

**Date of Report:****Revised 6/15/2022****BURNED-AREA REPORT****PART I - TYPE OF REQUEST****A. Type of Report**

- ☒ 1. Funding request for estimated emergency stabilization funds  
☐ 2. No Treatment Recommendation

**B. Type of Action**

- ☒ 1. Initial Request (Best estimate of funds needed to complete eligible stabilization measures)  
☐ 2. Interim Request # \_\_\_\_\_  
☐ Updating the initial funding request based on more accurate site data or design analysis

**PART II - BURNED-AREA DESCRIPTION****A. Fire Name: Cerro Pelado****B. Fire Number: NM-SNF-000049****C. State: New Mexico****D. County: Sandoval****E. Region: Southwestern****F. Forest: Santa Fe National Forest****G. District: Jemez****H. Fire Incident Job Code: P3PK47****I. Date Fire Started: 04/22/2022****J. Date Fire Contained: est. June 15, 2022****K. Suppression Cost: 45.4 million****L. Fire Suppression Damages Repaired with Suppression Funds (estimates):**

1. Fireline repaired (miles): 68.5
2. Other (identify): Dozer pushes 6.7 Acres

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

HUC #	Watershed Name	Total Acres	Acres Burned	% of Watershed Burned
130202020203	East Fork Jemez River	38,122	1,254	3.29
130202020205	Church Canyon-Jemez River	23,310	737	3.16
130202020402	Vallecita Creek	32,333	5,457	16.88
130202010205	Alamo Canyon-Rio Grande	37,614	1,424	3.79
130202010206	Rio Chiquito	30,177	13,903	46.07

HUC #	Watershed Name	Total Acres	Acres Burned	% of Watershed Burned
130202010207	Capulin Canyon-Rio Grande	26,8901	1,220	4.54
130202010601	Peralta Canyon	28,435	15,712	55.26
130202010602	Canon Santo Domingo	19,798	2,435	12.3
130202010603	130202010603	10,687	261	2.44
130202010605	Headwaters Borrego Canyon	28,936	2,798	9.67
130202010606	Outlet Borrego Canyon	28,435	405	2.10

#### N. Total Acres Burned:

Table 2: Total Acres Burned by Ownership

OWNERSHIP	ACRES
NFS	36,985
NPS	1,786
PUEBLO RESERVATION LANDS	4132
STATE	
PRIVATE	2,708
TOTAL	45,605

**O. Vegetation Types:** The Cerro Pelado fire burned through mostly mixed conifer and some ponderosa pine, with minor amounts of spruce fir, wet meadows, upland grasslands and riparian areas.

**P. Dominant Soils:** The majority of the soils were deep and there are no shallow soils in the burn. The dominant soil orders are alfisols and entisols with minor amounts of inceptisols and mollisols

**Q. Geologic Types:** Alluvium – 517 acres, Basalt – 684 acres, Clastic – 109 acres, Plutonic rock (phaneritic) – 582 acres, Rhyolite – 11,994 acres, and Volcanic rock (aphanitic) – 31,702 acres

#### R. Miles of Stream Channels by Order or Class:

Table 3: Miles of Stream Channels by Order or Class

STREAM TYPE	MILES OF STREAM
PERENNIAL	37.0
INTERMITTENT	148.8
EPHEMERAL	100.2
OTHER (DEFINE)	

#### S. Transportation System:

**Trails:** National Forest (miles): 21.0

**Other (miles):** 0

**Roads:** National Forest (miles): 147

**Other (miles):** System undetermined 13.7, Private 0.8, State, 1.1

### PART III - WATERSHED CONDITION

**A. Burn Severity (acres):***Table 4: Burn Severity Acres by Ownership*

Soil Burn Severity	NFS	Other Federal NPS	Pueblo Reservations	Private	Total	% within the Fire Perimeter
Unburned	10,737	829	1270	1139	13,974	31
Low	13458	661	1534	858	16,512	36
Moderate	12,487	291	1328	630	14,737	32
High	299	0	0	82	382	1
<b>Total</b>	<b>36981</b>	<b>1787</b>	<b>4132</b>	<b>2709</b>	<b>45605</b>	<b>100</b>

**B. Water-Repellent Soil (acres):** 13,270 acres that was determined from collect field data and is associated primarily with Moderate and High Soil Burn Severity

**C. Soil Erosion Hazard Rating:** Severe-36,264 acres, Moderate-5135 acres, Slight-86

**D. Erosion Potential:** 7.94 tons/hectare this is well below the Average T loss that is 30 tons/hectare.

**E. Sediment Potential:** 1469 cubic yards/square mile

**F. Estimated Vegetative Recovery Period (years):** Estimated vegetation recovery period would be about 5 years for understory grass and forb cover. Overstory cover could be suppressed especially in areas of Cerro Pelado moderate reburn which had previously burned in high severity during the 2011 Las Conchas fire. These areas had few overstory trees and now will have less recruitment of younger trees including pine and fir. Estimated Hydrologic Response (brief description): The Cerro Pelado burn scar included eleven 12-digit HUCs (subwatersheds), however only five subwatersheds had more than 10% of the watershed area burned or had moderate/high soil burn severity. Subwatersheds impacted include: Vallecita Creek, Peralta Canyon, Headwaters Borrego Canyon, Rio Chiquito and Church Canyon – Jemez River. Four of the five primary subwatersheds impacted by fire are headwater 6th code HUCs with an elongated shape and a channel network that consists generally of a primary perennial 2nd or 3rd order channel with many 1st and 2nd order intermittent tributaries. The fifth subwatershed, Church Canyon-Jemez River is part of the larger East Fork Jemez River watershed, however only the eastern headwater portion of this subwatershed, which has attributes similar to the other four larger subwatersheds was burned and therefore modeled for this assessment. The subwatersheds within the burn scar contain relatively equal amounts of soils in hydrologic soil groups A, B, C, and D – with soils in hydrologic soil group B being the most common (30%). Rock outcrops are a major occurrence along the slopes of Cochiti and Peralta Canyons and other nearby and tributary canyons. While 67% of the soils in the impacted watersheds were listed as being in fair condition and only 1% in poor condition, 32% of the subwatersheds impacted by Cerro Pelado were also within the 2011 Las Conchas burn scar. Based on field reconnaissance and communication with local expertise, 2022 pre-fire vegetation condition was assumed to be poor for those acres within the Las Conchas burn scar that had a moderate or high soil burn severity in 2011.

