Date of Report and Type: Initial 11/21/2017

BURNED-AREA REPORT

(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

	☐ 2. Accomplish	uest for estimated emerge ment Report nt Recommendation	ency stabilization fur	nds	
В. Ту	rpe of Action ⊠ 1. Initial Reque	st (Best estimate of funds	needed to complete	e eligible stabilizatio	on measures)
		ort #he initial funding request accomplishments to date	based on more accu	urate site data or de	esign analysis
	☐ 3. Final Report	(Following completion of	work)		
		PART II - BURI	NED-AREA DESCR	<u>IPTION</u>	
A. F	ire Name:Blacktai	ı	B. Fire Nu	ımber:MT-HLC-005	5124
C. S	state:Montana		D. County	:Meagher, Sweet G	Grass, Wheatland
E. F	Region:01 - Northe	rn	F. Forest:	15-Helena-Lewis a	nd Clark
G. [District: Musselshe	ell	H. Fire Inc	ident Job Code:P	1LCS6 (0115)
I. Da	te Fire Started 09	/10/2017	J. Date Fir	re Contained:10/05	/2017
K. S	uppression Cost:	\$850,000			
1.	Dozer Fireline r Excavator Firel	amages Repaired with sepaired (miles): None coine repaired (miles): None	mpleted yet	s (estimates):	
M. W	atershed Number	rs:			
	Table 1: Acres Burn	ed by Watershed Watershed Name	Total Acres	Acres Burned	% of Watershed
					Burned
	100402010601	Upper Big Elk Creek	32,814	5,350	16

N. Total Acres Burned:

Table 3: Total Acres Burned by Ownership

OWNERSHIP	ACRES
NFS	2,908
BLM	0
STATE	0
PRIVATE	2441
TOTAL	5349

- **O. Vegetation Types**: Douglas fir, lodgepole pine, sub alpine spruce, Pondarosa, and areas of grassland/sagebrush vegetative communities.
- P. Dominant Soils: The dominate soils are classified at the family level as Typic/Andic/Cryochrepts with surface textures of cobbly/very gravelly sandy loams/loams. Surface rock ranges in cover from 15 to 70 percent and in size from gravels to cobbles. The landtypes within the designated wilderness have been mapped, but data is not currently available. Soil types and attributes in this analysis were inferred from adjacent Land Type Association units (LTA) and the Lewis and Clark National Forest Soil Survey Data (SSURGO).

Table 2: Dominant soil map units within the Strawberry Fire.

Landtype	Map unit name	Acres in Burn	Percent of Burn	Hydrologic Soil Group	Soil Material Erodibility**
17	Mollic Cryoboralfs	1170	30	С	
20	Typic Cryochrepts	69	2	С	
42	Typic Cryoboralfs	144	4	С	
183	Rockland-Typic Cryochrepts	904	23	В	
203	Rockland	1167	30	B/C	
13A	Typic and Argic Cryoborolls	383	10	A/C	
20B	Typic Cryochrepts	18	1	В	
20E	Typic Cryochrepts	34	1	В	
63B	Typic and Argic Cryoborolls	45	1	B/C	
	Tota	J 3933*	100%		

^{*}acreage discrepancy is likely a result of GIS mapping efforts

- Q. Geologic Types: Geology across the Blacktail Fire is limestone, sandstone, and shale. Landforms are mountain high relief ridges and with slopes averaging 35 to 60 percent.
- 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	11.04
INTERMITTENT/EPHEMERAL	7.4

S. Transportation System:

Trails: National Forest (miles): 18.5 (HLF) Other (miles): 0

Roads: National Forest (miles): 0 Other (miles):

PART III - WATERSHED CONDITION

^{**} LTA Hazard Rating - Nesser 1998

A. Burn Severity (acres):

Table 4: Burn Severity Acres by Ownership

Soil Burn Severity	NFS HLF	BLM	State	Private	Total	% within the Fire Perimeter	
Low	169	110000		110	279	7	
Moderate	881			1312	2,193	22	
High	593			497	1,090	45	
Unburned						27	
Total	1643	III I I I I I I I I I I I I I I I I I		1919	3,563	100	

- B. Water-Repellent Soil (acres): 1,090 (high) + 2,193 (moderate) = 3,283 acres.
- C. Soil Erosion Hazard Rating:
- D. Erosion Potential (tons/acre): 5,376 Tons per square mile for the first two years after the fire.
- E. Sediment Potential (cubic yards/square mile): 6,720 yds3/mi2

