

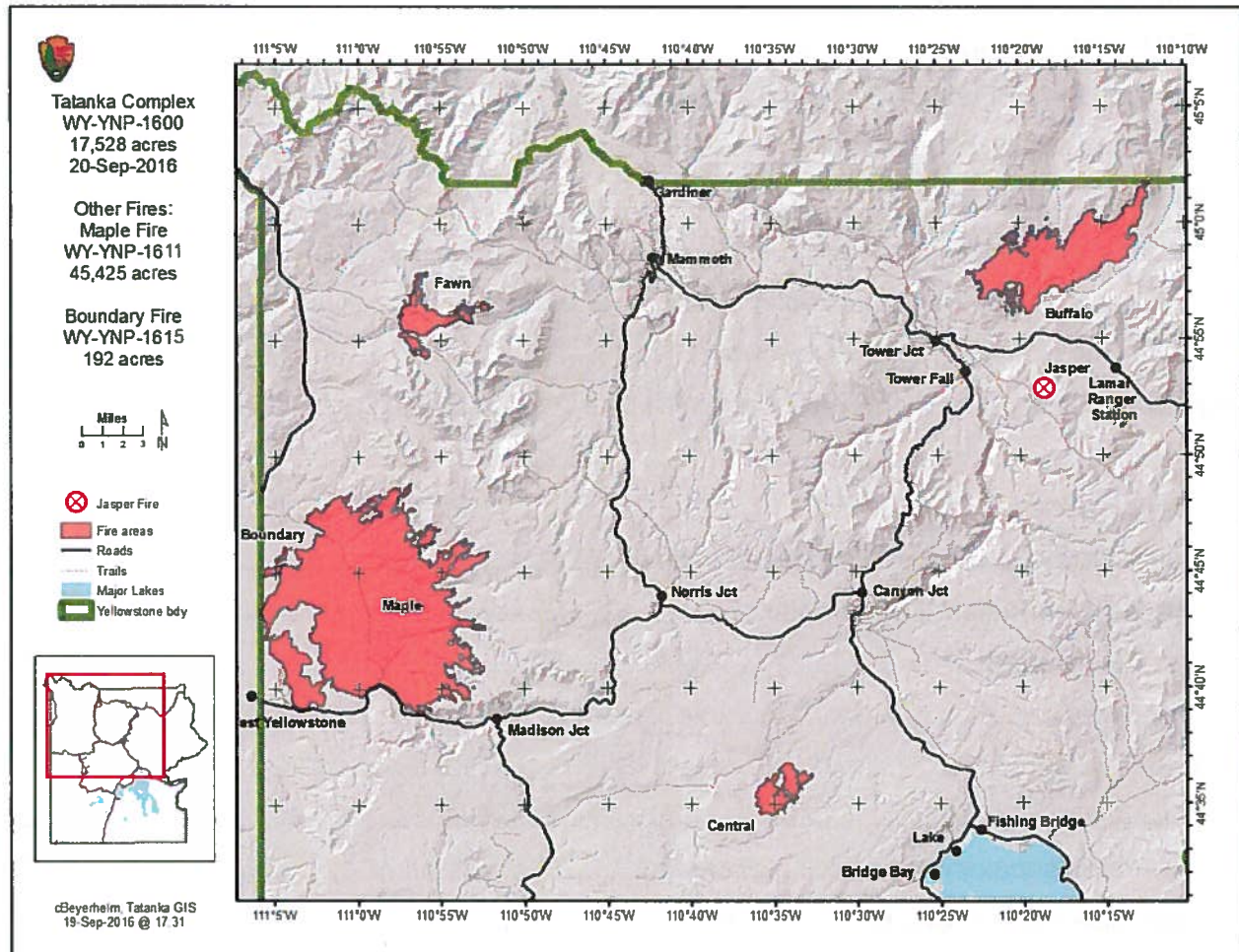
Yellowstone National Park

Tatanka Complex and Maple Fire

BURNED AREA EMERGENCY REHABILITATION PLAN

And

BURNED AREA REHABILITATION PLAN



Submitted By:

Dan Wenk
Dan Wenk, Superintendent

Table of Contents

Purpose and Need	3
Fire Location and Background Information.....	3
Overview.....	3
Tatanka Complex and Maple Fire BAER and BAR Team	4
Summary of Costs	5
Watershed Assessment.....	6
Site Descriptions	6
BARC Assessment.....	8
Implications for Post-fire Watershed Behavior	12
Values at Risk (VAR) Assessment	12
Watershed Modeling	13
Debris Flow Modeling.....	17
Assessments and Recommendations for Values at Risk.....	19
Hydrology and Watershed References.....	20
Hazard Tree Mitigation along West Entrance Road	20
Trails.....	21
Invasive Species.....	21
Burned Area Emergency Response Funding	21
Burned Area Rehabilitation Funding.....	22
Cultural Resources	23
Objectives	23
Issues	23
Observations.....	23
Cultural Resources Impacted	24
Culvert Clearing On West Entrance Road.....	25
Narrative and Cost for BAER and BAR Activities	25
Maps.....	27

Purpose and Need

This document is the post-fire Burned Area Emergency Response (BAER) plan for the Tataonka and Maple Fires in Yellowstone National Park. The purpose of BAER plans are to determine the need and prescribe treatments to minimize threats to life or property or to stabilize and prevent further unacceptable degradation to natural and cultural resources resulting from the effects of a fire. Natural recovery is preferable.

Post-fire priorities for the Tataonka and Maple Fires BAER plan are public safety, protection of property and values at risk, and the long-term health of critical ecosystems.

Fire Location and Background Information

Fire Name	Tatanka Complex (Buffalo, Central and Fawn Fires) and Maple Fire
Fire Number	KL88 (Tatanka Complex); KLE0 (Maple Fire)
Agency Unit	Yellowstone National Park
Region	Intermountain Region
State	WY, MT
County(s)	Park, WY; Park, MT
Ignition Date/Cause	Buffalo - 8/14/2016 lightning Central - 8/26/2016 lightning Fawn - 8/5/2016 lightning Maple - 8/8/2016 lightning
Date Contained	No containment as of 9/26/16
Jurisdiction	National Park Service
Acres	Buffalo - 12,693 Central - 2,129 Fawn - 2,706 Maple - 45,425 Size as of 9/26/2016

Overview

The Tatanka Complex consists of the Buffalo fire, Central fire, and Fawn fires. All were started by lightning and due to their remote locations are being managed with point protection and monitor strategies. The Maple Fire was originally part of the Tatanka Complex, until a Type 2 IMT took over management of the fire on 8/25/2016. It is also being managed with point protection and monitor strategies and was started by lightning.

The Buffalo fire is five miles northeast of Tower Junction and is burning in mixed conifer, grass and sage meadows, and portions of the 1988 Hellroaring fire. Approximately 0.5 miles of MIST

handline has been constructed. These suppression activities have been or will be rehabilitated by suppression rehabilitation funds during or immediately post fire by incident personnel.

The Central fire is approximately 12 miles northwest of Fishing Bridge and is burning in mature lodgepole pine west of the 2013 Druid Complex and 2015 Spruce fire, and south of Hayden Valley. No suppression activities have been implemented on the Central fire and no rehabilitation funding request is planned.

The Fawn fire is approximately 10 miles southwest of Mammoth, and is burning in mature mixed conifer and within portions of the 1988 Fan fire. Suppression activity damage was limited to a few small sections of MIST handline, which will be rehabilitated by suppression funds during or immediately post fire by incident personnel.

The Maple Fire is approximately five miles northwest of Madison Junction, and one mile northeast of West Yellowstone, MT and the West Entrance to the park. Vegetation in the burned area consists of immature and mature lodgepole pine, sage and grass. Fire behavior on the Maple fire created a mosaic of high, moderate and low fire impacts to the landscape. Suppression activity damage includes approximately two miles of handline construction along the western perimeter, and a 70 acre mechanized fuels reduction project along the park's west boundary to protect the community of West Yellowstone and park administrative areas. These activities have been rehabilitated by suppression funds during or immediately post fire.

Tatanka Complex and Maple Fire BAER and BAR Team

Team Lead	Becky Smith	NPS, Yellowstone National Park
Vegetation Specialist	Roy Renkin	NPS, Yellowstone National Park
Trails	Chris Glenn	NPS, Yellowstone National Park
Archaeologist	Beth Horton	NPS, Yellowstone National Park
BAER Hydrologist	Scott Sheppard	University of Arizona
Resource Advisor	Eric Reinertson	NPS, Yellowstone National Park
AFMO/Fuels Specialist	Keith Krause	NPS, Mesa Verde National Park

Summary of Costs

LINE ITEM NUMBER	TITLE	UNIT	UNIT COST	NUMBER OF UNITS	WORK AGENT	COSTS
1	Roadside Hazard Trees - BAER	miles	\$ 4,286	2.1	NPS	\$ 9,000
2	Repair Damaged Trails - BAR	miles	\$ 2,264	46	NPS	\$ 104,136
3	Invasive Plants - BAER and BAR	acres	\$ 54,000	1,200	NPS	\$ 54,000
4	Cultural Resource Assessment and Stabilization - BAER	sites	\$ 1,819	32	NPS	\$ 58,206
5	Safety Signs - BAER	signs	\$ 651	20	NPS	\$ 13,019
6	Culvert Cleaning - BAER	miles	\$ 3,892	2.1	NPS	\$ 1,911
7	BAER/BAR Plan Development - BAER	plans	\$ 8,400	1	NPS	\$ 8,400
						\$ 248,672

Watershed Assessment

Submitted by: Scott Sheppard, BAER Hydrologist, University of Arizona



Figure 1: Burned area on the Buffalo fire.

Site Descriptions

This report summarizes the results from the hydrologic assessment of the Maple and Buffalo fires in Yellowstone National Park, as part of the Burned Area Emergency Response (BAER) Program. These fires burned within lands managed by the National Park Service. Park staff deemed it unnecessary for the Central and Fawn Fires to be assessed for hydrologic changes. Yellowstone receives average annual rainfall of 15 inches and 71 inches of snowfall (Figure 2).

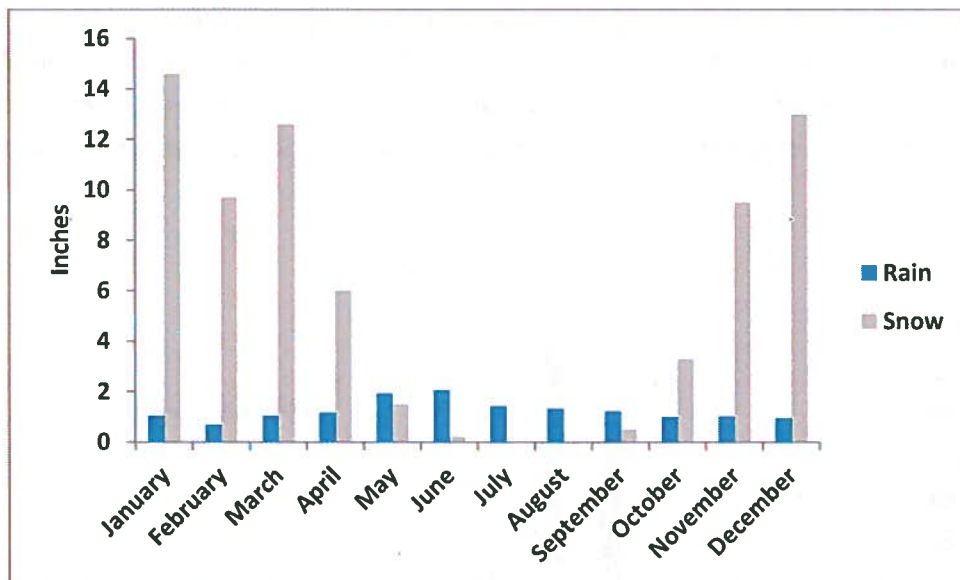


Figure 2. Average rain and snowfall data (1948-2006) for Yellowstone National Park.

