

Date of Report: 9/7/2022**Wildcat Initial 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: Wildcat**B. Fire Number: NV-HTF-010139****C. State: NV****D. County: Elko****E. Region: 04****F. Forest: Humboldt-Toiyabe NF****G. District: Mountain City, Ruby Mountains, Jarbidge****H. Fire Incident Job Code: P4PURD22 0417****I. Date Fire Started: 7/13/22****J. Date Fire Contained: 7/23/22****K. Suppression Cost: \$4 Million****L. Fire Suppression Damages Repaired with Suppression Funds (estimates):**

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

Table 1 Fire Suppression repairs on all ownerships.

Item	Unit	Amount Identified	Amount Repaired	No Repair Needed	Remaining
Mapped Dozer Line	Miles	29.7	29.7	0	0
Road as Control Line	Miles	0.2	0.09	0.11	0
Mapped Hand Line	Miles	0.45	0.40	0.05	0
Mixed Construction Line	Miles	6.85	0	6.85	0
Road Repair	Miles	19.4	0	0	19.4
Drop Points	Count	2	1	0	1
Fence Cut/Damaged	Count	11	10	0	1
Dozer Push	Count	9	9	0	0

Table 2 Suppression Repairs on only the Forest Service Administered lands

Item	Unit	Amount Identified	Amount Repaired	No Repair Needed	Remaining
Mapped Hand Line	Miles	0.05	0	0.05	0
Mixed Construction Line	Miles	2.03	0	2.03	0
Retardant Drop	Miles	0.86	0	0.86	0

M. Watershed Numbers:*Table 3: Acres Burned by Watershed*

HUC #	Watershed Name	Total Watershed Acres	Acres Burned	% of Watershed Burned
160401010403	Headwaters T Creek	14589	5,806	40%
160401010404	Wildcat Creek	27271	7,591	28%
160401010408	T Creek-Mary's River	33132	2,018	6%
170402130101	Deer Creek	21929	1,331	6%
170402130102	Sun Creek	26985	2,523	8%

Table 4 Soil Burn Severity by Watershed

HUC #	Watershed Name	Low Severity Acres	Moderate Severity Acres	High Severity Acres
160401010403	Headwaters T Creek	2647	3054	105
160401010404	Wildcat Creek	4914	2591	86
160401010408	T Creek-Mary's River	1002	997	19
170402130101	Deer Creek	1073	257	0.7
170402130102	Sun Creek	1445	1078	0

N. Total Acres Burned: 21,423 this includes unburned islands in the fire area.

Figure 1 Soil Burn Severity for all ownerships

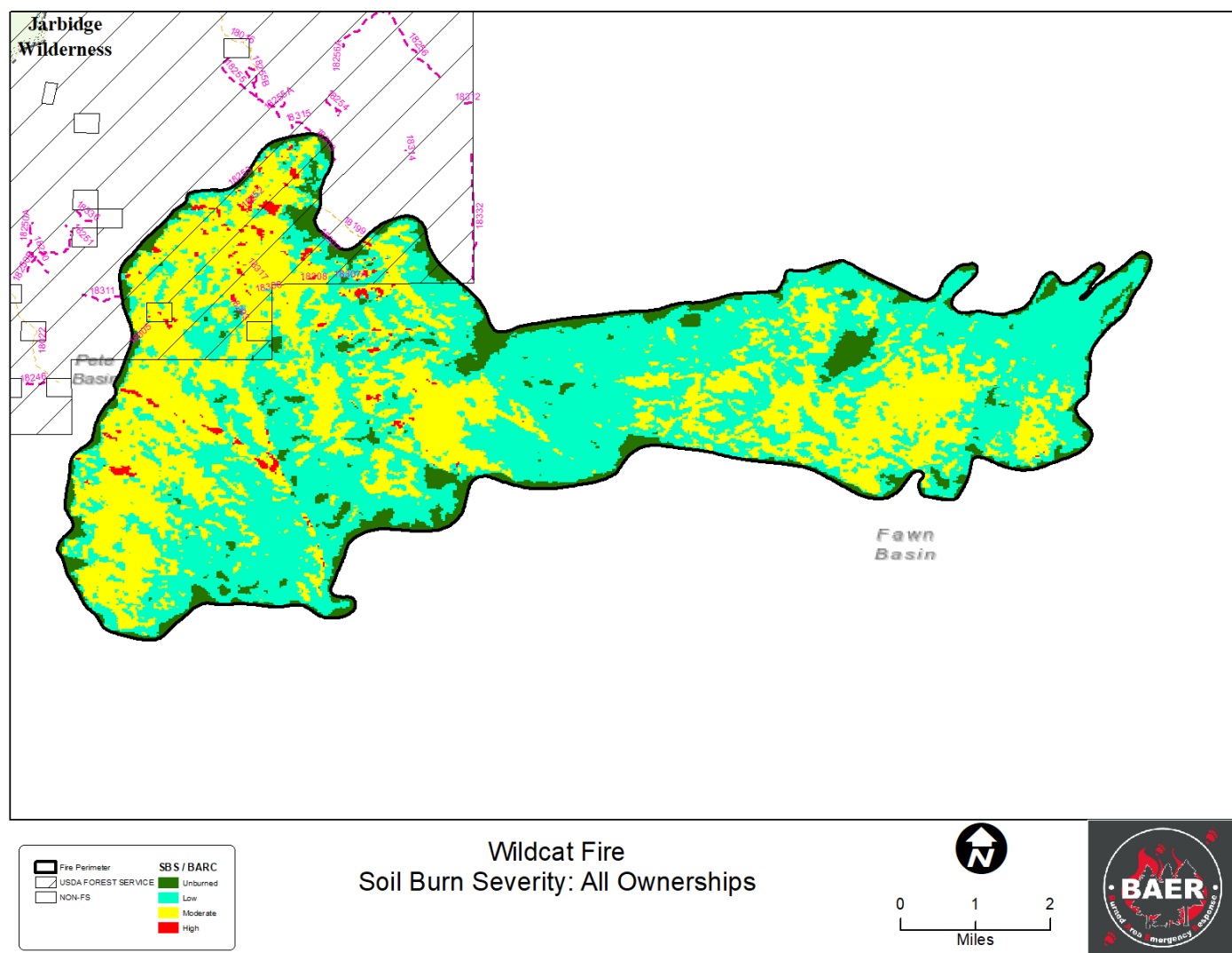


Table 5: Total Acres Burned by Ownership

Ownership	Acres	Percent of total fire area
NFS	2656	12

BLM	15671	73
Private	941	04
Total Burned	19,268	
Unburned	2154	10

O. Vegetation Types:

Mountain shrub, mountain big sage, riparian aspen, riparian shrub, riparian grass, aspen, curl leaf mountain mahogany, low sage, basin big sage, and mixed sagebrush/bitterbrush.