PART IV - HYDROLOGIC DESIGN FACTORS

- A. Estimated Vegetative Recovery Period (years): 1-3 grass, 20-25 shrubs, 20-50 conifers
- B. Design Chance of Success (percent): 80
- C. Equivalent Design Recurrence Interval (years): 5
- **D. Design Storm Duration** (hours): 6 hr.
- E. Design Storm Magnitude (inches): 1.5 in
- F. Design Flow (cubic feet / second/ square mile): 5 cfs/mi²
- G. Estimated Reduction in Infiltration (percent): 30
- H. Adjusted Design Flow (cfs per square mile): 70 cfs/mi²

PART V - SUMMARY OF ANALYSIS

Introduction/Background:

The Blacktail Fire was a lightning caused ignition that was first detected on August 09, 2017. The fire burned approximately 3,563 acres and was contained on October 05, 2017. The burned area is located along the in the Crazy Mountains on the Musselshell Ranger Districts of the Helena-Lewis and Clark National Forest, approximately 21 Miles south of Martinsdale, MT. The burn severity (SBS) map shows that approximately 67% of the burned area experienced high or moderate burn severity. The rest of the areas within the fire perimeter were either low burn severity or unburned. Increased post fire soil erosion and runoff are likely to occur within and downstream of the moderate and high burn severity areas and may result in localized flooding, scouring and/or deposition of materials.

Long duration (6+ hour), high intensity storms are the precipitation events of primary concern. Based on historic precipitation patterns, these types of events are likely to occur in the spring months following the fire. The risk of flooding and erosional events has increased as a result of the fire, creating hazardous conditions within and downstream of the burned area.

Recovery of pre-fire slope stability and watershed hydrologic response is dependent on many factors and typically occurs within 3-5 years following the fire. Recovery of high burn severity areas is slower because little or no vegetative ground cover remains, the potential for needle cast is low, and soils may be impacted by fire effects.

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

A list of values important to the Helena-Lewis and Clark National Forest was compiled by the BAER team during the assessment kickoff meeting. The risk (FSM 2523.1 – Exhibit 02) to these critical values has been assessed by the BAER team and is described below. A list of treatment numbers has been included below each critical value description to ensure tracking between values and treatments.

Table 5: Critical Value Matrix

Probability of	Magnitude of Consequences						
Damage or Loss	Major	Minor					
	RISK						
Very Likely	Very High (trails)	Very High	Low				
Likely	Very High	High	Low				
Possible	High (weeds)	Intermediate	Low				
Unlikely	Intermediate	Low	Very Low				

1. Human Life and Safety (HLS):

- a. Very high risk to travelers along routes (trails) within and downstream of the burn scar due to an increased threat of flooding and debris flows from contiguous areas of high and moderate burn severity in watershed source areas. The probability of damage or loss is likely and the magnitude of consequences is major. (Treatments: T02)
- b. Very high risk to travelers along routes (trails) within and downslope from hillslopes burned at a moderate to high severity due to an increased threat of falling trees, rocks, and other debris. The probability of damage or loss is likely and the magnitude of consequences is major. (Treatments: T02)

2. Property (P):

a. Very high risk to trail infrastructure throughout the burn scar due to an increased post-fire watershed response to precipitation and runoff events that is expected to result in the loss of control of water, overwhelming of existing drainage features and erosion of the trail prism. The burned area contains approximately 2 miles of trails at risk on the Helena and Lewis and Clark. The probability of damage or loss is likely and the magnitude of consequences is major. (Treatments: T02)

3. Natural Resources (NR):

- a. High risk to native plant communities due to the threat from the spread of noxious weeds and invasive plant species. Known noxious weed and invasive plant populations (spotted knapweed, Dalmatian toadflax, yellow toadflax, Canada thistle, musk thistle, bull thistle, common mullen, St. Johnswort and houndstongue) exist within and immediately adjacent to the burned area. The highest risk species to spread include spotted knapweed and Dalmation toadflax. The probability of damage or loss is likely and the magnitude of consequences is moderate. Treatments (T01)
- b. Intermediate risk to soil productivity and hydrologic function due to the threat of increased erosion and watershed response to precipitation events on areas that experienced moderate and high burn severity. The loss of ground cover and presence of hydrophobic soils will result in increased soil erosion during runoff producing events. The probability of damage or

loss is possible and the magnitude of consequences is moderate. BAER treatments are not recommended.

c. Intermediate risk to Lynx habitat throughout the burn scar due to the consumption of multiforest structure and subsequent loss of habitat. The probability of damage or loss is possible and the magnitude of consequences is moderate. BAER treatments are not recommended.

