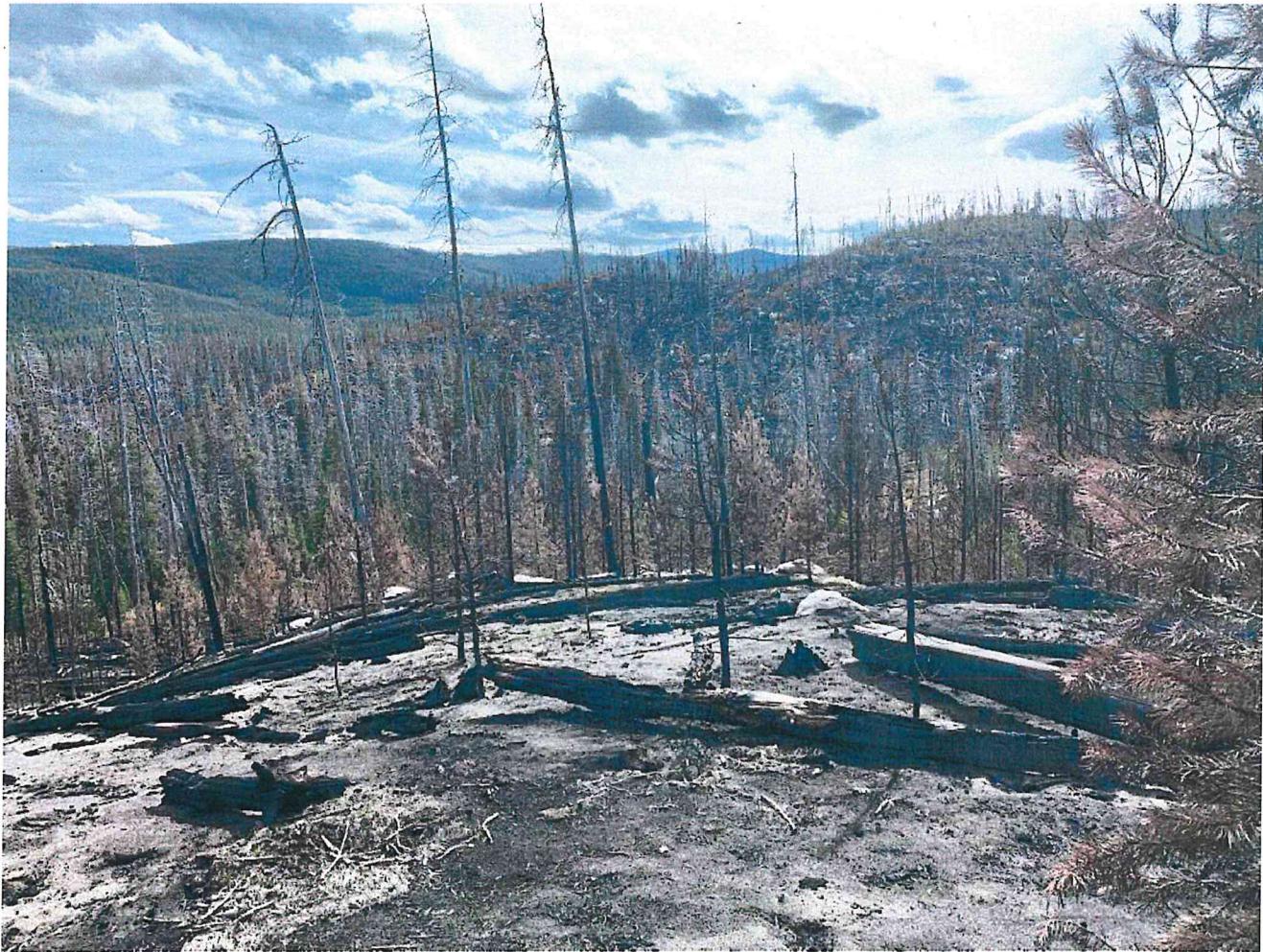


Date of Report: 11/27/2023

BURNED-AREA REPORT  
**Bowles Creek 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)
- 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: Bowles Creek      B. Fire Number: MT-BDF-006210
- C. State: Montana      D. County: Granite, Ravalli
- E. Region: R1      F. Forest: B-D, Bitterroot
- G. District: Pintler      H. Fire Incident Job Code: P1QEE2 (0102)
- I. Date Fire Started: 07/21/2023      J. Date Fire Contained: 11/1/2023
- K. Suppression Cost: 9.6 million Dollars

L. Fire Suppression Damages Repaired with Suppression Funds (estimates): Limited fire suppression efforts on the B-D other than commercial shaded fuel breaks.

