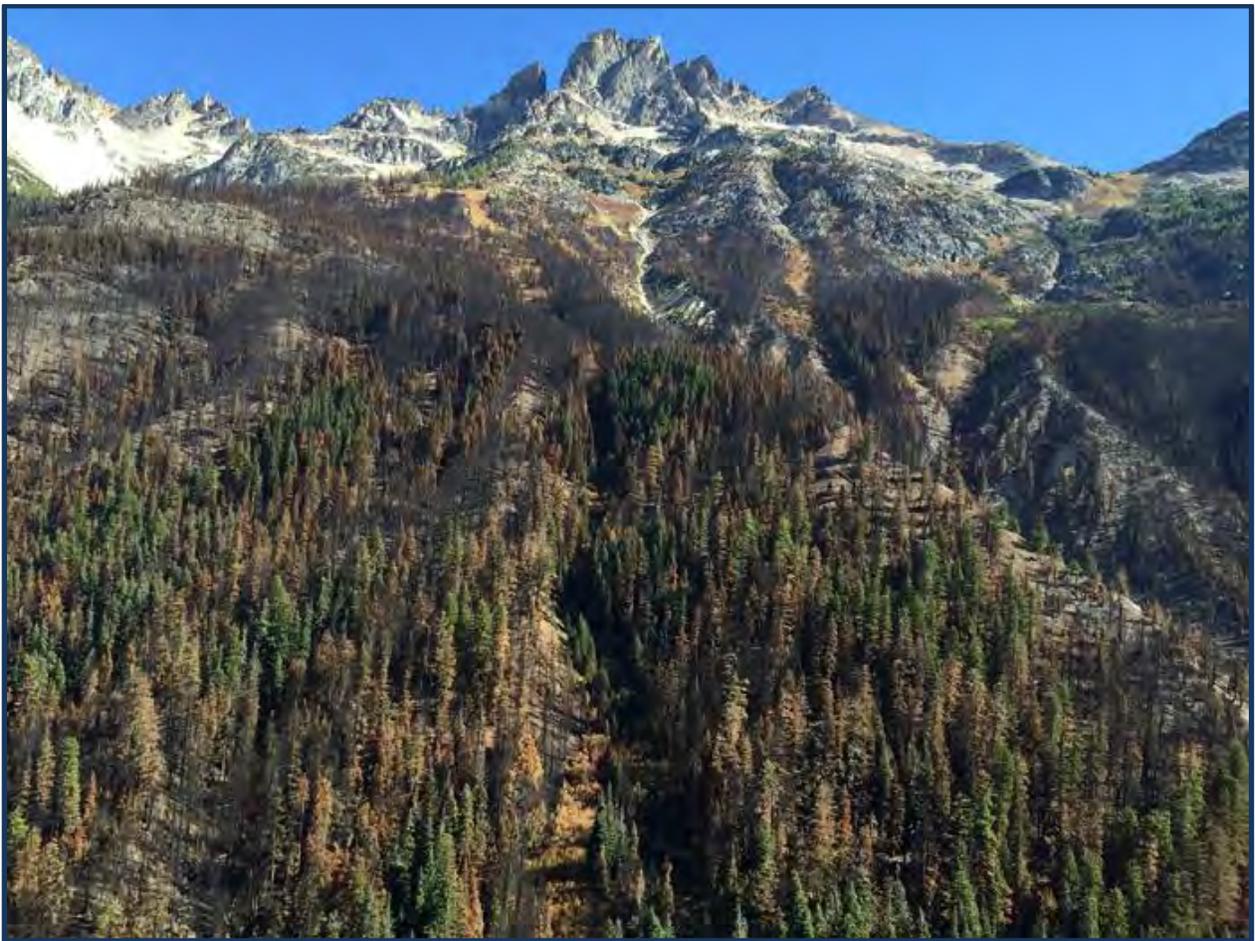


# North Cascades 2015 Fires Post-Fire Response Plan

North Cascades National Park Service Complex



**SUBMITTAL PAGE**

**PARK:** North Cascades National Park Service Complex

**DATE:** September 18, 2015

**PREPARED BY:** National Park Service NOCA Fires BAER Team

**SUBMITTED BY:** \_\_\_\_\_ **Date:** \_\_\_\_\_

Karen Taylor-Goodrich, Superintendent, North Cascades National Park Service Complex

**BURNED AREA EMERGENCY RESPONSE PLAN REVIEW AND APPROVAL**

**I. Chief of Resources/BAER Team Leader:** Approval that the North Cascades 2015 Fires Post-Fire Response Plan meets approved land management plan management objectives.

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*Jack Oelfke Chief of Resources, North Cascades National Park Service Complex* Date

**II. Regional BAER Coordinator:** Concurrence that the plan fits the technical definition for use of Emergency Stabilization and Rehabilitation funding.

