

Date of Report: 08/30/2021**BURNED-AREA REPORT**

Dixie Fire

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)
Due to the large size and complexity of the Dixie Fire, the BAER team is breaking the assessment into Phases to facilitate expedited assessment completion. This initial request is part of the Phase I assessment. A larger, more comprehensive analysis of Phase I is on going. This will result in a larger request for response actions to manage post-fire risks. This is a Preliminary Request just for roads and life and safety in order to allow the Plumas and Lassen National Forest to move forward with some treatment logistics while the rest of the assessment is completed. This request lacks detailed specifics about the locations of the treatments; however, the treatments would be "prescription by design," meaning that only roads and recreation sites in areas with threats would be addressed. Those sites or road segments in relatively stable areas (ridges, etc.) would not be addressed at this time. This is a specific, focused request to mobilize critical resources.
- ☐ 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: Dixie****B. Fire Number: CA-LNF-004628****C. State: CA****D. County: Butte, Plumas, Lassen****E. Region: 5****F. Forest: Lassen and Plumas****G. Districts:****H. Fire Incident Job Code: PNN5ZB21****I. Date Fire Started: 7/13/2021****J. Date Fire Contained: 48% as of 8/29****K. Suppression Cost: \$****L. Fire Suppression Damages Repaired with Suppression Funds (estimates): TBD****1. Fireline repaired (miles): 0**

2. **Other (identify):** 0

M. Watershed Numbers:

N. Total Acres Burned: 764,135 (as of 08/29)

O. Vegetation Types:

P. Dominant Soils:

Q. Geologic Types:

R. Miles of Stream Channels by Order or Class:

Table 1: Miles of Stream Channels by Order or Class

STREAM TYPE	MILES OF STREAM
PERRENIAL	
INTERMITTENT	
EPHEMERAL	
OTHER (DEFINE)	