Clear water flow (not ash or sediment laden) models were created to reflect both average (Antecedent Moisture Condition II (AMC II)) soil moisture conditions and saturated soil moisture conditions (AMC III). Model runs for AMC III were created to reflect the multiple single storm events that frequently occur during the monsoon season. Many of the modelled basins do not produce peak flows in pre-fire conditions, therefore the estimation of increased risk is based on the following: minimal - <25 cfs increase in peak flows pre-post fire; significant - 25-100 cfs increase; very significant – 101-200 cfs; extreme - >200 cfs. For most basins under average soil moisture conditions (AMC II) and the 50% chance storm event the change in peak flows is minimal to significant. The exceptions are the Top of Church Canyon (above the Jemez River Recreation Corridor), Upper and Lower San Juan Canyon in the Vallecita Creek subwatershed, the confluence of the San Juan drainage and Paliza Canyon, Hondo Canyon, and Peralta Canyon West of Bearhead Peak, which are all very significant. Peralta Canyon above the Cochiti Pueblo has an extreme change in peak flows for the single storm with a 50% chance occurrence. For the 50% chance storm that occurs after successive days of monsoon storms (AMC III), most basins have a modeled very significant to extreme change in peak flows. For the 20% chance single storm (AMC II), most basins have a very significant to extreme change in peak flows

and for the 20% chance multiple storm (AMC III) almost all basins have an extreme change. In summary, very significant to extreme changes in clear-water peak flows is very likely (88% chance over the next three years) to occur for most areas within and below the burn scar. Hyperconcentrated flows, flows that contain entrained ash and sediment that typically occur during the first 2-3 post-fire storm events, were estimated by “bulking” clear water flows by 25%. This change increases the estimated risk for the 50% chance single storm (AMC II) from minimal to significant for most basins to very significant for most basins and extreme for most basins with the 50% chance storm after multiple days of events (AMC III). For detailed information on clear water and hyper-concentrated flows in individual basins see the watershed report. USGS modelled debris flow hazards are highest for the basins and drainages at the top of Church Canyon and Vallecita Creek subwatersheds and for multiple basins draining toward Peralta Canyon.

## **PART V - SUMMARY OF ANALYSIS**

### **Introduction/Background**

The Cerro Pelado fire started on April 22<sup>nd</sup> 2022 on the Santa Fe National Forest in Sadoval County New Mexico. The fire started near Cerros Pelado Peak in the Jemez Mountains located approximately 7 miles east of Jemez Springs. The fire started during a time of extreme winds and record dry conditions in the area. The cause of the fire is not known at this time. Many communities were evacuated and affected by smoke from the fire. Approximately 32 % of the fire burned areas that had not previously burned, while approximately 68% of the fire was a reburn of the Las Conchas fire scar from 2011. Many of the Pueblos in the area have a traditional link to the area, also had lands that were burned in the fire. These include Jemez Pueblo, Santo Domingo Pueblo and Cochiti Pueblo. The Jemez Mountains including the burned area are utilized by the Pueblo cultures for traditional ceremonies, utilization of mature Douglas Fir for traditional uses, hunting, and plant collection for traditional medicine and ceremonies. Contemporary uses of the area include recreation, fuel wood, timber, and grazing. BAER critical values for the Cerro Pelado assessment were identified by using data collected from the incident management team, a listening session with the pueblo communities, forest personnel and communication with the DOI BAER team and other cooperating federal, state, and local agencies. BAER critical values identified through this process fall into three broad categories: human life and safety, property and natural resources and cultural and heritage resources. Specifics of these BAER critical values, the risk to these BAER critical values and treatment will be discussed further in this document and in specialist reports.

### **A. Describe Critical Values/Resources and Threats (narrative):**

*Table 5: Critical Value Matrix*

Probability of Damage or Loss	Magnitude of Consequences		
	Major	Moderate	Minor
	<b>RISK</b>		
Very Likely	<b>Very High</b>	<b>Very High</b>	<b>Low</b>
Likely	<b>Very High</b>	<b>High</b>	<b>Low</b>
Possible	<b>High</b>	<b>Intermediate</b>	<b>Low</b>
Unlikely	<b>Intermediate</b>	<b>Low</b>	<b>Very Low</b>

#### **1. Human Life and Safety (HLS):**

- a. There is a very high risk to human life and safety on NFS lands within and immediately downstream of the burned area. Threats to human life and safety of forest visitors and employees traveling on NFS roads and trails include falling trees and limbs, falling rocks, flash floods, debris flows and other burned area hazards. Threats downstream of the burned area on NFS lands include flash floods and debris flows. Near the summit of Cerro Pelado Peak is a repeater site that is used for FS communications and is critical for emergency notifications related to life and safety. There is no risk or damage to the repeater itself, however access to the site is threatened if FSR 270 becomes unpassable and maintenance and repair cannot be completed.