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*Nelson Siefkin, BAER Coordinator, Pacific West Region* Date

**III. Burned Area Rehabilitation Funding Concurrence (check one box below):**

- Approved
- Approved with Revision (see attached)
- Disapproved

**IV. Emergency Stabilization Funding Approval (check one box below):**

- Approved
- Approved with Revision (see attached)
- Disapproved

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*Patricia Neubacher, Acting Regional Director, Pacific West Region* Date

## EXECUTIVE SUMMARY

### Introduction

This post-fire response plan consists of assessments and treatment specifications to stabilize and rehabilitate the Goodell, Goode, and Wolverine fires in the North Cascades National Park Service Complex (NOCA). It has been prepared in accordance with Department of the Interior and National Park Service policy, including DM 620 Part 3: Burned Area Emergency Stabilization and Rehabilitation and the Interagency Burned Area Emergency Response Guidebook.

There are two funding sources for post-fire activities; emergency stabilization (ES) and rehabilitation (BAR). The primary objectives of emergency stabilization are to assess and prescribe cost effective post-fire stabilization measures necessary to protect human life, property, and critical cultural and natural resources in accordance with approved land management plans and policies, as well as all relevant federal, state, and local laws, and regulations. NOCA also recognizes the need to perform non-emergency burned area rehabilitation treatments to prevent the encroachment of invasive species and to repair minor infrastructure.

This plan provides recommendations and specifications for burned area treatments from both funding sources for NPS lands burned within the Goodell, Goode, and Wolverine Fires. It was prepared by a Burned Area Emergency Response (BAER) team composed of NOCA staff, as well as specialists from other NPS units, University of Arizona, and the North Coast and Cascades Network.

The North Cascades National Park Service Complex (North Cascades National Park, Ross Lake National Recreation Area, and Lake Chelan National Recreation Area) experienced the same extreme dry spring and summer conditions as did the rest of the Pacific Northwest in 2015. RAWS stations in Marblemount (west side of the mountains) and Stehekin (east side) recorded 41% of average precipitation between April and August 2015. The months of May, June, and July saw less than 33% of normal precipitation in both locations.

With these dry conditions, thunderstorms that began sweeping the region in early June started dozens of fires within the Complex. Many burned in remote wilderness, posed minimal threat to the public or park resources, and ultimately required no consideration under the BAER process. This report deals with the effects on infrastructure, watershed, natural resources, and cultural features caused by the Goodell, Goode, and Wolverine fires (Figure 1).

### The Goodell Fire

The Goodell Fire began on August 10<sup>th</sup>, 2015 within the North Cascades National Park Service Complex near Newhalem, Washington. To date, it has burned 7,111 acres in the Goodell, Gorge, Ladder, Falls, and Newhalem creek drainages on both sides of the Skagit River. The fire was ignited by a lightning strike on the flank of Mount Ross near Goodell Creek and burned about 100 acres in the first week. On August 19<sup>th</sup>, the fire made significant runs to the north, east, and south and expanded to approximately 3,200 acres. The fire made additional runs over the next 10

days but beginning on August 29, a series of moisture-laden Pacific storm systems delivered more than seven inches of rain to the area. This decreased fire behavior to isolated snags and sheltered pockets of fire, which may continue to burn into the winter. The fire is not expected to expand beyond its current boundary.

As the rapidly expanding Goodell Fire approached Newhalem on the 19<sup>th</sup>, the NPS first closed the Upper and Lower Goodell group camps and the Newhalem Creek Campground; later in the day the fire burned down to and crossed State Route 20. The Washington Department of Transportation closed the highway, and the NPS closed the North Cascades Visitor Center. Seattle City Light evacuated its employees from Diablo and Newhalem.

Trail closures in the Newhalem area resulting from the Goodell Fire included Ladder Creek Falls Trail, Linking Trail, Lower Newhalem Creek Trail, River Loop Trail, Rock Shelter Trail, To Know A Tree Trail, Trail of the Cedars, Newhalem Creek Trail, and the Park Creek Trail north of Two Mile Camp.

State Route 20 reopened on August 30, as did the North Cascades National Park Visitors Center, Colonial, Goodell, and Gorge campgrounds. All other campgrounds and all trails closed during the fire remain closed due to trail impacts, rockfall danger, hazardous trees, or continuing potential for fire activity.

## **The Goode Fire**

The Goode Fire was ignited by a lightning strike in the Park Creek drainage within the Lake Chelan National Recreation Area and was first detected on July 29, 2015. Firefighters and helicopter water drops limited the fire's spread down-drainage and prevented it from crossing Park Creek. Rock outcrops and snow fields stopped the fire to the north and west. By August 5, the fire burned approximately 616 acres on the steep southwest flank of Goode Mountain near Five Mile Camp.