S. Transportation System:

Trails: National Forest (miles): -

Other (miles): -

Roads: National Forest (miles): -

Other (miles): -

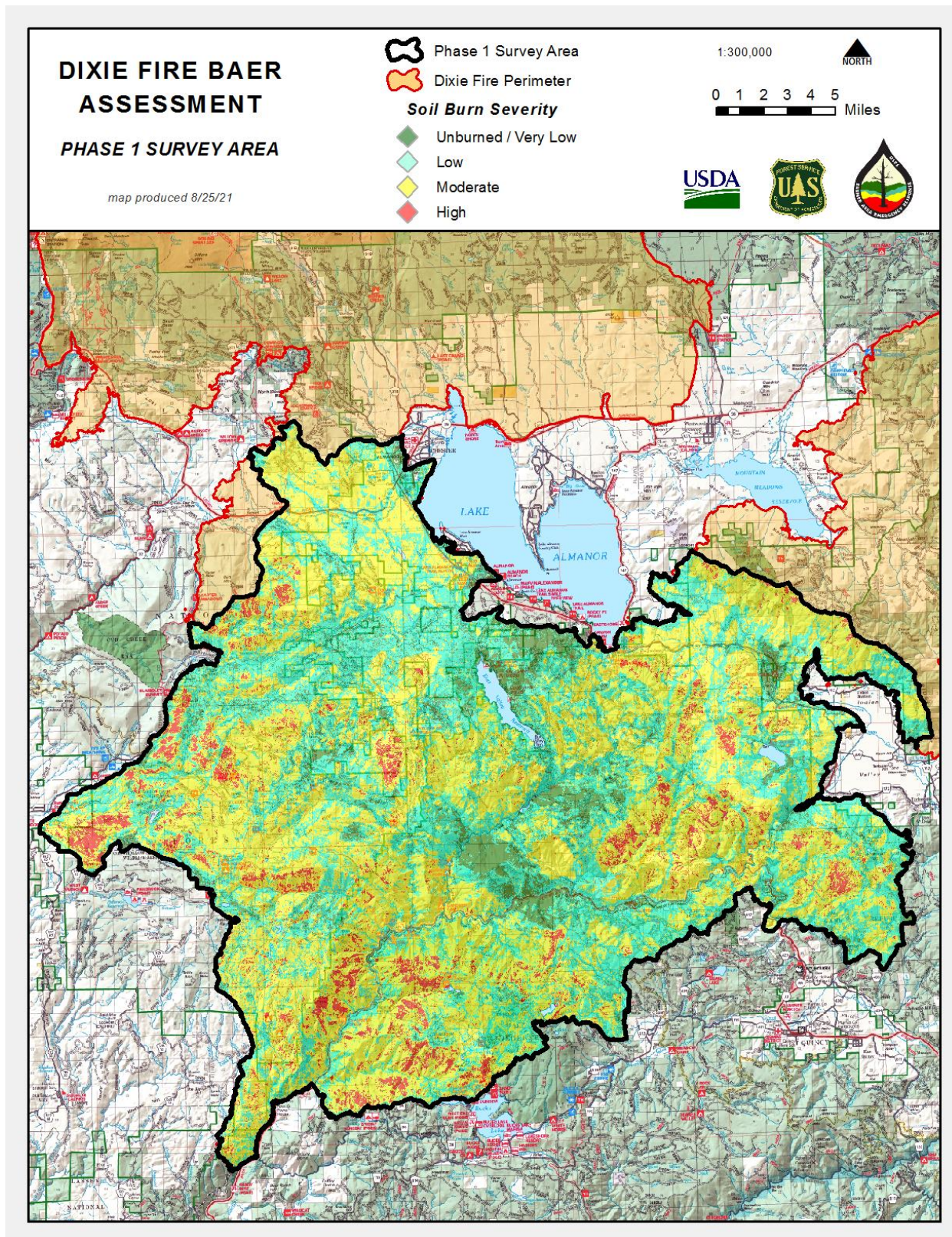
PART III - WATERSHED CONDITION

A. Burn Severity (acres):

Ownership	Acres of SBS				
	Unburned / Very Low	Low	Moderate	High	Grand Total
Bureau of Indian Affairs	11	39	16		67
Bureau of Land Management	15	62	21		98
CA Department of Fish and Game	166	375	343	6	889
Lassen National Forest	5,016	30,234	51,596	6,621	93,467
Plumas National Forest	13,393	59,963	93,048	10,056	176,460
Private / Unknown	7,665	40,101	44,723	2,160	94,648
State Lands Commission	11	39			50
Grand Total	26,276	130,813	189,747	18,842	365,678

**Approximately: 5% high, 52%
moderate, 36% low and 7%
unburned**

****Phase 1 Survey Area is 368,422 acres - this is greater than the total SBS acreage because we removed any waterbody areas from the SBS data**



B. Water-Repellent Soil (acres):

C. Soil Erosion Hazard Rating:

D. Erosion Potential:

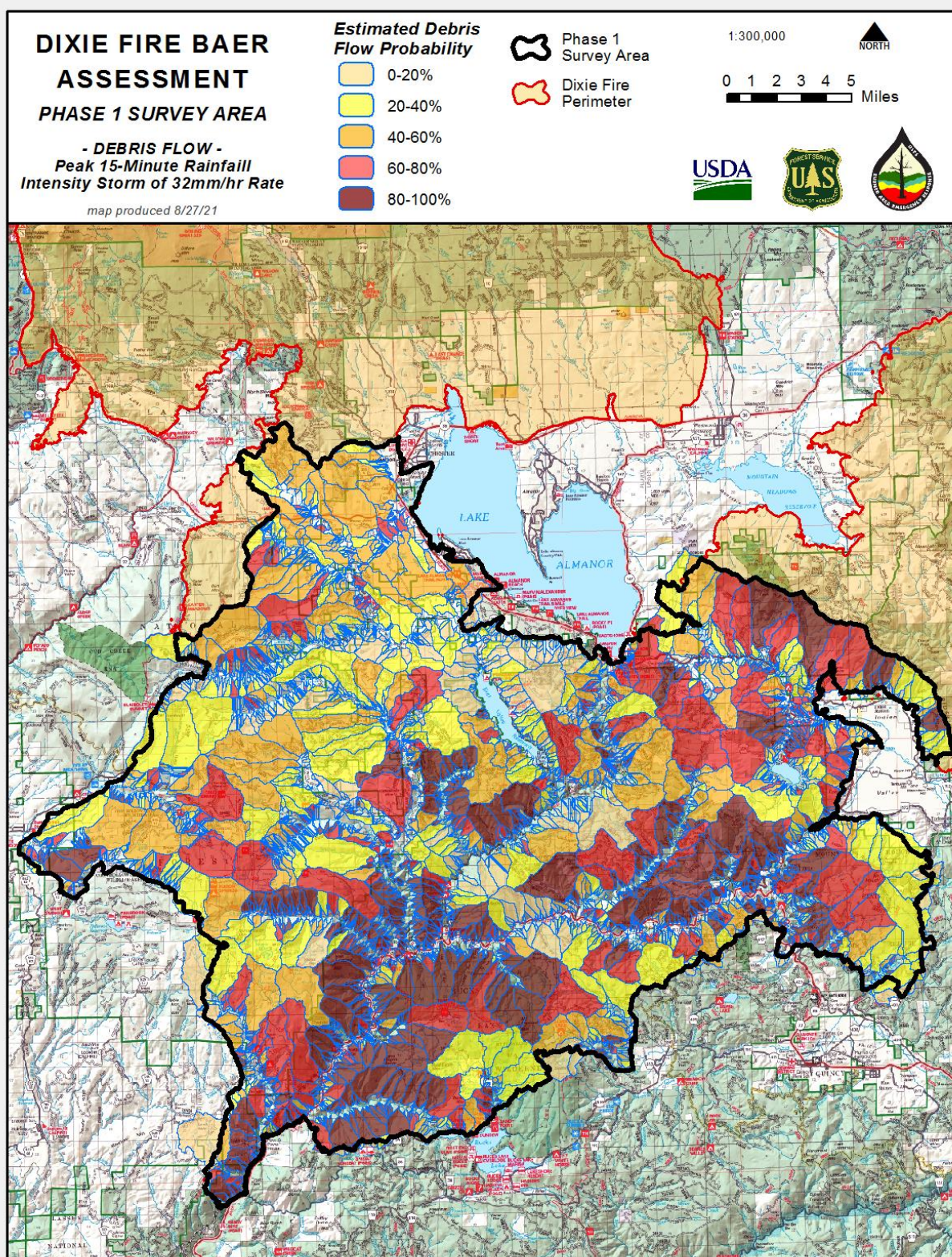
E. Sediment Potential:**F. Estimated Vegetative Recovery Period (years):****G. Estimated Hydrologic Response (brief description):****Geologic response:**

