

Date of Report: 01/18/13

BURNED-AREA REPORT

(Reference FSH 2509.13)

PART I - TYPE OF REQUEST**A. Type of Report**

- ☒ 1. Funding request for estimated emergency stabilization funds
☐ 2. Accomplishment Report
☐ 3. No Treatment Recommendation

B. Type of Action

- ☒ 1. Initial Request (Best estimate of funds needed to complete eligible stabilization measures)
☐ 2. Interim Report # _____
 ☐ Updating the initial funding request based on more accurate site data or design analysis
 ☐ Status of accomplishments to date
☐ 3. Final Report (Following completion of work)

PART II - BURNED-AREA DESCRIPTION**A. Fire Name:** Chrandal Creek**B. Fire Number:** MT-BRF-005432**C. State:** MT**D. County:** Ravalli**E. Region:** 1**F. Forest:** Bitterroot**G. District:** West Fork**H. Fire Incident Job Code:** P1G06L**I. Date Fire Started:** July 6, 2012**J. Date Fire Contained:** 08/07/12**K. Suppression Cost:** \$8,250,000**L. Fire Suppression Damages Repaired with Suppression Funds**

1. Fireline waterbarred (miles): 0
2. Fireline seeded (miles): 0
3. Other (identify):

M. Watershed Number: Hughes Creek #170205**N. Total Acres Burned:** 2,505

NFS Acres(2,505 total, 2,448 on BNF, 57 on S-CNF) Other Federal () State () Private ()

O. Vegetation Types: Ponderosa Pine/Doug Fir/Beargrass, Mixed Conifer (Doug Fir/Lodgepole Pine/huckleberry), Lodgepole/Beargrass/Huckleberry, Subalpine Fir/Beargrass, Whitebark Pine/Subalpine Fir/Beargrass, Subalpine bunchgrass communities.**P. Dominant Soils:** Belt series metamorphic, calc-silicates; coarse to fine textured sandy loams

Q. Geologic Types: Bitterroot Mountain Range, Glaciated landscape, Decomposed Granite and volcanic parent types, Idaho Batholith

R. Miles of Stream Channels by Order or Class: Perennial – 7.4 miles, Intermittent – 1 mile

S. Transportation System

Trails: 1.8 miles of high severity, 0.2 miles moderate (2 miles total) Roads: 0 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 1,214 (low) 704 (moderate) 530 (high)

B. Water-Repellent Soil (acres): 882 (all of high severity, 50% of moderate severity acres = 36% of area within fire perimeter, on BNF)

C. Soil Erosion Hazard Rating (acres):
1,214 (low) 704 (moderate) 530 (high)

D Erosion Potential: 2.2 tons/acre (Normal precip, 14.25 t/ac for 10yr RI precip year)

E. Sediment Potential: 7 tons/acre (4,480 cubic yards / square mile, assumes 1T/cu yd)

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 3-5 yrs grasses, 5-8 yrs shrubs, 50-80 yrs trees

B. Design Chance of Success, (percent): 75%

C. Equivalent Design Recurrence Interval, (years): 25 years

D. Design Storm Duration, (hours): 0.25 hours

E. Design Storm Magnitude, (inches): 0.53 inches

F. Design Flow, (cubic feet / second/ square mile): 4-6 cfs

G. Estimated Reduction in Infiltration, (percent): 25 %

H. Adjusted Design Flow, (cfs per square mile) 110 cfs¹

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

No downstream threats to life from storm events were found in the Chrandal Fire Area, however, the following threats were deemed significant:

General Description

¹ Use 110 cfs for watershed less than 2 mi²; Parret et al. 2003. Fire Hydrology. July 2003.

For watersheds 5-20 mi², the design storm should be approximately 23 cfs; Arkell Richard E, and Frank Richards, 1986. Short Duration Rainfall Relations for the Western United States. August 1986. Gerhardt, N, 2003. Precipitation – Frequency Values for Lolo Pass, Idaho/Montana. Unpublished Paper. September 2003

1. Previously weed-free areas within High/moderate burn severity – loss of competing vegetation due to the fire will enable progressive migration of road & trail side weeds into new areas. New Invader to Montana present upwind in Idaho (Rush Skeletonweed). The large amount of bare ground caused by the severe burn creates an opportunity for new invasion by weed species not previously found in the Upper West Fork. If untreated, the high and moderate severity areas of the burn, and the large percentage of dry habitat types in the burn area result in a high probability that new noxious weed species will be established, and potentially permanently displace native plant communities. This risk is primarily on the south and west aspects within the fire (where the dry habitat types are concentrated), along with areas subjected to high-intensity fire that consumed the duff layer and increased the native vegetation recovery period.