P. Dominant Soils:

Soil textures within the Wildcat Fire are predominantly very gravelly loam, but also include gravelly loam, very cobbly loam, very gravelly ashy loam, ashy loam, loam, extremely gravelly loam, and a small amount of silt loam.

Table 6 Soil Names, textures, and acres within the FS administered portion of the fire area. Percent of the fire area represented by the soil type provided for reference. The acres exclude the two private inholdings due to gis clipping using ownership.

Soil Complex	Soil Texture	Acres	Percent of Forest Portion of the fire
	Ashy loam	6.61871641691	<1%
Chug-Welch complex	Ashy loam	3.25896291274	<1%
Sumine-Chen-Hapgood association	Very cobbly loam	861.87205445300	28%
Stampede-Kleckner association	Gravelly loam	65.23298437020	2%
Cotant-Mclvey-Quarz association	Very cobbly ashy loam	261.12282349800	9%
Stampede-Kleckner association	Gravelly loam	55.20645585250	2%
Chug-Bendastik-Poppellen association	Ashy loam	9.04276435784	<1%
Tusel-Mahogee association	Very gravelly ashy loam	1358.05556831000	44%
Chen-Sumine-Tusel association	Gravelly loam	449.87474304300	15%
Cotant-Mclvey-Quarz association	Very gravelly loam	0.29841977305	<1%
Sumine-Chen-Hapgood association	Very cobbly loam	0.93236547730	<1%

Q. Geologic Types:

Tertiary Jarbidge Rhyolite; Tertiary Ignimbrite, tuff and associated sedimentary rocks; Quaternary alluvium, colluvial and landslide deposits derived from the Jarbidge Rhyolite; and Tertiary pyroxene and hornblende phenoandesite and phenodacite.

R. Miles of Stream Channels by Order or Class:

Table 7: Miles of Stream Channels by Order or Class

STREAM TYPE	MILES OF STREAM
PERENNIAL	14
INTERMITTENT	29
EPHEMERAL	37
OTHER (DEFINE)	Ditches .09 (likely under representation)

S. Transportation System:

Trails: National Forest (miles): motorized 13.4 (evaluated as roads) Other (miles):
Roads: National Forest (miles): 9.7 Other (miles): 9.11

Table 8 FS Motorized Trails in fire area

Trail No.	Name	Length (Miles)
18199	Wildcat Creek	0.7
18252	Wildcat7	0.7
18253	Wildcat1	0.8
18293	Draw 3	0.9
18305	Pete	0.6
18307	Wildcat3	1.1
18307A	Wildcat3 SpurA	0.22
18308	Wildcat4	0.18
18311	Draw5	0.13
18313	Wildcat5	0.38
18317	Wildcat6	0.45

PART III - WATERSHED CONDITION

A. Burn Severity (acres):

Soil burn severity was observed in the field by the BAER Assessment Team Leader (Hydrology and Soils), Roads Personnel, Fish biologists and Vegetation specialists all trained with gtr243 in taking surface hydrophobicity, soil root integrity, root crown integrity, ash color and vegetation burn intensity observations. Multiple points of burn severity class taken in the field to validate observed areas with similar burn indicators, these were then compared with the satellite-derived Burned Area Reflectance Classification (BARC) image of the Wildcat Fire, collected on June 25, 2022. The classification breaks of the BARC image were not adjusted to derive the soil burn severity map as they were found to be very similar to the field observations.

The soil burn severity survey was conducted by aerial, field, and virtual-based reconnaissance of the burned area. Soil burn severity was interpreted according to the definitions in the Field Guide for Mapping Soil Burn Severity (http://www.fs.fed.us/rm/pubs/rmrs_gtr243.pdf). Due to Covid19 precautions the soil analysis was limited to viewing photos from the fire area taken by IC4, READ and BAER staff who were able to visit the site. No field validation of the BARC map by the Soils Specialist was able to occur. The burn severity classifications of BARC image were used for the Soil Burn Severity determinations.

Figure 2 Soil Burn Severity detail of Forest Service managed lands.

