

Date of Report: 10/5/2022**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: Crockets Knob****B. Fire Number: MAF-022199****C. State: Oregon****D. County: Grant****E. Region: 06-PNW****F. Forest: Malheur NF****G. District: Blue Mountain****H. Fire Incident Job Code: P6P0XK (0604)****I. Date Fire Started: August 22, 2022****J. Date Fire Contained: 80% on 9/16/2022, expect 100% containment October 15th.****K. Suppression Cost: \$17,000,000****L. Fire Suppression Damages Repaired with Suppression Funds (estimates): \$ 327,200**

1. Fireline repaired (miles): 11.4
2. Other (identify): Roads, staging areas, drop lines, etc.

M. Watershed Numbers:*Table 1: Acres Burned by Watershed*

HUC #	Watershed Name	Total Acres	Acres Burned	% of Watershed Burned
1707020302	Camp Creek-Middle Fork John Day River	126,057	3860	3.0%
1707020303	Big Creek-Middle Fork John Day River	111,561	718	.64%
1707020204	Desolation Creek	69,656	16	.023%

N. Total Acres Burned:*Table 2: Total Acres Burned by Ownership*

OWNERSHIP	ACRES
NFS	4,594
OTHER FEDERAL (LIST AGENCY AND ACRES)	
STATE	

OWNERSHIP	ACRES
PRIVATE	
TOTAL	4,594

O. Vegetation Types: The Crockets Knob fire burned within the 1996 Summit Fire burn scar and vegetation was dominantly ceanothus with small, dense conifers, Vegetation types within fire range from mixed-conifer forest and cool moist forest to subalpine meadows and scablands. These high-elevation non-forested habitats are among the most vulnerable to disturbance. Plant associations include about 70% cold dry upland forest (subalpine fir, white bark pine, and lodgepole pine plant associations), 20% warm dry upland forest (douglas-fir, ponderosa, and grand fir plant associations), and some smaller patches of moist upland forest, upland shrub, and warm riparian shrub.

P. Dominant Soils: Dominant soils within the Crockets Knob fire originate from residuum and colluvium granite, basalt, or andesite. They have an influence of volcanic ash in the upper part of the soils profile. Volcanic ash was deposited from the eruption of Mount Mazama (present-day Crater Lake) over 7,700 years ago. Soils range from silt loam to sandy loam in the surface with varying amounts of rock content, generally increasing with depth. Soils tend to be shallow to deep, depth of bedrock is 18 to 60 inches. These soils are classified as well drained with moderate to rapid permeability.

Table 3. Dominant Soil Series in the Crockets Knob fire

Soil Name	Acres	Slope (%)	Texture
Troutmeadows	616.0	0-90	ashy silt loam
Raggedrock	485.5	15-90	ashy silt loam
Burgerbutte	390.4	0-90	extremely cobbly sandy loam
Gorhamgulch	344.6	0-90	ashy silt loam
Bearpawmeadow	329.6	0-90	ashy silt loam

Q. Geologic Types: The Crockets Knob fire lies within the Greenhorn Subterrane of the Baker Terrane, containing Pre-Permian serpentinite-matrix mélange and a wide variety of late Paleozoic metamorphosed volcanic, volcanoclastic, and sedimentary rocks and intruded with Mesozoic tonalite and granodiorite. Normal and thrust faults lie within the fire perimeter separating the different subterrane formations. Younger Cenozoic volcanics are present in the northeastern portion of the fire perimeter, including Columbia River basalts and John Day/Clarno Group andesites. Additionally, Quaternary alluvial and glacial deposits are present.

R. Miles of Stream Channels by Order or Class:

Table 4: Miles of Stream Channels by Order or Class

STREAM TYPE	MILES OF STREAM
PERENNIAL	21.7
INTERMITTENT	4.4
EPHEMERAL	
OTHER (DEFINE)	

S. Transportation System:

Trails: National Forest (miles): 2.6 Other (miles): Fence – 2.6 miles
Roads: National Forest (miles): 15.5 Other (miles):

PART III - WATERSHED CONDITION

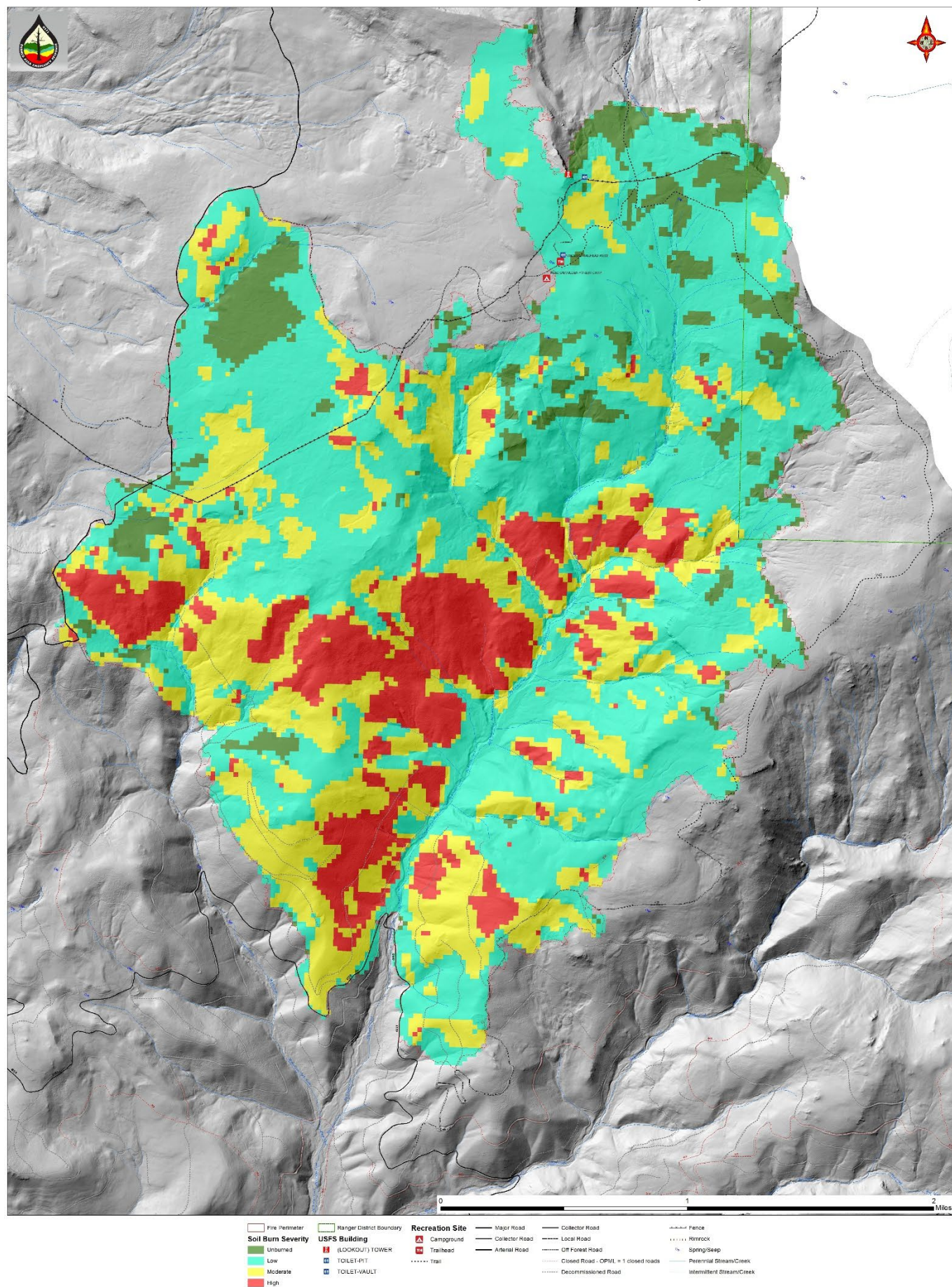
A. Burn Severity (acres):