Debris Flow: It is important to emphasize that debris flow initiations could happen regardless of post-fire conditions. In this case, post-fire condition will not be the main reason for debris flow initiations, but will exacerbate the issue, since now because of the removal of vegetation by the fire, soils are exposed and have become weakened, hydrophobic conditions have changed and rocks on slopes have lost their supportive vegetation. These post-fire conditions in addition to ample supply of woody debris will exacerbate debris flow events occurring in this burn area.

Due to these post-fire conditions, some roads and trails in the burn area are at risk from rolling rocks, debris flows, and hyper-concentrated floods. Risks to human life, roads, and trails, is elevated in some areas in and downstream of the Dixie Fire. Based on the above, special attention and caution is recommended in areas where people are traveling through, working, or recreating in or below the burned areas during and after storm events.

Table 1 - Acres of Predicted Debris flow by Probability		
probability	# of Basins	Sum_Acres
0-20%	450	31,980
20-40%	577	79,976
40-60%	512	78,459
60-80%	412	69,009
80-100%	693	69,448
Total	2,644	328,872

Note: Acres are slightly different due to debris flow model.



PART V - SUMMARY OF ANALYSIS

Introduction/Background: The Dixie Fire started on July 13th. The fire is burning on the Plumas and Lassen National Forests, Lassen Volcanic National Park, and in four counties: Shasta, Butte, Lassen, Plumas, and Tehama. The Fly Fire started on July 22nd and was managed under the Dixie Fire East Zone command as the two fires eventually merged into one. The drought, combined with dry, hot weather and strong winds, has resulted in very active fire behavior.

To maximize resources and efficiency, the Dixie Fire is being managed in two cooperative zones: West and East. CalFire Team 1 managed the West Zone until August 8th, when the team transitioned to CalFire Team 3. The East Zone was managed by the California Interagency Incident Management Team 2 until August 3rd, when the California Interagency Incident Management Team 4 transitioned into command. On August 17th, California Interagency Incident Management Team 1 took command of the East Zone of the fire. The fire has resulted in structure damage, evacuation orders, and evacuation warnings. Many roads are closed, as are the national forests. Air quality in the nearby communities has been unhealthy due to smoke.

On August 16th, a BAER team began assessing the southwest portion of the fire that has no fire activity. The initial consisted of soil scientists, hydrologists and geologists focused on mapping soil burn severity and assessing imminent post-fire threats to human life and safety, property, and natural resources. Additional BAER specialists, including road engineers, aquatic biologists, archeologists, botanists, and recreation managers have now engaged to assess specific threats in more detail.