The Park Creek Trail between Park Creek Pass and Two Mile Camp remains closed. Five Mile camp is also closed due to trail impacts, hazardous trees, or remaining potential for fire activity.

## **The Wolverine Fire**

The Wolverine Fire began on June 29, 2015, caused by a lightning strike on the east ridge of Lucerne Mountain in the Wenatchee National Forest, Washington. It has burned 2,656 acres within the Lake Chelan National Recreational Area of the North Cascades National Park Service Complex.

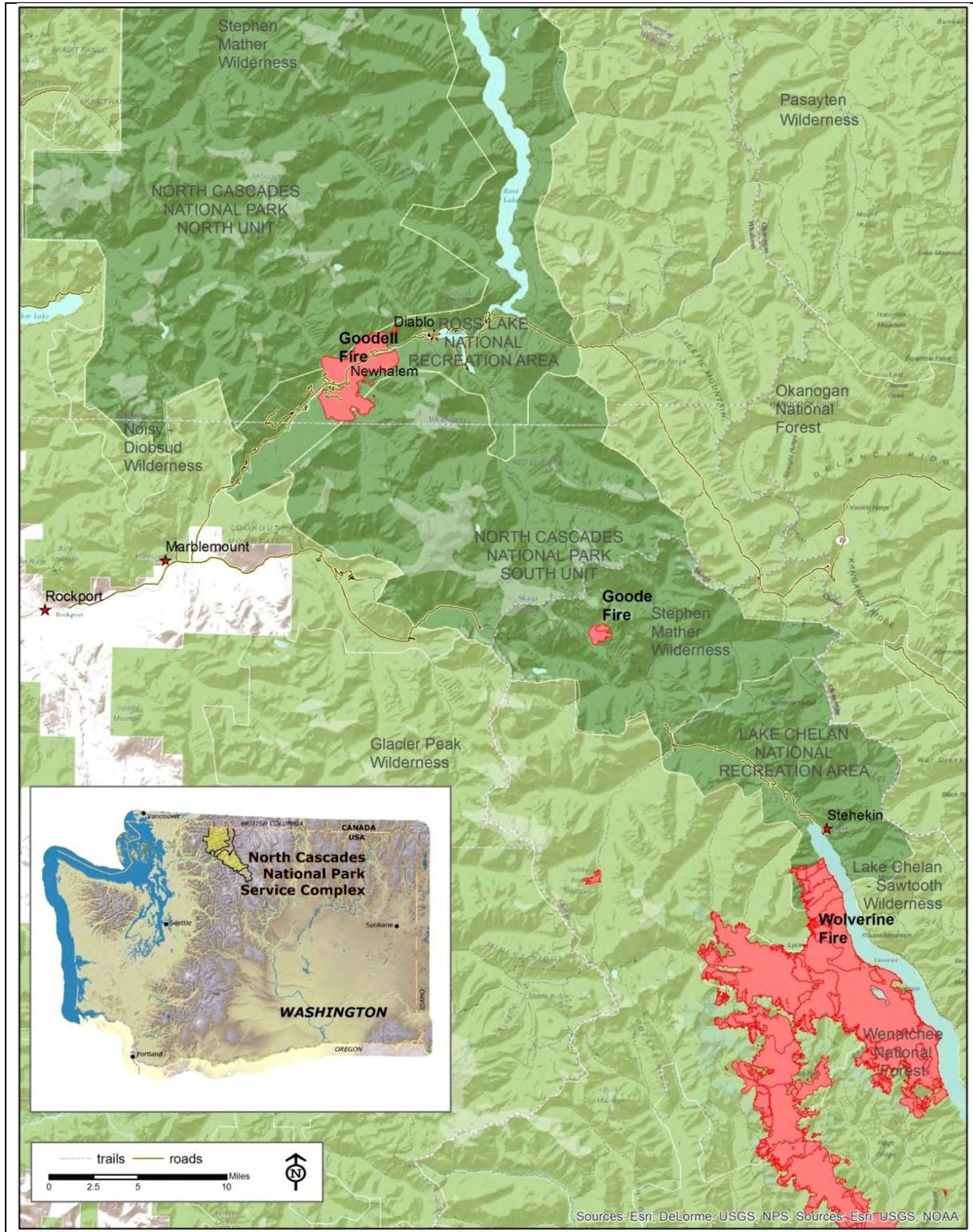


Figure 1. Location of the Goodell, Goode, and Wolverine fires within the North Cascades National Park Service Complex. Most of the Wolverine Fire burned outside NOCA in the Wenatchee National Forest.

