



Forest Service

Okanogan-Wenatchee National Forest

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**File Code:** 2520

**Date:** October 27, 2017

**Route To:**

**Subject:** Burned Area Emergency Response for Diamond Creek Fire

**To:** Regional Forester

This is an initial request for funding of treatments identified in the enclosed Burned Area Emergency Response (BAER) Report (FS 2500-8) for the Diamond Creek Fire. It contains our request for \$244,264 in WFSU-SULT funds. This incident occurred in the central portion of the Okanogan-Wenatchee National Forest, within the Methow Valley Ranger District in Winthrop, Washington. The Diamond Creek Fire burned area across the international border into British Columbia, Canada. The fire is about 128,272 acres in size, with 97,136 of National Forest System lands and 31,132 acres in British Columbia.

Resource specialists developed specific recommendations that will not result in detrimental effects to the human environment. Reports of existing conditions, maps, photos, and various other items related to the BAER assessment are final or near final are being filed at:  
O:\NFS\OkanoganWenatchee\Project\ForestWide\2520BAER\OkaWenFireComplexes2017\DIAMOND.

BAER consists of emergency actions needed to prevent loss of lives and property or to mitigate unacceptable resource degradation. I have reviewed the Report and determined that actions are consistent with current national BAER direction Interim Directive No. (FSM id\_2520-2017-1) and will not have significant impacts.

Two appendixes are attached to the FS 2500-8; Appendix A is the soil burn severity map and Appendix B are the treatment maps.

If you have questions regarding this request, please contact Okanogan Wenatchee BAER Team Leader Molly Hanson at (509) 664-9330 or Teresa Tucker, Resources/Planning Staff Officer at (509) 679-4281.

MICHAEL R. WILLIAMS  
Forest Supervisor

cc: Cara Farr, Molly Hanson, Teresa Tucker, Michael Liu



Date of Report: 10/27/2017

**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**

- |  |   |
|--|---|
| <b>A. Fire Name:</b> Diamond Creek   | <b>B. Fire Number:</b> WA-OWF-000267      |
| <b>C. State:</b> Washington  | <b>D. County:</b> Okanogan                |
| <b>E. Region:</b> PNW (06)   | <b>F. Forest:</b> Okanogan-Wenatchee      |
| <b>G. District:</b> Methow   | <b>H. Fire Incident Job Code:</b> P6K756  |
| <b>I. Date Fire Started:</b> July 23, 2017                                 | <b>J. Date Fire Contained:</b> 10/15/2017 |
| <b>K. Suppression Cost:</b> \$14,751,661                                   |   |
| <b>L. Fire Suppression Damages Repaired with Suppression Funds</b>         |   |
| 1. Fireline waterbarred (miles): 20  |   |
| 2. Fireline seeded (miles): 20   |   |
| 3. Other (identify): N/A 331, Unknown 40, three damaged culverts replaced. |   |

**M. Watershed Number:**

Watershed (HUC10)	Watershed Name	Subwatershed (HUC12)	Subwatershed Name
1702000701	Pasayten River	170200070104	East Fork Pasayten River
		170200070105	Peeve Creek
		170200070106	Central Creek-Pasayten River
1702000713	Headwaters Ashnola River	170200071301	Spanish Creek-Ashnola River
		170200071303	Beaver Creek-Ashnola River
		170200071304	Wall Creek
1702000801	Lost River	170200080101	Diamond Creek
		170200080102	Upper Lost River
		170200080104	Lower Lost River
1702000803	Upper Chewuch River	170200080301	Headwaters Chewuch River
		170200080304	Andrews Creek
		170200080305	Lake Creek
1702000804	Lower Chewuch River	170200080402	Falls Creek
		170200080404	Eightmile Creek

**N. Total Acres Burned: 128,272**

[97,136] NFS Acres [ 31,132] Other (Canada) [0] State [0] Private

**O. Vegetation Types:**

The burned area is characterized by a wide variety of canopied plant communities of mountain larch, whitebark pine, subalpine fir, Englemann spruce, lodgepole pine, white pine, Alaskan yellow cedar, silver fir and mountain hemlock associations. These associations are primarily driven by a variety of regimes of the uplands, wetlands, riparian areas, parklands, and rocky areas. A variety of dominant tree communities exist within the fire. Large non-forested openings range from a whitebark pine/green fescue drier parkland to a moister sedge dominated habitat. Willows and alder dominate riparian areas lacking tree cover.