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

Table 2: 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

- Human Life and Safety (HLS):**

Based on the potential for debris flows, flooding, rock falls, burned trees, etc., the BAER team identified a **serious risk** to public, employees, and cooperator staff in the Dixie Fire area. Details are contained below and within the Watershed characterization in the Section III G.

- Property:**

Roads: Several roads within and adjacent to the burned area lack the proper drainage structures to effectively withstand expected increases in storm runoff and sediment. Potential washouts and road failures could occur on road segments downslope of areas with high and moderate soil burn severity. Increased runoff and sediment delivery could overwhelm road drainage, worsening road conditions and possibly making them unsafe for FS user travel. Road failure can also contribute to failure of infrastructure downstream. Culverts associated with these roads are at risk of plugging from debris carried down channels from burned watersheds.

Priority roads for treatment include main artillery roads that access the fire and provide access for partners such as Pacific Gas and Electric and others that access critical hydroelectric and hydropower infrastructure. Within the Phase 1 assessment area, there are 734 miles of FS road. Of these, 438 miles are located within and downstream of high and moderate burn severity. Approximately 120 of these miles have numerous crossings that drain areas with more than 500 acres of high and moderate burn severity. Treatment is not necessary on 100% of these miles.

Risk Assessment for Roads: Roads proposed for treatment exhibit an unacceptable risk of failure that warrant specific treatments to help mitigate this risk. The forest has a vested interest in preserving access on these roads for the administration of National Forest lands and to minimize roads contributing to additional post-fire watershed response. **Possible/Likely Probability >> Moderate/Major consequence >> Intermediate/Very High Risk**

Natural Resources (NR):

4. Cultural and Heritage Resources (CHR):

B. Emergency Treatment Objectives:

To allow safe passage of water to protect infrastructures and watersheds from accelerated sheet and rill erosion. Risk determination is dependent on the design storm selected and downstream values at risk. By using an average storm (2-year event) emergency planning measures can be designed to mitigate and minimize anticipated risks. Generally, using a 2-year design storm the values at risk can be evaluated to determine if an emergency exists but in areas prone to intense thunderstorms a 5 to 10-year storm may be more appropriate.

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

Land n/a % Channel n/a % Roads/Trails 80 % Protection/Safety 100 %

D. Probability of Treatment Success (Not needed at this time)

Table 3: Probability of Treatment Success

	1 year after treatment	3 years after treatment	5 years after treatment
Land			
Channel			
Roads/Trails			
Protection/Safety			

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

Human Health and Safety: Human Life and Safety do not have a market value, but an injury would exceed \$1,000,000, providing a substantial benefit/cost ratio.

Property: The cost to rebuild sections of the road after they are washed out, eroded, or buried includes estimates to bring in material to build up the damaged roads. The cost of not treating the proposed roads is over \$100,000 per mile providing at least a 25:1 benefit/cost ratio. This does not include the lost value to project management, fire suppression, and recreation.

Land Treatments - Native and Naturalized Plant Communities:

Cultural and Heritage Resources

F. Cost of Selected Alternative (Including Loss):

Human Health and Safety:

Property:

Land Treatments

G. Skills Represented on Burned-Area Survey Team:

H. Treatment Narrative:

The proposed treatments on National Forest System lands can help to reduce the impacts of the fire, but treatments will not completely mitigate the effects of the fire. The treatments listed below are those that are the most effective on National Forest System lands given the local setting including topography and access.

Land: TBD

Channel: TBD

Roads and Trail Treatments:

Road Drainage Stabilization (Stormproofing)

Within and downslope of the moderate and high burn severity areas that occur along slopes greater than 20%, a lack of additional drainage structures could compromise the road infrastructure access. Concern exists for possible washouts to damage sections during large seasonal thunderstorm events. To mitigate against any increased runoff and sediment delivery, it is recommended to install rolling dips, waterbars, and clean and armor existing culverts. Additionally, it is recommended to improve spots of existing in-slope ditches to provide relief in the occurrence of storm events. Some road segments have a berm on the downslope edge. This feature will be opened in various locations to allow drainage of the road surface and minimize erosion. In addition, this treatment includes felling of hazard trees in forested areas that pose a threat to crews.

At certain crossings vegetation clearing and additional armoring is needed around the culverts to allow water and debris to pass through. Focusing on areas of high and moderate burn severity, areas that are midslope that have a high risk of damage from post-fire watershed response.