Table 5: Burn Severity Acres by Ownership

Soil Burn Severity	NFS	Other Federal (List Agency)	State	Private	Total	% within the Fire Perimeter
Unburned	366					8.0%

Soil Burn Severity	NFS	Other Federal (List Agency)	State	Private	Total	% within the Fire Perimeter
Low	2,439					53.1%
Moderate	1,174					25.6%
High	615					13.4%
Total	4,594					

Crocketts Knob Soil Burn Severity



B. Water-Repellent Soil (acres): 1,569 (34%)

Water repellency levels were assigned based on field data. Natural water repellency was observed within the unburned areas due to the presence of volcanic ash at the surface. Natural water repellency was found in the surface in the first 0-2 cm of the first mineral horizon. The low burn areas generally displayed no water repellency to slight repellency. Little to no water repellency was noted at the surface directly below the ash and duff layer in the low burn areas. Moderate burn areas displayed a range from slight to moderate water repellency below the first 2 cm of the soil profile. Due to the inability to access high soil burn severity locations it was not observed if water repellency was found in this area. Estimates of water repellency for high soil burn severity was based on the Soil Scientist's professional experience on a BAER assessment last year on the forest.

Table 6: Burn Severity Acres by Ownership

Water Repellent Acres	High SBS	Moderate SBS	Low SBS	Unburned/Very Low SBS
Crocketts Knob	615	1,174	2,439	365
Fractional Repellency*	0.30 – 0.60	0.10 – 0.25	0.10	0.10
Water Repellent Acres by SBS	584	704	244	37
Total Water Repellent Acres (estimate)	1,569			
Percent Water Repellent Acres	34%			

* Water repellency varies based on repellency strength as influenced by SBS.

C. Soil Erosion Hazard Rating:

Table 7: Soil Erosion Hazard Rating

Soil Erosion Rating	Acres	Percent of Fire
Low	769.3	16.7
Moderate	1,461.8	31.8
High	804.8	17.5
Very High	1,557.4	33.9

D. Erosion Potential: 0.04 – 0.11 tons/acre/year; average = 0.08 tons/acre/year

We looked specifically at modeled response to a 5- and 10-year storm events which have a 30 and 10 percent likelihood of occurrence, respectively, within the first two years post-fire. Average sediment delivery in the instance of a 10-year storm event is predicted to be 0.04 tons/acre/year for the entire fire area for the first two years post-fire. This is an increase from a pre-fire sediment prediction of 0 tons/acre/year for a 10-year runoff event. In the instance of a 5-year storm event within the first two years of post-fire recovery the average sediment delivery rate predicted for the fire area is 0.002 tons/acre/year.

E. Sediment Potential: 0.5 – 20.6 cubic yards/square mile/year; average = 10.3 cubic yards/square mile/year

It is assumed that 35 percent of sediment would be delivered based on slope roughness, surface rock fragments, and downed woody debris near streams that would function as sediment delivery interrupters. ERMiT estimates for erosion potential in tons per acre were converted to cubic yards per square mile.

F. Estimated Vegetative Recovery Period (years): 1-3 years for grass to achieve effective ground cover, 5-15 years shrubs, 20-70 years conifers**G. Estimated Hydrologic Response (brief description):**

Moderate and high soil burn severity areas were concentrated in the Big Boulder Creek subwatershed, which includes Big Boulder Creek, Myrtle Creek, and their associated poursheds. These drainages saw the greatest increases in post-fire runoff at pour points 3 & 4, which sit closest to the fire's edge along the 4550 road and are flanked by slopes of 30 to 60%. Below the 4550 road crossings at pour points 5-8 the post-fire discharges plateaued or even decreased due to the large areas of unburned headwaters upstream.