**P. Dominant Soils:**

Soils are somewhat variable and range from moderately coarse textured to ashy soils with large amounts of internal surface rocks throughout their profile. Surface textures are generally sandy loams, fine sandy loams or loamy sand which are highly erodible.

**Q. Geologic Types:**

There are approximately 15,000 acres of foliated crystalline rocks and 56,650 acres of massive crystalline rocks within the Diamond Creek fire perimeter. They are located predominately in the eastern half of the fire, east of Eightmile Creek and the southwestern edge in the Monument Creek drainage.

Between the terrains of crystalline rocks, within the Lost River Drainage, there are varying amounts of pyroclastic rocks, meta-sedimentary Rocks, meta-sedimentary – marine rocks, and undifferentiated surficial geology.

**R. Miles of Stream Channels by Order or Class:** 74 Perennial, 218 Intermittent, 5 Artificial Path/Ditch

**S. Transportation System**

Trails: 141 miles      Roads: 5.5 miles

**PART III - WATERSHED CONDITION**

**A. Burn Severity (acres):** 22,861 (low)    32,158 (moderate)    22,121 (high)

**B. Water-Repellent Soil (acres):** 54,274 (58% of burned area)

**C. Soil Erosion Hazard Rating (acres):** 3 (low)    7,893 (moderate)    64,289 (high)

**D. Erosion Potential:** 16 tons/acre   Pre Fire: 1 tons/acre)

**E. Sediment Potential:** 938 cubic yards / square mile

**PART IV - HYDROLOGIC DESIGN FACTORS**

**A. Estimated Vegetative Recovery Period, (years):** 5

**B. Design Chance of Success, (percent):** 80

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

**D. Design Storm Duration, (hours):** 24

**E. Design Storm Magnitude, (inches):** 3.3

**F. Design Flow, (cubic feet / second/ square mile):** 70

**G. Estimated Reduction in Infiltration, (percent):** 58

**H. Adjusted Design Flow, (cfs per square mile):** 210

## PART V - SUMMARY OF ANALYSIS

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

The Diamond Creek Fire burned 128,272 acres with a total of 97,136 on NFS lands. 40% of the burned area is at unburned or at low severity, 33% is moderate and 23% high burn severity. A BAER team began assessing the area for post-fire emergencies on September 30 through October 1, 2017. In that time the team has identified the following values at risk to post-fire threats.

#### Human Life & Safety

Threats to life and safety exist in and below the areas of high and moderate burn severity. Risk to travelers from flooding and hazard trees, and rockfall along the trails and roads in the Lost River and Eightmile drainages (FS 5130, FS 5120570) and on the Wilderness Trail system within in the fire perimeter including the Hidden Lakes, Larch Creek, Andrews Creek, Chewuch, Boundary Trails and backcountry camping areas in the floodplain.

At the top of the Lost River watershed, post-fire flows in Stub Creek are expected to increase by ~300% placing the Stub Creek Cabin and trail at risk from flooding. Stub Creek flows into First Hidden Lake and should attenuate the increase flow energy. There will be an increase in erosion and sediment delivered to Hidden Lake. The Ptarmigan Creek drainage is expected to have ~200% increase in flows and increase in erosion and sedimentation

Diamond Creek drains into Lost River and is expected to have increases in post-fire flows by ~270% Monument Creek flows into Lost River downstream of Diamond Creek and is expected to have increases in post-fire flows by ~150%.

This fire burned in the Upper Lost River drainage on NFS lands. There may be an increased probability of elevated flows in the upper watershed which may translate to flooding miles downstream at the county bridge (~10) and Lost River and Mazama communities. Therefore, coordination is necessary to communicate the changed conditions effecting post-fire runoff with the appropriate management agencies (County, State, NWS, and NRCS).