The Chrandal Creek Fire has burned in a mosaic pattern with a full range of burn intensities from high to unburned in discontinuous patches. Invasive plant species present a concern with respect to the goal of retaining native plant communities in order to maintain the structure and function of the local ecosystem. Most of the invasive plant species that occur within and upwind of the fire perimeter are well-adapted to fire. These species respond favorably to fire events and often spread rapidly after fire. The invasive plant species identified in the fire area listed on the Ravalli County (Montana) Invasive Species List, Idaho statewide containment list, Idaho statewide control list, and/or Lemhi County Cooperative Weed Management Area (CWMA) invasive list are shown in **Table 1**. Values at-risk from the invasion of new invasive/noxious species and rapid expansion of established invasive/noxious species include:

- a. Loss of native specie biological diversity and ecological stability on both public and private lands;
 - b. Loss of healthy native plant communities currently dominant in weed-free areas will result from invasives encroachment within the fire perimeter;
 - c. Interference by invasive/noxious weeds with the natural regeneration of native plant communities affected by the burn;
 - d. Loss of critical big game and bighorn sheep (sensitive specie) foraging habitat throughout the fire affected area by new and/or expanded invasive weed infestations in timbered and open habitat types;
 - e. Loss of upland soil stability and productivity on open timber and grass/shrub habitat types that typically accompanies invasive/noxious weed infestations.
 - f. Loss of previous investments and gains in invasive/noxious weed control made by RAC grants, Rocky Mountain Elk Foundation grants, National Fish and Wildlife Foundation grants, Cooperative CD Barrier Zone Project monitoring/treatment work, numerous biocontrol releases in cooperation with the Western Agricultural Research Center (MSU), BNF appropriated fund project work, and cooperative work with the Salmon-Challis National Forest and Lemhi County, Idaho.
2. Trail prisms/infrastructure – post-fire hydrology driven by high and moderate burn severity will increase risk of damage on 2 miles of system trails, with resulting loss of trail prism and waterbars. These are moderate-use level trails that access unique areas that the West Fork Ranger District would like to keep for the long term. Post-fire hydrology will increase the occurrence of surface runoff from burned slopes onto the trail prism, with potential stream capture by the trail. Without treatment, concentrated flow diverted down the trail tread may induce gully cutting and reduce downstream water quality. Proactive treatment of fire-affected trail segments would be cheaper than remediation after damage. There is also a risk of falling hazard trees for trail workers implementing prescribed drainage and stabilization treatments.

Native Plant Communities and Invasives - Details

The invasive plant species identified in the fire area listed on the Montana and Ravalli County Invasive Weeds List, Idaho statewide containment list, Idaho statewide control list, and/or Lemhi County Cooperative Weed

Management Area (CWMA) invasive list are shown in **Table 1**. Idaho lists are included as weed control in the Chrandal Creek Fire area will be a coordinated effort with the Salmon-Challis NF.

Table 1: Invasive plant species present in the area burned by the Chrandal Creek fire.

Target Invasive Weed Species with Potential to Colonize Burned Areas in the First Post-Fire Year	Montana and Ravalli County, MT Invasive List	Idaho Statewide containment list	Idaho Statewide control list	Lemhi County, ID CWMA Invasive List
Spotted knapweed	X	X		X
Sulphur cinquefoil	X			X
Rush skeletonweed *	X	X		X
Hoary alyssum *	X	X		X
Canada thistle	X	X		X
Houndstongue	X	X		X
Common St. Johnswort	X			X
Dalmatian toadflax	X	X		X
Knotweed	X		X	X
Oxeye daisy *	X	X		X
Puncturevine	X			X

* denotes species of highest priority for first year post-fire detection and treatment for the Bitterroot NF

Much of the upper Hughes Creek area on the Bitterroot NF burned by the Chrandal Fire is relatively free of invasive weeds but is now highly susceptible to exotic plant invasion due to habitat types, prevailing winds, exposed soils and fire disturbance to native plant communities. Scattered infestations of spotted knapweed, sulfur cinquefoil, oxeye daisy and houndstongue are also present in intermittent pockets and along the trail system. These species are also poised for rapid expansion into fire disturbed sites.