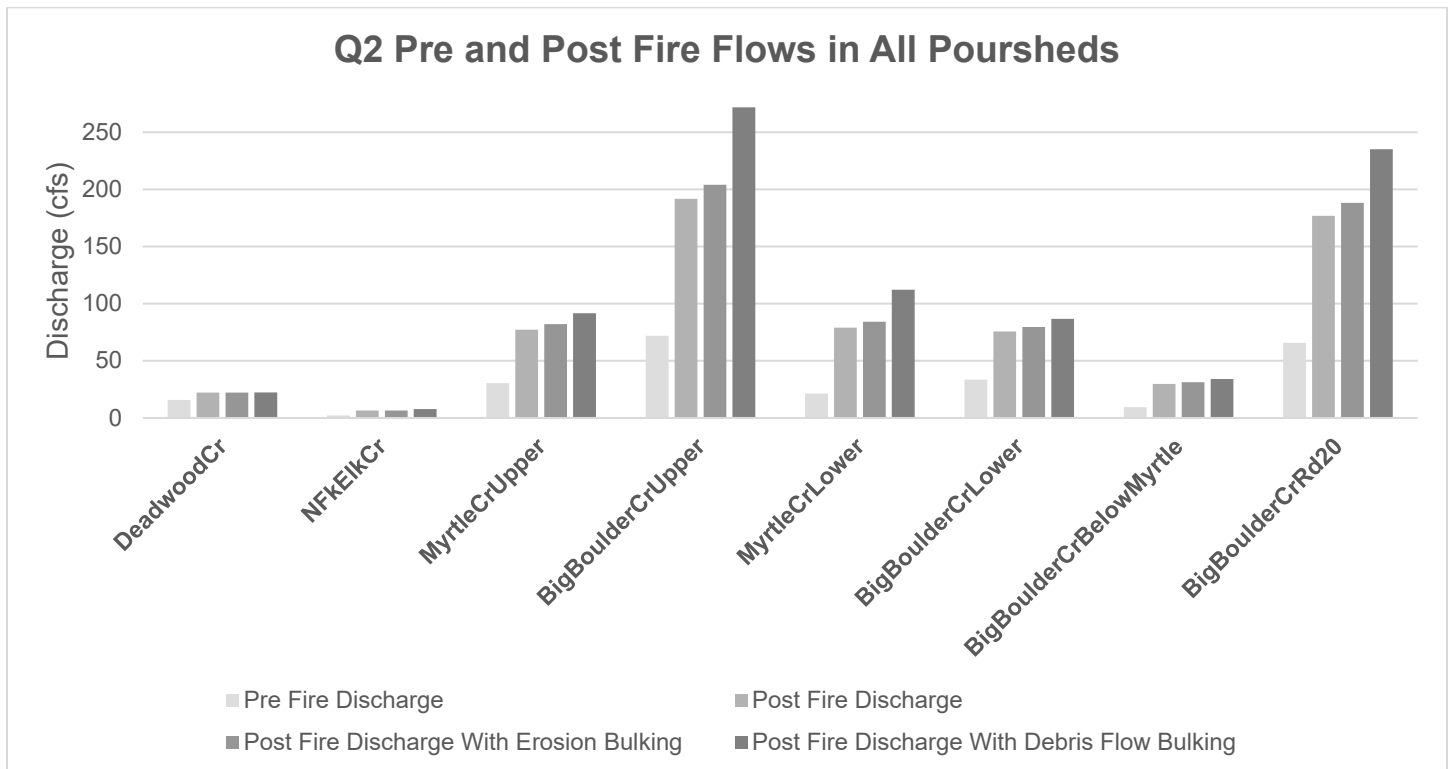


Figure 2. Q2 Comparison of pre- and post-fire streamflow (with & without bulking) for all poursheds.