Data from a USGS stream gage near the Maple Fire on the Madison River near West Yellowstone, Montana indicates that peak flows tend to take place between May and June, when snowmelt and spring rains can occur simultaneously (Figure 3).

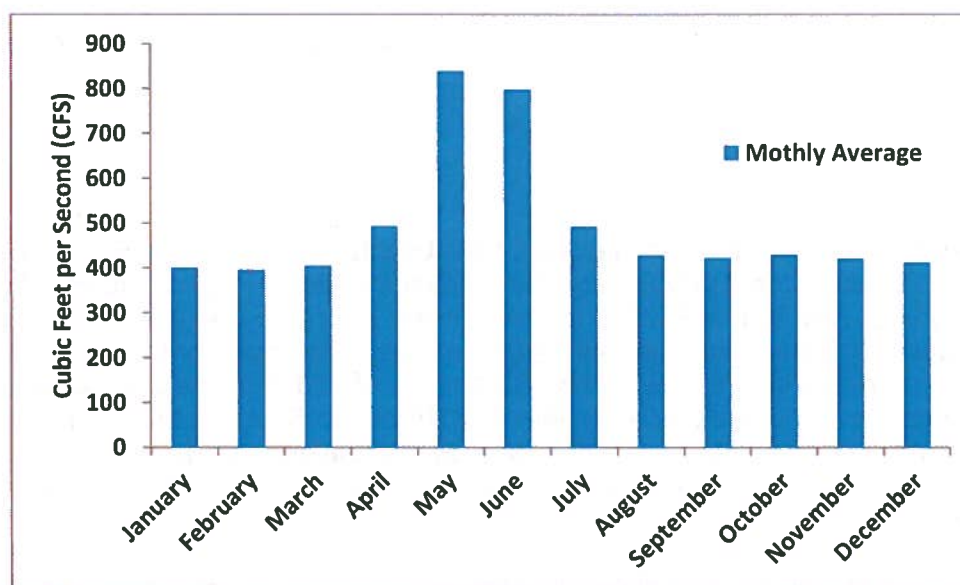


Figure 3. Average monthly streamflow recorded (1913-2016) on the Madison River near West Yellowstone, Montana.¹

¹ USGS stream gage #06037500. <http://waterdata.usgs.gov>

The Lamar River close to the Buffalo Fire more directly drains high elevation areas leading to a much higher rate of discharge related to spring snow melt and possibly the occurrence of rain falling on snow (Figure 4). Although this gauging station includes more drainage area than the Buffalo Fire contributes to, it is a reasonable representation of flow characteristics in the region.

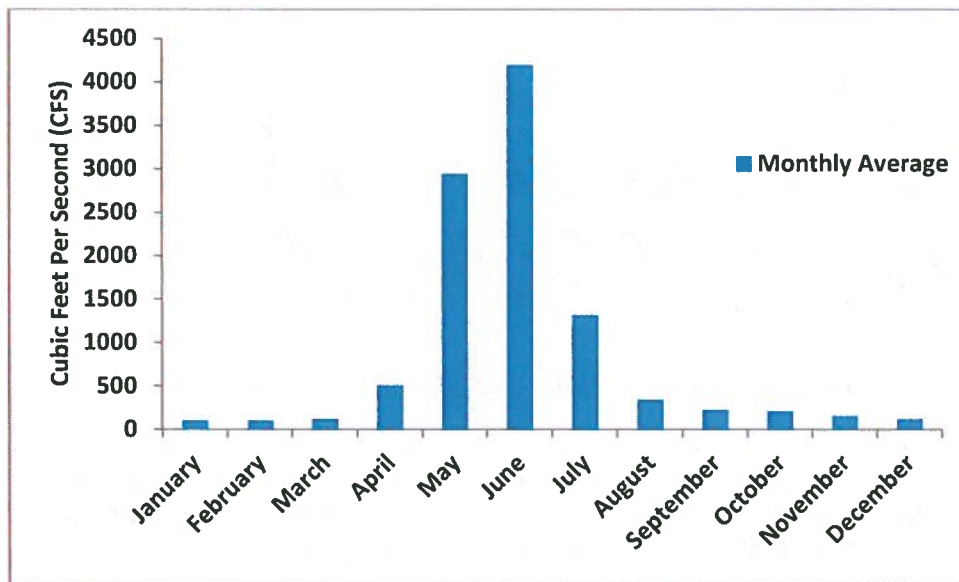


Figure 4. Average monthly streamflow recorded (1923-2016) on the Lamar River near Tower Junction, Wyoming.²

BARC Assessment

Watershed assessments and recommendations for treatments started with acquiring a Burned Area Reflectance Classification (BARC) map. The map for the Maple Fire was derived from a pre-fire image collected on August 4, 2016 by the Landsat 8 satellite and post-fire image collected on August 30, 2016, using the EO-1 satellite. The BARC map for the Buffalo Fire was derived from a pre-fire image collected on September 19, 2015 by the Landsat 8 satellite and post-fire image was collected on September 6, 2016 by the Spot 7 satellite. The USGS Earth Resources Observation and Science Center used these images to produce a new image, classifying the burned area into four categories: unburned, low severity, moderate severity, and high severity.

There was a substantial amount of smoke and cloud cover over both burned areas that limited the satellite based burn severity mapping to the fires' growth extent at the time of the last clear image taken. The western 30 percent of the Maple Fire is anticipated to have reduced burn severity estimations due to smoke. To account for the Buffalo Fire's growth that was not captured by satellite imagery, a helicopter reconnaissance flight was taken on September 21, 2016. Georeferenced photos taken during this flight were used to estimate burn severity in areas

² USGS stream gauge # 06188000. <http://waterdata.usgs.gov>

burned during the days following September 6, 2106. Due to poor satellite coverage, calculated acres of the burn severity categories presented in Table 1 should be viewed as estimates.

The BARC map for the Maple Fire was produced using the differential Normalized Burn Ratio (dNBR) metric. The Spot 7 satellite does not sense a spectral band necessary to produce dNBR results, the differential Normalized Difference Vegetation Index (dNDVI) was used as an alternate metric to produce a BARC map for the Buffalo Fire.

Time, weather, and limited specialist availability did not permit the ground surveying of burned areas necessary to quantify soil burn severity for the Maple or Buffalo Fires.

Table 1. Burn Severity Acres for Maple and Buffalo Fires.

Fire	Burn Severity	Acres	Percent
Maple	Unburned	21292	36%
	Low	8215	44%
	Moderate	12670	18%
	High	3154	3%
	Total	45,332	100%
Buffalo	Unburned	4540	47%
	Low	5541	18%
	Moderate	2223	28%
	High	363	7%
	Total	12,668	100%

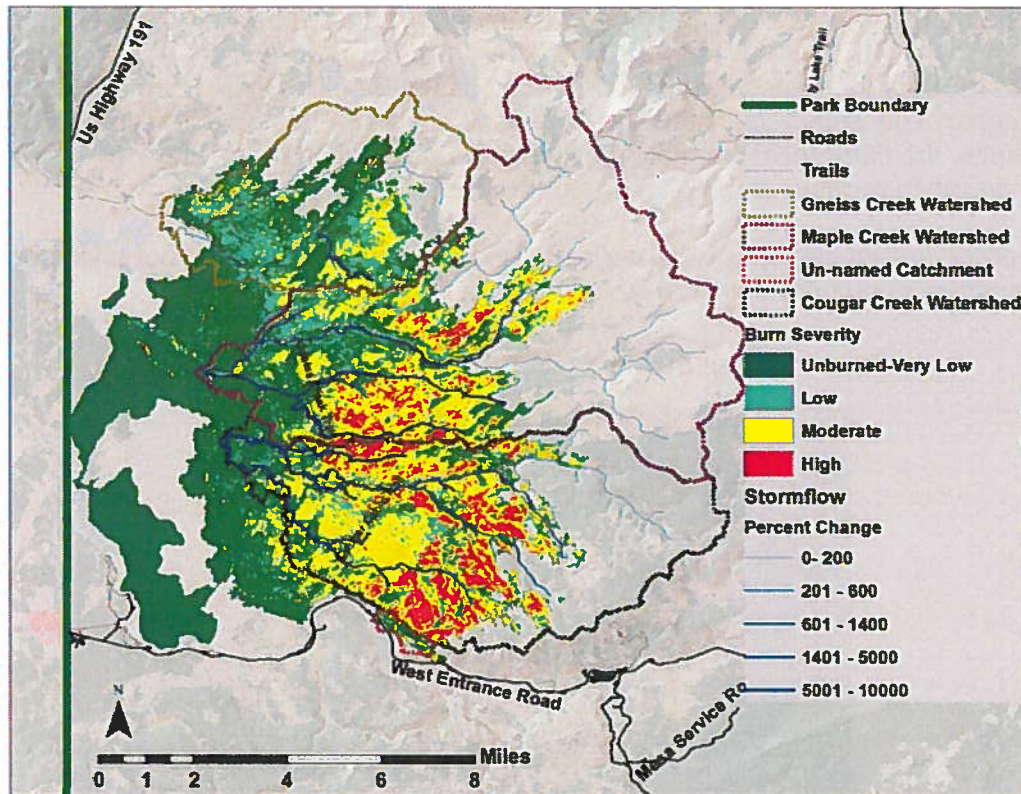


Figure 5. Burn severity for the Maple Fire.

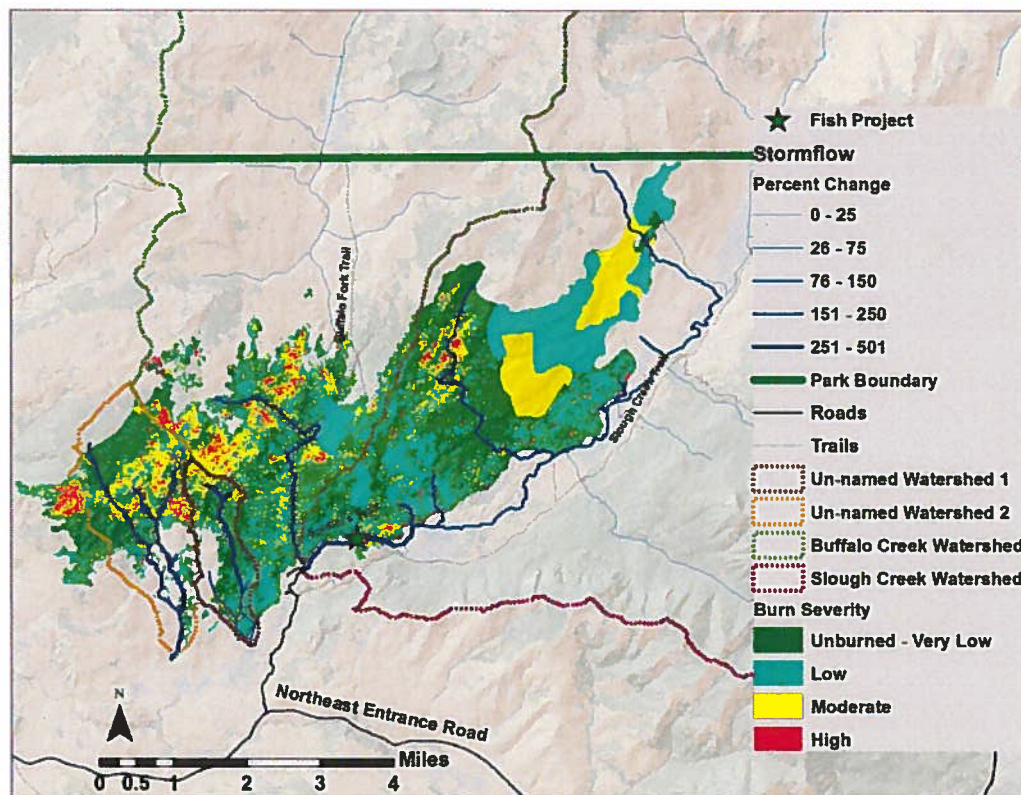


Figure 6. Burn severity map for the Buffalo Fire.