The potential for establishment and spread of invasive plant species in the burn area is very high. The prevailing wind pattern (southwest) of the region is perfectly aligned to carry the windborne seeds of rush skeletonweed populations upwind of the fire in a north/northeast direction and deposit them in the ideal seedbeds created by the fire. In addition, the fire consumed portions of the physical vegetative timber / shade and surface litter barriers that normally would reduce significantly the opportunities for germination of the invading rush seeds. Many known, mapped infestations that could serve as source areas are found within the adjacent Mustang Complex fire perimeter along or near roads within the upwind areas of the Salmon-Challis NF.

There are, however, other vectors as well for weed seeds, including domestic cattle, wildlife species, wind and water. In the case of rush skeletonweed, wind is a primary vector. Another species, sulphur cinquefoil, is spread by rodents and small birds. Sulphur cinquefoil spreads rapidly and is highly competitive; it can even out-compete spotted knapweed and has no forage value to wild ungulates. These two species, rush skeletonweed and sulphur cinquefoil, have a very high potential for disrupting native plant community re-establishment in areas otherwise free from noxious weeds.

The combination of known weed species' presence and invasive capabilities with the vulnerable post fire condition of the soil and vegetation resources puts the recovery of native plant communities within the burn area at a high risk. **Table 2** (below) displays the Risk Rating to invasion of native or naturalized communities within the Chrandal Creek fire area by each of the weed species presently known to occur within the adjacent Mustang Complex fire area. Trail erosion risk within high and moderate severity burn is also included in **Table 2**.

Please see the attached letter of support from the Montana State University Agricultural Experiment Station project leader of the Continental Divide Invasive Weed Barrier Zone, which includes the Chrandal Creek Fire area.

Table 2. Risk Assessment for Chrandal Creek Fire effects

Probability of Damage or Loss	Magnitude of Consequences		
	Major	Moderate	Minor
	RISK		
Very Likely	Rush Skeletonweed, Sulphur Cinquefoil spread = Very High	Untreated Trail Erosion, Spotted Knapweed spread = Very High	Canada Thistle = Low
Likely	Houndstongue, Knotweed, Oxeye Daisy spread = High	Common St. Johnswort, Hoary Alyssum = High	Low
Possible	Leafy Spurge, Puncturevine spread = High	Dalmatian Toadflax, Yellow Toadflax spread = Intermediate	Musk Thistle = Low
Unlikely	Diffuse Knapweed spread = Intermediate	Low	Henbane = Very Low

B. Emergency Treatment Objectives:

- **Stabilize fire-affected trail prisms and reduce impacts from flood flows, debris torrents, and other potential events and maintain access;**
- **Reduce the threat of significant expansion of existing noxious weeds or invasion of new noxious weeds; Locate and treat new invasive plant species infestations during early stages of spread in ecologically sensitive burned areas in order to maintain the structure and function of the local ecosystem.**
- **Protect trail workers from hazard trees.**
- **Inform the public of burned area hazards using trailhead signs.**

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

Land **75** % Channel **NA** % Roads/Trails **80** % Protection/Safety **95** %

D. Probability of Treatment Success:

	Years after Treatment		
	1	3	5
Land			
Noxious weed treatment	80	75	70
Noxious weed monitoring	85	NA	NA
Roads/Trails			
Trail Waterbar Installation	85	90	95
Protection/Safety			
Trailhead Hazard Signs	95	85	80

E. Cost of No-Action (Including Loss): **See Cost-Risk Analysis and Matrix p. 12**

F. Cost of Selected Alternative (Including Loss): **See Cost-Risk Analysis and Matrix p. 12**

G. Skills Represented on Burned-Area Survey Team:

<input checked="" type="checkbox"/> Hydrology	<input checked="" type="checkbox"/> Soils	<input type="checkbox"/> Geology	<input checked="" type="checkbox"/> Range	<input checked="" type="checkbox"/> Trails
<input type="checkbox"/> Forestry	<input type="checkbox"/> Wildlife	<input type="checkbox"/> Fire Mgmt.	<input type="checkbox"/> Engineering	<input checked="" type="checkbox"/> Invasive Species
<input type="checkbox"/> Contracting	<input type="checkbox"/> Ecology	<input type="checkbox"/> Botany	<input checked="" type="checkbox"/> Archaeology	<input type="checkbox"/>
<input type="checkbox"/> Fisheries	<input type="checkbox"/> Research	<input type="checkbox"/> Landscape Arch	<input type="checkbox"/> GIS	

Team Leader: Ed Snook

Email: esnook@fs.fed.us

Phone: 406.363.7103

FAX: 406.363.7106

H. **Treatment Narrative:**

(Describe the emergency treatments, where and how they will be applied, and what they are intended to do. This information helps to determine qualifying treatments for the appropriate funding authorities. For seeding treatments, include species, application rates and species selection rationale.)