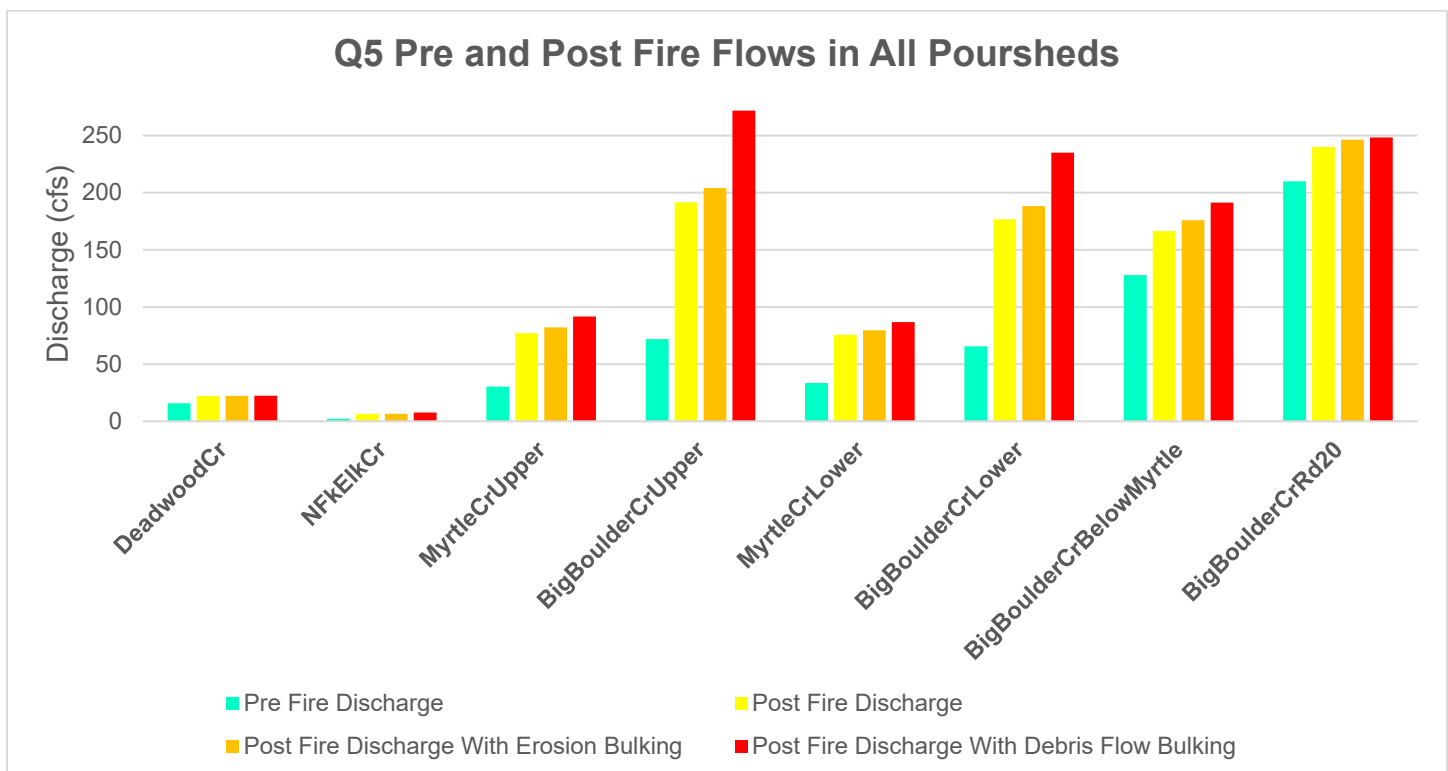
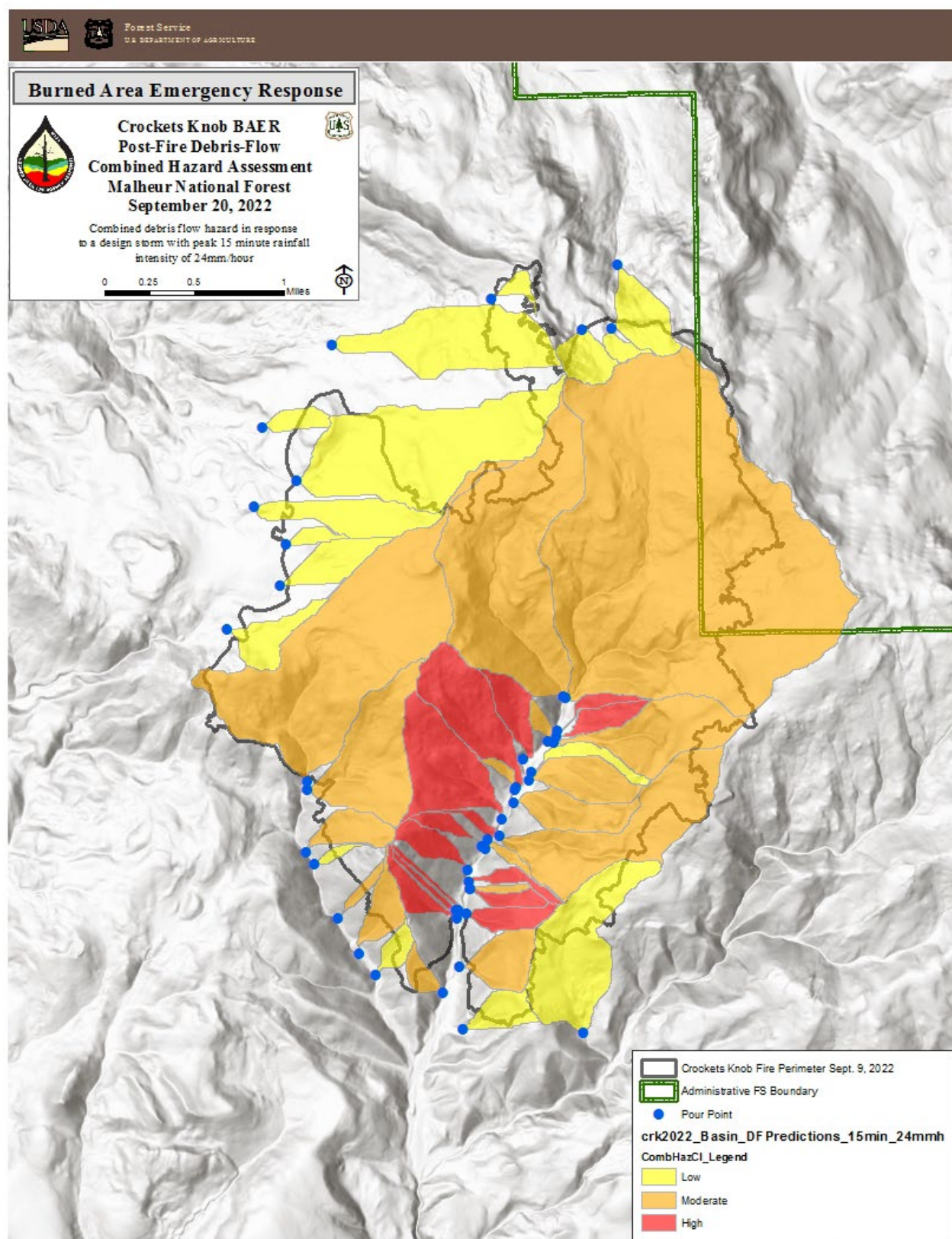


Figure 2. Q5 Comparison of pre- and post-fire streamflow (with & without bulking) for all poursheds.

Within the burned area of the Crockets Knob Fire, evidence of mass wasting such as rock fall and debris flows are apparent. Field observations noted areas in the fire perimeter with available unconsolidated material, steep slopes, and high soil burn severity. It is estimated that as a result of high intensity storms (>20mm/hour of rain in 15 minutes, which best resembles the Q5 event used in hydrologic modeling) that tend to trigger debris flows, including convective thunderstorms or summer thunderstorms, the probability of debris flows is possible (40-60%) in the majority of channels but likely (60-80%) in some channels of Myrtle Creek Drainage and very

likely (80-100%) within the channels in Big Boulder Creek Drainage. However, the overall combined hazard for the Myrtle Creek Drainage is moderate due to the presence of low soil burn severity or unburned, vegetated land throughout the majority of the drainage. The combined hazard for Big Boulder Creek for debris flows remains high because of the concentration of high severity burns, steep slopes, and available material; however, the presence of low soil burn severity and survived vegetation within the valley bottom of Big Boulder Creek drainage provides some ease to concerns.