Several precipitation events have occurred over the fire areas prior to the time of this assessment. During very limited ground observation of the Maple Fire burned area along the West Entrance Road, unconsumed twigs and re-sprouting grasses were observed (Figure 7). A reconnaissance flight showed that logs remain unconsumed by fire within the Buffalo Fire burned area (Figure 8).



Figure 7. Organic matter and grasses resprouting.



Figure 8. Unconsumed woody material as seen from a helicopter.

Implications for Post-fire Watershed Behavior

The primary watershed responses of the Maple and Buffalo Fires are expected to include: 1) an initial flush of ash, 2) minor rill and gully erosion in drainages and on steep slopes within the burned area, 3) increased peak flows and sediment transport. These responses are expected to be greatest in initial storm events, and will lessen as vegetation is reestablished, providing ground cover, increasing surface roughness, and stabilizing and improving the infiltration capacity of the soils.

Values at Risk (VAR) Assessment

A very brief assessment of known VARs was conducted September 21, 2016. Assessment of the Buffalo Fire was conducted by helicopter reconnaissance with both the Hydrologist and the Fish Biologist observing post-fire watershed conditions for fish habitat. The concern for fish habitat is related to a reintroduction of a native species that will take place several years in the future, due to the low severity and mosaicked nature of the fire it was determined by the Fish Biologist that no BAER action was necessary.

An assessment of burned hillslopes, a small burned unnamed catchment, and culverts that drain these areas at the West Entrance road was conducted by the Hydrologist. An example of one of these burned hill slopes is shown in Figure 9. With the amount of singed pine needles on the ground already, and the needles that have yet to be cast, a fair amount of natural erosion control is already in place. Several of these culverts at the road need attention (Figures 10 and 11), floatable debris is present in the immediate inlet area, and enough sediment is currently present to prohibit some of these culverts from functioning properly.



Figure 9. An example of a burned hillslope along the West Entrance Road.



Figure 10. Floatable woody debris adjacent to a culvert.



Figure 11. A plugged culvert along the West Entrance Road.

Watershed Modeling

A design storm accumulation depth was acquired from Weather Bureau Technical Paper 40 (Hershfield, 1961). A five year, one hour design storm specification was utilized for this analysis. This event has a total precipitation accumulation of 0.8 inches.

Post-fire watershed modeling utilized geospatial datasets, field observations, scientific literature, and professional judgement of site-specific conditions. The Automated Geospatial Watershed Assessment tool (AGWA) was used as a part of this process. This tool uses a Digital Elevation

Model (DEM) to break a watershed into modeling elements which are then intersected with soil and land cover geospatial layers to derive requisite model input parameters (Goodrich et al, 2005). Once parameters are assigned, the KINEROS2 model was used to estimate rainfall runoff response in both an unburned and a burned condition to get a sense of the anticipated change. Detailed information about KINEROS2 can be found on the KINEROS2 webpage.³ AGWA is designed to provide qualitative estimates of runoff and erosion relative to landscape change. It cannot provide reliable quantitative estimates of runoff and erosion without careful calibration. It is also subject to the assumptions and limitations of its component hydrologic models (Goodrich et al, 2005). Detailed information about AGWA can be found on the AGWA webpage.⁴

The AGWA tool was used to model post-fire watershed response on all major watersheds impacted by the Maple (Figure 12) and Buffalo Fire (Figure 14). Using a five year, one hour storm event that produced 0.8" of temporally distributed rainfall across the entire burned area, model results predict a mild to moderate percent increase in peak flow and sediment yield for watersheds impacted by the fire. Modeled results for specific stream reaches and a catchment that drains to the West Entrance Road (Figure 13) are shown in Table 2.

Table 2. Watershed modeling results for specific areas of concern. The percent increase in sediment delivery to Slough Creek is due to very small sediment production in the unburned condition.

Fire	Watershed	Pre-fire flow (cfs)	Post-fire flow (cfs)	Flow increase (%)	Sediment increase (%)
Maple	Unnamed Catchment	45	73	60	96
Buffalo	Buffalo Creek	30	91	200	180
	Slough Creek	5	30	329	805

³ <http://www.tucson.ars.ag.gov/kineros/>

⁴ <http://www.tucson.ars.ag.gov/agwa/>

Watershed Modeling Results Maps

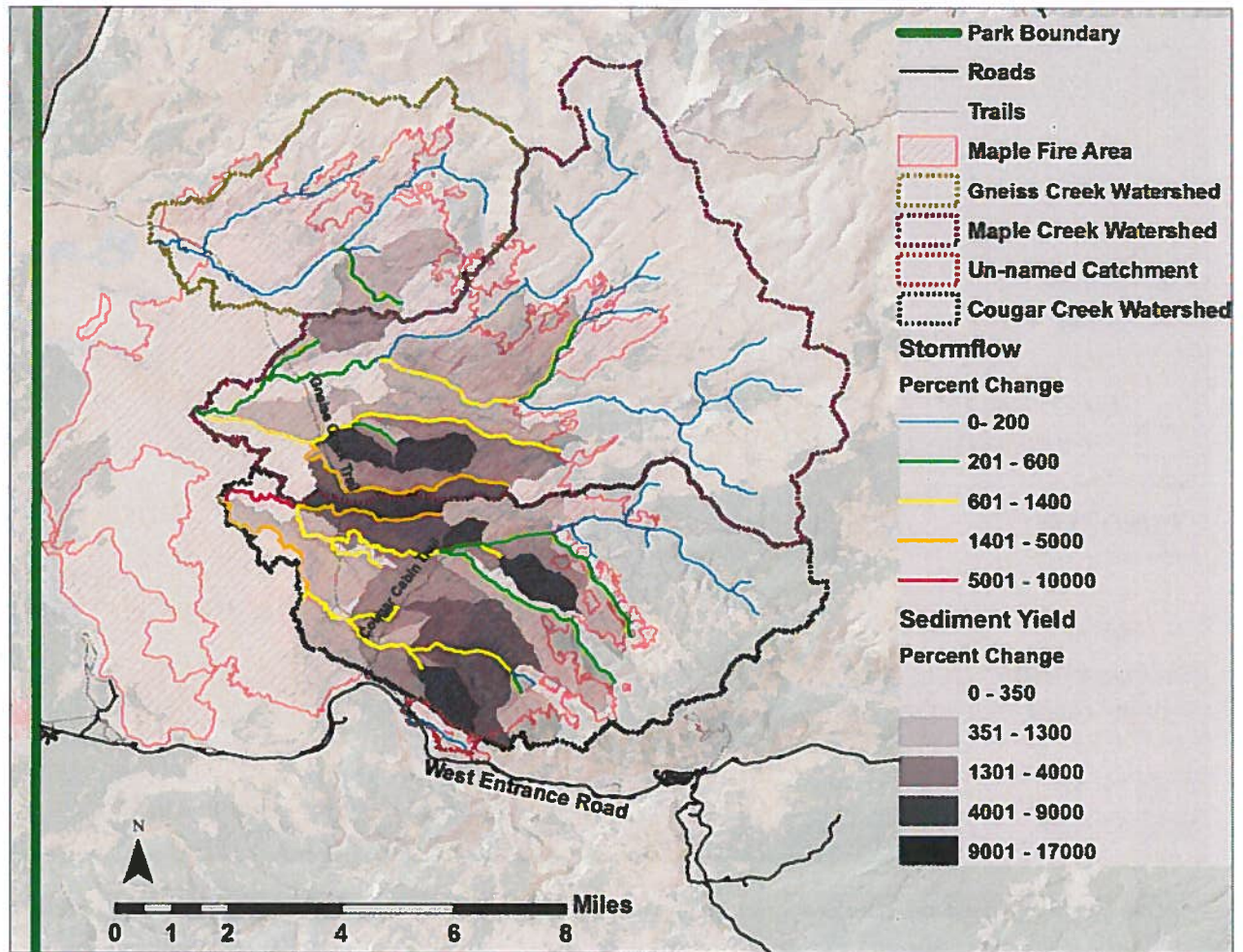


Figure 12. Mapped estimates for changes to watershed behavior for the Maple Fire area.

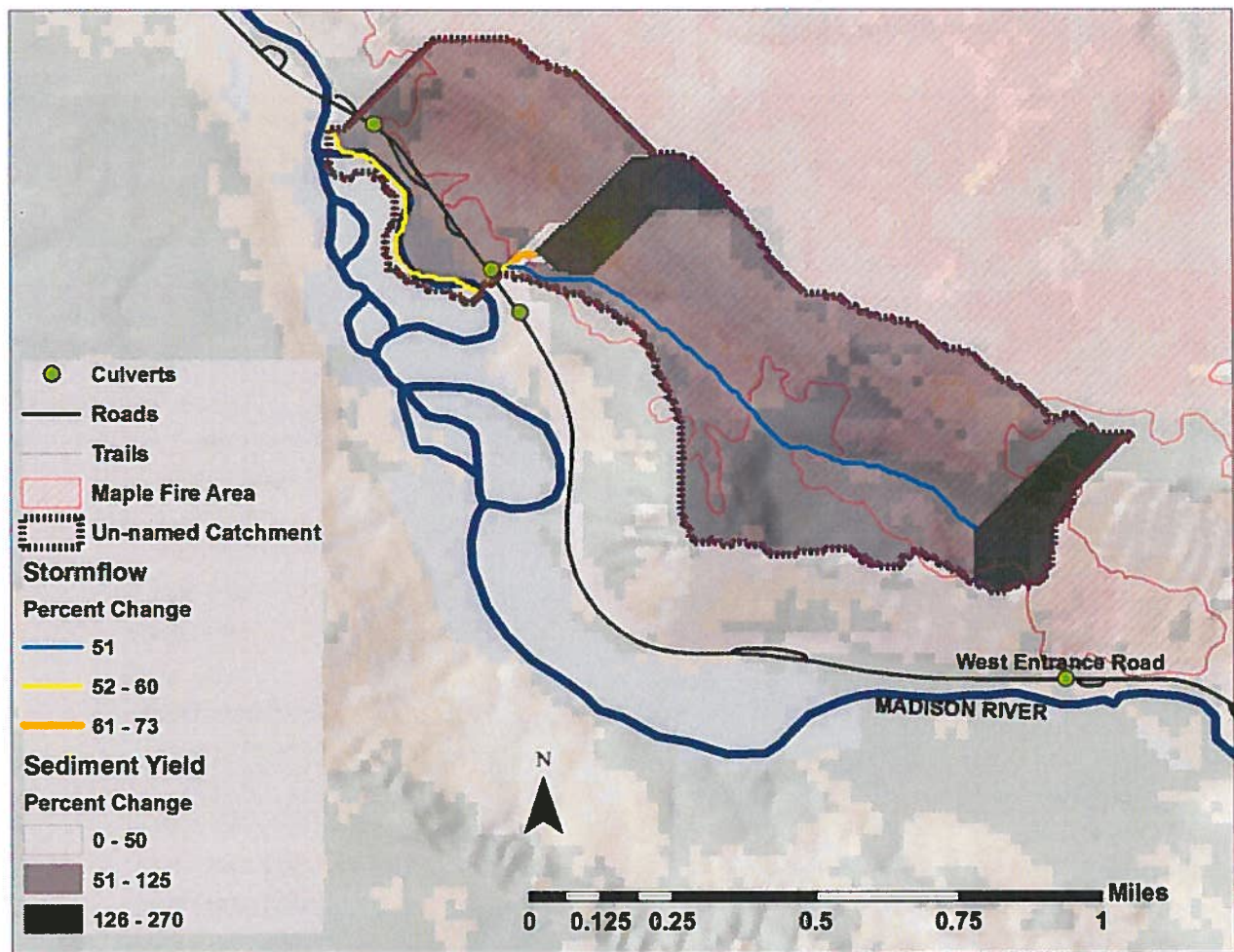


Figure 13. Mapped estimates for changes to watershed behavior in the catchment draining to the West Entrance Road.