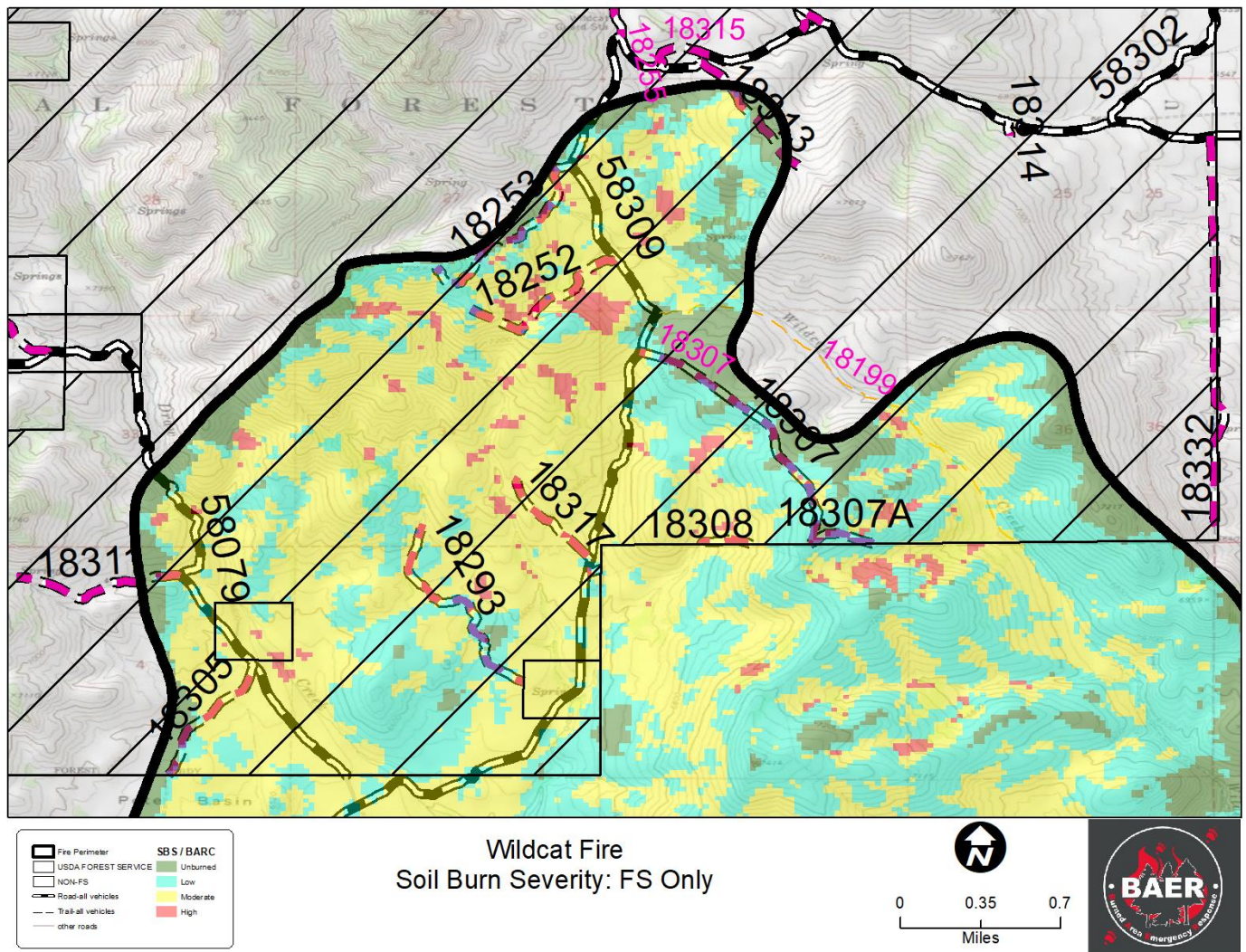


Table 9: Burn Severity Acres by Ownership

Soil Burn Severity	NFS	Other Federal (BLM)	State	Private	Total	% within the Fire Perimeter
Unburned	417	1683	0	54	2154	10
Low	870	9642	0	569	11081	52
Moderate	1687	5920	0	370	7977	37
High	100	109	0	2	211	1
Total	3074	17354	0	995	21423	100

The unburned acres are not carried forward in the document, the 2657 burned acres are.

B. Water-Repellent Soil (acres):

170 acres of low hydrophobicity, 17 acres of moderate hydrophobicity, no high hydrophobicity was detected. The higher hydrophobicity measurements were associated with the larger aspen stands that were heavily burned. These numbers are representative based on the amount of hydrophobicity detected in the field verification of the BARC confirming the Soil Burn Severity approximation it provided.

Soil water repellency was observed in the field by the BAER Assessment Team Leader (Hydrology and Soils), Roads Personnel, Fish biologists and Vegetation specialists and where it was detected, recorded in Avanza and survey 123. The majority of the hydrophobicity observed was low about 10% of the moderate SBS area; with only 10% of the total hydrophobicity observed having a moderate rating. The team soil scientist was made

aware of these observations, but they seem to have been forgotten in the shuffle of returning to home station to telework for health reasons.

C. Soil Erosion Hazard Rating:

The road trail rating was used as the off-road off-trail rating are not available for the fire area in Web Soil Survey. The majority of the FS portion of the fire is severe.

Table 10 NRCS Soil Erosion Hazard Rating for the entire fire area

Erosion Hazard Rating	Acres	Percent of the fire area
Slight	1789.6	8.4
Moderate	5236.5	24.4
Severe	14403	67.2

Table 11 NRCS Soil Erosion Hazard Rating for Forest Service Lands (includes unburned acres, excludes pvt land)

Erosion Hazard Rating	Acres	Percent of the fire area
Slight	0	0
Moderate	9	<1
Severe	2191	>99

D. Erosion Potential:

Figure 3 Dust Devils observed in the fire area. While some were short lived others had residence times over 30 minutes.



The following were calculated using the watershed modeling applications WEPPcloud and WEPP-PeP.

Table 12 WEPP modeled erosion potential

Watershed	Total Hillslope Soil Loss (t/yr)
Draw Creek pre-fire	31
Draw Creek post-fire	320

Wildcat Creek pre-fire	34
Wildcat Creek post-fire	430
T Creek at Draw Crk confluence pre-fire	51
T Creek at Draw Crk confluence post-fire	110
Wildhorse Creek pre-fire	30
Wildhorse Creek post-fire	62

E. Sediment Potential:

Table 13 was submitted by the team Soil Specialist. *In spot checking some of the numbers inconsistent errors were noted (some numbers significantly higher, some lower) that warrant rerunning these numbers prior to consulting with Fish and Wildlife or finalizing the ESR in channel designs past the 70% designs currently submitted.*

Table 13 ERMiT derived sediment potential

Watershed	Portion of Watershed Modeled	Burn severity	ERMiT Result (1000 ft. slope length (sediment: tons/ac.) Year 1	ERMiT Result (1000 ft. slope length (sediment: tons/ac.) Year 2	ERMiT Result (1000 ft. slope length (sediment: tons/ac.) Year 3	ERMiT Result (1000 ft. slope length (sediment: tons/ac.) Year 4	Percent chance exceedance
Meadow Creek	East slope	moderate	0.01	0	0	0	20%
Draw Creek	North Slope	moderate	0.02	0.01	0	0	20%
T Creek	North Slope	moderate	0.02	0	0	0	20%
Draw Creek	NE slope	high	4.62	1.16	0.43	0.23	20%
Wildcat Creek	NW tributary	high	11.77	5.83	2.41	0.73	20%
Wildcat Creek	SW slope	moderate / high	4.9	1.79	0.21	0.12	20%
Wildcat Creek	SW slope	moderate	0.07	0.02	0	0	20%
Draw Creek	West slope	mod / some high	0.07	0.02	0	0	20%

The team leader consulted with Regional Baer Coordinator, Jeff Bruggink, and was advised to estimate any of the above outputs needed for any potential treatment proposals, document them and to file an interim later if needed.

Of the currently proposed treatments only one, the culvert upgrade, needed sediment delivery numbers for proper bulking and flow passing capacity.

F. Estimated Vegetative Recovery Period (years): 1-5 years for grass and forb components, 5-10 years for shrub components, much longer for tree species.

G. Estimated Hydrologic Response (brief description):

The primary watershed responses of the Wildcat fire are expected to include: 1) an initial flush of ash and debris, 2) rill and gully erosion on steep slopes within the burned area, and 3) potential flash floods and debris flows during short duration high intensity summer monsoonal precipitation events, as well as during long duration winter atmospheric river precipitation events. While the burned topography is relatively moderate in steepness, storms will likely create increased surface flow that could trigger floods or debris flows with very high sediment volumes and large amounts of floatable debris due to the areas now devoid of vegetation and groundcover after the fire. These responses are expected to be most pronounced during the first 3-5 years after the fire and will become less evident as vegetation and soil-hydrologic function recover.