Threats to public health from uncontrolled human waste at a burned toilet at Billy Goat Trailhead, where vault toilet burned in the Eightmile drainage (accessed by FS 5130).

#### Threats to Property

There may be an increased probability of damage from increased runoff and debris from burned areas in the Monument, Diamond, Ptarmigan and Stub Creek drainages. There may be an increased probability of elevated flows in the upper watershed which may possibly translate to post-fire flood related damage miles (~10) downstream at the county bridge on the Lost River Road which provides access to FS 5400 Road.

The segments of Forest Service roads within the burned area are at a high risk from damage from increased runoff and erosion on ~4 miles of FS 5130 road in Eightmile. Drainage improvements and road stabilization work would improve water control and reduce risk of road failure in multiple stream crossing locations. There are multiple crossings that could be plugged with flood debris and trashracks are proposed to mitigate the risk of failure.

Approximately 141 miles of Forest Service wilderness trails are within the fire perimeter. Analysis of soil burn severity shows that, ~41 miles within the burned area are at risk from

increased water, erosion, sedimentation, and/or debris. Impacts include damage to the trail bed and/or loss of access due to severe erosion of the trail surface, or deposition of sediment or debris. Increased risk for temporary loss of access/egress exists on trails within the burned area.

Trail bridges below burned areas may be likely to sustain damage from increased flows, and some bridges burned in the fire. All FS bridges downstream of Eightmile creek are at risk to damage from expected flow increases.

#### Threats to Natural Resources

The risk to natural resources such as soil productivity and hydrologic function is elevated due to the large acreage of high and moderate burn severity conditions. The potential for increased erosion rates is major.

Impaired soil productivity and loss of seed bank may impact plant species locally and result in a loss of species viability. Establishment and expansion of the invasive plant species into the burned area are at risk to become new infestations.

The probability is high that rates of soil erosion and sediment delivery to stream channels will be significantly higher in moderate and high soil burn severity areas. This loss of water control, erosion and sediment delivery may impact critical habitat and populations of Steelhead and Bull trout within close proximity to the burn area.

#### EMERGENCY DETERMINATION

The BAER team began assessing the area for post-fire emergencies on September 29, 2017. In that time the team has identified the following values at risk to post-fire threats. Interim reports may be submitted as additional assessments are completed. The risk matrix below, Exhibit 2 of Interim Directive No.: **2520-2017-1** was used to evaluate the Risk Level for each value identified during the assessment. Only values at risk that had a risk of intermediate or above are discussed.

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

The table below describes the values at risk, probability of damage or loss, magnitude of consequences, risk, rationale for emergency treatment or actions and proposed treatments. Emergency Treatments activities (\*public health and safety, land, channel, road and trail treatments, protection and safety or public engagement actions).

Value at Risk	Description of Threat	Probability Magnitude Risk	Rationale for Emergency Management Actions	Risk Reduction Treatments/Management Actions
<b>Human Life and Safety Public Health</b>	Risk to public and employees to exposure to non-controlled human waste at burned vault toilets at Billy Goat TH.	Very Likely Major Very High	To avoid potential impacts to public health from exposure to human waste.	Treat and cover pit toilet.
<b>Human Life and Safety Road Access</b>	Risk to employees to exposure to hazard trees on road access and within the Billy Goat TH area.	Very Likely Major Very High	To avoid potential risk to health and safety from hazard trees for employees that complete work at Billy Goat TH area.	Create safe access for workers to treat and cover pit toilet.
<b>Human Life and Safety Backcountry Cabin Access</b>	Risk to employees and visitors at Stub cabin from flooding at this administrative site	Likely Major Very High	To increase awareness of increased post-fire flood risk. To avoid impacts to human health and safety from being caught in flood waters and debris.	Do not use cabin for administrative use until flood risk is reduced. Communicate increased risk of flooding for public safety and property protection. Public information/outreach, agency coordination