2. **Property (P):****FSR 10 Ponderosa** – A Maintenance Level (ML) 3 gravel road that climbs from the bottom of the drainage outside of the community of Ponderosa, NM and steadily climbs up to State Highway 4. Direct fire impact on the slopes directly adjacent to the road, areas of low and moderate burn severity on steep slopes above the alignment. Select drainages that cross the road suffered moderate burn severity with hydrological models predicting substantial increase in flows during modeled storms.
- b. **FSR 270 Cerro Pelado** – – A ML 2 native surfaced road that climbs from the bottom of the drainage to the ridge with direct fire impact on the road, areas of high and moderate burn severity on shoulders along alignment. Road accesses Cerro Pelado Lookout and Comm Site that is critical USFS infrastructure. The Communication site is automated, but access need to be maintained so that maintenance and refueling can occur. The Cerro Pelado look out is staffed by FS personnel.
  - c. **FSR 266 Bear Springs** – A ML 2 native surfaced road that runs from the bottom of the drainage, climbs to the ridge, then descends down into the drainage before entering Jemez Pueblo Reservation Lands with direct fire impacts on the road and the slopes and drainages above the road, areas of moderate burn severity on shoulders along alignment. This road has berms on the outside of the road for nearly the entire length that are impacting road drainage.
  - d. **Paliza 10B-0.1 Bridge** – Prestressed Concrete slab bridge located on FSR 10B at MP 0.1 and is the sole access to the Paliza Group Campground Site. Bridge is low profile. Large debris are unlikely to pass and higher predicted flows are likely to exceed hydraulic opening capacity based on flows provided from hydrological analysis of moderately burned watersheds that drain into Paliza Canyon above this crossing.
  - e. **Paliza 10-3.2 Bridge** – Prestressed Concrete Slab Bridge located on FSR 10 at MP 3.2. Bridge is low profile with some bank erosion and minor scour on the upstream End of Bridge (EOB) wingwall where flow is attacking the substructure. Large debris unlikely to pass and higher predicted flows likely to exceed hydraulic opening capacity based on flows provided from hydrological analysis of moderately burned watersheds that drain into Paliza Canyon above the crossing.
  - f. **Paliza 10-3.4 Bridge** – Prefabricated Steel Bridge located on FSR 10 at MP 3.4. Bridge superstructure sits more than 10-ft above the observed flow with no bank erosion or scour noted and riprap armoring in place protecting the abutments. Large debris likely to pass hydraulic opening but channel scour still possible given higher predicted flows provided from hydrological analysis of moderately burned watersheds that drain into Paliza Canyon above the crossing.
  - g. **Trail Bridge in Paliza Campground** – Concrete trail bridge located in Paliza Campground. Hydrological models predict a significant increase in creek flows during modeled storms. High and moderate SBS burned hillslopes in drainage above crossing. Footing (near side) is partially exposed pre fire.
3. **Natural Resources (NR):**Soils productivity and hydrologic function
- a. A majority of the subwatersheds within the fire perimeter have a **possible** risk to soil productivity in that there are areas exceeding soil loss tolerance, but they are of low overall acreage so the magnitude would be **minor** and risk **low**.
  - b. The Peralta Canyon subwatershed has a **likely** probability due to larger more continuous areas (or about half the burn scar) exceeding soil tolerance and these areas account for about a third of the watershed overall. This watershed burned in the Las Conchas fire in a mosaic of moderate and high burn severity 10 years ago, and has now reburned. The magnitude of consequences would be **moderate** due to most of these areas showing modelled soil loss at three times that of tolerance levels and due to the reburn on previous high severity areas. The risk to this subwatershed would be **high**.
- b. Invasive species
- a. Aggressive invasive plants are present within the burned area, primarily on travel routes and dispersed camping areas. These infestations include New Mexico Class A, B, and C species are within or adjacent to burned areas and areas of ground disturbing fire suppression related activities. Invasive species present include Class A species *Centaurea biebersteinii*, *Cirsium arvense* and *Onopordum acanthium*. Class B species

Cirsium vulgare and Class C species Bromus tectorum, Carduus nutans and Ulmus pumila.