Post-fire runoff modeling was conducted on twelve analysis watersheds across the Wildcat fire burn scar. The WEPPcloud model was used to predict pre-fire flows for 2, 5, 10-year flood events while WEPPcloud-PeP was used to predict post-fire flows of the same magnitudes. While increases in flow post-fire seem to be fairly moderate (see Table 12), it does not account for a significant degree of bulking from sediment and debris that is likely to occur in the watersheds affected by the Wildcat Fire over the next few years. These elevated post-fire flows and bulking could lead to plugged culverts, damage to road infrastructure, damage to utility infrastructure, damage to buildings, impacts to water quality, decreased soil productivity and hydrologic function, as well as threats to human life and safety.

Table 14 Modeled increases in post-fire flood discharge

		2-year % increase	5-year % increase	10-year % increase
Fisheries Pourpoints	Wildcat Creek	38.5	48.0	59.3
	T Creek @ Fire Bdy	30.0	15.4	20.0
	Draw Creek	22.0	10.6	3.8
	Wildhorse Creek	32.8	22.4	17.6
	T Creek @ DrawCreekConf	20.0	18.8	26.6
Engineering Pourpoints	58309 TCreek xing	26.6	35.4	45.5
	Rd 306 x Meadow Creek	28.6	13.8	0.0
	Rd 753 CMP24"	33.3	27.8	25.0
	Rd 753 CMP48"	16.7	16.0	14.8
	58309 Draw Creek Crossing w/Headcuts	26.9	22.6	10.0
	1098 Hot Creek Rd xing (BLM)0	28.6	44	27.3
	T-Creek below Gibbs Ranch Road Crossing	18.5	21.2	14.6

PART V - SUMMARY OF ANALYSIS

Introduction/Background

on 7/13/2022 the Wildcat fire started in O'niell Basin. This area is locally important for the Native plant community as it provides Greater Sage Grouse habitat, mule deer migratory habitat that allows the migrating deer to put on winter weight on their way to the south end of the Pequops as well as the intrinsic value of the plants themselves and the ecosystem services they provide. The native vegetation also provides for sediment retention and stream stabilization in the fire area which provides for water quality and habitat sufficient to have multiple Lahontan Cutthroat Trout streams within the fire area and where the BLM recently detected Western Pearlshell Mussels on both Forest Service and BLM administered portions of Wildcat Creek. Xerces lists Western Pearlshells as being extirpated from the state. T Creek, Draw Creek, and Wildcat Creek are all part of

the Mary's River drainage and their LCT populations rely on one another for genetic diversity. Seasonally as the waters in the lower elevations warm the fish migrate up stream into cooler waters and then back down on the rising base flows and spring snowmelt to their spawning reaches.

The fire area has a wide variation in elevation going from sagebrush step up to Subalpine fir on the forest. The riparian areas were dominated by willows and aspen which have burned at a moderate to high intensity in many locations resulting in moderate to high soil burn severity in the riparian reaches. Unfortunately the stream channels have pre-existing down cutting that, based on the age of the stumps and unburned riparian appear to correlate to the early 1980s flood event and the mid 1950s flood events. There are inset floodplains in many of the reaches but also active headcutting that is destabilizing the channels and disconnecting the stream flows from the floodplains. These stream systems are highly susceptible to further degradation due to their incised state in the face of increased post fire flows. The extent of unburned watershed on the forest is a benefit to the channels as, the higher elevations are typically the source areas for larger damaging flows but there is still sufficient tributaries and watershed area within the fire that degradation of the occupied LCT habitat could occur. The plant community is also used for permitted cattle operations that are a large economic contributor to the local community.

Roads in the fire area contribute to ease of access for land use and management. The permittees access livestock improvements such as stock ponds and for checking their cattle while recreationists and agency personnel access multiple dispersed camps and hunting camps as well as the Wildcat Guard Station. The fire area roads are also a backcountry access route to Jarbidge and Idaho.

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

The Wildcat fire burned 2657 acres on forest service and additional acres and connected riparian areas on BLM. The below value and risk discussion uses the Matrix and values from the 2523 manual (tables 13 and 14)

Table 15: Critical Value Matrix

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

Table 16 Probability and Magnitude values used to determine risk

Probability of Damage or Loss: The following descriptions provide a framework to estimate the relative probability that damage or loss would occur within 1 to 3 years (depending on the resource):

- Very likely. Nearly certain occurrence (90% - 100%)
- Likely. Likely occurrence (50% - 89%)
- Possible. Possible occurrence (10% - 49%)
- Unlikely. Unlikely occurrence (0% - 9%)

Magnitude of Consequences:

- Major. Loss of life or injury to humans; substantial property damage; irreversible damage to critical natural or cultural resources.
- Moderate. Injury or illness to humans; moderate property damage; damage to critical natural or cultural resources resulting in considerable or long term effects.
- Minor. Property damage is limited in economic value and/or to few investments; damage to critical natural or cultural resources resulting in minimal, recoverable or localized effects.

Critical Value	Value type	Probability	Mag	Rating+ Discussion
T Creek- LCT	NR	Unlikely	Moderate	Low- the upper third of the drainage area is unburned. The largest risk to this habitat is vertical instability migrating up from adjacent BLM administered lands.
Draw Creek- LCT	NR	Likely	Moderate	High- moderate sbs in the headwaters, riparian also burned, undersized culvert on fs boundary. Invasive weeds identified within burned area near creek could lead to site conversion from native to invasive plant communities.
Wildcat LCT	NR	Possible	Moderate	Intermediate- LCT and Western Pearl Shell Mussels are found in this drainage within the fire area. The mussels, while not yet listed, are a blm sensitive species and are dependent on the LCT as they are the only salmonids in the watershed (Western Pearlshell (Margaritifera falcata) U.S. Fish & Wildlife Service (fws.gov)). Both are sensitive to sediment and channel scour/aggradation. Invasive weeds identified within burned area near creek could lead to site degradation from native to invasive dominated plant communities. Depending on the invasive plant species this can lead to reduced shading and channel

Critical Value	Value type	Probability	Mag	Rating+ Discussion
				stability and increased sedimentation.
Soil Productivity	NR	Possible	Moderate	Intermediate -based on soil burn severity and soil texture. Pgs. 142-151 of the Custom Soil Report from Web Soil Survey Addresses Site Degradation Susceptibility. Most FS lands fall within high and moderate site degradation susceptibility. But because the potential for damage by fire is low and the potential for successful rangeland seeding is high (none proposed), soil productivity loss is possible in High SBS but unlikely to occur on much of the FS lands affected by the fire.
Roads	Property	Very likely	Major	Very High -Potential to lose access to entire burn area, loss of sections of road prism that provide access to an administrative site as well as recreation access. The soils report rates the magnitude as moderate however this is only a partial picture and did not take into account the changed runoff flows.
Roads	NR	Very Likely	Moderate	Very High -Sediment source to LCT habitat that will take one to two seasons to flush from system.
Roads	Safety	Very likely	Major	Very High - risk of entrapment in the fire area due to debris flows or road stream crossings failing. If someone is actively crossing when a debris flow passes, they could be killed or severely injured. While there are multiple access routes to the fire the potential exists that someone could be trapped during a medical emergency and not be able to reach care in time.
Native plant community	NR	Likely	Moderate	High - Conversion to invasive weeds will negatively impact the native plant community's ability to provide terrestrial habitat and to sustain the current fish populations. The entire burn area is identified as Preliminary Priority Habitat (PPH) and sage grouse were observed to actively be occupying the area. the Native plant community, especially the brush component, is important for the overwintering success of the local deer herd. Loss of native and naturalized plant communities could