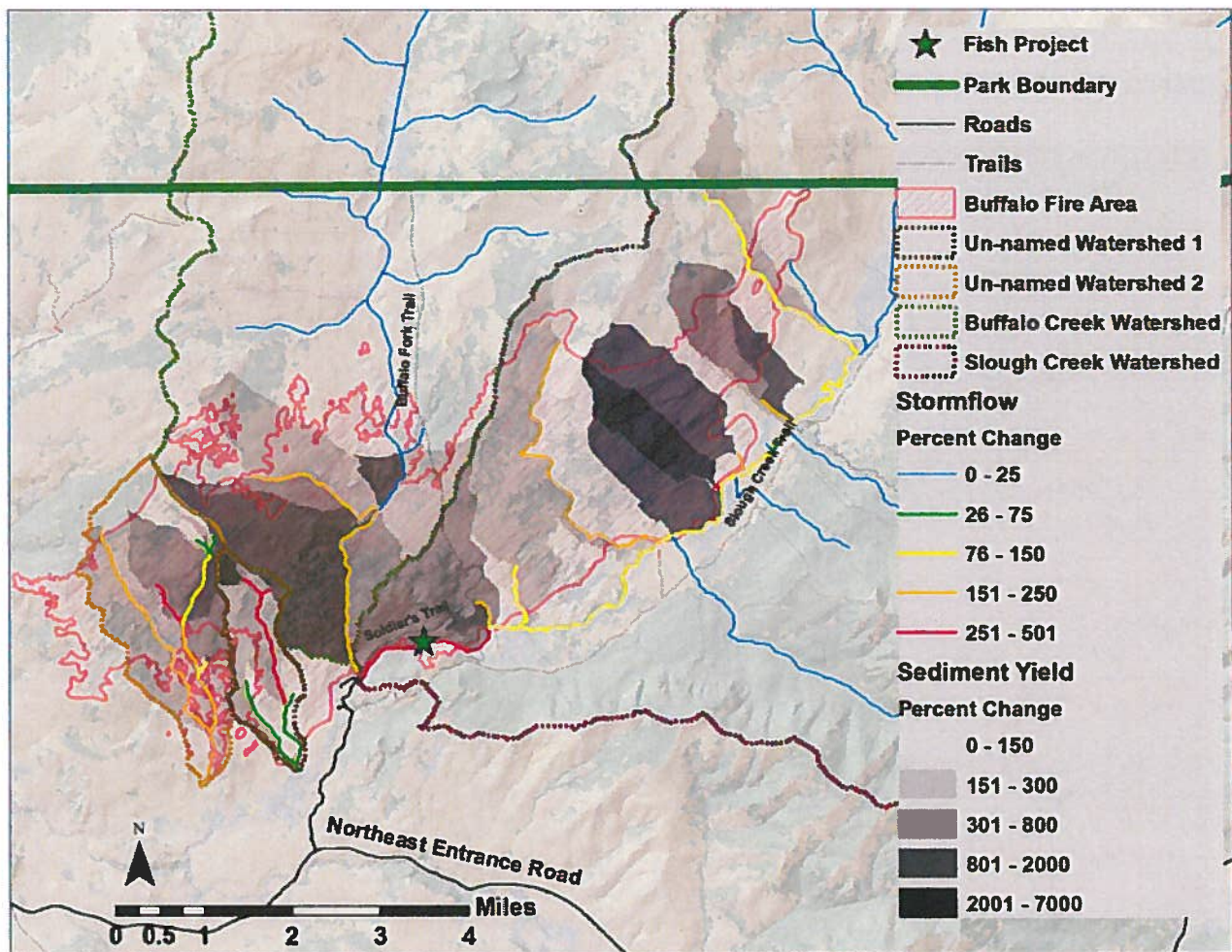


Figure 14. Mapped estimates for changes to watershed behavior for the Buffalo Fire area.

Debris Flow Modeling

Debris flow modeling was conducted by USGS debris flow specialist Dr. Dennis Staley.⁵ Debris flow modeling for the Maple Fire area shows the majority of the burned area is at low risk of mass movement. There are however two areas within the Cougar Creek Watershed that have a moderate degree of risk for debris flow (Figure 15).

Debris flow modeling for the Buffalo Fire area showed the majority of the burned area poses a low risk for debris flow, with a few drainages flowing into Slough Creek showing a moderate risk of debris flow (Figure 16).

The debris flow model used a 15 minute peak rainfall intensity of 0.6", which means the predicted level of risk is based on a rainstorm that produces more than half an inch of rain in a 15 minutes period within the duration of the storm.

⁵ http://landslides.usgs.gov/hazards/postfire_debrisflow/

Debris Flow Modeling Results Maps

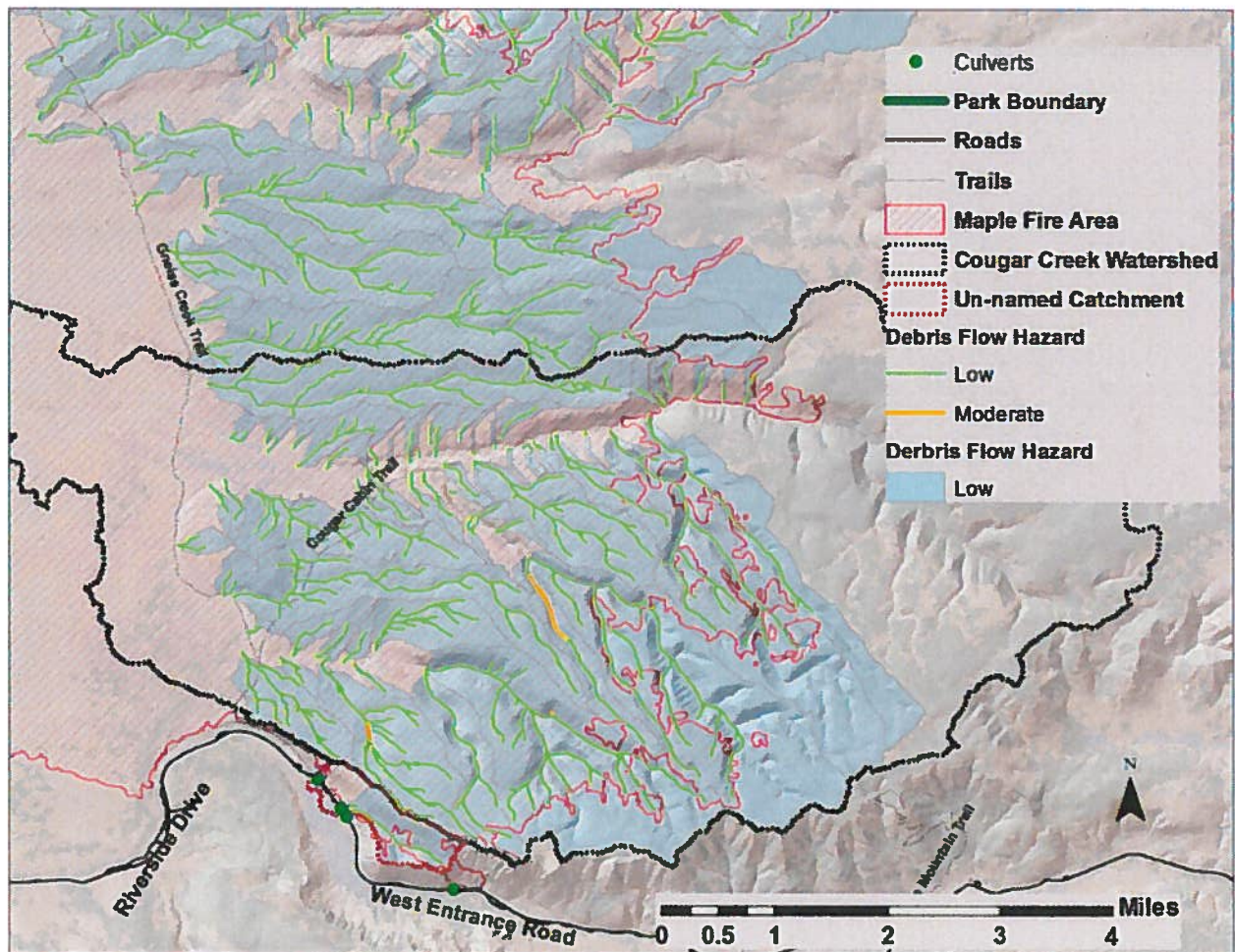


Figure 15. Map of post-fire debris flow hazard for the Cougar Creek area.

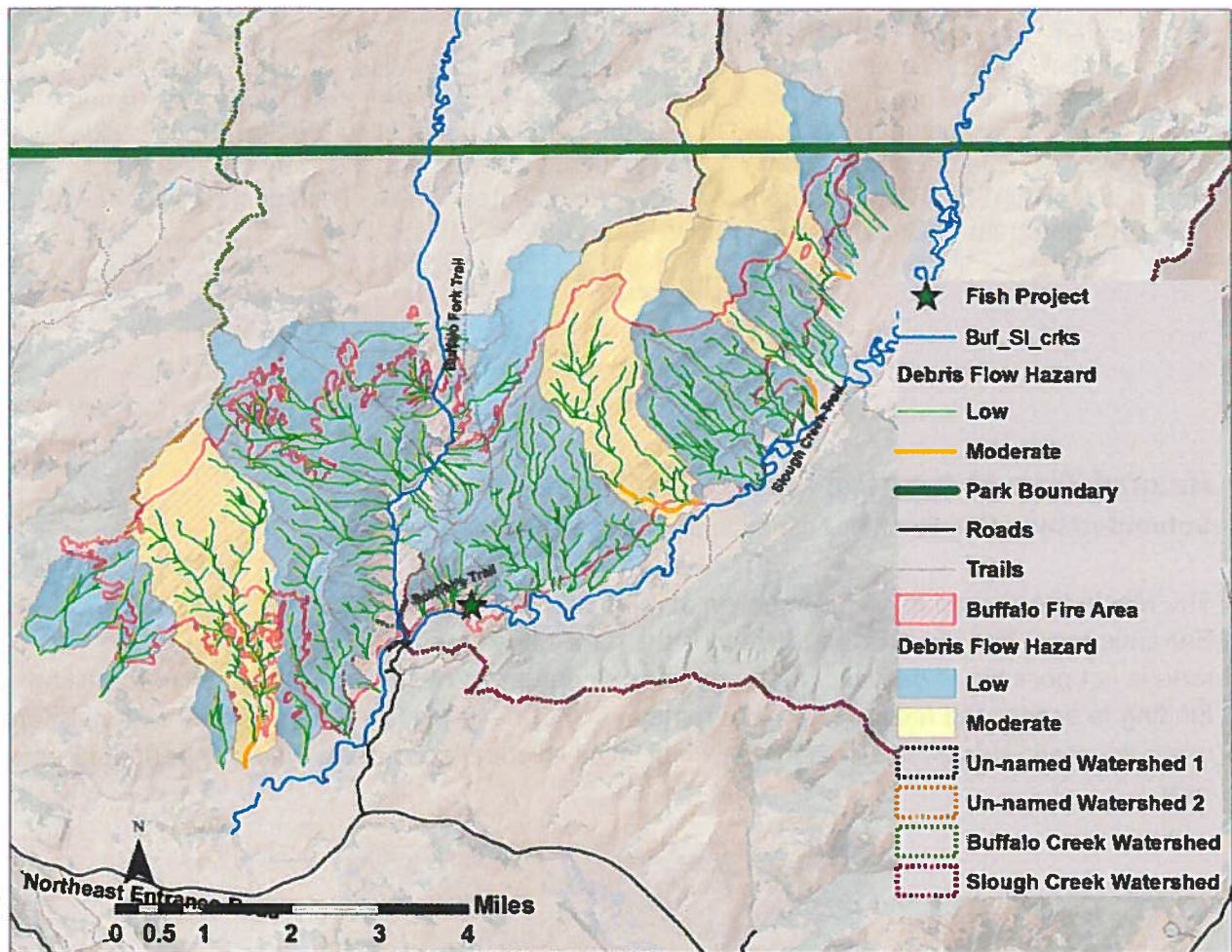


Figure 16. Map of post-fire debris flow hazard for the Buffalo Fire area.