Value at Risk	Description of Threat	Probability Magnitude Risk	Rationale for Emergency Management Actions	Risk Reduction Treatments/Management Actions
<b>Human Life and Safety Road Access</b>	Damage to FS roads from loss of water control on FS roads: 51300  5130570	Very Likely Major Very High  Likely Major Very High	To mitigate imminent hazards to travel on the road system from flooding risk.	Install gate to control access for public and employee safety. Signage to communicate risks.  Drainage improvement treatments to increase stability of road infrastructure will reduce risks of damage on ~4 miles of road.  Storm patrol needed to maintain road system integrity by using staged or contracted equipment to maintain functional drainage during storm events
<b>Human Life and Safety Road Access</b>	Risk of flood damage to FS bridges posing risk to human life and safety	Possible Major High	To reduce impacts of post-fire flow increases to bridge infrastructure from flood waters and debris that impair safe use of bridge.	Inspect bridges in 2018 (on current schedule, no BAER treatment proposed), reassess conditions and determine if stabilization work is necessary.
<b>Human Life and Safety Lost River Mazama</b>	Possible increased probability of flooding downstream of FS boundary	Possible Major Very High  Possible Major High	To increase awareness of potential post-fire flood risk and to avoid impacts to human health and safety from being caught in flood waters and debris.	Public information/outreach, coordination with appropriate responsible agencies

Value at Risk	Description of Threat	Probability Magnitude Risk	Rationale for Emergency Management Actions	Risk Reduction Treatments/Management Actions
<b>Human Life and Safety Trail Access</b>	Possible increase in risk to employees and visitors from post-fire flooding at trail crossings below high and moderate burn severity areas (Trail # 514 Diamond Jack, Ashnola, Spotted Creek, 500 Lake Creek, Drake Creek Trails)	Possible Major High	To avoid impacts to human health and safety from being caught in flood waters and debris at trail crossings.	Signage to communicate increased risk of flooding for public safety for travel within burned areas in the wilderness. Public information/outreach with trail community, agency coordination
<b>Human Life and Safety Trail Access</b>	Possible increase in risk to hikers along trails along portions of trails in high and moderate SBS: FS Trail # 447, 477 Hidden Lakes, 484 Monument/Shellrock, 500 Lake Creek, 502 Larch Creek/Billy Goat, 504 Andrews Creek, 510 Chewuch, 514 Diamond Jack, 533 Boundary Trail	Possible Major High	To increase awareness of post-fire conditions and risks of traveling and camping in burned areas. To reduce risk to hikers and campers from burned area hazards (stump holes, hazard trees, and rock fall hazards, safe campsite location and water quality impacts) in areas within and below moderate and high burn severity.	Signage and public outreach and coordination with local trails groups to communicate post-fire risks

Value at Risk	Description of Threat	Probability Magnitude Risk	Rationale for Emergency Management Actions	Risk Reduction Treatments/ Management Actions
<b>Human Life and Safety SUP/Private Access</b>	Risk to flooding at: Backcountry outfitter guide camps	Likely Major Very High	To increase awareness of increased post-fire flood risk. To avoid impacts to human health and safety from being caught in flood waters and debris. To notify of increased potential for damage to the corral from increased post-fire flows.	Public information/ outreach, Interagency coordination. Provide notification to SUP holders
<b>Property SUP Access</b>	Corral (FS 51300580 spur) that sits low in the floodplain	Possible Moderate Intermediate		
	Cabin (FS 51300580 spur)	Possible Moderate Intermediate		
<b>Human Life and Safety Road Access/Lost River Bridge (County)</b>	Possible increased probability of flooding downstream of FS boundary to county residents/visitors using Lost River bridge.	Possible Major Intermediate	To avoid impacts to human health and safety from being caught in flood waters and debris.	Public information/outreach, coordination with appropriate responsible agencies

