Date of Report: 7/29/2021

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: Wyrick

B. Fire Number: AZASF-00662

C. State: AZ

D. County: Navajo

E. Region: Region 3

F. Forest: Apache-Sitgreaves National Forests

G. District: Black Mesa RD

H. Fire Incident Job Code: P3N3B8

I. Date Fire Started: 06/19/2021

J. Date Fire Contained: 07/20/2021

K. Suppression Cost: 5,750,000

L. Fire Suppression Damages Repaired with Suppression Funds (estimates): Click here to enter text.

1. **Fireline repaired (miles):** 1.5
2. **Other (identify):** Click here to enter text.

M. Watershed Numbers:

Table 1: Acres Burned by Watershed

HUC #	Watershed Name	Total Acres	Acres Burned	% of Watershed Burned
150200100301	Upper Potato Wash	12,961	659	5%
150200100209	Lower Brookbank Canyon	20,973	3,525	17%
150200100208	Long Hollow Tank-Black Canyon	24,158	3,409	14%

N. Total Acres Burned:

Table 2: Total Acres Burned by Ownership

OWNERSHIP	ACRES
NFS	7,544
OTHER FEDERAL (LIST AGENCY AND ACRES)	
STATE	
PRIVATE	48
TOTAL	7,592

O. Vegetation Types:

Vegetation Type	Acres	%
Grasslands	539	7.1%
Juniper Woodland (Alligator, Utah, One-seed)	44	0.6%
No Data	135	1.8%
Pinyon-Juniper	6452	85.0%
Ponderosa Pine	416	5.5%
Streams	7	0.1%

P. Dominant Soils:

Soil Taxon	Acres	%
Lithic Haplustalfs	2,926	38
Lithic Ustochrepts	2,523	33
Typic Haplustalfs	1,462	19
*additional soil types account for ≤10% of the burned area		

Q. Geologic Types:

Geology	Acres	%
Limestone	132	2%
Limestone and Sandstone	5172	68%
Mixed Alluvium	314	4%
Old Alluvium and Sandstone	1462	19%
Sandstone	514	7%

R. Miles of Stream Channels by Order or Class:

Table 3: Miles of Stream Channels by Order or Class

STREAM TYPE	MILES OF STREAM
PERRENIAL	
INTERMITTENT	5.8
EPHEMERAL	15.6
OTHER (DEFINE)	

S. **Transportation System:**
Trails: *National Forest (miles):* 0.0 *Other (miles):* 0.0
Roads: *National Forest (miles):* 9.7 *Other (miles):* 1.2

PART III - WATERSHED CONDITION

A. Burn Severity (acres) (see Figure 1):

Table 4: Burn Severity Acres by Ownership

Soil Burn Severity	NFS	Other Federal (List Agency)	State	Private	Total	% within the Fire Perimeter
Unburned	1,228			9	1,237	16.3
Low	3,083			28	3,111	41.0
Moderate	3,239			5	3,244	42.7
High						
Total	7,550			42	7,592	

B. Water-Repellent Soil (acres): approximately 972ac. Based on hydrophobic soil conditions occurring 30% of the time when looking at fire effects in the Moderate soil burn severity

C. Soil Erosion Hazard Rating: Severe 367ac., Moderate 2,523ac., Slight 4,704ac.

D. Erosion Potential: 1.39 tons/acre **Sediment Potential:** 1.2 tons/ac. ; 12,914 tons of sediment

F. Estimated Vegetative Recovery Period (years): 1-3 years for areas of low or mosaic low/moderate soil burn severity. 5-10 years for areas of large continuous moderate soil burn severity with herbaceous canopy recovery within 3 years, longer for overstory species.

G. Estimated Hydrologic Response (brief description): Hydrologic response was modeled for the Long Hollow Tank watershed and the Lower Brookbank Canyon watershed. The Wildcat 5 model was used to estimate pre-fire and post-fire runoff at the outlets of each watershed. The storm modeled was a 10-year return, 1-hour duration convective summer thunderstorm, which drops an estimated 1.6 in. according to the NOAA Atlas14 database. There is a 30% chance that this size of storm will occur during a 3-year recovery period. Wildcat 5 uses Curve Numbers to estimate runoff response over the modeled area. Curve Numbers used are a composite of areas characterized by vegetation type, hydrologic soils group (HSG), and Soil Burn Severity. Results are shown in the table below.

Table 5. Post-fire estimated hydrologic response on HUC-12 watersheds.