Over the first month the fire grew gradually north and east to a few hundred acres, entering the park at Riddle Creek by July 29. On July 30, the fire began to spread rapidly to the south, increasing to 3,714 acres by July 31, then exploding to more than 24,400 acres by August 3. Between August 4 and 19, the fire spread an average of 1000 acres a day, first to the west up Railroad Creek to Holden, then turning to the south down the Entiat River. By September 7 the fire had burned just over 65,200 acres of federal and private lands. Current fire activity within NOCA is minimal, the fire being controlled on the north by hand line and water drops, on the west by rocky slopes, and on the east by Lake Chelan. WA Incident Management Team 2 assumed command of the fires on September 1 and continues to work to limit the fire's spread outside of the park.

Manly Wham Campground, on the shore of Lake Chelan and accessible only by boat, is within the burned area and is closed. Cabins at the mouth of Riddle Creek are likewise off limits to staff and visitors due primarily to unmitigated hazard trees.

## **Burned Area Emergency Response and Burned Area Rehabilitation – Assessments and Specifications**

The North Cascades 2015 Fires Burned Area Emergency Response (BAER) Team assessed the Goodell, Goode, and Wolverine incidents to determine post-fire impacts and hazards to life, property, and critical cultural and natural resources. The team conducted aerial reconnaissance and field visits to review resource conditions after the fire, completed literature reviews, and consulted resource specialists. The main objectives of this work were to:

- Identify and inventory values at risk
- Identify the physical and biological mechanisms that are creating risks
- Assess impacts and threats to cultural resources
- Develop soil burn severity and watershed response maps to identify potential debris flow, flood, and erosion source areas and targets
- Determine needs for emergency stabilization
- Determine post-fire hazard tree removal and assessment needs
- Assess post-fire invasive species concerns and identify treatments

Values at risk include NPS and private infrastructure, capital improvements, and cultural and natural resources located within or downstream/downslope of the fire that may be subject to damage from flooding, mud and debris deposition, debris flows, hill slope erosion, hazard trees, and invasive species. The following values at risk and were assessed for emergency response needs due to impacts and hazards caused by the North Cascades 2015 Fires:

### Goodell Fire

- Highway 20 corridor, especially through the Gorge (rockfall, debris flows, falling trees)
- Upper Goodell Group Campground and the road leading to the campground (hazard trees, damaged culverts, road damage)

- Rock Shelter and the boardwalk and trail leading to the shelter (tread erosion, hazard trees, post-fire erosion potential in shelter, risks to shelter from looters now that boardwalk is gone)
- The USGS stream gage on Newhalem Creek (damage by flooding, falling trees)
- Newhalem Creek NPS campground - Loop C (hazard trees)
- Ladder Creek Falls trail (hazard trees, debris flows and flooding)
- Intake diversion for the Newhalem Creek powerhouse (hazard trees)
- Migration of possible hazardous materials associated with historic settling tank near Ladder Creek (hazmat, cultural resource documentation and compliance)
- Assessments, stabilization, and monitoring of known cultural sites
- Cleaning smoke and ash out of the HVAC system at the North Cascades Visitor Center, which also houses the park's museum collections

## Goode Fire

- Fivemile Campground (debris flows)

## Wolverine Fire

- Manly Wham Campground (hazard trees, debris flows)
- Riddle Creek cabins (debris flows, hazard trees, invasive plants)

Resources impacted by the North Cascades 2015 Fires needing rehabilitation under BAR include:

- Invasive plant introductions or spread facilitated by burned ground
- Traffic counter burned in the Goodell Fire
- Repair trail tread where wood cribbing supports or roots burned and caused tread damage
- Campground cleanup and minor repairs in Newhalem Creek CG Loop C
- Campground facilities damaged by the fire or subsequent tree fall or debris flows
- Revegetating the highway berm at Falls Creek
- Hazard tree monitoring and mitigation

Watershed: A combination of aerial and ground reconnaissance were utilized to assess the threats of post-fire watershed conditions within and downstream of the North Cascades 2015 Fires. In addition, a Burned Area Reflectance Classification (BARC) image, generated September 11, was used to assist classification of soil burn severity within the fire perimeters. In general, the mosaic of fire severity raises few watershed concerns. Watershed response concerns focus on the debris flow fans at Manly Wham Campground and Riddle Creek cabins, although a ground assessment is needed to determine the extent of the threat (*Specification W4*). Additional watershed protection specifications include clearing roads and cleaning culverts (*W1*), hazard warning signs and public information/education materials (*W-2*), limiting the spread of potential hazardous material (*W3*), constructing a berm to protect NPS buildings from rockfall and cleaning the associated ditch (*W5, W6*), providing for law enforcement closure of roads when landslides block the highway (*W7*), and repairing the USGS stream gage in Newhalem Creek (*W8*).

Several unfunded management recommendations are directed toward Seattle City Light and their

facilities, including monitoring and cleanup of the intake diversion at the Newhalem Creek intake; increased patrols and maintenance of the road and culverts leading to the Newhalem Creek intake diversion; removal and cleanup of old lighting fixtures and associated debris within the channel area of Ladder Creek; and temporary closures and patrol of facilities north of State Route 20 including the picnic and electric vehicle charging areas . One general unfunded management recommendation for Washington DOT is for increased patrols of the Gorge for rockfall debris, and consideration of proactive road closures between Mile Markers 120 and 124 if large precipitation events are forecasted.