- b. Invasive plants are highly adapted to take advantage of early seral conditions created after fire and are able to out compete native plants for resources. These native plants have been identified as a critical resource for the pueblo cultures that have an ancestral link to the area. There is a **Probability of Damage and Loss is Highly Likely** with a **Moderate Magnitude of Consequence** come out to a **Very High Risk** to native plant populations due to invasive plants species.
- c. T&E
  - a. Mexican spotted owl Critical Habitat: MSO Habitat is not readily impacted by flooding events. Second order fire effects such as tree regeneration, plant succession, and changes in site productivity can be anticipated primarily for Moderate to High Soil Burn Severity. An increase in pest susceptibility may also occur including invasion of noxious and invasive species. Unaffected MSO PAC habitat could subsequently be impacted by pest outbreak originating from within the Cerro Pelado Fire. Using the BAER Risk Assessment Matrix (Matrix) for the natural resource critical values, we estimate the Probability of Loss for Mexican spotted owl PACs and Recovery Nest Roost to be "Possible" and the Magnitude of Consequences to be "Minor".
  - b. Jemez Mountains salamander Critical Habitat: There are 12,137 acres of designated JMS CH within the Cerro Pelado Fire perimeter. In 2011, much of this area was within the Las Conchas fire perimeter and experienced high severity fire effects that reduced habitat suitability. JMS habitat suitability is sensitive to soil and vegetation loss. Second order fire effects such as tree regeneration, plant succession, and changes in site productivity can be anticipated primarily for Moderate to High Soil Burn Severity. An increase in pest susceptibility may also occur including invasion of noxious and invasive species. Analysis of the Cerro Pelado Fire indicates JMS CH was primarily impacted by Unburned or Low Soil Burn Severity. Probability of Loss for Jemez Mountains salamander Critical Habitat is "Possible" and the Magnitude of Consequences has been determined to be "Moderate".
  - c. Rio Grande Cutthroat Trout: The Rio Grande Cutthroat Trout has been found historically within three creeks found within the Cerro Pelado fire and its area of influence. These systems include Peralta Creek, Medio Dia Creek, and Capulin Creek. Where Peralta Creek and Medio Dia Creek fall within the fire perimeter, USGS debris flow assessment for a 15min rainfall intensity of 40mm/hr indicates a potential combined hazard of High and Moderate respectively for basins that feed into these systems. Capulin Creek falls within the area of influence but outside of the fire perimeter. Maximum USGS debris flow combined hazard for a 15min rainfall intensity of 40mm/hr for this system is Low. Potential for downstream impacts from precipitation and/or flooding carrying sediment loads and ash may be significant for Rio Grande Cutthroat Trout occupied creeks. Probability of Loss for Rio Grande Cutthroat Trout habitat is "Very Likely", and the Magnitude of Consequences is determined to be "Moderate".

4. **Cultural and Heritage Resources:Forest Road 289/Capulin.** This area encompasses the south- to southeast interfluvial ridges and canyons to the south and east of Rabbit Mountain along the eastern edge of the fire, including portions of Sawyer Mesa, and the heads of Alamo Canyon and Capulin Canyon. Elevations range between 7900 and 8800 feet. There are 59 sites located in this portion of the fire. Almost all sites in this area are quarries used by Native Americans to acquire obsidian for making stone tools and artifact scatters associated with stone tool manufacturing. Most sites evaluated for National Register of Historic Places eligibility have been determined eligible, although roughly half of sites are unevaluated. The probability of damage to or loss of archeological sites in the Forest Road 289/Capulin area is **unlikely**, based on the conditions indicated by the SBS data

and observed conditions. Ridgetop sites retain sufficient live vegetation and experienced surface burns and are not susceptible to sheetwash erosion. The risk to cultural resources in this area is **low**.

- b. **Cochiti Mesa.** This area encompasses the flat, southeast facing top of Cochiti Mesa, as well as the other upland areas located west of Spruce Canyon in the eastern portion of the burn area. Elevations range between 8200 and 8800 feet. There are eight sites located in this portion of the fire. Most are Native American artifact scatters resulting from stone tool manufacturing. All have been evaluated for National Register of Historic Places eligible, and all but one are eligible under criterion (d). The probability of damage to or loss of archeological sites in the Cochiti Mesa area is **unlikely**, based on the conditions indicated by the SBS data and are not likely susceptible to sheetwash erosion. The risk to cultural resources in this area is **low**.
- c. **West Mesa.** This is a narrow, southeast-facing mesa located between Bland and Colle Canyons in the southeastern corner of the fire. Elevations range between 7000 and 7900 feet. There are 56 sites in this portion of the fire. Of these, 51 are located on the lower portion of the mesa, below 7600 feet. All sites are ancestral Pueblo masonry field house or small pueblo sites. The five sites on the upper end of the mesa are early 20<sup>th</sup> century log or stone cabins. Based on the information from the post-fire assessments conducted following Las Conchas Fire, and the conditions indicated by the SBS data, the risk of significant impacts from sheetwash erosion, pulling of root balls by falling fire-killed trees, and the collapse of burned out stump holes is low, and the probability of damage to or loss of archeological sites on West Mesa is **unlikely**. The risk to cultural resources in this area is **low**.
- d. **Oaks Mesa.** This is a broad, south-facing mesa located between Colle Canyon, Peralta Canyon, and Bearhead Peak on the southern margin of the fire. Elevations range between 7000 and 7300 feet. There are nine sites in this area. Two are ancestral Pueblo masonry field houses, while the remaining seven are wooden ramadas or log cabins dating to the early 20<sup>th</sup> century. All nine sites have been determined eligible to the National Register of Historic Places. The seven sites with wooden features likely burned in Las Conchas Fire and have lost the characteristics that once made them eligible to the National Register of Historic Places. Based on the conditions indicated in the SBS data, the risk of significant impacts from sheetwash erosion, pulling of root balls by falling fire-killed trees, and the collapse of burned out stump holes is low, and the probability of damage to or loss of archeological sites on Oaks Mesa is **unlikely**. Further, due to the likely loss by the majority of sites of the characteristics that made them eligible to the National Register of Historic Places, the magnitude of consequence to this loss is **minor**. The risk to cultural resources in this area is **very low**.
- e. **Bland Canyon, Albemarle, and Paliza Canyon.** These three areas comprise the center of the fire area where there has been little or no past archeological investigation. While comprising most of the fire area, only 15 archeological sites have been documented in this area. The Bland Canyon area is located in the southeastern portion of the fire. It is a broad, steep-sided canyon located between Horn Mesa and West Mesa. Elevations range between 6300 feet near its mouth at the southern edge of the fire to 8700 feet on the ridges near its head. The area contains eight sites and two ancestral Pueblo field house sites and a game trap at its lower end, and five sites associated with mining, including the ghost town of Bland, in its upper reaches. The Albemarle area is in the upper reaches of Colle Canyon in the center of the burn area at elevations between 7500 and 8000 feet. It contains two sites, the Albemarle town and mine sites. The Paliza Canyon area is located on the west side of the fire and drains the northwestern part of Peralta Ridge. The rivulet at the bottom of the canyon is known as Vallecitos Creek. There are five sites in this area, at an elevation ranging from 8200 to 8900 feet. Four of these sites are lithic scatters, while one contains a petroglyph and rock alignments. Most of the sites in the Bland and Albemarle area have not been evaluated for eligibility to the National Register of Historic Places but are of the types that would be eligible. However, all but one of the sites in the Bland and Albemarle areas were impacted by Las Conchas Fire, and were damaged or