Critical Value	Value type	Probability	Mag	Rating+ Discussion
				decrease the amount of PPH and make surrounding PPH more vulnerable to loss during future disturbances. LCT habitat relies on native vegetation to keep streams cool and stable- this is a concern because a large proportion of the riparian areas had Soil Burn Severity of moderate to high.
Water Quality	NR	Very Likely	Minor	Low: Damage to the critical value is expected to be recoverable and localized to those watersheds that receive high intensity rainfall that is capable of eroding hillslope material. Spikes in sediment and nutrients will occur immediately following storms and flush through the system within a few days as discharge levels return to baseflow. The natural recovery of ground cover from needle cast in higher elevations and vegetation re-growth throughout will mitigate the threat to water quality as watersheds recover in the next 3-5years.
Hydrologic Function	NR	Likely	Minor	Low: Consumption of ground cover by the fire was extensive within the moderate and high soil burn severity areas, rendering the soils vulnerable to increased rates of post fire erosion. Any reduction in hydrologic function is expected to be recoverable, localized, and is a natural component of the fire adapted ecosystem.

1. Human Life and Safety (HLS):

- a. Risk 1: Human life and safety on roads and lands within the Humboldt-Toiyabe National Forest (HTNF) due to the risk of Debris flow. Watershed changes caused by the fire cause the potential to be **likely** with Magnitude of Consequences being **major**, with a risk rating of **Very High**. The unnamed tributaries from the north to Draw Creek within the Wildcat Fire, mapped as moderate and high soil burn severity have the greatest debris flow potential, and pose the greatest risk to human life and safety. Based on examination of the topography, soils mapping, geologic substrate, and BARC / soil burn severity, and the USGS Post-Fire Debris Flow Model results and analysis of rain storm recurrence intervals modeled, it is concluded the probability of debris flows occurring in the Draw Creek area and tributaries to T Creek, Draw Creek, and Wildcat Creek on NFS lands is increased by changes in soil and vegetation conditions caused by the fire. Numerous road-stream crossing within the burn area are now at risk of damage from flash flood damage. Entrapment could lead to injury or loss of life.
 - a. BAER specific funds are requested to mitigate these risks via treatments PS 2 and RD

1

2. **Property (P):** Roads: both the Soils and Engineering Specialist reports identified roads as safety risks to human life, therefor they are discussed above. Because most all of the treatments fulfil mitigation under all three categories (safety, property, natural resource) they are combined into one package and not broken out by individual water diversion feature or section of ditch.

- a. BAER specific funds are requested to mitigate these risks via treatment RD 1

3. **Natural Resources (NR):**

- a. **Loss of Native and Naturalized Plant Community on Forest Service Lands to noxious weeds** Based on field assessment and use of RMRS-GTR-338 protocol the probability of damage/ loss is **Likely** and the magnitude of consequences **Moderate** which results in a risk rating of **High**. Within and adjacent to the burn area infestations of bull thistle, cheatgrass, Canada thistle, diffuse knapweed, medusahead rye, Scotch thistle and hoary cress were present prior to the fire. These infestations are located along roads used to access the fire. Approximately 4.55 miles of mixed line were constructed on HTNF lands during suppression activities access to this line and along this line could have distribute weed propagules to the rest of the fs administered fire area. The majority of the NFS lands that burned exhibited moderate soil burn severities, with locations of high and low or unburned areas within the perimeter. There is a high probability that seedbanks within the burn area are intact due to most of the burn area being low soil burn severity (52%). The advantageous growth rate and response to fire that these weeds express, likelihood of nearby seedbank survival, and the potential movement of seedbanks through fire suppression activities are all considered when determining the probability of loss or damage to the native and naturalized plant communities. We are currently experiencing a drought throughout the Great Basin. The effects of the drought exacerbate the decline in resiliency of the vegetation and the ability of it to recover from disturbance. The likely probability of damage or loss is because a weed wash station commensurate to the infestation scale of the area was not established on the incident in addition to the other concerns listed above. The higher elevation and potential precipitation amount on FS lands within the burn area helped reduce the probability rating. T Creek, Draw Creek, and Wildcat creek are all occupied habitat for Lahontan cutthroat trout. Conversion of native vegetation to noxious and/or invasive weeds will lead to degradation of the fish habitat through loss of streambank stability and stream temperature increase related to loss of shade from woody shrubs. Loss of these stream habitats will be a major loss to protection efforts for the species. The fire is entirely within Preliminary Priority Habitat for the Greater Sage Grouse. Invasive and noxious weeds are the second leading cause of loss to sage grouse habitat after fire. Having both fire and invasives present in the identified habitat reduces the resiliency of the landscape and reduces the ability of the vegetation to recover post disturbance. I am rating the magnitude of consequences as **Moderate** because invasives could have considerable and long-lasting impacts to the resiliency and recovery of the native and naturalized plant community that both LCT and Greater Sage Grouse rely on. I have assessed the **risk of loss** of the native and naturalized plant community as **high**, which is an unacceptable risk.

- a. BAER specific funds are requested to mitigate these risks via treatment(s) LD 1

- b. Roads: both the Soils and Engineering Specialist reports identified roads as safety risks to human life, therefor they are discussed above. Because most all of the treatments fulfil mitigation under all three categories (safety, property, natural resource) they are combined into one package and not broken out by individual water diversion feature or section of ditch.

- a. BAER specific funds are requested to mitigate these risks via treatment RD 1

4. **Cultural and Heritage Resources:** While there are heritage resources within the burn area including historic ditches, no concerns were noted by the Archeologist. All proposed treatment areas were assessed, on site, for risk of impact to heritage resources and no concerns were noted.

B. **Emergency Treatment Objectives:**

- Provide for the safety of forest visitors and employees alike visiting and working in the fire area.
- Treat invasive plants that are a threat to native and naturalized ecosystems by minimizing the expansion of existing populations in the burned area and control of expected invasion of noxious weeds within and adjacent to the area where soils/vegetation was disturbed as a result of fire suppression activities.
- Prevent stream crossings from becoming impassable due to common rain fall events and the subsequent fire caused increased flows including some debris.