4. Cultural and Heritage Resources:

- a. The Blacktail Creek Fire is estimated at 5,351 acres in size and is located on the east side of the Crazy Mountains. It started on Forest and burned east onto private property. The burn area on NFS lands has never been surveyed and there are no known historic properties with the burn perimeter, but there is one just over a mile to the northwest. The site is not at risk from fire impacts and requires no post burn erosion control treatments.
- b. Because of the low risk BAER evaluation of post fire erosion to the nine heritage sites located in the burn area, this does not constitute an emergency situation requiring erosion control treatment measures.

5. Other non-BAER Values:

a. There are numerous NFS values that are not BAER Critical Values in addition to non-NFS values potentially at risk from post-fire threats originating primarily on NFS lands. Treatments for these other values have not been identified. Activities to address the non-BAER Critical Values on NFS lands can be considered for discretionary program funding. It is recommended the non-NFS values potentially threatened by post-fire conditions be communicated to the appropriate parties through interagency coordination.

B. Emergency Treatment Objectives:

Protect or minimize damage to NFS investments in trail infrastructure by installing drainage features capable of withstanding potential increased stream flows and/or debris flows. Minimize damage to key NFS travel routes.

Protect or mitigate potential post-fire impacts to critical natural resources within the burned area. Implement treatments that minimize threats to native and naturalized ecosystems by minimizing the potential for expansion of non-native invasive species (NNIS) into the most susceptible otherwise pristine natural communities that burned within high and moderate severity.

Evaluate authorized BAER treatments and existing infrastructure to determine effectiveness in post-fire flow conditions. Monitor weeds for effectiveness of BAER treatments and to identify need for future treatments.

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

Land 80% Roads/Trails 70% Channel N/A Protection/Safety 80%

D. Probability of Treatment Success

Table 6: Probability of Treatment Success

	1 year after treatment	3 years after treatment	5 years after treatment		
Land	85	85	90		
Channel	N/A	N/A	N/A		
Roads/Trails	80	90	90		

		1 year after treatment	3 years after treatment	5 years after treatment	
Prot	ection/Safety	90	80	70	
E. Cost of No-Action 3*\$2,760) = \$38,280	n (Including Loss): (Replacement c	ost of trails = \$15,0	000*2 miles) + (Weed co.	sts =
F. Cost of Selected (Weeds BAER Treatm 15,849 Skills Repres e	nent cost = \$2,757) + (Implementatio	n coordination/con	+ (Trail Loss = .3*\$7,302 sultation = \$3,600) = \$	2) +
	□ Botany	☐ Ecology	□ Economist		
	☐ Forestry	⊠ GIS		□ Range	
⊠ Recreation	Soils		□ Wildlife		
Team Leader: \ Email:wgreen@ Forest BAER C Email:wgreen@	fs.fed.us oordinator: Wayr	ne Green	406-791-7740 406-791-7740		
Core Team Mer	mbers:				
Table 7: BAER Te	eam Members by Skill				
10 D	Ski		r Name		
	Team Lead(s	/			
	Archaeolog	,			
	Range/Weed Engineerin				
	Fisherie	0			
	GI	3			
	Hydrolog				
	Recreatio				
	Soil	s Jonathan LeBl	anc		

H. Treatment Narrative:

Land Treatments:

T01 - Early Detection and Rapid Response

General Description:

Invasive plants and weed assessments will be conducted in FY2018 for Early Detection and Rapid Response (EDRR) on any new infestation within areas burned at high and moderate burn severity. Treatments will occur at proper phenology of each species to ensure maximum control.

Because noxious weeds are scattered throughout the burn area, there is a high risk for new infestations within the fire perimeter to become established due to the disturbance caused by the wildfire and the suppression equipment used to fight the fire. There are known infestations of spotted knapweed, Dalmatian toadflax, yellow toadflax, Canada. Thistle, musk thistle, bull thistle, common mullen, St. Johnswort and hounds tongue within the burn perimeter.