Assessments and Recommendations for Values at Risk

Very few values at risk were brought to the attention of the Hydrologist. The anticipated risk to life, infrastructure and property due to post-wildfire watershed conditions is expected to be minimal to negligible.

Table 3. Issues and recommendations for values at risk.

Fire	Watershed	Site	Issue	Recommendations
Maple	Unnamed Catchment	Culverts	Potential Clogging	Remove floatable debris from area and clean and monitor culverts.
Buffalo	Buffalo Creek Slough Creek	Fisheries	Potential Sedimentation	Ensure favorable conditions exist prior to reintroduction of native population.

Hydrology and Watershed References

- Goodrich, D.C., H.E. Canfield, I.S. Burns, D.J. Semmens, S.N. Miller, M. Hernandez, L.R. Levick, D.P. Guertin, and W.G. Kepner, 2005. Rapid post-fire hydrologic watershed assessment using the AGWA GIS-based hydrologic modeling tool. In: Proceedings, ASCE Watershed Management Conference, Williamsburg, VA, July 19-22, 2005.
- Hershfield, D.M. 1961. Rainfall frequency atlas of the United States. Technical Report 40. U.S. Department of Commerce. Weather Bureau.

Hazard Tree Mitigation along West Entrance Road

Submitted by: Roy Renkin, Acting Chief of Vegetation Management

The Maple fire burned a 2.1 mile section of road east of Seven Mile Bridge on the West Entrance road. The West Entrance road is the park's busiest road, and therefore closing the road is not possible to deal with the trees killed or damaged by the fire. The park is requesting funding to assess the hazard trees and remove any threatening the life and safety of the visitors using the road. This effort will require six biological science technicians, one pay period, for one year.



Figure 17. Maple fire disturbance along roadside where hazard tree mitigation is needed.

Trails

Submitted by: Chris Glenn, Trails Supervisor

Trails of concern for the Tatanka complex are:

- Buffalo fire - Buffalo Fork trail (7 miles within fire perimeter), Slough Creek trail (10 miles within fire perimeter), and Old Soldiers trail (8 miles within fire perimeter);
- Central fire - none;
- Fawn fire - Fawn Pass trail (4 miles within fire perimeter) and Bighorn Pass trail (2 miles within fire perimeter).
- Maple fire - Gneiss Creek trail (12 miles within fire perimeter) and Cougar Cabin trail (3 miles with fire perimeter)

Trail concerns for all trails include clearing fallen snags, erosion control measures, and tread repair over the course of the next three years. Implementation of corrective measures will require 29 trail crewmembers for one to two pay periods each, for one year.

Invasive Species

Submitted by: Roy Renkin, Acting Chief of Vegetation Management

Burned Area Emergency Response Funding

Invasive plant species concerns are focused on the Maple fire due to its close proximity to West Yellowstone, and known invasive species such as berteroa (*Berteroa incana*), yellow toadflax (*Linaria vulgaris*), spotted knapweed (*Centaurea stoebe*) and St. Johnswort (*Hypericum perforatum*). The park is proposing to assess invasive species in the fuel treatment area along the boundary due to management actions (use of heavy equipment to create a contingency line) and the known infestations within close proximity (100 feet) of the equipment use area. Known patches of Canada thistle (*Cirsium arvense*) have infested stretches of the Madison River floodplain adjacent to the burned West Entrance Road corridor, and will require treatment from spreading into the fire perimeter. Other areas of concern where assessments would take place include the Buffalo fire in burned sagebrush meadows which are in close proximity to established cheatgrass (*Bromus tectorum*) populations, and burned portions along the Fawn Pass trail with known invasive plant populations.

If assessments show an increase of invasive species within these areas, the park will chemically or mechanically treat the invasive species, reducing them to pre-fire/treatment levels. Chemical treatment would be followed by reseeding with native seed collected locally. Treatment would be consistent with the park's Exotic Plant Management Plan (2013). NPS employees would monitor, and if needed, chemically or mechanically treat invasive species, reseeding with native grasses in bare soil areas over the next year. These efforts will require six seasonal biological science technicians for two pay periods each.



Figure 18. Fuel treatment along boundary of park on Maple fire where heavy equipment was used in close proximity to invasive species infestations.

Burned Area Rehabilitation Funding

The invasive species concerns the park would like to address with BAR funding are the same as the concerns expressed above for BAER funding, but would be over a longer period of time. These efforts will require six seasonal biological science technicians, for two pay periods each year, for two years.

Cultural Resources

Submitted by: Beth Horton, Archaeologist and Tobin Roop, Chief of Cultural Resources

Objectives

1. Assess potential threats to known and incidentally encountered cultural resources within and adjacent to the burned areas for the purpose of recommending emergency stabilization treatments to stabilize archeological sites, historic structures, and cultural landscapes from potential adverse effects of post-fire erosion or other landscape processes;
2. Assess potential for adverse effects to cultural resources from other emergency stabilization and rehabilitation actions;
3. As required under the National Historic Preservation Act (NHPA) and its implementing regulations (36 CFR §800), consult with the Wyoming State Historic Preservation Officer (SHPO), Montana State Historic Preservation Officer (SHPO), and American Indian tribes and groups traditionally associated with Yellowstone National Park lands and resources to meet National Park Service statutory and regulatory requirements, agency policies, and agreements, for other proposed emergency treatments that might adversely impact cultural resources, and if so, take measures to avoid, minimize, or otherwise mitigate actual and potential impacts.

Issues

1. Effects from post fire flooding, debris flows, tree fall, or other severe erosion at significant cultural resources;
2. An elevated risk of unauthorized artifact collection due to denuded surfaces that increase artifact exposure; and
3. Potential effects to cultural resources from implementation of proposed Emergency Stabilization treatments prescribed to address other values at risk.

Observations

A. Background

Numerous cultural resources lie within the footprint of the Tatanka Complex (Buffalo, Fawn, Central fires) and Maple Fires. Many of these were burned over by the fire itself, and have the potential to be damaged by both the post-fire effects and the treatments designed to protect park infrastructure and other resources. These cultural resources include prehistoric and historic archeological sites (lithic scatters, dumps, structural ruins, former NPS administrative sites, etc.), historic roads and trails (including one wagon road, now used as a trail, that are Historic Properties), historic structural ruins, and cultural landscape resources.

B. Emergency Response and Regulatory Notifications

The first NPS Resource Advisor (READ) was assigned to the Tatanka Complex on August 5, 2016. A NPS cultural resource READ was assigned to the incident between August 22, 2016 and August 26, 2016, and between August 31, 2016 and September 13, 2016.

C. Resource Identification and Assessment Methods

Cultural resources at risk were identified using existing cultural resources data on file at Yellowstone National Park, the Burned Area Reflectance Classification (BARC) map and subject matter expert (SME) assessments of potential post fire runoff impacts (e.g., flooding, colluvial events, erosion, etc.) developed for the Tatanka Fire Complex and Maple Fire (included in this document). Cultural resource information for the burn area is not complete. Only 3.6 percent of Yellowstone National Park has been surveyed for cultural resources.

Department of Interior policy only allows for the post-fire emergency stabilization protection of known or initially discovered sites unless the post-fire stabilization involves treatments that have the potential to adversely affect historic properties. In the latter case, if efforts to identify historic properties are not complete, preceding any stabilization treatments these will be undertaken in accordance with Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations (36 CFR §800).

Cultural Resources Impacted

Thirty two burned over and exposed known cultural resources are within the burned areas of the Tatanka Complex (Buffalo, Central, and Fawn fires) and the Maple Fire, five of which are eligible for listing on the National Register of Historic Places (NRHP). These include 25 archaeological sites, one historic wagon road (Slough Creek Historic Wagon Road), and one historic transportation corridor (West Yellowstone Entrance Road Historic District). Archaeological sites consist of 25 prehistoric lithic scatters, one with a cairn, and two multicomponent sites consisting of lithic scatters and historic refuse.

In addition, three backcountry cabins (Cougar Creek, Buffalo Plateau, and Fawn Pass) eligible for nomination to the NRHP (SHPO concurrence) were wrapped with protective coverings during emergency suppression activities. Post fire treatment activities undertaken to protect the three historic backcountry cabins, such as ongoing hazard tree removal, can change the associated cultural landscapes. Post fire assessment of the three backcountry cabins needs to be completed to assess the extent of impacts caused by emergency suppression activities. If damage is identified that is directly related to fire suppression activities, then recommendations for specific treatment(s) for repair and/or restoration will also be completed as part of the assessment. These will be addressed under revisions to this document for a future year's Burned Area Rehabilitation (BAR) plan.

Assessments need to occur at each of the archeological sites in the burn area to ensure post fire activities do not have a negative impact on the sites. Potential impacts include erosion, landslides, looting, and ground disturbance associated with post fire emergency stabilization actions. If damage is identified that is directly related to the fire suppression activities, then specific treatment(s) for repair and/or restoration recommendations will also be completed as part of the assessment.

No clean-up or treatment activities are currently proposed, and there is minor hydrological, flooding, and erosion risks to known cultural resources. Any proposed treatments developed after the assessments should be designed to avoid adversely impacting remaining attributes of cultural resources.

Culvert Clearing On West Entrance Road

Submitted by: Becky Smith, BAER/BAR Team Lead

The Maple fire burned a 2.1 mile section of road east of Seven Mile Bridge on the West Entrance road. There are three culverts on this stretch of road, which may clog with burned debris (i.e., burned logs) and sedimentation due to the close proximity of the burned slope above them. Removal of this sedimentation and fire debris is critical to stabilize the road to ensure the busiest road in the park remains open. The park is requesting funding to do periodic sedimentation removal caused by the burned slope above the culverts that may pose a threat to the life and safety of the visitors using the road if not cleared. This effort will require one equipment operator, for one pay period, for one year.

Narrative and Cost for BAER and BAR Activities

Hazard Tree Mitigation - BAER Funding Requested: \$9,000

NPS crews will survey and remove hazardous trees that were scorched and will likely die overwinter along 2.1 miles of the West Entrance Road corridor. This effort will require six seasonal biological science technicians for one pay period for one year. See spreadsheet for estimate details.