C. Probability of Completing Treatment Prior to Damaging Storm or Event:***Land:** 100%**Channel:****Roads/Trails:** 85%**Protection/Safety:** 85%

*Prevention activities will be conducted as part of BAER EDRR treatments would be conducted in the fall or spring.

D. Probability of Treatment Success*Table 17: Probability of Treatment Success*

	1 year after treatment	3 years after treatment	5 years after treatment
Land	80	50	35
Channel	-	-	-
Roads/Trails	85	85	85
Protection/Safety	85	85	85

E. Cost of No-Action (Including Loss):

Per the white paper on cost benefit found on the WO BAER sharepoint "Q. FS-2500-8 instructs to use an "appropriate cost-risk tool." What is an appropriate cost-risk tool? A. In both instances where cost-benefit is mentioned in the FSM policy, they leave the analysis to be scaled as needed to the situation. When BCVs treatments are straight forward with only low-cost minimal treatments, there may not be a need to perform a complex and rigorous analysis. On more complex fires, the analysis may need to be scaled-up and have a more detailed look, especially at expensive treatments. The Team Leader must be able to explain the process used and be able to defend it."

Land Treatments - Native and Naturalized Plant Communities: Approximately \$340,000 to complete delayed treatments across entirety of burned area on FS lands. the U.S. Congress, Office of Technology Assessment (1993) stated that the environmental and economic benefits of supporting prevention and early detection initiatives significantly outweigh any incurred costs, with the median benefit-to-cost ratio of 17:1 in favor of being proactive. Based on that statement, the cost of the no-action alternative is estimated at \$340,000(17 x \$20,000). It is worth noting that this estimate would likely cover the costs of treatment alone through a federal contractor and would not include the cost and time necessary to get FWS consultation completed to ensure treatments can occur where needed along LCT habitat. It is difficult to place monetary value on the potential loss of habitat on approximately 2,656 acres of HTNF lands. If the proposed BAER treatment is not funded, it is expected that new and existing non-native invasive plants will spread throughout the burned area. The expected consequences include: loss of native/naturalized plant communities, diminished quality of Lahontan Cutthroat Trout habitat, Greater Sage Grouse habitat, pollinator habitat and other wildlife habitat, reduction in quality forage available to livestock, and decreased recreation value. In the absence of emergency weed surveys and treatments, exponential increases in the cost over subsequent years to treat new infestations of small satellite populations not controlled within year one are anticipated. Failure to address the potential spread of noxious weeds found within the Wildcat Fire area could lead to large portions of the native plant community converting to noxious weeds within 3-5 years. Unmeasurable items: loss/alteration of soil productivity, and decrease in forage production due to lost soil productivity for livestock and wildlife.

Safety: potential loss of life

Roads: The cost of not doing any road stabilization in the fire area at this time would be the cost to rebuild sections of road after they are washed out, eroded away, or buried. This cost estimate includes bringing in material to build up the washed-out sections and construction costs. The cost of the lost value of the roads to project management, fire suppression, and recreation is not included in this estimate.

Table 18 Estimated costs of repairing USFS roads in Wildcat Fire if no recommended treatments are performed.

Estimated Reconstruction Costs for USFS Roads in Wildcat Fire
--

Road Number	Road Name	FS Road Miles Within Burn Area	Estimated FS Road Miles Effected By Fire	Cost to Rebuild at \$41,000 mile (2020 contract costs)
58079	Draw Creek	1.5	1.1	\$45,100
58309	Wildcat Creek	7.8	1.0	\$41,000
18035	N/A	1	0.15	\$6,150
Cost of No Action				\$92,250

F. Cost of Selected Alternative (Including Loss):

Protection and Safety:

PS 1 Weather service was briefed on the changed soil conditions and provided a fire perimeter and soil burn severity map. The early alert levels were adjusted to trigger if radar estimates are approaching the .25inch in 15 minutes threshold recommended by the USGS. *This was completed on 7/30/2022; cost \$0.*

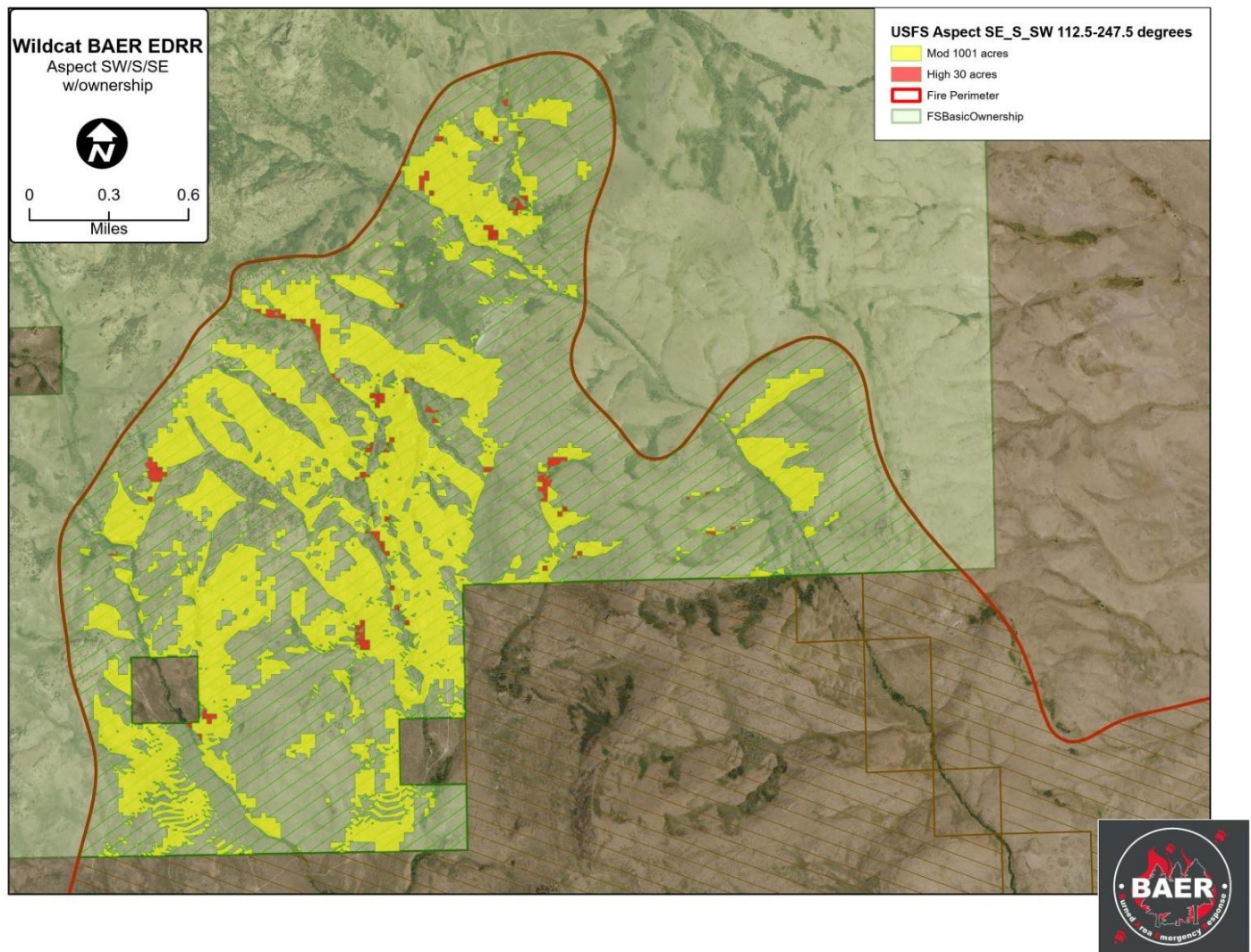
PS 2- Install fire area warning signs on the three main access routes to the fire. All locations are BLM owned and will require approval from the BLM to install.