Value at Risk	Description of Threat	Probability Magnitude Risk	Rationale for Emergency Management Actions	Risk Reduction Treatments/Management Actions
<b>Property</b> Road Infrastructure	Damage to FS roads from loss of water control on roads 51300, 5130570, 5130580, 5130545, 5130565,	Major Moderate Very High	To mitigate imminent hazards to the roads system vary from minor sloughing and culvert blockage to partial or total loss of road template.	Install gate to manage access and reduce degradation of road. Drainage improvement treatments to increase stability of road infrastructure will reduce risks of damage on ~4 miles of road.
<b>Property</b> Road Access/ Bridges	Risk of damage to FS bridges	Possible Minor Low		Storm patrol needed to maintain road system integrity by using staged or contracted equipment to maintain functional drainage during storm events

Value at Risk	Description of Threat	Probability Magnitude Risk	Rationale for Emergency Management Actions	Risk Reduction Treatments/Management Actions
Property Trail Infrastructure	Damage to FS trails from loss of water control is expected from risk of increased runoff and erosion from burned areas on Trail # 447, 477 Hidden Lakes, 484 Monument/Shellrock, 500 Lake Creek, 502 Larch Creek/Billy Goat, 504 Andrews Creek, 510 Chewuch, 514 Diamond Jack, 533 Boundary Trail	Possible Major High	Trail segments with high erosional hazard were susceptible to accelerated erosion pre-fire, therefore trails within high and moderate burn severity, are prone to increased post-fire runoff, concentration of flow, and erosion of the trail surface.	Drainage structures will be installed along ~41 miles of trail to control runoff and avoid, minimize and mitigate damage to the trail bed and down-slope hillslopes.

Value at Risk	Description of Threat	Probability Magnitude Risk	Rationale for Emergency Management Actions	Risk Reduction Treatments/Management Actions
<b>Natural Resources</b> Soil Productivity	Approximately 58% of the fire area is burned at high and moderate soil burn severity posing a moderate threat to soil productivity.  The extent and degree of changes is unknown. Loss of productivity due to erosion is considered to be long-term but recovery of hill-slope stability is likely to occur within 3-5 years following the fire.	Likely Major Very High	Hillslope treatments are limited due to wilderness, timing and topographic limitations, therefore treatments to control water on road and trail infrastructure in areas of high and moderate soil burn severity will help to avoid further degradation to soil productivity	Road and trail drainage treatments are proposed to control the increase in runoff and avoid erosion of road and trail bed and sedimentation into streams.  Natural recovery of effective groundcover is the most cost-effective approach to emergency stabilization.

Value at Risk	Description of Threat	Probability Magnitude Risk	Rationale for Emergency Management Actions	Risk Reduction Treatments/Management Actions
<b>Natural Resources</b> Hydrologic Function	Risk of impacts to hydrologic function from increased runoff and erosion.  Approximately 58% of the fire is burned at high and moderate soil burn severity posing a moderate threat to hydrologic function with lasting impacts to hydrologic response,	Very Likely Moderate Very High	Hillslope treatments are limited due to timing and topographic limitations, therefore treatments to control water on road and trail infrastructure in areas of high and moderate soil burn severity will help to avoid further degradation to hydrologic function.	Road and trail drainage treatments are proposed to control the increase in runoff and avoid erosion of road and trail bed and sedimentation into streams.  Natural recovery of effective groundcover is the most cost-effective approach to emergency stabilization.
<b>Natural Resources</b> Riparian Function	Increased post-fire flows expected are not likely to degrade riparian function.  Channel widening or incision is unlikely to occur in the wilderness portion/majority of the fire resulting in low threat to degradation to riparian areas from increased flows, channel erosion and loss of riparian vegetation.	Unlikely Minor Very Low (wilderness)	Hillslope treatments are limited due to timing and topographic limitations, therefore treatments to control water on road and trail infrastructure in areas of high and moderate soil burn severity will help to avoid further degradation to riparian function.	Road and trail drainage treatments are proposed to control the increase in runoff and avoid erosion of road and trail bed and sedimentation into streams.  Natural recovery of effective groundcover is the most cost-effective approach to emergency stabilization.