Trails Repair - BAR Funding Requested: \$104,136

NPS employees will assess and rehabilitate 47 miles of 7 affected backcountry trails stabilizing and repairing burned over hillside and meadow trail surfaces and structures. Treatment will consist of stabilization of masonry structures, repair/replacement of affected log retaining and drainage structures, and removal of soils and debris from loss of vegetation and subsequent soil erosion. These efforts will require 29 trail crewmembers for one to two pay periods each, for one year, and four seasonal backcountry rangers for two pay periods each, for one year. See spreadsheet for estimate details.

Invasive species - BAER Funding Requested: \$18,000

NPS employees would monitor, and if needed, chemically or mechanically treat invasive species, reseeding with native grasses in bare soil areas over the next three years. These efforts will require six seasonal biological science technicians for two pay periods each, for one year. See spreadsheet for estimate details.

Invasive species - BAER Funding Requested: \$36,000

NPS employees would monitor, and if needed, chemically or mechanically treat invasive species, reseeding with native grasses in bare soil areas. These efforts will require six seasonal biological science technicians for two pay periods each year, for the next two years. See spreadsheet for estimate details.

Cultural Resources - BAER Funding Requested: \$58,206

Employees would assess potential threats to cultural resources for the purpose of recommending treatments to stabilize archeological sites, historic structures, and cultural landscapes from potential adverse effects of post fire erosion or other landscape processes. Prescribe treatments to avoid, minimize, or otherwise mitigate actual and potential adverse effects to cultural resources that may occur from post fire effects and emergency stabilization treatments. These efforts will require seven employees for one to nine pay periods each, for one year, along with miscellaneous materials, supplies, and travel costs. See spreadsheet for estimated details. See spreadsheet for estimate details.

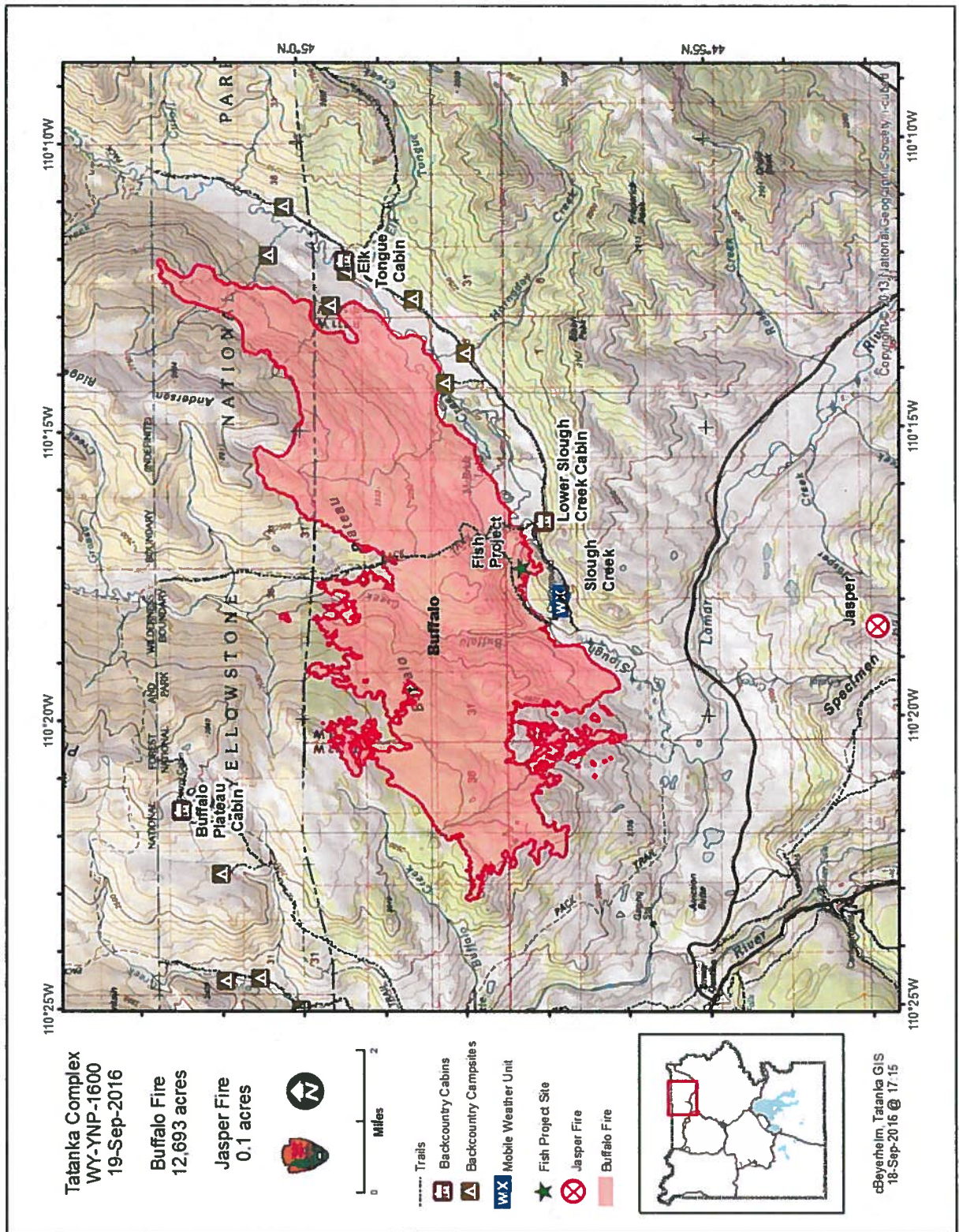
Safety Signs - BAER Funding Requested: \$13,019

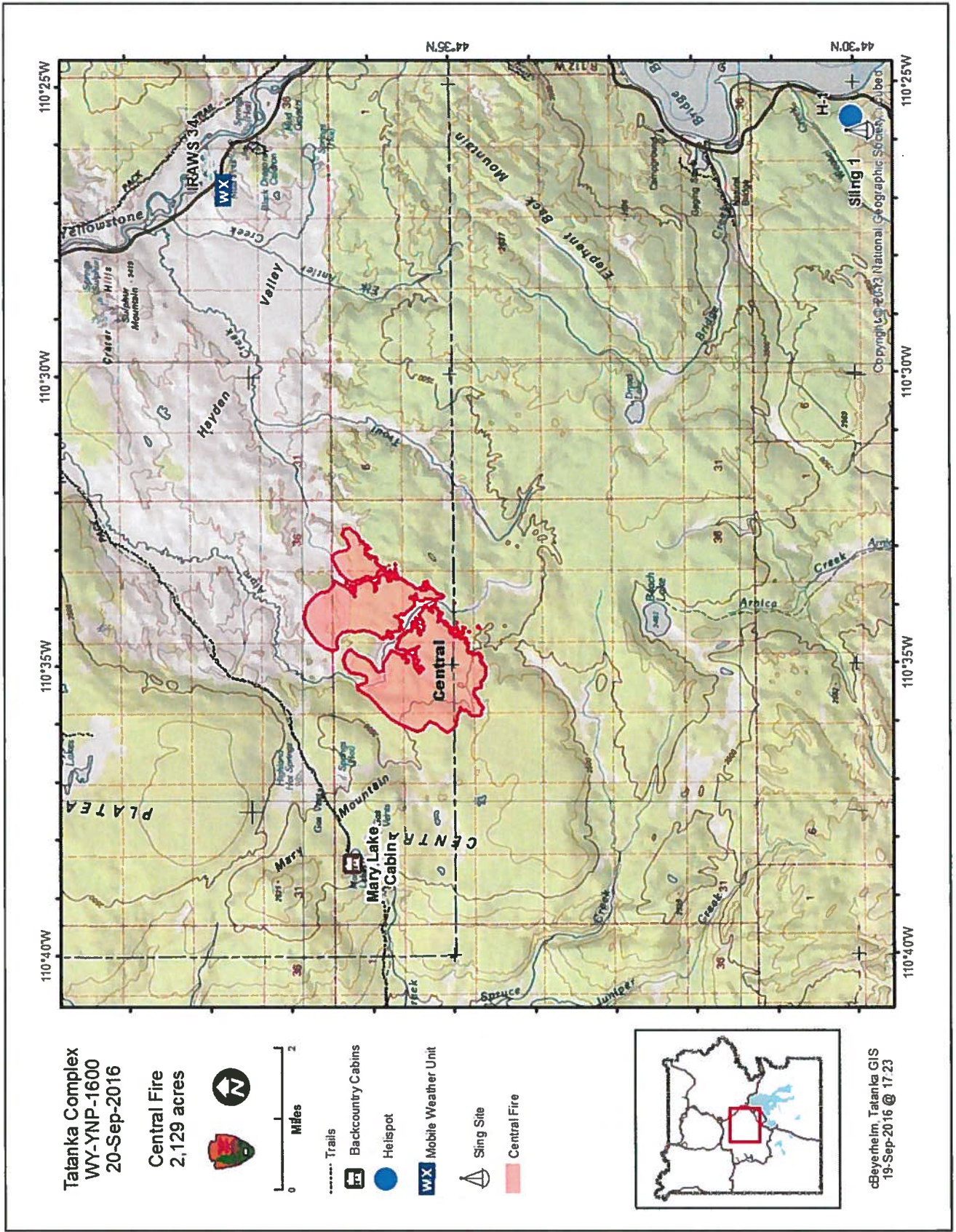
The park is requesting funding to have warning signs made and installed to warn visitors of hazard trees, debris flows, and falling rocks. These signs will be installed at trailheads and campgrounds within the burned areas. This will require two maintenance workers for 1.25 pay periods, for one year, along with the cost to have the signs made. See spreadsheet for estimate details.

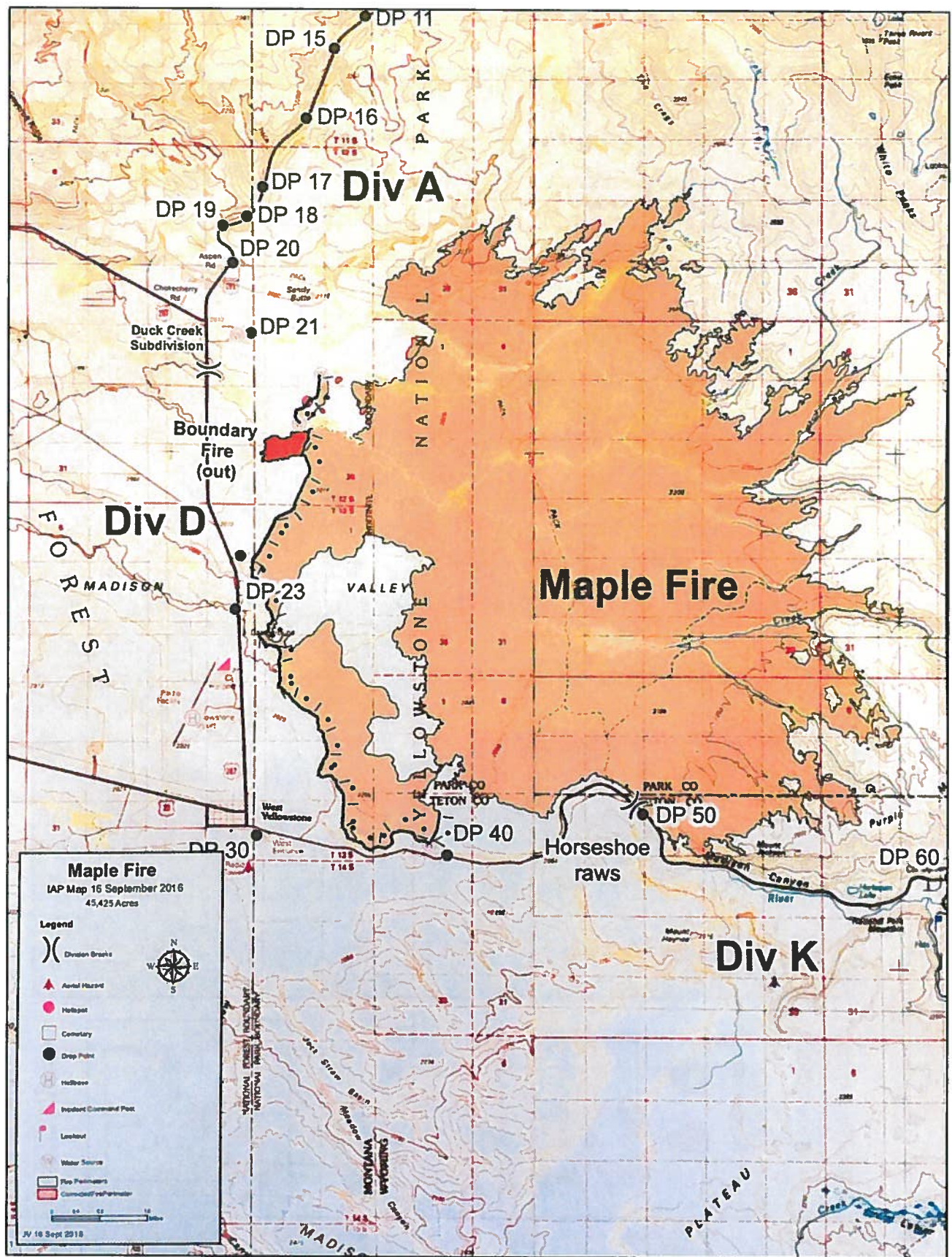
Culvert Clearing - BAER Funding Requested: \$1,911