Item	Unit	Unit cost	# of units	Cost
Redeploy fire area warning signs from past fires	each	0	3	0
Skid steer with auger	Hours	20	3	60
Vehicle mileage to haul skid steer (signs are in Corta & Cherry fires and need to be moved to the Wildcat Fire area)	Miles	.69	300	210
Misc supplies incase signs, posts or hardware aren't reusable	Lump	100	1	100
Total costs rounded up				\$400

Native and Naturalized Plant Communities:

BAER EDRR surveys on at least 875 acres of burned area: first prioritizing surveying south facing slopes with high soil burn severity (30acres), secondly prioritizing surveying south facing slopes with moderated soil burn severity (1,001acres). See Figure 4 (below) for identification of south facing slopes by soil burn severity. These EDRR survey proposals are based on values at risk, current infestation sizes, and areas that were disturbed by suppression activities, resulting in unacceptable risks to natural resources. EDRR surveys will be conducted by Great Basin Institute interns. The weed risk to native plant community recovery can be mitigated at low cost by implementing EDRR within the first year after the fire. New, small weed infestations located during EDRR surveys will be manually treated upon discovery. Existing infestations found to be expanding due to the fire or fire suppression activities would be re-mapped and evaluated for treatment. This alternative was selected because early detection and rapid response for smaller acreages of noxious weeds proves to be more economically efficient than trying to rehabilitate the landscape once these populations have expanded and/or converted to annual grasslands. An interim report for the chemical treatment of noxious weeds spread by the fire on HTNF lands may be filed if large acreages of weed spread is identified. If additional risk still exists past one year from the date of containment, BAR, program, or partner funds would need to cover the cost of continued treatment. Contract crew costs associated with BAER EDRR surveys on south facing slopes with high-to-moderated soil burn severity (875 acres) are \$18,679. Total combined cost equals \$20,000 or \$22.85 per acre.

Figure 4 Prioritized EDRR areas within the FS administered portion of the fire



LD 1 – BAER- Specific EDRR

Item	Unit	Unit Cost	# Of Units	Cost
(2) Contract Biological Science Technicians (salary, OT, travel)	days	\$747.16	25	\$18,679
Vehicle Mileage Costs	Miles	\$0.44	1,500	\$660
Materials and Supplies (Herbicides)	-	-	-	\$660
Total Costs (rounded up)				\$20,000

Roads:

Because most of the treatments fulfil mitigation under all three categories (safety, property, natural resource) they are combined into one package. All proposed BAER road work is on Forest Service Maintenance Responsibility roads. Labor costs are included in the off chance that the agency road crew is not available and contractors need to be hired.

RD 1- Treatments for road stabilization and risk mitigation. The following tables show the cost breakdown of suggested BAER treatments for roads.

Table 19 BAER treatment Equipment and contract labor costs, not including culvert replacement. A 25% markup was added due to recent inflation and high construction costs in today's market.

	Total Number	Cost Per Single Item	Total Cost	25% Cost Multiplier
Rolling Dips	21	\$912	\$19,147	\$23,933
Low Water Crossings	4	\$750	\$3,000	\$3,750
Ditch-work (ft)	1100	\$3,671 / mi	\$765	\$956
Total Labor and Equipment Costs:			\$22,911	\$28,639

Table 20 Total earthen material costs for BAER treatments of armoring for low water crossings and culverts. Delivery costs are estimated at \$2/mile for a 20 yd³ load 150 miles roundtrip

Rock Size	Total Volume (yd ³)	Cost
4-6"	10	\$282
8-12"	80	\$1,400
Delivery	90	\$1,500
Total:		\$3,182

USFS Culvert Cost

Specifications for the USFS culvert replacement can be found under Quadrant 1, Site B. The estimated total time that it takes to install a culvert is one full day, and the transport distance is roughly 80 miles. Further cost details are found in the Appendix of the engineering report. Due to the fact that the current culvert is inset into a gully in a meadow changing over to a low water crossing would cause more ecosystem damage than is already at the site. Due to the depth of the gully and fill a squash pipe maintains safety and cover for the site. Removing the pipe and letting the drainage flow through the winter was considered but not brought forward due to the vertical drop between the channel height above the crossing and below; the current pipe is acting as a grade control structure. Further the road is a main access to the Wildcat Guard Station, and this portion of the fire area, so having the road temporarily closed would present a safety hazard and not be an enforceable closure leading to user created trails being created on the meadow surface or on the adjacent private land to bypass the missing crossing.

Table 21 Material costs for USFS culvert replacement, not including armoring rock (included in previous table). Culvert is 16 gauge with price based on \$72 per foot.