Wildlife: Four federally listed species have suitable habitat with the boundaries of one or more of the fires, including gray wolf (*Canus lupus*), grizzly bear (*Ursus arctos*), Canada lynx (*Lynx canadensis*), and spotted owl (*Strix occidentalis*). None of these species is known to currently use habitat within the fire area, although both the spotted owl and gray wolf are known to use areas within a few miles of the burn area. Consultation with park wildlife biologists familiar with the area led to a conclusion that no impacts were anticipated to either of the species, and thus no treatment specifications are requested under the BAER or BAR programs.

Vegetation: Two major vegetation issues emerged through assessments. First was the likelihood that noxious plant species would invade and/or expand in the burned areas. Vegetation specialists completed ground reconnaissance, consulted with experts from other agencies, and analyzed recent inventory records to develop a treatment specification for invasive plant species within the burn area. Funds will be requested from the Burned Area Rehabilitation program for herbicide and manual control of a range of invasive species, especially knapweeds, common tansy aster, Scotch broom, and herb-Robert. (*Specification V1*). The park will work cooperatively with Seattle City Light to prevent new infestations to burned NPS lands immediately adjacent to SCL property.

Revegetation with native species is another way to combat noxious weed invasion. A large (6000 ft<sup>2</sup>) stone and earthen berm constructed by WA DOT to stop rockfall from impacting State Highway 20 in the Skagit River Gorge was originally planted by NOCA to native trees and grasses. These plantings burned in the fire. *Specification V2* allows NOCA to propagate and re-plant the berm with local native species, as well as control any invasive plants that appear.

Equally important were concerns raised by the large number of potential hazard trees associated with facilities and infrastructure in burned areas. A BAR treatment specification (*Specification V3*) was developed to address immediate mitigation of hazard trees directly threatening life and property and to re-assess burned tree hazards within the park's developed areas in the spring of 2016. The closure of public facilities (campgrounds, trails) within the burn areas through at least one winter for safety is recommended.

No rare plant concerns arose during the BAER team analysis of the burn areas.

Minor Facilities: Minor facilities included within the burn area include several trails (Rock Shelter, Ladder Creek, River Loop trails, and Trail of the Cedars), campgrounds (Upper Goodell Group Camp, Loop C of Newhalem Creek Camp within the Goodell Fire, Fivemile Camp below the Goode Fire, and Manly Wham Camp within the Wolverine Fire), a traffic counter, and signs

along roads and trails. Field reconnaissance by trail crew employees and the BAER Team documented damage to many of these facilities. Burned Area Emergency Response funding is requested to address repairs to roads and culverts (*Specifications F1, F5*). Funding is requested through the Burned Area Rehabilitation program to repair or replace the traffic counter (*F2*), trail tread (*F3*) campground infrastructure (*F4*), and the Rock Shelter boardwalk (*F6*).

Cultural Resources: A review of cultural resource inventory and research records and field reconnaissance of sites within and below the burn areas revealed direct burn impacts to several known and newly discovered cultural resources, and the potential for post-fire damage to sites exposed by the fire. Burned Area Emergency Response funding is requested to complete assessments of known cultural sites (*Specification C1*), monitor the condition of sites in the burn area (*C2*), protect the museum collections and protect field sites to prevent erosion and looting (*C3, C4*), as well as evaluation and stabilization of new features revealed by the fire (*C5*).

Miscellaneous: Also submitted are specifications to fund preparation of the North Cascades 2015 Fires Post-Fire Response Plan (*O1*) and implementation of both the BAER and BAR plans (*O2*).

## SUMMARY OF TREATMENTS AND ACTIVITIES

Below is a summary of the emergency stabilization treatments activities proposed for funding from the subactivity E13 BAER funding source, followed by the proposed funding by fiscal year. Individual treatment specifications are found in the **SPECIFICATIONS** section of this plan.