PART V - SUMMARY OF ANALYSIS**Introduction/Background****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

Value	Life/Property/Resources	Critical Value	Threat to Value	Probability of Damage or Loss	Rationale for Probability	Magnitude of Consequence	Rationale for Magnitude	Risk	Recommended Treatment
BAER critical value	Life and Safety	Public Safety	Falling Trees, Rocks, increased flood potential, stump holes, unstable ground, road prism failures.	Possible	Numerous hazards exist especially in the first year following the fire.	Major	Loss of life or injury to humans	High	S1a/S1b. Road/Trail Hazard Signs
BAER critical value	Property - Roads	FS Road 4550-Big Boulder Stream Crossing	Road failures due to increased flows, debris flows, threat to water quality from sediment delivery, threat to Mid-Columbia Steelhead critical and occupied habitat.	Likely	road locations below high and moderate soil burn severity are expected to sustain damage	Moderate	Road investment will be lost resulting in substantial property damage	High	R4. Culvert Removal

BAER critical value	Property - Roads	FS Road 4550-Myrtle Stream Crossing	Road failures due to increased flows, debris flows, threat to water quality from sediment delivery, threat to Mid-Columbia Steelhead critical and occupied habitat.	Likely	road locations below high and moderate soil burn severity are expected to sustain damage	Moderate	Road investment will be lost resulting in substantial property damage	High	R3. Storm Inspection and Response
BAER critical value	Property - Roads	Closed road stream crossings on Big Boulder & Myrtle Creek	Road failures due to increased flows, debris flows, threat to water quality from sediment delivery, threat to Mid-Columbia Steelhead critical and occupied habitat.	Likely	road locations below high and moderate are expected to sustain damage	Moderate	Moderate Property Damage, considerable damage to critical natural resources	High	R4. Culvert Removal
BAER critical value	Property - Roads	Closed FS Roads on, within, & downstream of the fire perimeter	Road failures due to increased flows, debris flows.	Unlikely	road locations below high and moderate are expected to sustain damage	Minor	Minimal damage resulting in low economic loss	Very Low	

BAER critical value	Natural Resources - T&E habitat	Bulltrout Critical Habitat in head of Deadwood Creek	Decrease in water quality from sediment delivery, debris flow, & increased stream flows.	Unlikely	Low mortality post-fire conditions, vegetation/roots to stabilize rock in low burn severity areas are present, minor increases surface runoff	Moderate	Duration to recovery of ground cover expected within 3 years. Riparian communities expected to recover quickly (3-5 years). Large wood addition to streams due to overstory mortality to occur for decades.	Low	
BAER critical value	Natural Resources - T&E habitat	Mid-Columbia Steelhead Critical Habitat	Decrease in water quality from sediment delivery, debris flow, & increased stream flows.	Possible	Higher rates of runoff and soil erosion due to loss of canopy cover, ground cover, and channel stabilizing vegetation. Steep slopes present along streams with high and mod SBS	Moderate	Duration to recovery of ground cover expected within 3 years. Riparian communities expected to recover quickly (3-5 years). Large wood addition to streams due to overstory mortality to occur for decades.	Intermediate	

BAER critical value	Natural Resources - Soil and Water	Hydrologic Function	Sediment Delivery Into water bodies	Likely	Higher rates of runoff and soil erosion due to loss of canopy cover, ground cover, and channel stabilizing vegetation. Steep slopes present along streams with high and mod SBS	Minor	Duration to recovery of ground cover expected within 3 years. Riparian communities expected to recover quickly (3-5 years). Large wood addition to streams due to overstory mortality to occur for decades.	Low	
BAER critical value	Natural Resources - Soil and Water	Soil Productivity	Erosion	Likely	steep slope moderate and high SBS areas lack cover to stabilize loose, single-grain surface soil.	Minor	conditions for erosion are found within a mosaic of less disturbed areas and not consistent throughout burn area	Low	
BAER critical value	Natural Resources - Native Plants	Native plant communities of concern burned at moderate or high intensity	Invasive species, cattle grazing, habitat degradation	Possible	Invasives species documented adjacent and in fire perimeter and would spread due to disturbance from fire	Moderate	There are many high priority noxious weeds documented adjacent and within fire perimeter, that would result in long-term native plant community degradation	Intermediate	

Other FS value	Natural Resources - Native Plants	not a critical BAER value but suppression related category	dozer lines, safety zones, drop points, spike camps all susceptible to invasion due to ground disturbing activities from fire suppression	Very Likely	Disturbed ground is highly susceptible to invasion by adjacent noxious weed infestations	Moderate	dozer lines and other disturbances are readily colonized by noxious weeds before native plants have a chance to recover or reestablish	Very High	P1b. Invasives EDRR
BAER critical value	Natural Resources - T&E habitat	White bark pine habitat burned at moderate or high intensity	Invasive species, cattle grazing, habitat degradation	Unlikely	A few invasive species documented near whitebark pine habitat, but these high-elevation native plant communities tend to be resilient against invasion due to ecological factors	Minor	Historical whitebark pine points are no longer extant, though it has been modeled as suitable habitat. Majority of the suitable habitat areas are unburned or low burn severity areas.	Very Low	
BAER critical value	Cultural Resources	Cultural Resources	Erosion causing site integrity or Potential for Looting of sites due to loss of vegetation.	Unlikely	Relative Few Sites and mostly on areas with minor slope.	Major	any damage to nationally registered listed cultural resources would result in minimal or localized effects.	Intermediate	

BAER critical value	Property - Trails	Forest Service Trails within Fire Perimeter	change in drainage due to post-fire flow regime, potential sloughing, erosion of tread material & prism	Unlikely	Increase in surface runoff due to post-fire flows. 97% of trail mileage is in low SBS or along ridgetops.	Minor	Loss of trail tread resulting in infrastructure impacts	Very Low	
BAER critical value	Property - Other	Trail Head Sign Boards and miscellaneous trail structures	Trees falling onto infrastructure	Unlikely	Many snags exist as a result of the fire	Minor	Could destroy existing infrastructure	Very Low	
BAER critical value	Property - Other	Head O Boulder Forest Camp	Trees falling onto infrastructure	Unlikely	Many snags exist as a result of the fire	Moderate	Could destroy existing infrastructure	Low	
BAER critical value	Property - Other	Indian Rock Lookout	Trees falling onto infrastructure	Unlikely	No snags exist as a result of the fire as a result of suppression activities.	Moderate	Could destroy existing infrastructure	Low	