destroyed by burning, flooding, or both. Based on the conditions indicated in the SBS data, the risk of significant impacts from sheetwash and slopewash erosion that likely remain eligible to the National Register of Historic Places in these areas (the petroglyph and game trap sites) is low, and the probability of damage to or loss of archeological sites in the Bland Canyon, Albemarle, and Paliza Canyon areas is **unlikely**. Further, due to the likely loss by the majority of sites of the characteristics that made them eligible to the National Register of Historic Places, or the likelihood that they would not be eligible, the magnitude of consequence to this loss is **minor**. The risk to cultural resources in these areas is **very low**.

- f. **Forest Road 270 and Forest Road 10.** This area encompasses the summit and slopes of Los Griegos and Cerro Pelado, and the portions of the heads of San Juan Canyon and the East Fork of the Jemez River. It is located in the northwestern corner of the burn area. Elevations range between 8100 feet where the San Juan Canyon exits the burn area to 10,109 feet at the peak of Cerro Pelado. The area contains 14 sites. The sites are diverse, and include lithic scatters, the remains of a cabin and sawmill, a historic spring box, a peeled ponderosa pine, a set of New Deal era culverts on Forest Road 270, and the mid-20<sup>th</sup> century Cerro Pelado lookout and associated features. The probability of damage to or loss of archeological sites in the Forest Road 10 and Forest Road 270 area is **unlikely**, based on the conditions indicated by the SBS data and observed conditions. Low intensity surface burning or unburned areas at the locations of most sites indicate that significant sheetwash or slopewash erosion is unlikely. Of the two sites where sheetwash and slopewash erosion are likely, the sites are not eligible to the National Register of Historic Places. A third site is unlikely to be further significantly impacted by slopewash erosion. The risk to cultural resources in this area is **low**.
- g. **Forest Road 10 and Forest Road 266 Historic Infrastructure.** Two roads along the western perimeter of the fire, Forest Road 10 and Forest Road 266, have historic infrastructure that is within or borders the burn area. This infrastructure was constructed by the Civilian Conservation Corps in the New Deal era of the early 20<sup>th</sup> century and is maintained and currently in use. Both sets of road infrastructure have been determined eligible to the National Register of Historic Places. The infrastructure along Forest Road 10 (AR-03-10-03-02700/LA 90428) is located in Sections 22 and 23, Township 18N Range 3E, New Mexico Principal Meridian (NMPM). This infrastructure consists of 18 features, including 11 culverts and seven retaining walls. All of these features are intact, functioning, and are characteristics that qualify the site for the National Register of Historic Places. The infrastructure along Forest Road 266 (AR-03-10-03-04352/LA 172687) is located in Sections 6, 7, and 13 (projected), Township 17N, Range 4E, NMPM. This infrastructure consists of 32 features, including 31 culverts and one retaining wall. Of these, 21 of the culverts and the retaining wall are intact, remain functional, and are site characteristics that qualify the site for the National Register of Historic Places. Based on the combined hazard debris flow model, and field observations made by heritage and engineering, the probability of damage or loss to the historic culvert features in the burn area on Forest Roads 10 and 266 is **likely**. The risk to cultural resources in these two localities is **high**.
- h. **Hondo Canyon/Borrogo Canyon.** This 1.5 mile (2.42km) section of intermittent drainage extends from where Hondo Canyon crosses the Pueblo of Jemez property boundary south to its junction with Borrogo Canyon, and then 0.65 mile (1.05km) further south along Borrogo Canyon, in Sections 26 and 35, Township 17N, Range 3E, NMPM. This section contains eight sites, including a large ancestral Pueblo village site (AR-03-10-03-00572/LA 189, Kiabakwa Pueblo), four field houses, the remains of a logging camp, the remains of a sawmill, and a brush corral. Four sites are located in Hondo Canyon north of the canyon junction and three are located in Borrogo Canyon south of the canyon junction. The large village site is located at the canyon junction. The large village site is listed on the National Register of Historic Places and was identified by the Pueblo of Jemez as a critical value at risk. The four field houses and the logging camp have been determined eligible to the National Register of Historic Places, while the brush corral's eligibility is undetermined and the sawmill site is unevaluated. Based on field assessment, three of the four sites in Hondo Canyon are located on terraces above the drainage bottom. The fourth site, the brush corral, is located near the drainage bottom. The



large village site is located on a terrace above the drainage bottom that is approximately 30 feet (10m) above the drainage bottom. The three sites south in Borrego Canyon were not assessed but based on records appear to be on terraces above the drainage bottom. Based on the hydrological model and field assessments and observations, it is likely that the brush corral site could be damaged or destroyed by flooding. However, this site has an undetermined National Register of Historic Places eligibility and would likely be not eligible if assessed, and as such the consequence of this loss would be minor. It is **possible** that the large village site could be damaged by flooding. Based on the National Register of Historic Places listing of this site and its identification as a critical value at risk by the Pueblo of Jemez, the consequence of this loss would be **major**. As such, the risk to cultural resources at this location is **high**.