### SUMMARY OF ACTIVITIES AND COSTS - BAER

SPECIFICATION #	TITLE	UNIT	UNIT COST	# OF UNITS	WORK AGENT	COSTS
C1	Cultural Resource Assessments	Site	\$ 1,686	16	F	\$ 26,976
C2	Cultural Resource Monitoring	Site	\$ 1,739.00	25	F	\$ 43,476
C3	Cultural Resource Stabilization	Site	\$ 1,521.00	15	F	\$ 22,820
C4	Cultural Resource Protection	Site	\$ 13,788.00	5	F	\$ 68,940
C5	Protect Historic Structure	Study	\$ 3,360.00	1	F	\$ 3,360
F1	Replace Burned Culvert	Culvert	\$ 8,200.00	1	F	\$ 8,200
F5	Road Stabilization	Repair	\$ 4,150.00	1	F	\$ 4,150
O1	NOCA Fires BAER/BAR Plan Prep	Plan	\$ 75,950.00	1	F	\$ 78,814
W1	Road & Culvert Cleaning	Storm Event	\$ 4,168.00	12	F	\$ 50,014
W2	Replace Safety Signs	Sign	\$ 627.00	20	F	\$ 12,540
W3a	Stabilize Potential Hazmat Site	Containment	\$ 8,420.00	1	F	\$ 8,420
W3b	Investigate Potential Hazmat Site	Study	\$ 15,000.00	1	S	\$ 15,000
W4	Wolverine Fire Watershed Assessment	Assessment	\$ 3,100.00	1	F	\$ 3,100
W5	Restore Flood Control Berm	Berm	\$ 12,570.00	1	F	\$ 12,570
W6	Channel Debris Removal	Clearing	\$ 4,340.00	1	F	\$ 4,340
W7	Road Closure	Closure	\$ 932.00	12	F	\$ 11,184
W8	Repair USGS Gaging Station	Repair	\$ 20,000.00	1	C	\$ 20,000
<b>TOTAL COSTS</b>						<b>\$ 393,904</b>

### SUMMARY OF ACTIVITIES AND COSTS BY YEAR - BAER

SPEC #	TITLE	UNIT	UNIT COST	# OF UNITS	WORK AGENT	FY 15	FY 16	FY 17	FY 18	TOTAL COSTS
C1	Cultural Resource Assessments	Site	\$1,686	16	F		\$26,976			\$26,976
C2	Cultural Resource Monitoring	Site	\$1,739	25	F		\$36,012	\$5,264	\$2,200	\$43,476
C3	Cultural Resource Stabilization	Site	\$1,521	15	F		\$22,820			\$22,820
C4	Cultural Resource Protection	Site	\$13,788	5	F	\$2,820	\$35,960	\$30,160		\$68,940
C5	Protect Historic Structure	Study	\$3,360	1	F		\$3,360			\$3,360
F1	Replace Burned Culvert	Culvert	\$8,200	1	F		\$8,200			\$8,200
F5	Road Stabilization	Repair	\$4,150	1	F		\$4,150			\$4,150
O1	NOCA Fires BAER/BAR Plan	Plan	\$75,950	1	F		\$78,814			\$78,814
W1	Road & Culvert Cleaning	Storm Event	\$4,168	12	F		\$25,007	\$16,671	\$8,336	\$50,014
W2	Replace Safety Signs	Sign	\$627	20	F		\$12,540			\$12,540
W3a	Stabilize Potential Hazmat Site	Containment	\$8,420	1	F		\$8,420			\$8,420
W3b	Investigate Potential Hazmat	Study	\$15,000	1	S		\$15,000			\$15,000
W4	Wolverine Fire Watershed Assessment	Assessment	\$3,100	1	F		\$3,100			\$3,100
W5	Restore Flood Control Berm	Berm	\$12,570	1	F		\$12,570			\$12,570
W6	Channel Debris Removal	Clearing	\$4,340	1	F		\$4,340			\$4,340

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

W7	Road Closure	Closure	\$932	12	F		\$5,592	\$3,728	\$1,864	\$11,184	
W8	Repair USGS Gaging Station	Repair	\$20,000	1	C		\$20,000			\$20,000	
<b>TOTAL COSTS</b>							<b>\$2,820</b>	<b>\$289,721</b>	<b>\$61,623</b>	<b>\$42,560</b>	<b>\$ 393,904</b>

Below is a summary of the rehabilitation costs proposed for funding from the subactivity B11 BAR funding source, followed by the proposed funding for each fiscal year. Individual treatment specifications are found in the **SPECIFICATIONS** section of this plan.

### SUMMARY OF ACTIVITIES AND COSTS - BAR

SPECIFICATION #	TITLE	UNIT	UNIT COST	# OF UNITS	WORK AGENT	TOTAL COSTS
F2	Replace Traffic Counter	Counter	\$ 350.00	1	F	\$ 350
F3	Trail Repair	Site	\$ 19,172.00	5	F	\$ 95,860
F4	Repair Campgrounds	Campground	\$ 4,900.00	2	F	\$ 9,800
F6	Replace Rock Shelter Boardwalk	Boardwalk	\$ 179,420.00	1	F	\$179,420
O2	BAER/BAR Implementation Leader	Year	\$ 18,533.00	3	F	\$ 55,599
V1	Invasive Species Control	Acres	\$ 391.00	371	F	\$145,061
V2	Berm Revegetation	Berm	\$ 22,560.00	1	F	\$ 22,560
V3	Hazard Tree Assessment and Mitigation	Acres	\$ 781.50	20	F	\$ 15,630
<b>TOTAL COSTS</b>						<b>\$524,280</b>