Value at Risk	Description of Threat	Probability Magnitude Risk	Rationale for Emergency Management Actions	Risk Reduction Treatments/Management Actions
<b>Natural Resources</b> TES	Lost River and Eightmile Creek Risk to Bull Trout and Steelhead populations from the threat of increased post-fire flows, erosion and sedimentation of critical habitat.	Very Likely Moderate Very High	Hillslope treatments are limited due to timing and topographic limitations, therefore treatments to control water on road and trail infrastructure in areas of high and moderate soil burn severity will help to avoid further degradation to riparian function and aquatic habitat.	Road and trail drainage treatments are proposed to control the increase in runoff and avoid erosion of road and trail bed and sedimentation into streams  Natural recovery of effective groundcover is the most cost-effective approach to emergency stabilization, fire disturbance is within historical range of variability
<b>Natural Resources</b> MIS, R6 Sensitive Species Habitat	Threats to the Redband and Westslope cutthroat trout.	Very Likely Minor Low	Hillslope treatments are limited due to timing and topographic limitations, therefore treatments to control water on road and trail infrastructure in areas of high and moderate soil burn severity will help to avoid further degradation to riparian function and aquatic habitat.	Road and trail drainage treatments are proposed to control the increase in runoff and avoid erosion of road and trail bed and sedimentation into streams  Natural recovery of watershed conditions

Value at Risk	Description of Threat	Probability Magnitude Risk	Rationale for Emergency Management Actions	Risk Reduction Treatments/Management Actions
<b>Natural Resources</b> Native or naturalized plant communities.	Risk to forested native or naturalized vegetative communities due to significant tree mortality, where natural regeneration is delayed to the loss of the canopy	Likely Moderate High	There are populations of 2 invasive species (Class B noxious weed) along the travel routes in the burn area. Nearby infestations of invasive plant species are likely to move into the burned area, due to the wind-blown dispersal nature of the seed and the inability of the existing native seed bank to offer natural competition.	Early Detection Rapid Response treatments for invasive species
<b>Natural Resources</b> Native or naturalized plant communities.	Risk to Whitebark pine recovery Federal Candidate and Sensitive	Likely Minor Very Low	Whitebark pine burned within this fire perimeter. The natural seed production of the pine and burn intervals may or may not line up to provide seed production post fire.	Natural recovery of watershed and vegetative conditions, some restoration planting may occur through restoration effort due to scale of burned stands and distance to viable natural seed production.
<b>Natural Resources</b> TES Wildlife	Threats to Twisp wolf pack, lynx and wide ranging carnivore critical habitat from vegetation loss, degraded soil productivity and hydrologic and riparian function.	Likely Minor Very Low	Natural recovery of watershed and vegetative conditions, some restoration planting may occur through restoration effort.	Natural recovery of watershed and vegetative conditions, some restoration planting may occur through restoration efforts

**B. Emergency Treatment Objectives (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: EDRR treatments. Early Detection – Rapid Response within moderate burned areas with existing invasive species adjacent to forest road 5100. Ten acres treated in both the spring and the fall.

Implementation Support (Note: for all treatments) Includes SO Coordinator and cost tracking support as well as needed day-to-day coordination and support from the Methow Valley Ranger District.

Channel Treatments: None.

Roads and Trail Treatments: Install armored rolling dips to minimize damage to the road system by hardening road surface and diverting water off the road at intermittent channels. Restore necessary drainage to protect the investment on principal and secondary roads. Storm patrol needed to maintain road system integrity by using staged or contracted equipment to maintain functional drainage during storm events. Three debris racks in Eight Mile Creek to reduce the likelihood of burned area debris plugging culverts and resulting potential road failure (Note: Eight Mile Road is a ML 4 System Road.) Danger tree clearing at road work sites necessary to create safe working conditions for contractors implementing road treatments. Trail stabilization of the 84 miles of trail within moderate and high burn severity areas, ~41 were identified as main trails near fish populations and locations adjacent to stream channels and crossing. A total of 955 additional drainage structures will be installed to accommodate the projected increase in runoff from adjacent areas.