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

M. Watershed Numbers:

Table 1: Acres Burned by Watershed

HUC #	Watershed Name	Total Acres	Acres Burned	% of Watershed Burned
170102021001	Headwaters West Fork Ross Creek	13,057	1970	15%
170102021002	Upper West Fork Rock Creek	11,840	155	1%
170102050901	Daly Creek	23,957	357	1.5%
170102050902	Upper Skalkaho Creek	29,103	1,926	7%

N. Total Acres Burned:

Table 2: Total Acres Burned by Ownership

OWNERSHIP	ACRES
NFS	Boundary 7159 acres, all on NFS Lands. 4408 acres of Low severity or higher within boundary.
TOTAL	Boundary 7159 acres, all on NFS Lands. 4408 acres of Low severity or higher within boundary.

O. Vegetation Types: Mostly lodgepole pine and subalpine-fir stands in the higher elevations, some of which were burned in numerous past fires. Wet meadows with willow and riparian sedge plant communities can be found in drainages.

P. Dominant Soils: Soils in the fire area are generally deep to very deep ashy loams that formed in material weathered from granite with Mt. Mazama volcanic ash in the upper part of the profile (see Littlesalmon and Bata series in Table 3 below). Volcanic ash was observed on sideslopes and in lower portions of the landscape, with shallow soils derived from granite along ridges and shoulder slopes (see Caseypeak series, Table 3). Deep soils derived from granite (Ovando series, Table 3) were common in lower portions

of the landscape along with very deep, poorly and very poorly drained soils that formed in mixed alluvium on stream terraces (Finn series, Table 3).

Table 3. Most common soil map units found in the Trail Ridge fire area, with associated landforms, geology, and common soil series.

Soil Map Unit	Landform	Geology	Common Soil Series	Acres
15GDE, 15GE3	Glaciated mountainslopes and ridges	Granite	<u>Ovando</u> , <u>Littlesalmon</u> , <u>Bata</u> , <u>Caseypeak</u>	3,676
64GD1, 64GJ1	Young stream terraces and floodplains	Granite	<u>Ovando</u> , <u>Blackleed</u> , <u>Finn</u>	154
15NE2	Glaciated mountainslopes and ridges	Non-calcareous sedimentary	<u>Rubycreek</u> , <u>Lilylake</u>	44
21UD2	Young moraines	Undifferentiated	<u>Garlet</u> , <u>Worock</u> , <u>Waldbillig</u>	9

**Q. Geologic Types:** Late Cretaceous granodioritic rock (Sapphire Batholith) is the predominant geology type in the Bowles Creek fire area.

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

Table 4: Miles of Stream Channels by Order or Class

STREAM TYPE	MILES OF STREAM
PERRENIAL	12.3 Miles
INTERMITTENT	14.9 Miles

**S. Transportation System:**

**Trails:** National Forest (miles): 2.7 Miles on B-D, 1.1 Miles Bitterroot

**Roads:** National Forest (miles): 0.94 Miles on B-D, 1.08 miles Bitterroot

**Other (miles):** 0.27 Miles Non-System Roads

### PART III - WATERSHED CONDITION

**A. Burn Severity (acres):**

Table 5: Burn Severity Acres by Ownership

Soil Burn Severity	B-D NFS	BIT NFS	Total	% within the Fire Perimeter
Unburned	1,724	1,023	2,747	38%
Low	959	1,017	1,976	28%
Moderate	1,090	1,186	2,276	32%
High	77	79	156	2%
<b>Total</b>	<b>3,850</b>	<b>3,305</b>	<b>7,155</b>	<b>100%</b>

**B. Water-Repellent Soil (acres):** Approximately 2,000 Acres, primarily in concentrations historic deadfall from Mussigbrod fire and in unburned pockets from the old fire scar.