### SUMMARY OF ACTIVITIES AND COSTS BY YEAR - BAR

SPEC #	TITLE	UNIT	UNIT COST	# OF UNITS	WORK AGENT	COSTS FY 2016	COSTS FY 2017	COSTS FY 2018	TOTAL COSTS
F2	Replace Traffic Counter	Counter	\$350	1	F	\$350			\$350
F3	Trail Repair	Site	\$19,172	5	F	\$89,740	\$3,060	\$3,060	\$ 95,860
F4	Repair Campgrounds	Campground	\$ 4,900	2	F	\$4,900			\$9,800
F6	Replace Rock Shelter Boardwalk	Boardwalk	\$179,420	1	F	\$179,420			\$179,420
O2	BAER/BAR Implementation Leader	Year	\$18,533	3	F	\$ 26,800	\$14,400	\$14,400	\$ 55,600
V1	Invasive Species Control	Acres	\$391	371	F	\$48,790	\$48,190	\$48,190	\$145,170
V2	Berm Revegetation	Berm	\$22,560	1	F	\$7,520	\$7,520	\$ 7,520	\$ 22,560
V3	Hazard Tree Assessment and Mitigation	Acres	\$781	20	F	\$7,080	\$5,010	\$ 3,540	\$ 15,630
<b>TOTAL COSTS</b>						<b>\$364,600</b>	<b>\$75,120</b>	<b>\$73,650</b>	<b>\$524,390</b>

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**NORTH CASCADES 2015 FIRES INFORMATION**

**Fire Information**

<b>FIRE LOCATION AND BACKGROUND</b>	
FIRE NAMES	GOODELL, GOODE, WOLVERINE
FIRE CODE	9475-FN3G
PARK	NORTH CASCADES NATIONAL PARK SERVICE COMPLEX
STATE	WASHINGTON
REGION	PACIFIC WEST
IGNITION DATE	AUGUST 10, JULY 29, JUNE 29, 2015
CONTAINMENT DATE	UNCONTAINED
ACRES	7,111, 616, 2656 ACRES

**Assessment Team**

<b>TEAM MEMBERS</b>	
TEAM LEADER, CHIEF OF RESOURCES	JACK OELFKE, NORTH CASCADES
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HYDROLOGIST	SCOTT SHEPPARD, UNIVERSITY OF ARIZONA
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ARCHEOLOGIST	KIM KWALSICK, NORTH CASCADES
GEOGRAPHIC INFORMATION SYSTEMS	KAREN KOPPER, NORTH CASCADES
TECHNICAL ADVISOR	NELSON SIEFKEN, PACIFIC WEST REGION

**BURNED AREA ASSESSMENTS**



## WATERSHED BURNED AREA ASSESSMENT

### Background

This report summarizes the results from the hydrologic assessment of three fires within the North Cascades National Park System Complex (NOCA) during 2015. Analysis of soil and watershed changes caused by the fires are discussed, particularly those that pose elevated threats to human life and property, as well as critical natural and cultural resources.

The Goodell, Goode, and Wolverine fires were scattered across 40 miles in the Cascade Mountains. The western Cascades and eastern Cascades, which have distinctly different climates, will likely see differences in post-fire watershed recovery time and response. The western side has higher rainfall, lower snowfall, and maritime-influenced temperatures (Figure 1), whereas the eastern side has lower rainfall, higher snowfall, and more continental temperatures (Figure 2).

Climate models project at least a 95 percent chance of El Niño continuing through the winter of 2015 (NOAA 2015a). For this region of Washington, El Niño years tend to push the jet stream south, resulting in reduced fall and winter precipitation (NOAA 2015b). Elevated temperatures also cause precipitation to fall as rain instead of snow. Additional impacts to the snowpack could include higher levels of ablation, especially for the Goode and Wolverine Fires which have a more arid climate. Ablation causes burned areas to hold less snowpack thereby producing less runoff than adjacent unburned areas (Harpold et al. 2014). These factors generally suggest decreased snowpack may occur within burn scars during the winter of 2015/2016, which could decrease potential for snowmelt-driven flooding in the spring of 2016.

### Goodell Fire – Site Description

This fire burned in a very steep landscape in the upper Skagit Valley. Hard metamorphic bedrock known as Skagit Gneiss was deeply eroded by multiple excursions of the Cordilleran Ice Sheet, alpine glaciers, and their meltwaters. The resistant bedrock composes the near vertical walls of the Skagit River Gorge, which was a major hydrologic divide until it was breached by the south-bound Pleistocene ice sheet.