Assess the Helena-Lewis and Clark National Forest Service land within the Fire for new infestations of noxious weeds. Invasive and noxious weed assessments from FY2017 will establish baseline data to be tracked through the Districts GIS databases and will be used to determine the priority,

amount and intensity of control for new infestations of noxious weeds located within the burn area for FY2018. Spotted knapweed, Dalmatian toadflax and yellow toadflax are the primary species of concern to invade the burn.

The priority areas proposed for noxious weed/invasive species monitoring and EDRR are very susceptible to invasion due to invasion due to soil and vegetation disturbance cause by wildfire and existing populations of noxious weeds are now adjacent to non-infested areas that are devoid of surface vegetation. A program of early detection and rapid response to control new infestations is cost effective because it helps to prevent new weed and invasive species invasions from becoming large and too expensive to control.

Location/Suitable Sites:

Assess areas that have a high potential for weed/invasive species establishment. Critical areas include, travel corridors such as trails and areas impacted by suppression activities as well as areas adjacent to existing infestations.

Treatment will focus on high and moderate burned areas adjacent to 3 acres of inventoried noxious weeds that are within the fire perimeter. These infestations have been treated in the past and have been reduced to minor levels. However, the risk for re-emergence and spread into the burned area is high. EDRR will occur along 2 miles of trail located within the burned areas, surveying and treating on average 2.5 acres per mile occur on average of 2.5 acres of along Approximately 2 miles of dozer line will be inventoried and treated through EDRR. This EDRR work will occur within roughly 12 feet either side of the 15 foot wide dozer line (4.8 acres per mile of dozer line).

Design/Construction Specifications:

Conduct short-term monitoring in FY2018 using early detection and rapid response (EDRR) assessment/monitoring of noxious weed plant species infestations within the burned area. Monitoring will be done with crews able to treat infestations located during monitoring.

Inventory/assessment, map new noxious weed infestations within burned area using GPS technology and upload into the Helena-Lewis & Clark NF GIS Noxious Weeds database.

Chemical treatments using ATV and backpack spray units will be used on any noxious weeds located within the fire on public lands.

Purpose of Treatment:

This treatment is necessary to prevent the establishment and to control the spread of new noxious weeds species into the burned area. EDRR will be used to prevent new noxious weed infestations from becoming established and to ensure the natural recovery of the native perennial grasses and forbs is not affected by the establishment of noxious weeds. This treatment will also ensure the ecological indicators (Soil Stability, Hydrologic Function, and Biotic Integrity) are functioning properly during the natural recovery period on lands administered by the FS. Chemical treatment of new and existing noxious weed infestations will reduce the likelihood of their spread to disturbed areas and help to re-establish high quality wildlife habitat within the burn.

The fire is a disturbance that provides a receptive avenue for the spread of noxious weeds. Noxious weeds and non-native invasive species are a concern for biodiversity. Weed invasion is a potentially threatening process leading to competition and habitat modification. Plant communities and native species likely to be at greatest risk from weed invasion are those which occupy weed-prone habitats that have experienced moderate to high burn severity. This treatment mitigates this risk by allowing for an early means of detecting new noxious weed occurrences and a quick response for control.

Table 8: T01 - Weeds EDRR Treatment Types and Cost

TREATMENT DESCRIPTION	TARGET WEED SPECIES	PRESCRIPTION	ESTIMATED ACRES	COST PER ACRE	COST	TIMING
EDRR - SUPPRESSION	spotted knapweed,	Monitor resources, Treat target weeds	5	\$120 – Inventory	\$600	FY18
IMPACTS	Dalmatian	species upon		and misc.		
o mitremation	toadflax and yellow toadflax	detection		spraying		
EDRR – DOZER LINE	Leafy Spurge, spotted	Monitor and inventory noxious	10	\$41 Inventory	\$410	FY18
	knapweed, Dalmatian toadflax, yellow toadflax, etc.	weeds along dozer line. Treat target weeds species upon detection		and misc. spraying		
EDRR – IN HIGH PRIORTY NATURAL	spotted knapweed, Dalmatian	Herbicide application by contract crew on	9	\$155.00 Includes: Labor and	\$1395	FY18
COMMUNITIES	toadflax and yellow toadflax	moderate and high SBS sites		chemicals		
		where weeds are known to be present in minor amounts				
TOTAL		amounts			\$2,405	

Channel Treatments: None proposed

Roads and Trail Treatments:

T02 - Trail Drainage Restoration /Tread Stabilization

General Description:

Treatment would provide immediate protection to the trail system. Trails may capture increased surface runoff caused by the lack of effective ground cover to inhibit excessive flow. Flows will intercept system trails and cause severe tread erosion and initiation of soil rutting adjacent to the trails. The trail system would be improved to withstand increased runoff, protecting property, workers and users.