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

- a. Protect and stabilize Forest Service infrastructure at risk of damage because of increased sedimentation, stream diversion, and erosion from the fire.
- b. Reduce risk to water quality and other natural resources by reducing risk of infrastructure contamination, damage, and failure.
- c. Mitigate public safety hazards along NFS roads.
- d. Reduce risk to downstream infrastructure where possible.
- e. Protect road crews from the threat of falling trees.

The Lassen 6-person road crew with associated equipment, is available to start this work immediately, mobilizing to treat critical areas.

Funding is based on 2 payperiods to get the crew started, with additional funding requested in Interim #1.

Cost: \$100,000

Natural Resources Treatments:

Cultural and Heritage Treatments: TBD

Protection/Safety Treatments:

Warning Signs: Warning signs would need to be installed to warn road users of the unmitigated dangers present in the FS fire areas (Plumas and Lassen NF's.) Posting signs in critical ingress and egress areas of the burned to alert the public to potential dangers of falling trees, increased runoff, hazardous rockfall. The road and other crews are available to complete this work.

Cost: \$44,000

I. Monitoring Narrative: N/A

PART VI – EMERGENCY STABILIZATION TREATMENTS AND SOURCE OF FUNDS

Lassen			NFS Lands			Other Lands				All
		Unit	# of		Other	# of	Fed	# of	Non Fed	Total
Line Items	Units	Cost	Units	BAER \$	\$	units	\$	Units	\$	\$
A. Land Treatments										
EDRR survey	acres				\$0		\$0		\$0	\$0
EDRR treatment	acres				\$0		\$0		\$0	\$0
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0
Subtotal Land Treatments				\$0	\$0		\$0		\$0	\$0
B. Channel Treatments										
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0
Subtotal Channel Treatments				\$0	\$0		\$0		\$0	\$0
C. Road and Trails										
Drainage Stabilization	project	100,000	1	\$100,000	\$0		\$0		\$0	\$100,000
Storm Patrol	project		1	\$0	\$0		\$0		\$0	\$0
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0
Subtotal Road and Trails				\$100,000	\$0		\$0		\$0	\$100,000
D. Protection/Safety										
Warning Signs, Barriers	project	22,000	1	\$22,000	\$0		\$0		\$0	\$22,000
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0
Subtotal Protection/Safety				\$22,000	\$0		\$0		\$0	\$22,000
E. BAER Evaluation										
Initial Assessment	Report			---	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
Insert new items above this line!				---	\$0		\$0		\$0	\$0
Subtotal Evaluation				\$0	\$0		\$0		\$0	\$0
F. Monitoring										
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0
Subtotal Monitoring				\$0	\$0		\$0		\$0	\$0
G. Totals										
				\$122,000	\$0		\$0		\$0	\$122,000
Previously approved										
Total for this request				\$122,000						

Plumas			NFS Lands			Other Lands			All	
		Unit	# of		Other	# of	Fed	# of	Non Fed	Total
Line Items	Units	Cost	Units	BAER \$	\$	units	\$	Units	\$	\$
A. Land Treatments										
EDRR survey	acres				\$0		\$0		\$0	\$0
EDRR treatment	acres				\$0		\$0		\$0	\$0
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0
Subtotal Land Treatments				\$0	\$0		\$0		\$0	\$0
B. Channel Treatments										
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0
Subtotal Channel Treatments				\$0	\$0		\$0		\$0	\$0
C. Road and Trails										
stormproofing	project		1		\$0		\$0		\$0	\$0
Storm Patrol	project	0	1		\$0		\$0		\$0	\$0
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0
Subtotal Road and Trails				\$0	\$0		\$0		\$0	\$0
D. Protection/Safety										
Warning Signs, Barriers	project	22,000		\$22,000	\$0		\$0		\$0	\$22,000
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0
Subtotal Protection/Safety				\$22,000	\$0		\$0		\$0	\$22,000
E. BAER Evaluation										
Initial Assessment	Report			---	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
Insert new items above this line!				---	\$0		\$0		\$0	\$0
Subtotal Evaluation				\$0	\$0		\$0		\$0	\$0
F. Monitoring										
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0
Subtotal Monitoring				\$0	\$0		\$0		\$0	\$0
G. Totals										
				\$22,000	\$0		\$0		\$0	\$22,000
Previously approved										
Total for this request				\$22,000						

PART VII - APPROVALS

1. Del Bumper August 31, 2021
Lassen Forest Supervisor Date

3. Chris Carlton August 31, 2021
Plumas Forest Supervisor Date