Watershed	Pre-fire CN	Post-fire CN	Pre-fire Flows	Post-fire Flows	Flow Increase	Flood Hazard
Long Hollow Tank	71	73	730 cfs	934 cfs	28%	Low
Lower Brookbank Canyon	72	74	815 cfs	1030 cfs	26%	Low

PART V - SUMMARY OF ANALYSIS

Introduction/Background
A considerable portion (almost 43%) of the Wyrick Fire resulted in moderate soil burn severity. Although these areas have some intact roots and soil structure, all the overstory vegetation and groundcover has been removed. Monsoonal activity has caused some damage to Forest Service roads.

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

Table 6: 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

1. **Human Life and Safety (HLS):**
   a. Forest Service roads 95, 95A, 9976 and County Road 504 are all at 'high' to 'very high' risk based on a 'Major magnitude of risk for potential flooding and washout incidents at road crossings.
2. **Property (P):**Forest Service roads 95, 95A, 9976 and County Road 504 are all at 'high' risk based on the major magnitude of risk of damage to the road prism from potential flooding and washout incidents.
3. **Natural Resources (NR):**Soil Productivity and Hydrologic function: Areas of Low soil burn severity had fine fuels intact on shrubs, grass was beginning to regenerate, root and soil structure was unaffected and surface litter was only partially consumed. Areas of moderate soil burn severity saw complete litter consumption and loss of vegetative canopy. Fine and very fine roots were charred in the upper 3 cm. Soil structure is mostly intact with some weakening of structure at a few points. Hydrophobic conditions occurred in about 30% of moderate soil points and did not extend past the upper 3cm of mineral soil. While most of the moderate burn severity did not produce hydrophobic conditions the overall lack of vegetation over large areas does produce concern about localized soil redistribution and possible longer recovery time for pinyon-juniper community. Overall the average soil loss is predicted to increase from an average 0.03 tons/acre to 1.2 tons/acre. This is still within tolerable soil loss for this area. Therefore, the probability of long term damage to soil productivity is Unlikely. There are areas of Moderate soil burn severity in Pinyon-Juniper vegetation that the continuous nature of the unvegetated area suggests normal regeneration could be prolonged compared to typical re-vegetation rate of 3 years in this ecosystem. Therefore; magnitude of consequence is rated as Moderate. That makes the overall risk rating for soil productivity LOW. There are no wildlife, aquatics, or other natural resource BAER VARs at unacceptable risk.
4. **Cultural and Heritage Resources:**There are no cultural and heritage resources BAER VARs threatened within/by the burned area.

B. Emergency Treatment Objectives: Provide public users of the Forest Service and a county road with warning opportunities to avoid dangerous driving situations with the use of signs throughout and downstream of the burned area. Prevent deterioration of Forest Service roads through storm patrol and response actions. Maintain safe ingress and egress on roads via storm inspection and response on likely impacted Forest Service roads.

C. Probability of Completing Treatment Prior to Damaging Storm or Event:
Land NA **Channel** NA
Roads/Trails Damaging storms have occurred in the area, however given the strength of the mosoon season further risks to forest service road prisms remain. **Protection/Safety** Damaging storms have occurred in the area, however given the strength of the mosoon season further risks to the public from motorized travel remains.

D. Probability of Treatment Success

Table 5: Probability of Treatment Success

	1 year after treatment	3 years after treatment	5 years after treatment
Land			
Channel			
Roads/Trails	90%	95%	100%
Protection/Safety	100%	100%	100%

E. Cost of No-Action (Including Loss): Loss of 2 miles of ML-2 roads x $40,000/mile = $80,000

F. Cost of Selected Alternative (Including Loss): Signage and Road Inspection and Response = $25,704

H. Skills Represented on Burned-Area Survey Team:

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

Team Leader: Paul Brown
Email:paul.a.brown@usda.gov **Phone(s)928) 333-6308**

Forest BAER Coordinator: Paul Brown
Email:paul.a.brown@usda.gov **Phone(s):(928) 333-6308**

Team Members: *Table 6: BAER Team Members by Skill*

Skill	Team Member Name
Team Lead(s)	Paul Brown
Soils	Kristi Meier
Hydrology	Dan Bone
Engineering	Chris Miller
GIS	
Archaeology	Laura Acre
Weeds	
Recreation	
Other	

H. Treatment Narrative:Land Treatments: Seeding of approximately 800 acres was thoroughly vetted, however the risk to soil productivity was determined to be 'low' as were the risks to other VARs from soil related impacts. Forest Roads 95 and 9976 are popular routes for NF visitors and used by grazing permitees to access an active allotment. Therefore, signing and inspection of these roads following significant precipitation events and maintaining them to be passable if impacted is warranted.