Land Treatments

Noxious Weeds Control/Treatment

Objective:

The purpose of the treatment is to maintain ecosystem integrity within the Chrandal Creek Fire Area (Hughes Creek, Upper West Fork Bitterroot River), where few noxious weed populations exist. Without treatment rush skeletonweed and other new invaders may spread into the severely burned areas. By reducing the amount of weed seed in the area, native species will have an opportunity to take advantage of the post-fire nutrient flush without competition from noxious weeds.

Methods:

As monitoring indicates, treat fire access road corridors that provide routes invasive weed species could use to expand into the severely burned areas with aminopyralid or Escort. Selected sites include spraying along routes including, but not limited to, Trails #106, 184, and 95, and Forest Roads 5688 and 5793 where road surface disturbance and heavy canopy loss has increased the risk of rush skeletonweed, knapweed and other species spreading into the burned area. Trails listed under trail treatments would receive priority. Newly discovered infestations would receive a high priority for treatment under the EDRR strategy. Effects of herbicide treatments at the proposed rates using aminopyralid, clopyralid or picloram are addressed in the Bitterroot National Forest Noxious Weed Environmental Assessment, and all implemented treatments would be consistent with this document. New invaders and previously weed-free areas would be targeted.

The selection of herbicide, application rate, and time of application will be based on specific weeds being treated, access to the locations of areas where weeds may occur and plant phenology at the time of treatment. The application rates and spraying method would depend on the abundance of the target species, condition of non-target vegetation, soil type, depth to the water table, the distance to open water sources, riparian areas, special status plants, and requirements of the herbicide label. Applications would be scheduled and designed to minimize the potential impacts to non-target plants. Monitoring of treated sites would determine treatment efficacy and the need for follow-up treatments. Monitoring would identify whether treatment methods needed to be changed or if a more effective herbicide should be used. Proposed monitoring of treated sites will locate new infestations.

Channel Treatments: N/A

Roads and Trail Treatments:

Stabilize Trail Prism

Objective:

Approximately 2 miles of trail are within high and moderate burn severity and expected to be at risk of deterioration from additional runoff and sediment from post-fire conditions. The threats are from upland slope erosion and flow staying on the trail. The trails drainage system was not designed for the increased flow that may occur from the fire. This may cause soil erosion on the trail surface and fill-slope. Failure of burned water bars may cause stream capture onto trail surface area causing soil erosion, including loss of the trail by rilling and gullyng. Trails destabilized by high and moderate severity burn include: #'s 184 (Chrandal Creek Trail) and 95 (Thunder Mt. Trail). Please reference the trails treatment specification sheet for the fire for more information.

Methods:

The method for reducing this risk is focused on installing water bars or outslope sections, which would be used to direct and divert flow off the trail. Some trail segments require tread stabilization to facilitate the proposed drainage structures. These treatments would reduce the risk of the trail washing out, stream capture and increased sediment to streams.

Protection/Safety Treatments:

Install Trail Warning Signs

Objective:

Inform the public of potential post-fire risks to trail user safety. These include hazard trees, stump holes, eroded trail surfaces and unstable tread.

I. Monitoring Narrative:

(Describe the monitoring needs, what treatments will be monitored, how they will be monitored, and when monitoring will occur. A detailed monitoring plan must be submitted as a separate document to the Regional BAER coordinator.)

Noxious Weed Monitoring

Objective:

Monitor known and high potential infestation sites for noxious weed species in the burned area and determine need and extent of control treatment to be implemented. Monitor weed treatments results to ensure native plant community protection objectives are being met.

Methods :

During 2013, monitor effectiveness of the spraying and establishment of new weed populations. Perform Early Detection Rapid Response to locate new and known minor populations of invasive plant species' infestations during early stages of spread in ecologically sensitive areas in order to maintain the structure and function of the local ecosystem. Accurately map new populations using GPS and GIS. Establish photo plots for potential treatment. Monitor weed treatments results to ensure objectives are being met. Accurately map any new populations using GPS. Establish photo plots for documentation as needed.

EDRR activities will begin at known weed infestations and then radiate out from these epicenters to detect, map and treat new infestations. Crews will be trained to recognize and look for new invaders as well that may have been vectored into the burn area by fire suppression crews. This approach served well for Salmon-Challis NF BAER efforts after the 2007 Clear Fire in lower Panther Creek, when an astute crew member found and reported infestations of salt cedar establishing in the riparian area along Clear Creek.