1. **Human Life and Safety (HLS):** Human life/safety is at risk on NFS land from threats associated with post-fire related hazard trees, rock fall, increased flooding and debris flows, and loss of egress/access throughout the burned area, but particularly on roads and trails. Several miles of the primary roads have already been snagged out thus greatly reducing the overhead hazards. Treatments such as closure and signage will be critical in protecting human life and safety.
2. **Property (P): Recreation:** Approximately 3% (0.07 miles) of trail exists in Moderate or High SBS areas and none of this was generally through or below steep terrain above 40% slope. Trail infrastructure is not expected to be damaged and lost after storm events due to increased flows, accelerated erosion, or debris flows because affected sections of trail are located along ridgetops on the perimeter of the fire and are not expected to see increased flows during storm events.
 - b. **Roads:** Primary roads of concern that have stream crossings downstream of moderate to high burn severities include the 45, 4550, & 4550-389 road systems. Big Boulder Creek and Myrtle Creek drainages exhibit the most high or moderate soil burn severity in the Crockets Knob Fire, cross FSR 4550 & 4550-389, and are critical habitat for Mid-Columbia steelhead. There is increased potential for increased flows & debris transport resulting in road failures. Hazard trees adjacent to roads in the burn area are limited due to pre-fire vegetation and suppression activities.
3. **Natural Resources (NR):Hydrologic Function,** fire impacts proper functioning of hydrologic processes with the greatest and longest lasting impacts occurring from high soil burn severity and anthropogenic activities. Fire impacts within moderate, low, and very low burn areas are recoverable and expected to diminish as vegetation reestablishes. Most of the burn area resulted in low soil burn severity.

The primary threat to values at risk for hydrology are associated with flooding, debris flows, and sedimentation as a result of altered soil hydrologic function and slope stability associated with burned soils and vegetation. Hydrologic changes induced by wildfire that can impact values at risk include reductions or elimination of rainfall interception, transpiration, litter storage of water, and infiltration. These reductions typically result in greater runoff, increased overland flow, increased streamflows, increased water yields and increases in stormflow. In addition to increased flows, as root strength is lost from wildfire induced tree mortality, slopes stability decreases leading to higher susceptibility to landslide or debris flows.

- b. **Native and naturalized plant communities:** The native plant communities affected by the Crockets Knob Fire include habitats with documented populations of plant species on the R6 Regional Forester's Sensitive Species List (USDA 2021) and provide important habitat and ecological values for wildlife and other uses. Two populations of moonworts (*Botrychium* spp.) totaling about 0.8 acres are documented within the fire area. Moonworts occur locally (not widespread) in marshes or springs, moist meadows, riparian zones, moist roadsides, and openings in cold forests. Moonworts often occur in calcareous soils, but not necessarily.

Most of the native vegetation in the area is adapted to historical levels of wildfire, so there are no expected long-term negative impacts on these native plant communities and their associated sensitive plant populations due to the fire itself. The primary threat to these existing sensitive plant populations and other suitable sensitive plant habitat is the invasion of non-native plant species including state listed noxious weeds that could displace sensitive plant populations, lower plant community diversity and negatively affect ecosystem services. Non-native species can aggressively take over burned open spaces and crowd out native species (USFWS 2010).

Three species of B-listed noxious weeds from the Oregon Department of Agriculture list (ODA 2020) are mapped within the burned area: Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), and houndstongue (*Cynoglossum officinale*). All three of these species are known to invade and spread after fire and disturbance. Documented populations within the fire perimeter (not on surrounding roads) cover about 4 acres, though there are likely many more unmapped

infestations across the fire area, as it has never been completely surveyed.

- c. **Threatened and Endangered Fisheries and Wildlife** species exist within the burn area. Species of concern include Mid-Columbia Steelhead and Bull trout. Increased habitat degradation and juvenile and sub-adult mortality of Steelhead is possible due to accelerated sedimentation, debris flow, loss of stream shade and large wood, and potential accelerated channel erosion mostly focused in Big Boulder Creek. Culvert Removals, Culvert replacements, and storm inspection and response will ameliorate additional sedimentation by maintaining and improving drainage capacity and soil stability. EDRR treatments will benefit T&E listed species by promoting the recovery of native riparian communities, particularly wetlands which mitigate for decreased water quality and increased stream temperatures resulting from potentially high-sediment loads. Robust riparian communities outcompete introduced and/or invasive plant species, store and release cold water during the summer, increase stream shade, and improve streambank stability during high-flow events, and are essential to preserving fish habitat and cold-water refugia. Fisheries specific actions are more long-term where strategic assessments are needed to inform actions. There are no specific treatment recommendations for fisheries at this point, other than those already recommended by hydrology and engineering (i.e. storm inspection and response, culvert removals).
- d. **Soil Productivity** – Overall, the probability of damage to soil productivity is likely and the magnitude of consequence is minor based on the following:

It is recognized there is potential for accelerated soil erosion to occur across the burned area primarily due to the loss of overstory and understory canopy, with higher increases likely where water repellency occurs in isolated locations mapped as high SBS. However, the post-fire hillslope conditions characterized by surface rock and some intact woody debris that remains armors the soil surface. These conditions are expected to limit soil detachment from rainfall, keeping accelerated erosion to slightly higher than inherent surface erosion rates. The concern lies with precipitation runoff. The afore mentioned surface rock and woody debris break up slope lengths and serve as obstructions to overland flow, thereby decreasing the runoff water energy (volume and speed) that would generally cause soil detachment, accelerated surface erosion and increased downslope sediment delivery.

The Crockets Knob fire is within the 1996 Summit Fire burn scar. Reburning this area again in a short timeframe resulted in moderate and high soil burn severity, especially in areas that the vegetation was dominated by ceanothus and limited trees. Additionally, areas of high soil burn severity had quite a bit of downed timber after the Summit Fire, based on Google Earth imagery, that led to areas that the fire completely consumed the logs. This raises the concern that reburning will extend the recovery time of these soils found within the Crockets Knob burn scar.

This brought the overall risk to soil productivity to Low.