Roads and Trail Treatments: $1500 for each storm inspection and response x 15 responses = $22,500 (see Figure 2 for locations)

Protection/Safety Treatments: (see Figure 2) Road sign installation: Signs $150/ each x 18 = 1,800 (+) Labor 2 people per day installation @ $700/day x 2 days = $1,400 for a total of $3,200 or $178/sign (see Figure 2 for locations)

I. Monitoring Narrative:

Not requested

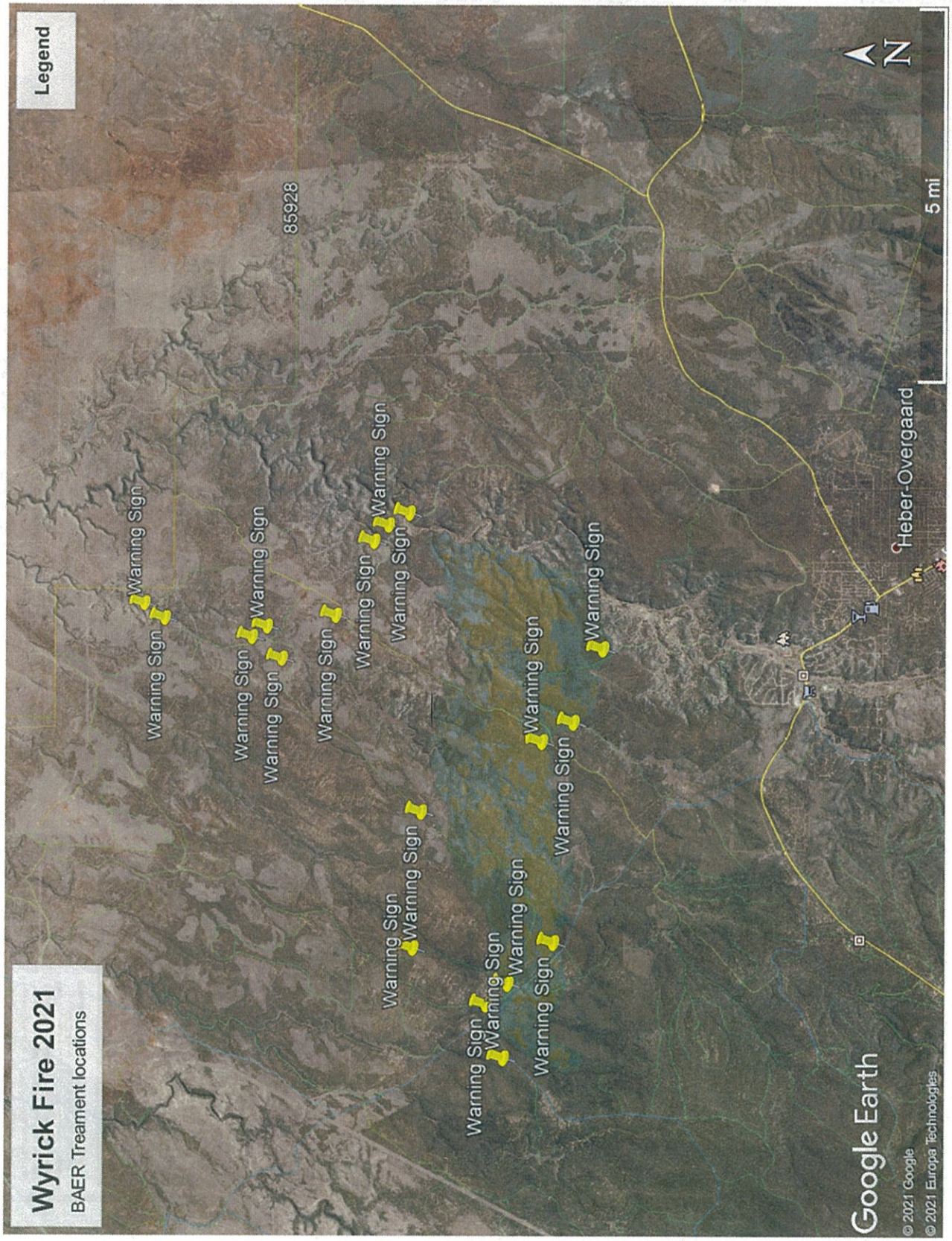
PART VI – EMERGENCY STABILIZATION TREATMENTS AND SOURCE OF FUNDS

			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										
Hand Seeding	acre			$0	$0		#VALUE!		#VALUE!	#VALUE!
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Land Treatments				$0	$0		#VALUE!		#VALUE!	#VALUE!
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										
Road Inspection and Response		1,500	15	$22,500	$0		$0		$0	$22,500
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Road and Trails				$22,500	$0		$0		$0	$22,500
D. Protection/Safety										
Road signs		178	18	$3,204	$0		$0		$0	$3,204
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Protection/Safety				$3,204	$0		$0		$0	$3,204
E. BAER Evaluation										
Initial Assessment	Report	$4,695	1	---	$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				$25,704	$0		######		#VALUE!	#VALUE!
Previously approved										
Total for this request				**$25,704**						