Protection/Safety: Install gate and warning signs to maintain public safety by restricting access to unsafe areas. Outreach/PIO support for public coordination and dissemination of BAER information and fielding public and partner requests. One open house to include partner and agencies with jurisdiction (NWS, County Emergency Services, NRCS, and others) to share findings and responsibilities. Mitigate resulting human health and safety issues associated with the burning of three toilets at the Billy Goat Trail Head; to include \$1000 for danger tree falling to insure site safety during treatment, and \$700 to pump and sanitize the holding area. Notifications letters to downstream municipalities, and agencies with jurisdiction of changed conditions related to the fire.

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

Land 80% Channel N/A Roads/Trails 85/60% Protection/Safety 90%

#### D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
<b>Land</b>	80	80	70
<b>Channel</b>	NA	NA	NA
<b>Roads/Trails</b>	85	85	80
<b>Protection/Safety</b>	90	80	80

E. Cost of No-Action (Including Loss): \$1,290,000

F. Cost of Selected Alternative (Including Loss): \$1,225,000

#### G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: Molly Hanson and Gregory A. Kuyumjian

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#### Team Members:

Rory Steinke (Soils)	Ken Bigelow (Engineering)	Helen Lau (Botany)
Dave Moore (Soils)	Lori McAlister (Engineering)	AngelaMcPhee (Recreation)
Tim Downing(Soils)	Matt Karrer (Geology)	Julia Gower (GIS)
Kristen Meier (Soils Trainee)	Stephen Slaughter (DNR Geology)	Carly Reed (PIO)
Kerri Lange (Soils Trainee)	Trevor Contreras (DNR Geology)	DanO'Conner (Web PIO)
Kit MacDonald (Soils)	Katherine Rowden (NWS Hydrology)	
Eric Merten (Aquatics Trainee)	Tom Matthews (Hydrology Trainee)	

#### 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:** EDRR treatments. Early Detection – Rapid Response within moderate burned areas with existing invasive species adjacent to forest road 5100. Ten acres treated in both the spring and the fall.

**Channel Treatments:** NA

**Roads and Trail Treatments:** Treatments: Install armored rolling dips to minimize damage to the road system by hardening road surface and diverting water off the road at intermittent channels.

Restore necessary drainage to protect the investment on principal and secondary roads. Storm patrol needed to maintain road system integrity by using staged or contracted equipment to maintain functional drainage during storm events.

Three debris racks in Eight Mile Creek to reduce the likelihood of burned area debris plugging culverts and resulting potential road failure (Note: Eight Mile Road is a ML 4 System Road.)

Danger tree clearing at road work sites necessary to create safe working conditions for contractors implementing road treatments.

Trail stabilization of the 141 miles of trail within moderate and high burn severity areas, ~41 were identified as main trails near fish populations and locations adjacent to stream channels and crossing.

A total of 955 additional drainage structures will be installed to accommodate the projected increase in runoff from adjacent areas including some limited “danger tree” falling (within wilderness guidelines) to create a safer working corridor for trail treatment implementation.

**Protection/Safety Treatments:** Install gate and warning signs to maintain public safety by restricting access to unsafe areas.

Outreach/PIO support for public coordination and dissemination of BAER information and fielding public and partner requests along with interagency coordination. One open house to include partner and agencies with jurisdiction (NWS, County Emergency Services, NRCS, and others) to share findings and responsibilities to include website support.

Mitigate resulting human health and safety issues associated with the burning of three toilets at the Billy Goat Trail Head; to include \$1000 for danger tree falling to insure site safety during treatment, and \$700 to pump, sanitize and cap the holding area.

Notifications letters to downstream municipalities, and appropriate agencies with jurisdiction of changed conditions related to the fire.

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.)

Effectiveness monitoring is proposed for: protection and safety treatments, road drainage, and trail stabilization treatments.