**A. Soil Erosion Hazard Rating:** Erosion risk for each soil map unit was completed for the Deerlodge Soil Survey area in 2011. These risk ratings are similar to the ones generated by NRCS but are modified to consider landform (see Ruppert and Fletcher, 2011). The vast majority of the fire area (95.4%) is considered to have high-moderate erosion risk (Table 5). Soils derived from granitic geology have an

erosion class that is one class higher than soils from other geology types within the same slope class, due to their inherent erosivity. Note that acres do not match other totals, because only Beaverhead-Deerlodge National Forest soil mapping was considered in this analysis.

**Table 6. Erosion Risk of Soils in the Bowles Creek Fire.**

Erosion Risk	Acres	Percent
Slight	110	2.8
Moderate-Slight	53	1.3
High-Moderate	3,676	95.4
High	11	0.2

**B. Erosion Potential:** The edited BARC map was uploaded to the WEPPcloud -- Disturbed online model. The model was run on the Bowles Creek drainage with a single outlet location at the crossing of Bowles Creek on FSR 5071, as this crossing captures the sum total of flow from the area burned on the Beaverhead-Deerlodge side of the fire. The total area contributing to the outlet is 5,000 acres. We also ran a baseline run to get an idea of baseline erosion before the fire. The ground-truthed, adjusted BARC map was loaded directly into the model. The land use options, and soil options were determined by hillslope for each run. Multi-factor ranking was used for the climate station option, and PRISM Modified was used as the climate method. Single climate was selected for 100 years of simulation. Table 6 shows the results, both per unit area of watershed and also at the outlet of the watershed. Despite natural erodibility of the granitic soils (Table 5), a low percentage of high burn severity and relatively rolling topography with short slopes translate to a very modest increase in expected erosion in the fire area.

**Table 7. WEPP cloud modeled erosion for the Bowles Creek watershed. Unburned and burned results are included.**

	Unburned model results per unit area of watershed	Burned model results per unit area of watershed	Unburned model results from outlet	Burned model results from outlet
Precipitation	31.5 in/year	31.5 in/year	570000000 ft <sup>3</sup> /year	570000000 ft <sup>3</sup> /year
Stream discharge	11.5 in/year	12.6 in/year	210000000 ft <sup>3</sup> /year	230000000 ft <sup>3</sup> /year
Total hillslope loss	0 lb/acre/year	0.44 lb/acre/year	0 ton/year	1.1 ton/year
Total channel soil loss	43 lb/acre/year	45 lb/acre/year	110 ton/year	110 ton/year
Sediment discharge	20 lb/acre/year	21 lb/acre/year	50 ton/year	53 ton/year

**C. Sediment Potential:** 50 tons per year based on model outputs

**F. Estimated Vegetative Recovery Period (years):** 1-3 years grass and forbs, 10-15 years shrubs, 20-50 years conifers

**G. Estimated Hydrologic Response (brief description):** The hydrologic response is expected to be highly variable across this landscape. The reason for this is the number of metrics influencing soil burn characteristics including past burn effects, past timber harvest with multiple even aged stands, topographic, and aspect driven burn intensities. The majority of the burn effects were in the headwaters of larger watersheds influencing primarily first and second order streams. These higher gradient headwater streams are susceptible to burn effects but the large amount of variability in the hydrologic response should help them adjust and attenuate some of the debris flow risks.

## PART V - SUMMARY OF ANALYSIS

### Introduction/Background

The Bowles Creek fire is located South of Skalkaho Pass in the Saphire Mountains. Elevations range from 6,200 feet on the Bitterroot National Forest on the west side of the fire, and up to 7,831 feet along the Forest and watershed divide. Fire severity (heat intensity, duration and loss of vegetation) ranged from low to high depending on terrain, ground cover, weather and suppression activities. The watershed divide runs through the middle of the fire perimeter. Post fire severity conditions resulting from this fire have the potential to directly and/or indirectly impact trail infrastructure, potential for weed infestations, trail network, and public safety. These resource impacts will be evaluated based on the critical value matrix outlined in Table 8.

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

Table 8: 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):

Within the Bowles Creek fire, public safety is at risk from fire related effects including falling trees and hazardous terrain. Although a tree falling on a hiker is low it is still possible and therefore the risk is HIGH.