Location/Suitable Sites:

Trails located within the fire perimeter include 2.0 miles on the Helena Lewis and Clark NF within the moderate to high burn severity. 2.0 miles of trail would be treated. The managed uses for these trail systems are Hiker and Pack and Saddle. Priority trails to be worked on include those that are within or below moderate to high burn severity slopes and those with sustained steep grades that have inadequate drainage. Refer to BAER Treatment Map for specific locations.

Design/Construction Specifications:

Install waterbars depending on steepness of trail in areas of moderate or high burn severity:

- 50 per mile on high to moderate burn severity slopes >30%
- 25 per mile on high to moderate burn severity slopes 15 to 30%
- 10 per mile on moderate to high burn severity slopes 0-15%

Install waterbars in sections of trail that have continuous gradient for a length of greater than 50 feet and are either insloped (cupped) or show evidence of routing water (rills, gullies).

Clean existing water bars.

Mitigate hazards from rocks and trees within the trail route that restrict safe access and movement at work sites. If the area poses a large safety risk then the work will be delayed until safety risk is stabilized.

Purpose of Treatment:

Trails within the fire are located within and downslope of moderate to high burn severity slopes. Predicted increased runoff due to water repellant soils and lack of effective ground cover will be intercepted and captured by trails, leading to severe trail tread erosion that will render the trails unusable or dangerous to use. Hikers and stock parties are the primary users. Additional hazards caused by the fire such as hazard trees and rock fall will create unsafe conditions at trail access points and worksites along the trails to workers.

The fire has burned adjacent slopes above and along the trail routes that will result in runoff that will damage the system substantially enough to prevent future use of the trails. The increased erosional risk to trails can be mitigated with drainage structures, tread stabilization, and scheduled drainage maintenance. The treatments directly mitigate these increased threats in that adequate trail tread drainage will pass accelerated erosional runoff off the tread and prevent tread erosion, and firegenerated hazards such as hazard trees and rock fall will be removed in and around trail work sites.

These treatments would prevent unacceptable erosion and loss of trail investment and minimize contribution of trail derived sediment to streams. Treatments ensure drainage structures are sufficient to divert water effectively given increased runoff and increased sediment movement. Treatments will protect property and watershed values. Treatment will prevent injury and lower risk to workers and users.

Table 9:T02 - Trail Stabilization Cost Estimate

TREATMENT	UNIT	UNIT COST	# OF UNIT	TOTAL COST
TRAIL STABILIZATION	Mile	\$4,000	2	\$8,000
HAZARD TREE MITIGATION AT WORKSITES	Mile	\$1,000	1	\$1,000

Protection/Safety Treatments:

BAER Evaluation

T03 - Implementation Coordination

Associated activities obligated under ID-FSM2520-2017-1 need to be considered in the BAER funding request when emergency response actions are authorized. These are accumulated tasks above the normal program of work and generally not accounted for in out-year program planning. Because implementation of approved BAER response actions trigger these required tasks and the unit's allocated budget does not account for these obligations, BAER funding is the appropriate authorization to ensure this coordination and consultation is completed.

Table 10: T03-Coordination and Consultation Cost Estimate

TREATMENT	UNIT	UNIT COST	# OF UNIT	TOTAL COST
IMPLEMENTATION TRACKING & REPORTING FOREST BAER COORDINATOR (GS-12)	Days	\$450	4	\$1,800

I. Monitoring Narrative:

To1-Early Detection Rapid Response: Treatment sites will be evaluated annually for the next three years to ensure control methods are meeting resource objectives and to inventory for new invaders. Weed specialist/technicians will visit chemically treated sites after treatment; this is especially important for weed populations that are sprayed to ensure efficacy of herbicide application. Initiate follow-up treatments if additional non-native species or new infestations are discovered. Control will be considered successful upon determination that all noxious weeds have been controlled have not spread beyond their pre-fire locations.