PART VII - APPROVALS

1. Forest Supervisor — Date: July 29, 2021

FIGURE 2


Legend
Wyrick Fire 2021
BAER Treament locations
Warning Sign
85928
Heber-Overgaard
5 mi
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Google Earth
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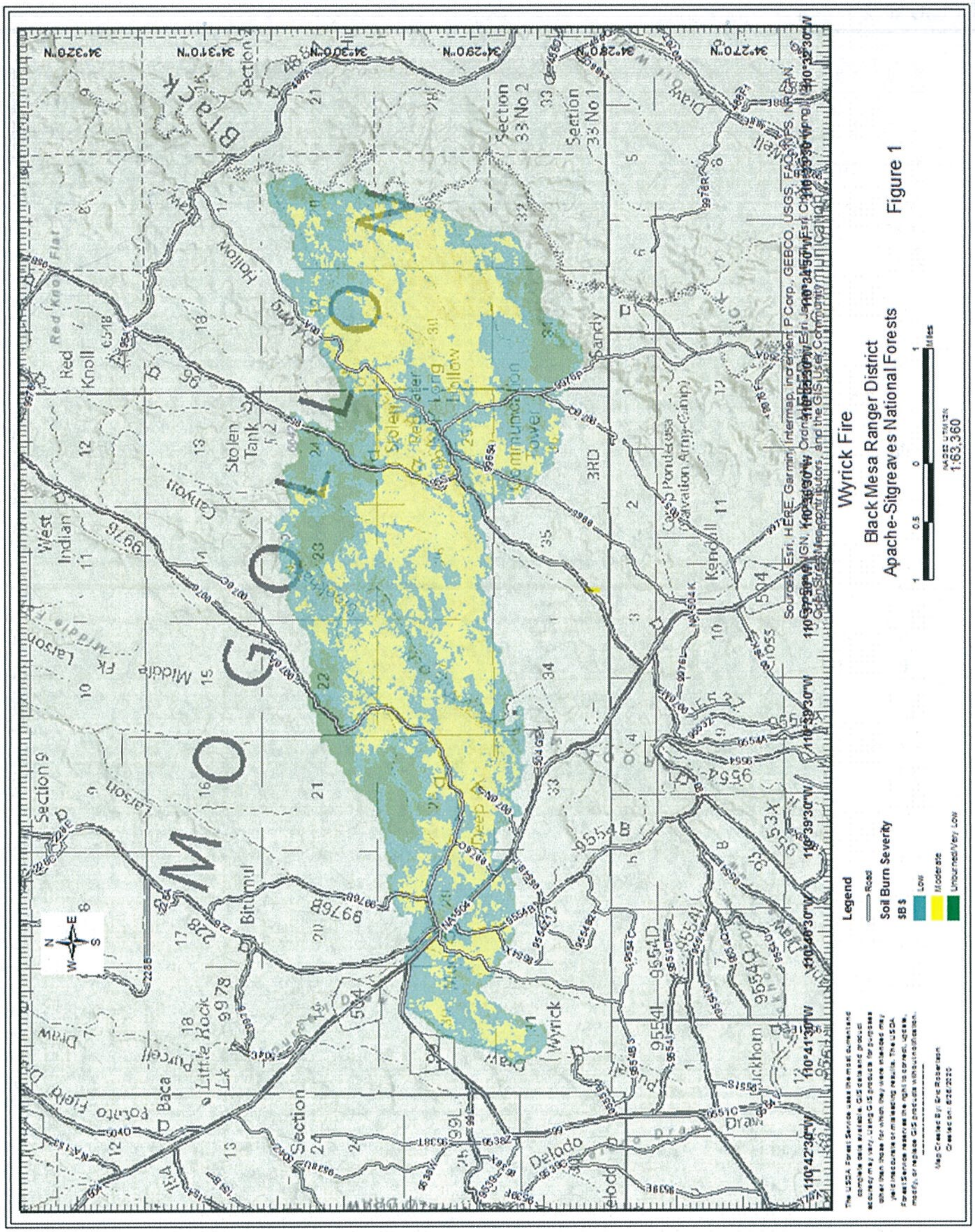
Wyrick Fire
Black Mesa Ranger District
Apache-Sitgreaves National Forests
Figure 1
Legend
Road
Soil Burn Severity
SBS
Low
Moderate
Unburned/Very Low
1:63,360
Miles