The park is requesting funding to do periodic sedimentation and debris removal around culverts caused by the Maple fire that may pose a threat to the life and safety of the visitors using the road if not cleared. This effort will require one equipment operator, for one pay period, for one year. See spreadsheet for estimate details.

Maps







PART F - INDIVIDUAL SPECIFICATION

TREATMENT/ACTIVITY NAME	Roadside Hazard Tree Mitigation - BAER	PART E SPECIFICATION #	
NFPORS TREATMENT CATEGORY		FISCAL YEAR(S) (list each year):	2017
NFPORS TREATMENT TYPE *		WUI? Y / N	Y
IMPACTED COMMUNITIES AT RIS	N/A	IMPACTED T&E SPECIES	n/a

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

Number and Describe Each Task:

A. General Description: The Maple fire burned a 2.1 mile section of road east of Seven Mile Bridge on the West Entrance road. The West Entrance road is the park's busiest road, and therefore closing the road is not possible to deal with the trees killed or damaged by the fire. The park is requesting funding to assess the hazard trees and remove any threatening the life and safety of the visitors using the road

B. Location/(Suitable Sites): Yellowstone National Park; 2.1 miles of the West Entrance road, east of the Seven Mile Bridge.

C. Design/Construction Specifications: Remove hazard trees which were killed or damaged by the fire and pose a threat to visitor safety in the 2.1 mile section of the West Entrance road.

D. Purpose of Treatment Specifications: Mitigate the threat to life and safety to all who use the West Entrance road in the area where the Maple fire killed or damaged trees.

E. Treatment Effectiveness Monitoring Proposed: Area will be assessed periodically through a one year time frame to ensure all fire killed and damaged trees posing a threat to visitors on the West Entrance road are removed.

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST / ITEM
3 each, GS-04 Seasonal Biological Science Tech, 1 pp @ \$1,200/pp x 1 yr	\$ 3,600
2 each, GS-05 Seasonal Biological Science Tech, 1 pp @ \$1,490/pp x 1 yr	\$ 2,980
1 each, GS-07 Seasonal Biological Science Tech, 1 pp @ \$1,850/pp x 1 yr	\$ 1,850
TOTAL PERSONNEL SERVICE COST	\$ 8,430
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST / ITEM
	\$ -
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$ -
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST / ITEM
Fuel, bar oil, wedges, misc supplies	\$ 570
TOTAL MATERIALS AND SUPPLY COST	\$ 570
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST / ITEM
TOTAL TRAVEL COST	\$ -
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST / ITEM
	\$ -
TOTAL CONTRACT COST	\$ -

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
FY 17	10/01/16	08/08/17	NPS	miles	\$ 4,286	2.1	\$ 9,000
TOTAL					\$ 4,286	2.1	\$ 9,000

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	P, M
5. No cost estimate required - cost charged to Fire Suppression Account.	

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT**TOTAL COST BY JURISDICTION**

JURISDICTION	UNITS TREATED	COST
Yellowstone National Park	2.1 miles	\$ 9,000
	TOTAL COST	\$ 9,000

Specification Form Created September 23, 2006

PART F - INDIVIDUAL SPECIFICATION

TREATMENT/ACTIVITY NAME	Repair Damaged Trails - BAR	PART E SPECIFICATION #	
NFPORS TREATMENT CATEGORY		FISCAL YEAR(S) (list each year):	2017
NFPORS TREATMENT TYPE *		WUI? Y / N	N
IMPACTED COMMUNITIES AT RIS	N/A	IMPACTED T&E SPECIES	n/a

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

Number and Describe Each Task:

- A. General Description: NPS employees will assess and rehabilitate 47 miles of 7 affected backcountry trails stabilizing and repairing burned over hillside and meadow trail surfaces and structures. Treatment will consist of stabilization of masonry structures, repair/replacement of affected log retaining and drainage structures, and removal of soils and debris from loss of vegetation and subsequent soil erosion.
- B. Location/(Suitable Sites): Yellowstone National Park; portions of 7 trails in areas burned by the Buffalo, Fawn, and Maple fires: Gneiss Creek trail (12 miles), Cougar Cabin trail (3 miles), Bighorn Pass trail (2 miles), Fawn Pass trail (4 miles), Buffalo Fork trail (7 miles), Old Solider's trail (8 miles), and Slough Creek trail (10 miles).
- C. Design/Construction Specifications: Stabilize dry-stone masonry structures. Repair/replace affected log retention structures. Re-contour trail tread surface to re-establish necessary grade of out-slope. Remove soil and debris from pre-existing drainage features, with the possibility of the need to establish new drainage features to accommodate for changes in drainage patterns. Remove fallen snags from trail. Stabilize affected campsites and replace burned trail and meadow markers and signage.
- D. Purpose of Treatment Specifications: Assess and repair damage to trails from the Buffalo, Fawn, and Maple fires, preventing additional erosion and returning them to pre-fire specifications.
- E. Treatment Effectiveness Monitoring Proposed: Assess repairs by visiting the site in the following years and inspect for additional erosion and damage. If additional damage occurs, submit additional specification in FY2018 and FY2019.

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST / ITEM
(4) WL07 Crewleader@ \$35.64/hr x 160hr x 1yr	\$ 22,808
(5) WG07 Mnt Worker@ \$23.05/hr x 160hr x 1yr	\$ 18,438
(8) WG05 Mnt Worker@ \$19.68/hr x 160hr x 1yr	\$ 25,188
(8) WG03 Laborer @ \$15.61/hr x 160hr x 1yr	\$ 12,487
(3) WG08 Animal Packers @ 23.87 x 80hr x 1yr	\$ 8,366
(1) WG05 Animal Packer Helper@ \$19.68/hr x 80hr x 1yr	\$ 1,574
(4) GS07 Seasonal Rangers @ 19.18/hr x 160hr x 1yr	\$ 12,275
TOTAL PERSONNEL SERVICE COST	\$ 101,136
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST / ITEM
	\$ -
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$ -
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST / ITEM
Misc. expendable supplies: fuel, oil, bar chain, hand tools/handles, plank, spikes etc.	\$ 3,000
TOTAL MATERIALS AND SUPPLY COST	\$ 3,000
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST / ITEM
TOTAL TRAVEL COST	\$ -
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST / ITEM
TOTAL CONTRACT COST	\$ -

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
FY_17	10/01/16	09/30/17	NPS	miles	\$ 2,264	46	\$ 104,136
TOTAL					\$ 2,264	46	\$ 104,136

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	P, M
5. No cost estimate required - cost charged to Fire Suppression Account.	

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT

--

TOTAL COST BY JURISDICTION

JURISDICTION	UNITS TREATE	COST
Yellowstone National Park	46 miles	\$ 104,136
	TOTAL COST	\$ 104,136

PART F - INDIVIDUAL SPECIFICATION

TREATMENT/ACTIVITY NAME	Invasive Plants - BAER and BAR	PART E SPECIFICATION #	
NFPORS TREATMENT CATEGORY*		FISCAL YEAR(S) (list each year)	2017 (BAER), 2018 and 2019 (BAR)
NFPORS TREATMENT TYPE *		WUI? Y / N	N
IMPACTED COMMUNITIES AT RISK	n/a	IMPACTED T&E SPECIES	n/a

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

Number and Describe Each Task:
A. General Description: The park is proposing to assess invasive species in the fuel treatment area along the boundary due to management actions (use of heavy equipment to create a contingency line) and the known infestations within close proximity (100 feet) of the equipment use area. Known patches of Canada thistle (Cirsium arvense) have infested stretches of the Madison River floodplain adjacent to the burned West Entrance Road corridor, and will require treatment from spreading into the fire perimeter. Other areas of concern where assessments would take place include the Buffalo fire in burned sagebrush meadows which are in close proximity to established cheatgrass (Bromus tectorum) populations, and burned portions along the Fawn Pass trail with known invasive plant populations. If assessments show an increase of invasive species within these areas, the park will chemically or mechanically treat the invasive species, reducing them to pre-fire/treatment levels. Chemical treatment would be followed by reseeding with native seed collected locally. B. Location/(Suitable Sites): 1,200 acres in the Maple fire, Buffalo fire, and Fawn fire perimeters. C. Design/Construction Specifications: Detect and chemically treat any invasive non-native species, reducing them to pre-fire disturbance levels, and eradicate any new non-native species present in the area. Treatment threshold level: any presence of new non-native species. Treatments are consistent with the Park's Exotic Plant Management Plan (2013). Detection and treatment will be done by a vegetation crew with expertise of these invasive species. D. Purpose of Treatment Specifications: Prevent the increase of invasive non-native species aggravated by the fuel break creation and fires. Detect and prevent detrimental invasion by new non-native species. E. Treatment Effectiveness Monitoring Proposed: Document previously detected non-native species and any new non-native species encountered. If is impractical to reduce populations to pre-fire / disturbance levels by chemical removal, document locations and seek funding for chemical treatments in FY2018.