- i. **San Juan Canyon.** This area consists of three sections of intermittent drainage, as well as the portion of San Juan Canyon within the burn area. The section of intermittent drainage closest to the burn area is 1.07 miles (1.73km) long and is located in the vicinity of the Forest Road 10-270 junction in Sections 27 and 28, Township 18N, Range 3E, NMPM. The second section of drainage is 0.63 mile (1.01km) long and is located in Section 33, Township 18N, Range 3E, NMPM. The third section is 3.06 miles (4.92km) long and is located in Sections 4, 9, 16 and 17, Township 17N, Range 3E, NMPM. There are 33 sites along these reaches of San Juan Canyon, including four sites in the burn area, seven sites along the upper reach, four sites along the middle reach, and 18 sites along the lower reach. Most of the sites (21) are ancestral Pueblo field houses. Other sites include an ancestral Pueblo small pueblo settlement, Native American artifact scatters (3), boulder shelters (2), a 20<sup>th</sup> century trash scatter, two small 20<sup>th</sup> century camp sites with various features, the remains of a Civilian Conservation Corps field camp, and an animal pen. Most sites have been determined eligible to the National Register of Historic Places. Only one site, a Native American artifact scatter, has been determined not eligible. Five sites are unevaluated for their National Register of Historic Places eligibility, but three of these are of types that would likely be considered eligible. Based on the hydrological model and field assessments and observations, it is likely that the brush corral site could be damaged or destroyed by flooding. However, this site has an undetermined National Register of Historic Places eligibility and would likely be not eligible if assessed, and as such the consequence of this loss would be minor. It is **possible** that the large village site could be damaged by flooding. Based on the National Register of Historic Places listing of this site and its identification as a critical value at risk by the Pueblo of Jemez, the consequence of this loss would be **major**. As such, the risk to cultural resources at this location is **high**.
- j. **Paliza Canyon (Vallecitos Creek).** This 3.37 mile (5.43km) stretch of intermittent drainage extends from just above the Elza Seligman Girl Scout Camp through the Paliza Campground area to the Ponderosa acequia reservoir near the private property boundary in Sections 9, 10, 16, and 20, and Section 20 (projected), Township 17N, Range 3E, NMPM. This section contains 13 sites, including ancestral Pueblo field houses (6), medium size ancestral Pueblo villages (2), a small pueblo settlement, Native American artifact scatters (3), and a petroglyph site. Most of the sites have been determined eligible to the National Register of Historic Places. The remaining sites are unevaluated but belong to site types that are likely to be eligible to the National Register of Historic Places if evaluated. Based on the assumed location of all archeological sites on the first terrace above the floodplain, it is **unlikely** there will be any damage or loss at these sites. The risk to cultural resources at this location is **low**.
- k. **East Fork of the Jemez River.** This 2.19 mile (3.52km) stretch of perennial stream extends from approximately 0.75 mile (1.2km) below Jemez Falls northwest to its confluence with San Antonio Creek, in Section 32, Township 19N, Range 3E, and Sections 4 and 5, Township 18N, Range 3E, NMPM. This section contains four sites: two ancestral Pueblo fieldhouses, an ancestral Pueblo residential complex containing two small pueblo settlements and agricultural features, and an artifact scatter. The field houses and residential complex have been determined eligible to the National Register of Historic Places, while the artifact scatter has been determined not eligible. The hydrological model for this drainage estimates the potential

for stream flows in excess of 340 cubic feet per second above Vallecitos de los Indios. In conversations with the BAER hydrologist, it is likely that most debris and some sediment will be removed from floodwaters when it has the chance to spread out in the broad meadows of the Vallecitos de los Indios. However, channel scouring will still occur within the drainage through this section, though the narrowness of the canyon bottom here will likely limit burial by sediment to small floodplain areas. Although the boundary polygon for the residential complex site overlaps the stream channel, based on the site documentation the features of this site are located on the terrace above the channel. The other three sites along this section are also documented to be on the terrace above the channel.

- I. **Bland Canyon and Cochiti Canyon (Rio Chiquito).** While there are known cultural resources in these canyons on National Forest System lands, it is assumed that they were damaged or destroyed during flooding following the 2011 Las Conchas Fire. As flooding following the current burn is predicted to be less than flooding that occurred following that fire, the risk to cultural resources on National Forest System lands was not assessed. While the hypothetical probability of damage or loss is **very likely**, due to the prior damage or loss the consequence is **minor**. This risk to cultural resources in these locations is **low**.

## **B. Emergency Treatment Objectives:**

The primary objective of this Burned Area Emergency Response Report is to recommend treatments to manage identified unacceptable risks from “imminent post-wildfire threats to human life and safety, property, and critical natural resources on National Forest System lands” (FSM 2523.02). These treatments are expected to substantially reduce the probability of damage to identified BAER critical values.

Post closure and warning signs to control public access and to inform the public of post-wildfire hazards that exist within the burned area and in watershed affected by the fire.

Protecting high value Forest Service roads and bridges through storm inspection and response, construction and improvement of road dips, berm removal and removal of drainage structures that are expected to fail, will ensure NFS investments are able to function properly during events with increased flows, and sedimentation loads.

Suppression and BAER invasive weeds Early Detection and Rapid Response (EDRR) to protect vegetative resource critical to cultural practices of Pueblos that have an ancestral link to the burned area and native plant communities that are critical to natural recovery.