<u>T02-Trail Drainage Reconstruction:</u> The drainage improvements will be inspected throughout the year after implementation to monitor the effectiveness of water run-off and the trail drainage condition.

T03-Implementation Coordination: Forest BAER Coordinator will file annual accomplishment report.

PART VI – FOREST EMERGENCY STABILIZATION TREATMENTS AND SOURCE OF FUNDS

Helena-Lewis and Clark National Forest

			NPS Land	ds			Other Lands			All	
		Unit	# of		Other		lo t	Fed	# of	Non Fed	Total
Line Items	Unite	Cost	Units	BAER \$	\$	u	nits	\$	Unite	S	\$
A. Land Treatments	+			1				11		11_	
T01-Weede/EDRR	Acres	120	5	\$600	\$0			\$0		\$0	\$600
T01-Weeds/Dozer lin	e Acres	41	10	\$406	\$0			.50		50	\$400
T01-Weeds High Pric	or Acres	155	9	\$1,395	\$0			\$0		\$0	\$1,305
Resort new items above	this tinal							\$0		\$0	84
Sub total Land Transmiss	1/3			\$2,401	30			\$0		50	\$2,401
B. Channel Treatmen	ds										
Insert new items above	this time!			\$0	\$0			\$0		\$0	80
Subtotal Channel Treats	ments			50	30			20		\$0	\$1
C. Road and Trails											
T02-Trail Stabilization	Mies	3.651	2	\$7,302	\$0			\$0		\$0	\$7,300
T02-Haz Tree	Mies	1,000	1	\$1,000	\$0			\$0		\$0	\$1,000
Insert new Horns above	this line!			\$0	\$0			\$0		\$0	\$0
Subtotal Road and Trail	3			\$8,302	\$0			\$0		\$0	\$8,302
D. Protection/Safety	T			-							
Insert now items above	thes time?			\$0	\$0			\$0		\$0	\$0
Subtotal Protection/Sale	dy			\$0	\$0			80		\$0	\$0
E. BAER Evaluation				-							
Initial Assessment	Papori			445	50			\$0		\$0	\$0
Implementation Coordina	tion	\$450	4	\$1,800	\$0		554V5T 5	\$0		\$0	\$1,800
Invert new items above:	this line!			444	\$0			\$0		\$0	90
Subtotal Evaluation				\$1,800	\$0			50		50	\$1,800
F. Monitaring						NI .					
				\$0	\$0			\$0		\$0	30
				\$0	50			\$0		\$0	\$0
Insert new Herna above	thin frant			80	\$0			\$0		\$0	90
Sub total Monitoring				50	50			\$0		\$0	30
G. Totals				\$12,503	\$0			80		\$0	\$12.503
Previously approve						100					
Total for this reques	3.6			\$12,503		10					

PART VII - APPROVALS

1. W	11-21-17	/2017
William Avey, Helena-Lewis and Clark NF	Forest Supervisor	Date
2. De EReil	11/27	117/2017
Leanne Marten, Region 1 Regional Fores	ter	Date

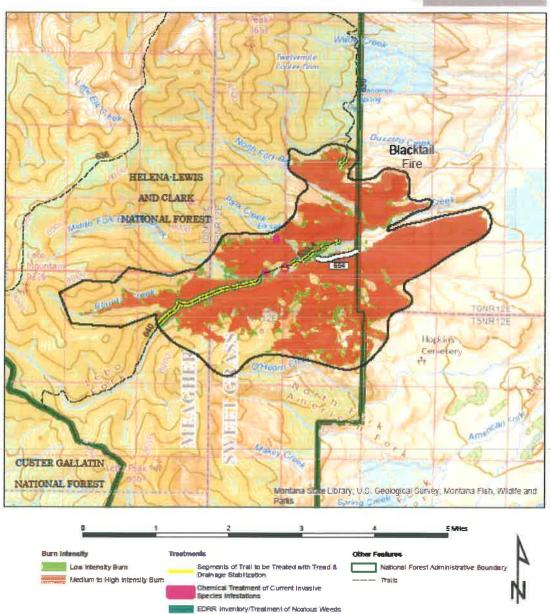




United States Department of Agricultur Forest Service Northern Region Burned Area Emergency Response

Blacktail Fire-BAER Treatment Map





Date: 11/9/2017