- 4. **Cultural and Heritage Resources:** Cultural resources at risk include traditional use areas, prehistoric lithic scatters, and historic hard rock mining sites. Of those that qualify as BAER Critical Values, there are no cultural resource sites that due to effects of wildfire are at risk to looting and/or degradation from erosion.

B. Emergency Treatment Objectives:

Proposed Land Treatments

The objective of the land treatments are to:

1. Promote and protect native and naturalized vegetative recovery by reducing the spread of noxious weeds (**P1b**).

Note - No active land treatments are recommended for long-term soil productivity. Allowing for natural recovery is the recommended course of action.

Proposed Channel Treatments: NoneProposed Road and Trail Treatments

The objective of the road and trail treatments are to:

1. Protect road investments from damaged due to increased post-fire runoff (**R3 & R4**).
2. Reduce sedimentation into streams degrading water quality important for T&E Fish species (**R3 & R4**).

Proposed Protection/Safety Treatments:

The objective of the protection/safety treatments are to:

1. Protect human life and safety by raising awareness through posting hazard warning signs at recreation sites and trailheads. (**S1b**)
2. Posting of hazard warning signs along various forest service roads and trails to warn users of potential hazards resulting from post-fire conditions (**S1a & S1b**)
3. Protect worker and public safety by removing hazard trees associated with BAER treatments and within the vicinity of road BAER treatment sites (**R3 & R4**)
4. Protection of Forest Service investments and recreation infrastructure (**R3**).

Proposed Treatment Effectiveness Monitoring: None**C. Probability of Completing Treatment Prior to Damaging Storm or Event:**

Land: 90%

Channel: N/A

Roads/Trails: 75%

Protection/Safety: 90%

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	85	90
Channel	80	85	90
Roads/Trails	85	90	90
Protection/Safety	90	95	95

E. Cost of No-Action (Including Loss): \$278,550 (Not including threat to human life and safety) If no action is taken there will be a loss of native plant communities to invasive plant populations.

F. Cost of Selected Alternative (Including Loss): \$43,725 (Assuming 10% loss)

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: Chase Bloom(t)

Email: chase.bloom@usda.gov

Phone(s): (707) 496-0244

Forest BAER Coordinator: Robert McNeil

Email: robert.mcneil@usda.gov

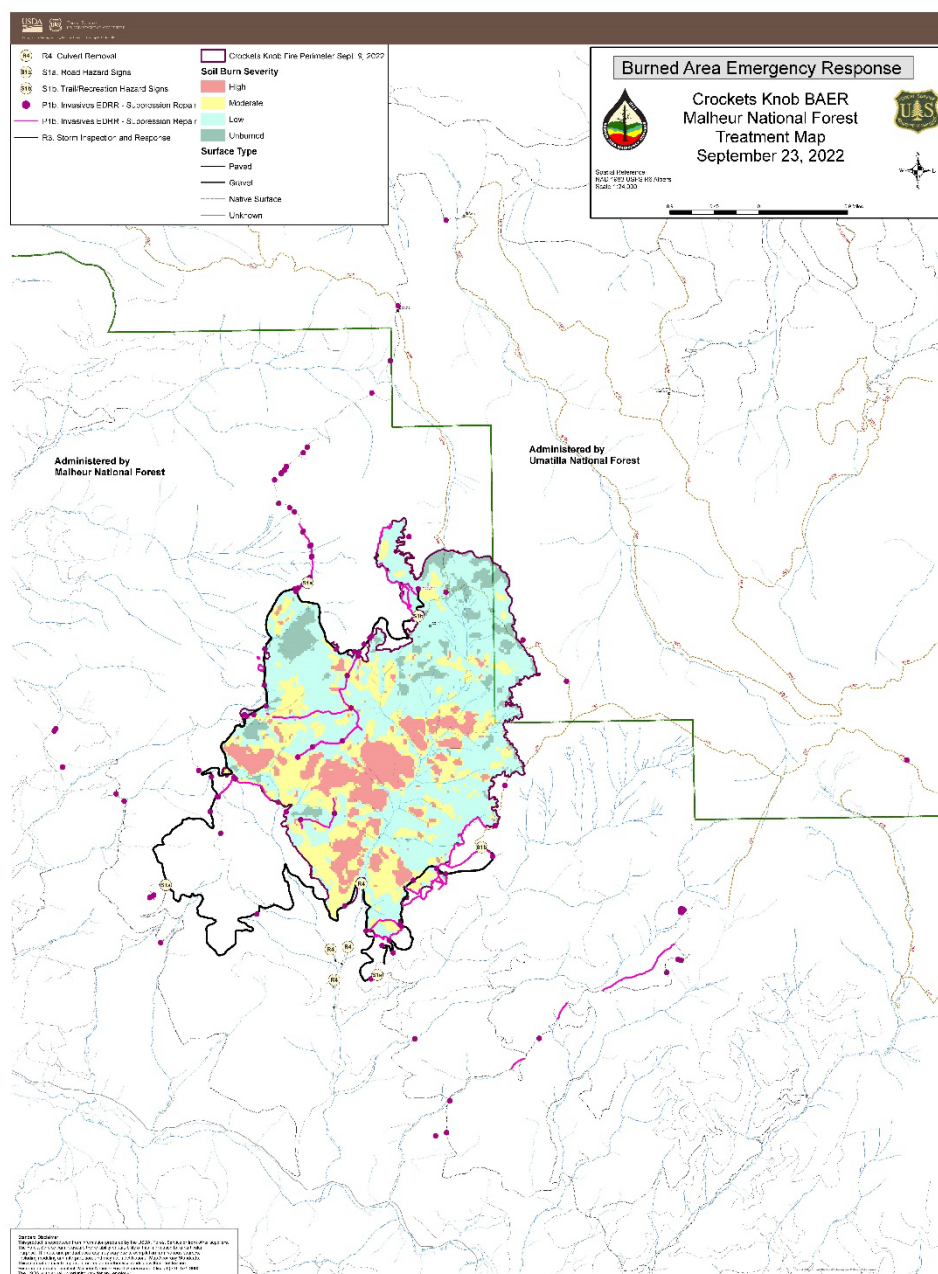
Phone(s): (541) 575-3464

Team Members: Table 10: BAER Team Members by Skill

Skill	Team Member Name
Team Lead(s)	Hannah Grist, Chase Bloom (t)