An Invasive Plant monitoring plan was developed and is available for review. Contact Ed Snook, BNF BAER Coordinator for a copy.

Part VI – Emergency Stabilization Treatments and Source of Funds

Interim #

			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											
Invasive Weed Treatm	acres	102	25	\$2,550	\$0			\$0		\$0	\$2,550
				\$0	\$0			\$0		\$0	\$0
				\$0	\$0			\$0		\$0	\$0
Insert new items above this line!				\$0	\$0			\$0		\$0	\$0
Subtotal Land Treatments				\$2,550	\$0			\$0		\$0	\$2,550
B. Channel Treatments											
				\$0	\$0			\$0		\$0	\$0
				\$0	\$0			\$0		\$0	\$0
				\$0	\$0			\$0		\$0	\$0
Insert new items above this line!				\$0	\$0			\$0		\$0	\$0
Subtotal Channel Treat.				\$0	\$0			\$0		\$0	\$0
C. Road and Trails											
Stabilize Trails	miles	1613	2	\$3,226	\$0			\$0		\$0	\$3,226
				\$0	\$0			\$0		\$0	\$0
				\$0	\$0			\$0		\$0	\$0
Insert new items above this line!				\$0	\$0			\$0		\$0	\$0
Subtotal Road & Trails				\$3,226	\$0			\$0		\$0	\$3,226
D. Protection/Safety											
Hazard Tree - Trail wo	miles	300	2	\$600	\$0			\$0		\$0	\$600
Hazard Signs	each	250	3	\$750	\$0			\$0		\$0	\$750
				\$0	\$0			\$0		\$0	\$0
Insert new items above this line!				\$0	\$0			\$0		\$0	\$0
Subtotal Structures				\$1,350	\$0			\$0		\$0	\$1,350
E. BAER Evaluation	each	2750	1								
				---				\$0		\$0	\$0
Insert new items above this line!				---	\$0			\$0		\$0	\$0
Subtotal Evaluation				---	\$0			\$0		\$0	\$0
F. Monitoring											
Invasive Weed Monit	acres	6	318	\$1,908	\$0			\$0		\$0	\$1,908
Insert new items above this line!				\$0	\$0			\$0		\$0	\$0
Subtotal Monitoring				\$1,908	\$0			\$0		\$0	\$1,908
G. Totals				\$9,034	\$0			\$0		\$0	\$9,034
Previously approved											
Total for this request				\$9,034							

PART VII - APPROVALS

 1. _____
 Forest Supervisor (signature)

 Date

 2. _____
 Regional Forester (signature)

 Date

**Attachement A:
Chrandal Creek Fire MT 2012
BAER Treatment Cost/Risk Assessment**

Part 1. Treatment Cost

Treatment	cost
1. Weed Treatments	\$2,550
2. Stabilize Trail	\$3,226
3. Install Trail Warning/Safety Signs	\$750
4. New Invasive Weed Monitoring	\$1,908
5. Hazard Tree Treatment	\$600
TOTAL COST	\$9,304

Part 2. Probability of Rehabilitation Treatments Successfully Meeting EFR Objectives

Treatment	%
1. Weed Treatments	80
2. Install Trail Waterbars	85
3. Install Trail Warning/Safety Signs	90
4. New Invasive Weed Monitoring	85
5. Hazard Tree Treatment	90

Risk of Resource Value Loss or Damage

Identify the risk (high, medium, low, none or not applicable (NA)) of unacceptable impacts or loss of resources.

No Action- Treatments Not Implemented (check one)

Resource Value	None	Low	Mid	High
Human health and safety			X	
Plant communities at-risk from weed infestation				X
Native Plant community structure, function and composition				X
Aquatic community structure, function and composition			X	

Watershed integrity			X	
Heritage resources		X		
Threatened and Endangered Species (terrestrial)		X		
Threatened and Endangered Species (fish)			X	

Proposed Action - Treatments Successfully Implemented (check one)

Resource Value	None	Low	Mid	High
Human health and safety		X		
Plant communities at-risk from weed infestation			X	
Plant community (PIPO; PIMO) structure, function and composition			X	
Aquatic community structure, function and composition			X	
Watershed integrity			X	
Heritage resources		X		
Threatened and Endangered Species (terrestrial)		X		
Threatened and Endangered Species (fish)			X	