2. **Property (P):** Within the Bowles Creek fire, trail infrastructure has the potential to be washed out from damaging spring runoff and thunderstorms. The risk of these failures are somewhat likely but the consequences is moderate to public safety so the risk is HIGH.
3. **Natural Resources (NR):** Within the Bowles Creek fire, rapid noxious weed spread has the potential to threaten native vegetation and impact additional natural resources. As we have seen with past fires, the likelihood of expansion is high which would make the risk also HIGH.

### B. Emergency Treatment Objectives: Address threats to the public, environment, and FS infrastructure to the extent feasible based on risk factors.

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

Land 75%	Channel NA
Roads/Trails 75%	Protection/Safety 100%

### D. Probability of Treatment Success

Table 9: Probability of Treatment Success

	1 year after treatment	3 years after treatment	5 years after treatment
Land	80%	65%	50%
Channel	NA	NA	NA
Roads/Trails	80%	75%	50%
Protection/Safety	80%	75%	75%

**E. Cost of No-Action (Including Loss):** \$5,000,000, increased safety risks to the public. Resource damage from increased noxious weed infestations in disturbed areas. Loss of trail infrastructure.

**F. Cost of Selected Alternative (Including Loss): 0\$ Skills Represented on Burned-Area Survey Team:**

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

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**Forest BAER Coordinator:** Kevin Weinner

**Email:** kevin.weinners@usda.gov

**Phone(s):** 406-683-3857

**Team Members:** *Table 10: BAER Team Members by Skill*

Skill	Team Member Name
<i>Team Lead(s)</i>	Kevin Weinner
<i>Soils</i>	Pam Fletcher
<i>Hydrology</i>	Kevin Weinner
<i>Engineering</i>	Matt McCabe
<i>GIS</i>	
<i>Archaeology</i>	Ayme Swartz
<i>Weeds</i>	Alicia Snow
<i>Recreation</i>	Josh Lattin

**H. Treatment Narrative:**



*Figure 1 Example of trail impacts to Bowles Creek Trail (8014)*

**Land Treatments:** No land treatments were requested. Weed spraying is warranted to address the potential of weed spread from the significantly more infested Bitterroot Valley and would occur next summer. Our weed inventory showed current infestations on the 5071 road where significant fire suppression activities took place. The emergency weed treatments are needed but will be requested through BAR funding to ensure multiple years of treatments where we can monitor and treat noxious weed spread better.

**Trail Treatments:** The Bowles Creek fire area encompasses approximately 2.7 miles of system trails on the B-D. There was approximately 1.5 miles of trail that had moderate to high soil burn severity on or adjacent to the trail where erosion and/or trail infrastructure was impacted based on our field assessment. Figure 1 provides an example of those fire effects. Although funding for trail work is warranted, BAR infrastructure funding is a more appropriate funding source to address the treatment needs.

**Protection/Safety Treatments:** There were two locations that provide the best access to the fire area on the B-D side of fire, they include 5071 Road and Bowles Creek Trail (8014). These sites were the most logical place to warn the public about potential hazards that could exist in the post burn environment. Signs were installed on November 1st, 2023. Signs were provided by the Region and thus no funding request necessary.

**I. Monitoring Narrative:**

No treatments are proposed for this assessment, but the assessment lays the framework for infrastructure work to be completed with the BAR program, that work will be monitored for effectiveness.

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

Line Items	Units	Unit Cost	NFS Lands			# of units	Other Lands		All	
			# of Units	BAER \$	Other \$		Fed \$	# of Units	Non Fed \$	Total \$
<b>A. Land Treatments</b>										
PL1a. Invasives	Acres	0	0	\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<b>Subtotal Land Treatments</b>				\$0	\$0		\$0		\$0	\$0
<b>B. Channel Treatments</b>										
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<b>Subtotal Channel Treatments</b>				\$0	\$0		\$0		\$0	\$0
<b>C. Road and Trails</b>										
Trail Drainage/Protection					\$0		\$0		\$0	\$0
RT-5 Storm Proofing					\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<b>Subtotal Road and Trails</b>				\$0	\$0		\$0		\$0	\$0
<b>D. Protection/Safety</b>										
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<b>Subtotal Protection/Safety</b>				\$0	\$0		\$0		\$0	\$0
<b>E. BAER Evaluation</b>										
Initial Assessment	Report		---	\$0			\$0		\$0	\$0
				\$0	\$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>										
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
<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>										
Previously approved				\$0			\$0		\$0	\$0
Total for this request				\$0						