Protection of Kiabakwa Pueblo located in Hondo Canyon. Kiabakwa Pueblo is a large ancestral pueblo located on a terrace above the main drainage. It has been assessed and there is a high risk of Damage or loss due to terrace undercutting during large runoff events.

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

**Land:** 90

**Channel:** 80

**Roads/Trails:** 80

**Protection/Safety:** 80

## **D. Probability of Treatment Success**

Table 6: Probability of Treatment Success

	1 year after treatment	3 years after treatment	5 years after treatment
<b>Land</b>	80	80	80
<b>Channel</b>	80	90	90
<b>Roads/Trails</b>	70	80	80
<b>Protection/Safety</b>	90	90	90

**E. Cost of No-Action (Including Loss): \$1,604,213**

**F. Cost of Selected Alternative (Including Loss): \$368,553**

**G. Skills Represented on Burned-Area Survey Team:**

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

**Team Leader:** Mark Casillas

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**Phone(s)** 505-389-7436

**Forest BAER Coordinator:** Josh Hall (acting)

**Email:** joshua.hall@usda.gov

**Phone(s):** 505-697-1465

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

Skill	Team Member Name
<i>Team Lead(s)</i>	Mark (Andy) Casillas
<i>Soils</i>	Nori Kohler, Tom Giambra
<i>Hydrology</i>	Kelly Mott Lacroix, Kyle Paffet, Rebecca McCracken
<i>Engineering</i>	Kenneth Bigelow
<i>GIS</i>	Brian Park
<i>Archaeology</i>	Jeremy Kulishek
<i>Weeds</i>	
<i>Recreation</i>	
<i>Other</i>	Cathleen Thompson – PIO Amber Bishop - Wildlife

**H. Treatment Narrative:**

**Land Treatments:**

**Early Detection Rapid Response EDRR :** Preventing invasive plants from establishing in weed-free burned areas is the most effective and least costly management method. This can be accomplished through early detection and eradication/rapid response. Two EDRR treatment are recommended for the burned area and suppression areas.

**Suppression EDRR:** This includes the Early detection for 38 acres of ground disturbing suppression activities in the area including Dozer line and pushes, Handline, and road that had ground disturbing actives to create improvised containment lines. Monitoring should be after monsoon rains, during spring green or when local specialist indicate is best.

**BAER EDRR:** This includes 6.7 acres of area know New Mexico A and B class invasive weed species within or near areas of moderate or high soil burn. Monitoring should be after monsoon rains, during spring green or when local specialist indicate is best.

**Channel Treatments:**

CT-1 Kiabakwa Pueblo Protection- Kiabakwa Pueblo is at a high risk of loss due to increased flow possibly undercutting the terrace that it is on. The treatment will include one fire crew, one hydrologist to design the treatment and one Archeologist to oversee the cultural protection treatment. The treatment includes the placement and securing multiple straw bales to divert increase water flows away from the terrace the Kiabakwa Pueblo is on.

Item	Unit	Unit cost	Total Cost
Staff Overtime	1 event	\$5,000	%5,000
Medium Duty Truck	4 days	\$14.25	\$57
2 light Trucks	5day	\$12.65	\$64
2 String weed free Straw Bales	160 bales	\$100	\$16,000
#8 Rebar or Wood stake	640 feet	\$6.20	\$3,968
Miscellaneous Supplies	1 event	\$400	\$400
Total			\$25,489

**Roads and Trail Treatments:**

RT-1 Storm Inspection and Response - Storm Inspection and Response (SI&R) involves inspecting the transportation system after storm events and cleaning ditches, culverts and bridges of any accumulated debris to ensure they remain free flowing. SI&R would allow the forest to monitor the road drainage structure treatments to ensure the treatments are functioning, clean the area to ensure they continue to function in the future, and maintain and/or repair any damage to the road surface due to the sediment delivery thus preserving the investments in this transportation network. The SI&R cost associated with road reconditioning of the ML-3 roads in the assessed area are:

NFSR	Miles of Treatment	Total Road Recondition Cost
10	.08	\$240
270	3.46	\$10,380
266	1.35	\$ 4,050
Total	12.8	\$14,670

RT-2 Storm Inspection and Response with Heavy Equipment - Storm Inspection and Response (SI&R) involves inspecting the transportation system after storm events and cleaning ditches, culverts and bridges of any accumulated debris to ensure they remain free flowing. SI&R would allow the forest to monitor the road drainage structure treatments to ensure the treatments are functioning, clean the area to ensure they continue to function in the future, and maintain and/or repair any damage to the road surface due to the sediment delivery thus preserving the investments in this transportation network.

NFSR	Treatment	Total Road Recondition Cost
10b-.01 Bridge	1	\$2,880
10b-.01 Bridge	1	\$2,880
Total	2	\$5,760

RT-3 Culverts/ Drainage Dips - Drain dips harden the road crossing providing a relief path for flooded roadway, minimizing diversion potential, and providing protection where flow modeling predicts concentrated flows that would erode the road fill. Additional components of the treatment include enlarging existing catch basins to increase capacity and armoring the inlet and outlet of a few strategic culverts to accommodate the predicted increased flows with the least damage to the road structure. The costs associated with this treatment are:

NFSR	Miles of Culvert Treatments	# of Dips	Total Cost
270	3.49	6	\$47,094
266	1.35	8	\$60,810
Total	4.84	2	107,904

**RT-4 Berm Removal** – Berm removal to allow for the free drainage of water from the road. Berm removal is recommended every 500 ft. The costs associated with this treatment are:

NFSR	Miles of Treatments	Total Cost
266	1.35	\$607.50
Total	1.35	\$607.50

**RT-5 Culvert Removal** – Removal of undersized culvert that may fail with increased post fire flow. This failure of the culvert could result in loss of this section of the road. A natural in place drainage feature will facilitate drainage after the culvert is removed. The costs associated with this treatment are:

NFSR	# culvert removed	Total Cost
266	1	\$500.00
Total	1	\$500.00

**RT-6 Warning Sign Installation** – Warning signs are critical to warn visitor of to the areas of the condition that might be present in the post fire environment. See Roads treatment map for installation locations. The costs associated with this treatment are:

NFSR	# culverts removed	Total Cost
All FS Roads in Perimeter	18	\$11,200.00
Total	1	\$11,200.00

### Protection/Safety Treatments:

**Warning/Closure Signs** Burned area warning signs: An administrative closure is currently in place on Santa Fe National Forest lands until July 18th. It has been determined there is an unacceptable risk to human life and safety associated with roads, trails, and recreation areas and sites within and down gradient from the burn areas. We are recommending an area closure that prevents the public from accessing areas identified as having high risk. The gates currently in and around the closure areas will be adequate to enforce the area closure. In addition to the administrative closure and already in-place gates we are recommending the installation of 53 warning signs at key access points of trails, roads and recreation sites. The purpose of the Burned Area Warning signs is to reduce risks to human life and safety by informing forest visitors of potential dangers and/or hazards when entering burned areas on NFS lands. Entering burned areas presents a high risk to human and life and safety, with increased threats from post-fire effects such as falling trees, rolling rocks, flash floods, and debris flows. It is necessary to inform the public of burned-area hazards that are a direct result of wildfire. Lump sum costs include signs, posts, hardware and installation.

Sign Type	UOM	Unit Cost	# of Units	Total Cost
TFW8-14d 12"x8"	Lump Sum	\$450	22	\$9,900
FW8-14f 48"x24"	Lump Sum	\$725	15	\$10,875

FW8-14d 60"x42"	Lump Sum	\$875	15	\$13,125

**I. Monitoring Narrative:**

Monitoring is recommended for CT-1 Kiabakwa Pueblo Protection. Monitoring is recommended after each major storm event to monitor treatment effectiveness. Monitor will be conducted by forest and/or archeologist. No BAER funding is requested for **CT-1 Kiabakwa Pueblo Protection monitoring**.

Monitoring is recommended for T&E species within the burn area. Continue monitoring Jemez Mountains Salamander using detection surveys. For the Mexican Spotted owl Complete PAC monitoring and/or deploy acoustical recording units within PAC boundaries in subsequent breeding seasons. No BAER funding is requested for T&E monitoring.

**PART VI – EMERGENCY STABILIZATION TREATMENTS AND SOURCE OF FUNDS**

Line Items	Units	Unit Cost	NFS Lands		Other	Other Lands				All Total
			# of Units	BAER \$		# of units	Fed \$	# of Units	Non Fed \$	
<b>A. Land Treatments</b>										
Supresion EDRR	acre	300	38	\$11,400	\$0		\$0		\$0	\$11,400
BAER EDRR	acres	300	6.7	\$2,010	\$0		\$0		\$0	\$2,010
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<b>Subtotal Land Treatments</b>				\$13,410	\$0		\$0		\$0	\$13,410
<b>B. Channel Treatments</b>										
CT-1 Kiabakwa Pueblo Prote	each	25,489	1	\$25,489	\$0		\$0		\$0	\$25,489
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<b>Subtotal Channel Treatments</b>				\$25,489	\$0		\$0		\$0	\$25,489
<b>C. Road and Trails</b>										
Dip Contruction	each	7,500	14	\$105,000	\$0		\$0		\$0	\$105,000
Stormproofing	miles	5	600	\$2,904	\$0		\$0		\$0	\$2,904
Berm Removal	miles	1	450	\$608	\$0		\$0		\$0	\$608
Culvert Removal	miles	1	500	\$500	\$0		\$0		\$0	\$500
Install Warning Sign	each	16	700	\$11,200	\$0		\$0		\$0	\$11,200
Storm Inspection and Response	mile	5	3,000	\$14,670	\$0		\$0		\$0	\$14,670
Storm Inspection and Response W/ heavy Equipment	each	2	2,880	\$5,760	\$0		\$0		\$0	\$5,760
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<b>Subtotal Road and Trails</b>				\$140,642	\$0		\$0		\$0	\$140,642
<b>D. Protection/Safety</b>										
Trail Sign	each	450	22	\$9,900	\$0		\$0		\$0	\$9,900
Gate Signs	each	725	15	\$10,875	\$0		\$0		\$0	\$10,875
Road Signs	each	875	15	\$13,125	\$0		\$0		\$0	\$13,125
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<b>Subtotal Protection/Safety</b>				\$33,900	\$0		\$0		\$0	\$33,900
<b>E. BAER Evaluation</b>										
Initial Assessment	Report	\$54,816	1	---	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				---	\$0		\$0		\$0	\$0
<b>Subtotal Evaluation</b>				\$0	\$0		\$0		\$0	\$0
<b>F. Monitoring</b>										
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<b>Subtotal Monitoring</b>				\$0	\$0		\$0		\$0	\$0
<b>G. Totals</b>				\$213,441	\$0		<b>\$0</b>		<b>\$0</b>	<b>\$213,441</b>
Previously approved										
Total for this request				<b>\$213,441</b>						

**PART VII - APPROVALS**

1. \_\_\_\_\_  
 Forest Supervisor Date