24" USFS Culvert Replacement	
40' long 36" Squash Culvert	\$2,880
Flare	\$850
Couplers (2)	\$180
Labor, Equipment, and Transport	\$1,999
Total	\$5,909

One time mobilization for road crew

Mobilization	\$6,670
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Total requested for this project: \$44,400

G. Skills Represented on Burned-Area Survey Team:

- | | | | | |
|---|---|---|--|---|
| <input checked="" type="checkbox"/> Soils | <input checked="" type="checkbox"/> Hydrology | <input checked="" type="checkbox"/> Engineering | <input checked="" type="checkbox"/> GIS | <input checked="" type="checkbox"/> Archaeology |
| <input checked="" type="checkbox"/> Weeds | <input type="checkbox"/> Recreation | <input checked="" type="checkbox"/> Fisheries | <input checked="" type="checkbox"/> Wildlife | |

☒ Soils ☒ Hydrology ☒ Engineering ☒ GIS ☒ Archaeology
☒ Other:
 Fisheries

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Forest BAER Coordinator: Dirk Netz
Email: dirk.netz@usda.gov

Phone(s): 775-340-8505

Team Members: Table 22: BAER Team Members by Skill

Skill	Team Member Name
Team Lead(s)	Robin Wignall (hydrology and soils)
Soils	Rebecca Biglow (debris flow)
Hydrology	Hilda Kwan
Engineering	Caleb Dedmore, Derek Ginter, Troy Jorgenson
GIS	Mariah Blackhorse
Archaeology	Chimalis Kuehn
Weeds	Meagan Carter
Recreation	Emily Shue was consulted
Other	Nick Rzyska-Filipek (Fisheries), David Hamilton (Wildlife/Fisheries)

H. Treatment Narrative:

Multiple alternatives were considered as treatments for the risks identified during the field assessments. After balancing the least cost for the least impact to achieve the mitigation the best price to government alternatives were brought forward.

Land Treatments:

Native and Naturalized Plant Communities: Although the pre-fire landscape appears to be highly resilient and is expected to recover the native and naturalized plant community quickly, there is a high risk of invasive and noxious weeds moving into disturbed areas with little to no residual vegetation or seedbank remaining post burn. Forest Service direction is to minimize the establishment of non-native invasive species to prevent unacceptable degradation of the burned area. Focus will be on surveying for invasive treatment needs on south facing slopes with high to moderate SBS to ensure that the areas that have the lowest potential resiliency and the longest estimated time of recovery will be protected against invasion. Trace amounts of cheatgrass identified in unburned patches of vegetation along roadsides indicate that the movement of invasives into the area has yet to increase to an amount that will trigger a type conversion to an annual grassland. Early Detection Rapid Response surveys will prevent the annual grass component of the overall vegetative cover from exceeding 5% to ensure recovery of the native and naturalized plant community. BAER EDRR surveys on 875 acres of high-to-moderate SBS within the burned area. These EDRR survey proposals are based on critical values at risk, current infestation sizes, and proximity to areas that were disturbed by suppression activities as they can become a new infestation area and seed source to the rest of the fire area, resulting in unacceptable risks to natural resources. EDRR surveys will be conducted by Great Basin Institute interns or equivalent. The weed risk to native plant community recovery can be mitigated at low cost by implementing EDRR within the first year after the fire. New, small weed infestations located during EDRR surveys will be manually treated upon discovery. Existing infestations found to be expanding due to the fire or fire suppression activities would be re-mapped and evaluated for treatment. This treatment was selected because early detection and rapid response for smaller acreages of noxious weeds proves to be more economically efficient than trying to rehabilitate the landscape once these populations have expanded and/or converted to annual grasslands.

Channel Treatments:

None proposed on forest. The baer team will be supporting the BLM on their implementation as it will protect forest channel reaches.

Roads and Trail Treatments:

Treatments considered for the transportation system included natural recovery, road closures, minimal road drainage structures, reshaping the crown of the road, preparing ditches for increased runoff, armoring and reshaping low water crossings, culvert cleaning, and culvert replacement. Only one, of all the culverts inspected, is recommended for being upgraded this is due to the fact that the current culvert is inset into a gully in a meadow and changing over to a low water crossing would cause more ecosystem damage than is already at the site. Additional considerations for the pipe replacement included the depth of the gully and fill necessitates a squash pipe to maintain safety and cover for the site and removing the pipe and letting the drainage flow through the winter was considered but not brought forward due to the vertical drop between the channel height above the crossing and below; the current pipe is acting as a grade control structure. Further the road is a main access to the Wildcat Guard Station and this portion of the fire area so having the road temporarily closed would present a safety hazard and not be an enforceable closure leading to user created trails being created on the meadow surface or on the adjacent private land to bypass the missing crossing.

Based on the considerations storm proofing the highest risk portions of the roads and replacing the one culvert was brought forward as the best price option to mitigate the fire caused risks while being the least possible cost. Pertinent site-specific discussions are found in the roads and motorized trails report under quadrant 1 and quadrant 2 discussions.

Protection/Safety Treatments:

In order to provide the public with an informed choice on whether to enter the fire area or not the forest is proposing to install 3 fire area warning signs at the three main access points to the fire. The forest has already coordinated with the Weather Service on the increased flood and debris flow risk of the fire area and set the threshold of concern at a conservative .25inch of precip received in 15minutes. The weather service has already issued one flood/debris flow alert for the fire area due to a slow-moving storm cell over the Meadow Creek part of the fire on BLM administered lands. There were flood flows triggered by the rainfall intensity which ended up being higher than the warning threshold, minor amounts of topsoil was moved in the flows due to the lack of vegetative roughness no larger cobbles were noted as having been transported.

I. Monitoring Narrative:No monitoring is requested under BAER authority. Implementation and effectiveness monitoring will occur but due to the exclusion of agency employee salary from baer funding and the small size of the fire area not necessitating over time or travel to complete the monitoring no funding is currently requested.

PART VI – EMERGENCY STABILIZATION TREATMENTS AND SOURCE OF FUNDS

Line Items	Units	Unit Cost	# of Units	BAER \$	Other \$	# of units	Fed \$	# of Units	Non Fed \$	Total \$
A. Land Treatments										
LD-1	each		1	\$20,000	\$0		\$0		\$0	\$20,000
					\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Land Treatments</i>				\$20,000	\$0		\$0		\$0	\$20,000
B. Channel Treatments										
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Channel Treatments</i>				\$0	\$0		\$0		\$0	\$0
C. Road and Trails										
RD-1	each	38,200	1	\$44,400	\$0		\$0		\$0	\$44,400
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Road and Trails</i>				\$44,400	\$0		\$0		\$0	\$44,400
D. Protection/Safety										
PS-2	each	400	1	\$400	\$0		\$0		\$0	\$400
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Protection/Safety</i>				\$400	\$0		\$0		\$0	\$400
E. BAER Evaluation										
Initial Assessment	Report			---	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				---	\$0		\$0		\$0	\$0
<i>Subtotal Evaluation</i>				\$0	\$0		\$0		\$0	\$0
F. Monitoring										
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Monitoring</i>				\$0	\$0		\$0		\$0	\$0
G. Totals										
				\$64,800	\$0		\$0		\$0	\$64,800
Previously approved										
Total for this request				\$64,800						

PART VII - APPROVALS

for 1. _____
 Forest Supervisor _____ Date _____