**PART VII - APPROVALS**

1.   
 Forest Supervisor Beaverhead Deerlodge National Forest

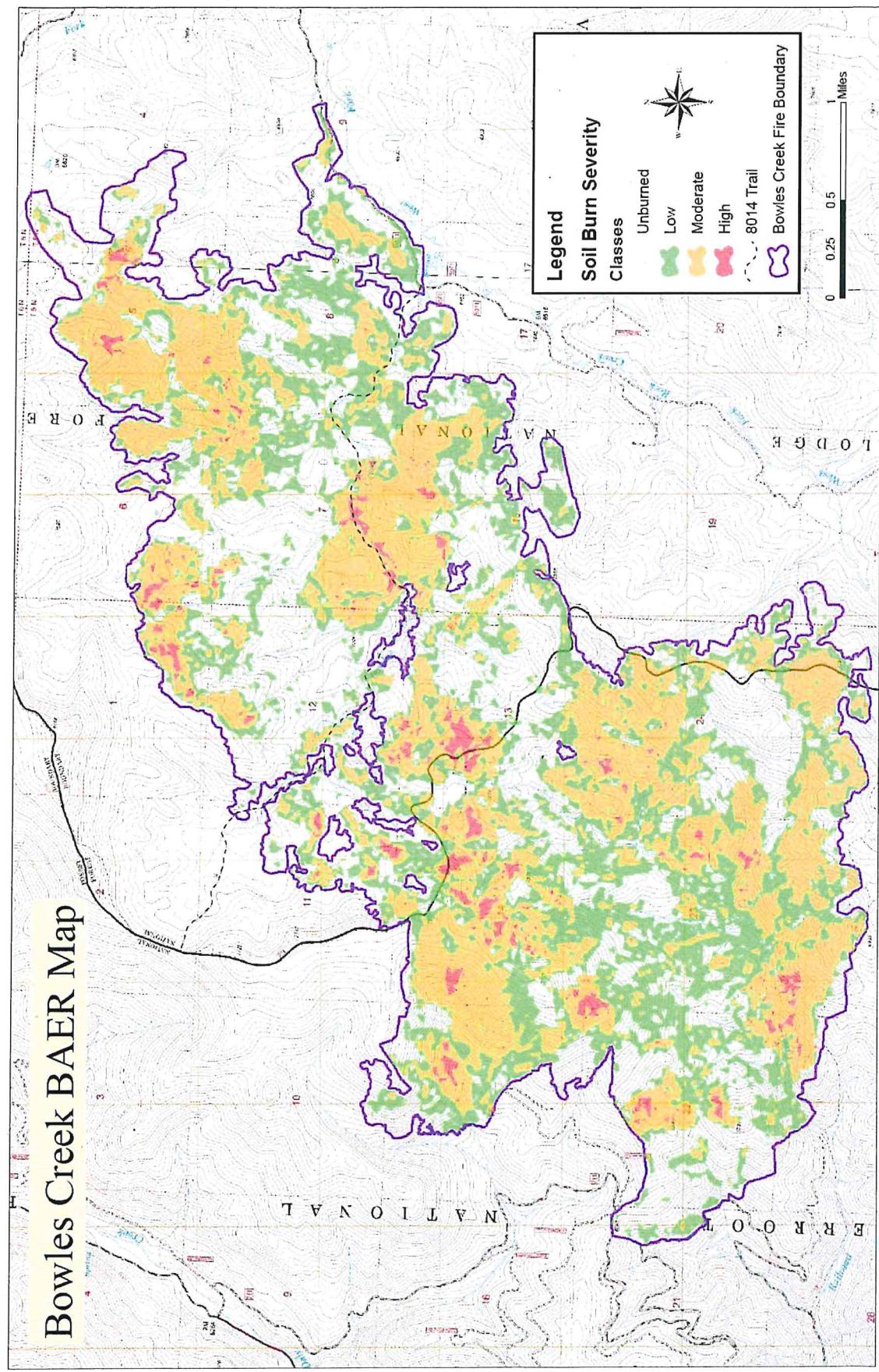


Figure 2 Bowles Creek BAER Map