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST / ITEM
BAER (FY17)	\$ -
3 each, GS-04 Seasonal Biological Science Technician, 2 pp @ \$1,200/pp	\$ 7,200
2 each, GS-05 Seasonal Biological Science Technician, 2 pp @ \$1,490/pp	\$ 5,960
1 each, GS-07 Seasonal Biological Science Technician, 2 pp @ \$1,850/pp	\$ 3,700
BAR (FY18)	
3 each, GS-04 Seasonal Biological Science Technician, 2 pp @ \$1,200/pp	\$ 7,200
2 each, GS-05 Seasonal Biological Science Technician, 2 pp @ \$1,490/pp	\$ 5,960
1 each, GS-07 Seasonal Biological Science Technician, 2 pp @ \$1,850/pp	\$ 3,700
BAR (FY 19)	
3 each, GS-04 Seasonal Biological Science Technician, 2 pp @ \$1,200/pp	\$ 7,200
2 each, GS-05 Seasonal Biological Science Technician, 2 pp @ \$1,490/pp	\$ 5,960
1 each, GS-07 Seasonal Biological Science Technician, 2 pp @ \$1,850/pp	\$ 3,700
TOTAL PERSONNEL SERVICE COST	\$ 50,580
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST / ITEM
	\$ -
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$ -
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST / ITEM
BAER (FY17): Herbicides, dye, sprayer parts/nozzles	\$ 1,140
BAR (FY18): Herbicides, dye, sprayer parts	\$ 1,140
BAR (FY19): Herbicides, dye, sprayer parts	\$ 1,140
TOTAL MATERIALS AND SUPPLY COST	\$ 3,420
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST / ITEM
	\$ -
TOTAL TRAVEL COST	\$ -
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST / ITEM
TOTAL CONTRACT COST	\$ -

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
-------------	---------------------------------------	---------------------------------------	------------	-------	-----------	-------------------------	--------------

FY 17 BAER	07/15/17	08/26/17	NPS	acres	\$ 15	1200	\$ 18,000
FY 18 BAR	07/15/18	09/30/18	NPS	acres	\$ 15	1200	\$ 18,000
FY 19 BAR	07/15/19	09/30/19	NPS	acres	\$ 15	1200	\$ 18,000
TOTAL					\$ 15	3,600	\$ 54,000

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	P, M
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required - cost charged to Fire Suppression Account.	

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT

TOTAL COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
Yellowstone National Park	1200 acres	\$ 54,000
TOTAL COST		\$ 54,000

Specification Form Created September 23, 2006

PART F - INDIVIDUAL SPECIFICATION

TREATMENT/ACTIVITY NAME	Cultural Resources Assessment and Stabilization - BAER	PART E SPECIFICATION #	
NFPORS TREATMENT CATEGORY*		FISCAL YEAR(S) (list each year):	2017
NFPORS TREATMENT TYPE *		WUI? Y / N	N
IMPACTED COMMUNITIES AT RISK	n/a	IMPACTED T&E SPECIES	n/a

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

Number and Describe Each Task:

A. General Description: Assess potential threats to cultural resources for the purpose of recommending treatments to stabilize archeological sites, historic structures, and cultural landscapes from potential adverse effects of post fire erosion or other landscape processes. Prescribe treatments to avoid, minimize, or otherwise mitigate actual and potential adverse effects to cultural resources that may occur from post fire effects and emergency stabilization treatments.

B. Resource Inventory: Identify and inventory archeological sites (mound, pit, etc.), historic structures, historic trails, historical structural ruins, and cultural landscape resources.

C. Design/Construction Specifications: Resource identification and assessment methods using existing cultural resources data on file at Yellowstone National Park and Burned Area Reflectance Classification (BARC) map.

D. Purpose of Treatment Specifications: avoid, minimize, or otherwise mitigate actual and potential adverse effects to cultural resources

E. Treatment Effectiveness Monitoring Proposed: None

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).		COST / ITEM
1 GS-9 Archeologist (NTE 1039, incl. health benefits)\$23.86/hr; 80 hrs/PP@ 9 PPs, Benefits estimated at 20%		\$ 20,614
2 GS-7 Archeological Technicians (NTE 1039, incl. health benefits)\$19.51/hr; 80 hrs/PP@ 5 PPs, Benefits estimated at 20%		\$ 18,726
1 GS-7 GIS Technician (full benefits) \$20.52/hr; 80 hrs/PP@ 2 PPs, Benefits estimated at 36%		\$ 2,185
1 GS-9 Facilities (Full benefits) \$23.86/hr; 80 hrs/PP@ 1 PPs, Benefits estimated at 40%		\$ 2,672
2 GS-5 LCS Technicians (NTE 1039, incl. health benefits)\$15.75/hr; 80 hrs/PP@ 1 PPs, Benefits estimated at 20%		\$ 6,049
TOTAL PERSONNEL SERVICE COST		\$ 50,246
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.		COST / ITEM
provided by park		
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST		\$ -
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):		COST / ITEM
Soil Stabilization Matting		\$ 2,000
Miscellaneous Equipment and Supplies (safety gear, consumables, etc.)		\$ 650
TOTAL MATERIALS AND SUPPLY COST		\$ 2,650
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):		COST / ITEM
Per Diem, Back country Camping (Archaeology: 3 ea. @ 20.00/day @ 30 days ea.; Historic Structure: 3 ea. @ 20.00/day @ 6 days ea.)		\$ 2,160
Housing for 3 NTE 1039 Employees (GS 9 @ 4.5 months + 2 GS-7 @ 3 months = 10.5 months @ \$300/month)		\$ 3,150
TOTAL TRAVEL COST		\$ 5,310
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):		COST / ITEM
TOTAL CONTRACT COST		\$ -

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
FY 17	10/01/16	08/26/17	NPS	Sites/Historic	\$ 1,819	32	\$ 58,206
TOTAL					\$ 1,819	32	\$ 58,206

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	P

3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	P, M
5. No cost estimate required - cost charged to Fire Suppression Account.	

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT

--

TOTAL COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
Yellowstone National Park	30 sites	\$ 58,206
	TOTAL COST	\$ 58,206

PART F - INDIVIDUAL SPECIFICATION

TREATMENT/ACTIVITY NAME	Safety Signs - BAER	PART E SPECIFICATION #	
NFPORS TREATMENT CATEGORY*	Trails	FISCAL YEAR(S) (list each year):	2017
NFPORS TREATMENT TYPE *	Signs	WUI? Y / N	Y
IMPACTED COMMUNITIES AT RISK	Yellowstone National Park	IMPACTED T&E SPECIES	n/a

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

Number and Describe Each Task:

- Install warning/safety signs at trail heads to protect public and employees.
- Location/(Suitable Sites): Trails entering or within burned areas.
- Design/Construction Specifications: Signs must conform to NPS standards.
- Purpose of Treatment Specifications: To protect public and employees along trails damaged by fire ore fire-related conditions.
- Treatment Effectiveness Monitoring Proposed: Monitor signs for damage or vandalism and replace as necessary.

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):	COST / ITEM
Do not include contract personnel costs here (see contractor services below).	
(1) WL07 Crewleader@ \$35.64/hr X 100hr x 1yr	\$ 3,564
(1) WG07 Mnt Worker@ \$23.05/hr x 100hr x 1yr	\$ 2,305
TOTAL PERSONNEL SERVICE COST	\$ 5,869
Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST / ITEM
Signs @ \$250/sign x 20	\$ 5,000
General supplies @ \$100/sign x 20	\$ 2,000
Fuel @ \$3.00/gal x 50gal	\$ 150
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$ 7,150
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST / ITEM
TOTAL MATERIALS AND SUPPLY COST	\$ -
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST / ITEM
TOTAL TRAVEL COST	\$ -
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST / ITEM
TOTAL CONTRACT COST	\$ -

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED	PLANNED	WORK AGENT	UNITS	UNIT COST	PLANNED	PLANNED COST
FY 17	10/01/16	09/30/17		20	\$ 651		\$ 13,019
							\$ -
				TOTAL		0	\$ 13,019

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	P, M
5. No cost estimate required - cost charged to Fire Suppression Account.	

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT

--

TOTAL COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
Yellowstone National Park	20	\$ 13,019
	TOTAL COST	\$ 13,019

PART F - INDIVIDUAL SPECIFICATION

TREATMENT/ACTIVITY NAME	Culvert Clearing - BAER	PART E SPECIFICATION #	
NFPORS TREATMENT CATEGORY*		FISCAL YEAR(S) (list each year):	2017
NFPORS TREATMENT TYPE *		WUI? Y / N	Y
IMPACTED COMMUNITIES AT RISK	N/A	IMPACTED T&E SPECIES	n/a

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

Number and Describe Each Task:

- A. General Description: The Maple fire burned a 2.1 mile section of road east of Seven Mile Bridge on the West Entrance road. The West Entrance road is the park's busiest road, and therefore closing the road is not possible to deal with the trees killed or damaged by the fire. The park is requesting funding to assess the hazard trees and remove any threatening the life and safety of the visitors using the road
- B. Location/(Suitable Sites): Yellowstone National Park; 2.1 miles of the West Entrance road, east of the Seven Mile Bridge.
- C. Design/Construction Specifications: Remove hazard trees which were killed or damaged by the fire and pose a threat to visitor safety in the 2.1 mile section of the West Entrance road.
- D. Purpose of Treatment Specifications: Mitigate the threat to life and safety to all who use the West Entrance road in the area where the Maple fire killed or damaged trees.
- E. Treatment Effectiveness Monitoring Proposed: Area will be assessed periodically through a one year time frame to ensure all fire killed and damaged trees posing a threat to visitors on the West Entrance road are removed.

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST / ITEM
1 WG-08/03 @ 23.88/hr x 80 hrs x 1 yr = 1910.40	\$ 1,911
TOTAL PERSONNEL SERVICE COST	
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST / ITEM
	\$ -
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$ -
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST / ITEM
TOTAL MATERIALS AND SUPPLY COST	\$ -
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST / ITEM
TOTAL TRAVEL COST	\$ -
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST / ITEM
	\$ -
TOTAL CONTRACT COST	\$ -

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
FY 17	10/01/16	08/08/17	NPS	miles	\$ 910	2.1	\$ 1,911
TOTAL					\$ 910	2.1	\$ 1,911

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	P
5. No cost estimate required - cost charged to Fire Suppression Account.	

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT

TOTAL COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
Yellowstone National Park	2.1 miles	\$ 1,911
TOTAL COST		\$ 1,911

PART F - INDIVIDUAL SPECIFICATION

TREATMENT/ACTIVITY NAME	Plan Development - BAER	PART E SPECIFICATION #	
NFPORS TREATMENT CATEGORY		FISCAL YEAR(S) (list each year):	2016
NFPORS TREATMENT TYPE *		WUI? Y / N	N
IMPACTED COMMUNITIES AT RIS	n/a	IMPACTED T&E SPECIES	n/a

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

Number and Describe Each Task:

A. General Description: Funding will be used to prepare the BAER/BAR plan for the Tatanka Complex and Maple fires within Yellowstone. All of this funding will be used to support a hydrologist who will model erosion and sedimentation into rivers and creeks considered as native fish habitat.

B. Location/(Suitable Sites): Yellowstone National Park, West Entrance Road, Buffalo Fork of Slough Creek, and Slough Creek.

C. Design/Construction Specifications: Support hydrologist's salary, travel and per diem during plan development.

D. Purpose of Treatment Specifications: To determine if increased sediment flow into these waterways may affect native fish habitat.

E. Treatment Effectiveness Monitoring Proposed: BAER/BAR plan is completed on time.

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST / ITEM
AD-K @ \$38.44/hr x 130 hrs x 1 FY = \$4,997.20	\$ 5,000
GS-11 Park Archeologist @ \$32.17/hr x 10 hrs x 1 FY = \$321.70	\$ 322
TOTAL PERSONNEL SERVICE COST	\$ 5,322
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST / ITEM
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$ -
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST / ITEM
TOTAL MATERIALS AND SUPPLY COST	\$ -
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST / ITEM
Airline flights and rental car = \$1000 flight, rental car \$400 = \$1400	\$ 1,400
Hotel and per diem = \$1296 hotel and 382.50 per diem = 1678.50	\$ 1,679
TOTAL TRAVEL COST	\$ 3,079
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST / ITEM
TOTAL CONTRACT COST	\$ -

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
FY_16	09/19/16	09/28/16	NPS				\$ 8,400
TOTAL						0	\$ 8,400

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	P, T
5. No cost estimate required - cost charged to Fire Suppression Account.	

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT

--

TOTAL COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
Yellowstone National Park	1	\$ 8,400
	TOTAL COST	\$ 8,400