Skill	Team Member Name
Soils	Leslee Crawford
Hydrology	Sam Spengler, Kenny Withee (t)
Engineering	Matt Smith
GIS	Robin Harris
Archaeology	Emily Modelski
Weeds	Jesse Brunson
Recreation	Ty Cronin
Fisheries	Erika Porter
Geology	Keifer Nace
Other	Alex Rozin

H. Treatment Narrative:



Land Treatments:

P1b. Invasives EDRR Suppression: For Early Detection Rapid Response (EDRR) related to fire suppression, we propose detection and treatment for dozerlines, staging areas, drop points, and other ground disturbance caused by fire suppression activities to prevent invasion into disturbed areas. The likelihood that heavy equipment working on the fire brought in propagules from outside the Malheur National Forest is moderate to high. It's also highly likely that new disturbance areas created by fire suppression equipment will provide open niches for the establishment of nearby noxious weeds and windborne weed seeds.

We expect much of this EDRR work to go into an existing partnership agreement with Grant Soil and Water Conservation District Weed Control Department. They have equipment designed for efficient right-of-way treatments and have conducted treatment on many forest roads as a partner for several years now. This work would be an extension of the work they currently conduct for us.

Treatment	Units	Unit Cost	# of Units	Total Cost
P1b. Invasives EDRR-Suppression	Acres	\$90	140	\$12,600

Channel Treatments: None Proposed

Roads and Trail Treatments:

R3 - Storm Inspection and Response

Situation: Roads within the Crockets Knob Fire contain drainage structures that cross streams located in watersheds that have a high to moderate burn severity. These streams now have the potential for increased runoff and debris flows. These increases in flows pose a threat to the existing crossings which may result in plugging drainage structures or exceeding their maximum flow capacity. If these flows plug drainage structures the result could be massive erosion and debris torrents further down the drainage due to the failure. Storm inspection/response keeps culvert and drainage structures functional by cleaning sediment and debris from the inlet between or during storms. This work will be accomplished through Forest Service Road Crew, equipment rental, and general labor and focus on the 4550-000, 4550-713, 4550-577, 4550-389, and 4550-426 road systems.

The 4550-000 Road at the Myrtle Creek crossing was analyzed. The hydrologic modeling suggest that the culvert does not have the capability of passing the flow of the chosen post-fire flow event. However, there is a natural riparian corridor directly above the culvert for approximately a half mile that will serve to mitigate the risks of sediment and debris bulking. The risk of culvert failure is lower at this crossing. Therefore storm inspection and response will be the recommended response action for this crossing.

Recommendation: Monitor Road drainage structures during and after significant storm events to ensure the maximum drainage capacity is maintained until the natural re-vegetation of the burned area has occurred.

Treatment	Units	Unit Cost	# of Units	Total Cost
R3. Storm Inspection & Response	Mile	\$320	5	\$1,600

R4 - Culvert Removal

Situation: The hydrologic modeling for the streams and culverts on the 4550 and 4550-389 closed road on Big Boulder Creek shows that they are not capable of passing the flows of the chosen post-fire flow event. Combining these risks with the risks to T&E species, it is recommended to remove these culverts.

Treatment	Units	Unit Cost	# of Units	Total Cost
R4. Culvert Removal	Each	\$6,000	4	\$24,000

Protection/Safety Treatments:**S1a Road Hazard Signs**

Situation: The severity of burn in some watersheds, combined with road location, high possibility of flash flooding and debris flow has increased the risk to road users.

Recommendation: Install warning signs for flash flooding and potential debris flows. Install Burn Area signs (FW8-14D) where necessary to properly alert the travelers of the dangers ahead.

Sign Type	Location
ENTERING BURNED AREA	On FSR 4500-000 @ 537 Intersection facing North
	On FSR 4500-000 @ 4550-000 Intersection facing South
	On FSR 4550-000 @ 4550-749 Intersection facing East

Treatment	Units	Unit Cost	# of Units	Total Cost
S1a. Road Hazard Signs	Each	\$150	3	\$450

S1b Trail/Recreation Hazard Signs

Placing signage at trailheads (TFW8-14d) to inform public of the hazard associated with trails post fire. Treatment map points for map at:

Treatment	Units	Unit Cost	# of Units	Total Cost
S1b. Trail/Recreation Hazard Signs	Each	\$50	2	\$100

I. Monitoring Narrative: Not Applicable

			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										
P1b. Invasives EDRR-Suppression	Cost/Acre	90	140	\$12,600	\$0		\$0		\$0	\$12,600
Subtotal Land Treatments				\$12,600	\$0		\$0		\$0	\$12,600
B. Channel Treatments										
Subtotal Channel Treatments				\$0	\$0		\$0		\$0	\$0
C. Road and Trails										
R3. Storm Inspection & Response	Cost/Mile	320	5	\$1,600	\$0		\$0		\$0	\$1,600
R4. Culvert Removals	Cost/Each	6,000	4	\$24,000	\$0		\$0		\$0	\$24,000
Subtotal Road and Trails				\$25,600	\$0		\$0		\$0	\$25,600
D. Protection/Safety										
S1a. Road Hazard Signs	Cost/Each	3	350	\$1,050	\$0		\$0		\$0	\$1,050
S1b. Recreation/Trail Hazard Signs	Cost/Each	2	250	\$500	\$0		\$0		\$0	\$500
Subtotal Protection/Safety				\$1,550	\$0		\$0		\$0	\$1,550
E. BAER Evaluation										
Initial Assessment	Report			---	\$29,544		\$0		\$0	\$29,544
Subtotal Evaluation				\$0	\$29,544		\$0		\$0	\$29,544
F. Monitoring										
Subtotal Monitoring				\$0	\$0		\$0		\$0	\$0
G. Totals				\$39,750	\$29,544		\$0		\$0	\$69,294
Previously approved				\$0						
Total for this request				\$39,750						

CRAIG
TRULOCK

1. _____
Forest Supervisor

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