Type	Days	Grade	Cost
Trail treatments	6	GS-7 Trail tech	\$1,800
Road Treatments	6	GS-11 Engineer	\$2,550

**Part VI – Emergency Stabilization Treatments and Source of Funds****Interim #**

		NFS Lands					Other Lands			
		Unit	# of		Other	# of	Fed	# of	Non Fed	All
Line Items	Units	Cost	Units	BAER \$	\$	units	\$	Units	\$	Total
<b>A. Land Treatments</b>										
Implementation Suppo	Task	3600	1	\$3,600	\$0		\$0		\$0	\$3,600
EDRR	acres	130	10	\$1,300	\$0		\$0		\$0	\$1,300
<i>Insert new items above this line!</i>					\$0	\$0	\$0		\$0	\$0
<b>Subtotal Land Treatments</b>					<b>\$4,900</b>	<b>\$0</b>	<b>\$0</b>		<b>\$0</b>	<b>\$4,900</b>
<b>B. Channel Treatments</b>										
<i>Insert new items above this line!</i>					\$0	\$0	\$0		\$0	\$0
<b>Subtotal Channel Treat.</b>					<b>\$0</b>	<b>\$0</b>	<b>\$0</b>		<b>\$0</b>	<b>\$0</b>
<b>C. Road and Trails</b>										
Gate (8-Mile Road)	EA	8,800	1	\$8,800	\$0		\$0		\$0	\$8,800
Armored Rolling Dips	EA	2,640	12	<b>\$31,680</b>	\$0		\$0		\$0	\$66,000
Storm Patrol Response	Miles	3,300	3	\$9,900	\$0		\$0		\$0	\$9,900
Increase Rd Drainage	Mile	2,750	3.5	\$9,625	\$0		\$0		\$0	\$9,625
Debris (trash) rack	EA	27,500	0	<b>\$0</b>	\$0		\$0		\$0	\$82,500
Danger Tree Mitigation	mile	5500	0.3	<b>\$1,000</b>	\$0		\$0		\$0	\$1,650
Trail Stabilization	Mile	1,500	40.5	\$60,750	\$0		\$0		\$0	\$60,750
<i>Insert new items above this line!</i>					\$0	\$0	\$0		\$0	\$0
<b>Subtotal Road &amp; Trails</b>					<b>\$121,755</b>	<b>\$0</b>	<b>\$0</b>		<b>\$0</b>	<b>\$239,225</b>
<b>D. Protection/Safety</b>										
Signs	EA	550	10	\$5,500	\$0		\$0		\$0	\$5,500
Outreach/PIO	Day	350	10	\$3,500	\$0		\$0		\$0	\$3,500
Open House	Event	1500	1	\$1,500	\$0		\$0		\$0	\$1,500
Mitigate Burned Toilets	Site	1700	1	\$1,700	\$0		\$0		\$0	\$1,700
Closure Patrols	Day	500		\$0	\$0	10	\$5,000		\$0	\$5,000
Notification Letters	Letter	200	10	\$2,000	\$0		\$0		\$0	\$2,000
<i>Insert new items above this line!</i>					\$0	\$0	\$0		\$0	\$0
<b>Subtotal Structures</b>					<b>\$14,200</b>	<b>\$0</b>	<b>\$5,000</b>		<b>\$0</b>	<b>\$19,200</b>
<b>E. BAER Evaluation</b>										
Assessment Team	Report	40,000		—		1	#####		\$0	\$40,000
<i>Insert new items above this line!</i>					—	\$0	\$0		\$0	\$0
<b>Subtotal Evaluation</b>					—	<b>\$0</b>	#####		<b>\$0</b>	<b>\$40,000</b>
<b>F. Monitoring</b>										
Trail Treatment	Day	300	6	\$1,800	\$0		\$0		\$0	\$1,800
Road Treatment	Day	425	6	\$2,550	\$0		\$0		\$0	\$2,550
<i>Insert new items above this line!</i>					\$0	\$0	\$0		\$0	\$0
<b>Subtotal Monitoring</b>					<b>\$2,550</b>	<b>\$0</b>	<b>\$0</b>		<b>\$0</b>	<b>\$2,550</b>
<b>G. Totals</b>					<b>\$143,405</b>	<b>\$0</b>	#####		<b>\$0</b>	<b>\$305,875</b>
Previously approved										
Total for this request					<b>\$143,405</b>					

PART VII - APPROVALS

for

1. \_\_\_\_\_  
Forest Supervisor (signature)

2. \_\_\_\_\_

Regional Forester (signature)

10/27/2017

Date

\_\_\_\_\_

Date