The floor of the gorge lies 6500 feet below the summit of nearby Davis Peak, creating some of the greatest local relief in the lower 48 states. The walls of the gorge were generally smoothed by the through-flowing ice-sheet, which also removed most surficial deposits. Several first and second order streams plunge steeply down the walls of the gorge, including Falls Creek and Gorge Creek within the burn area. Falls Creek, just above State Highway 20, is choked by very large boulders deposited by a December 2003 rock avalanche. Gorge Creek enters the Skagit River via a steep fault-controlled canyon spanned by a highway bridge and does not present a debris flow hazard. Primary geologic hazards within the gorge are rock and ice falls, falling trees, debris flows, and snow avalanches. These events frequently close State Route 20 at Newhalem, particularly during the winter.

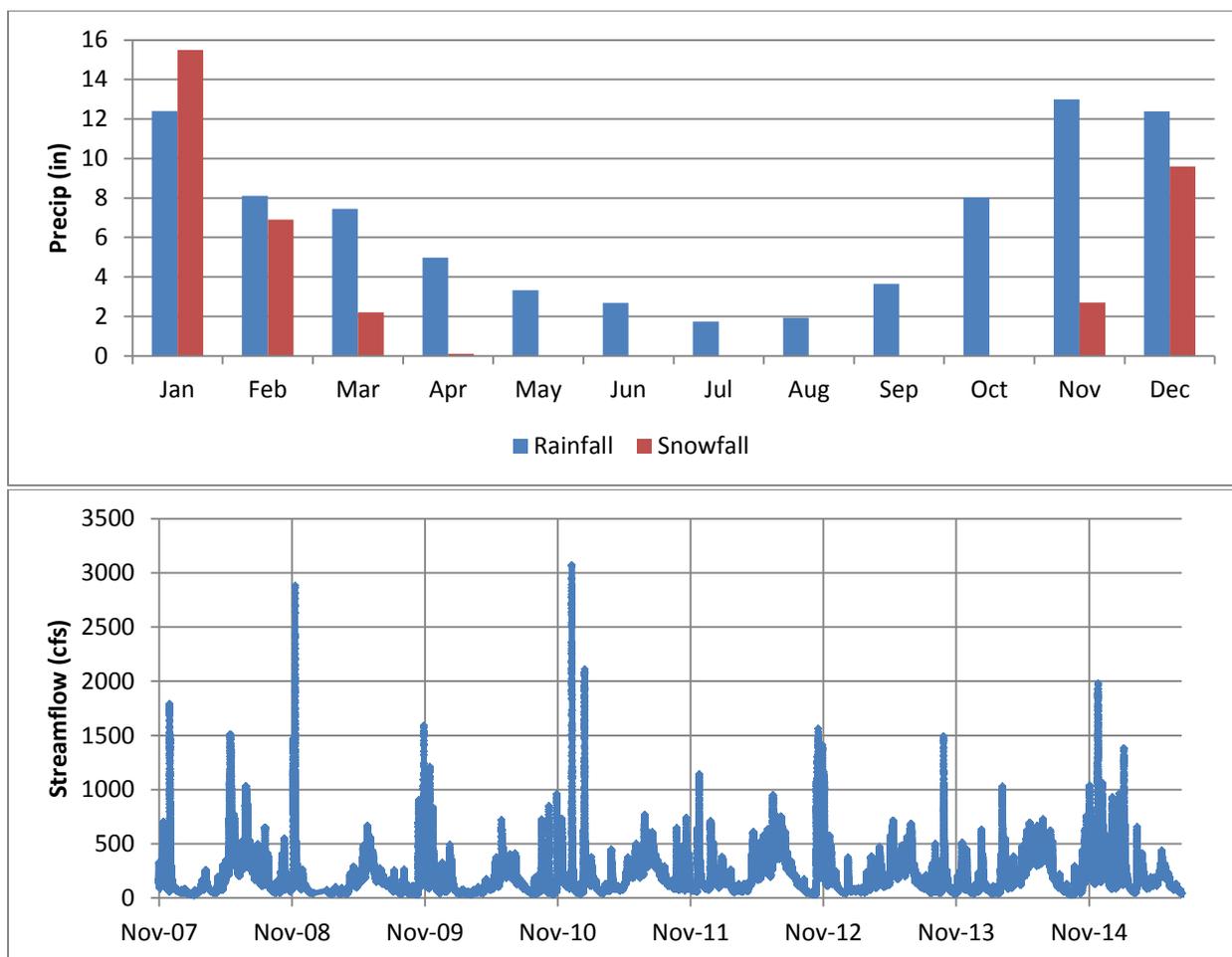


Figure 1. Average monthly precipitation (top) and streamflow (bottom) for Newhalem Creek at Newhalem, WA<sup>1</sup>.

The climate of the Goodell Fire is classified as maritime, with cool dry summers and mild, wet winters. Annual precipitation at Ross Dam at the east end of Skagit Gorge is 59 inches, with most falling as rain from November to April. The location of the gorge 80 miles inland from Puget Sound is also influenced by large cold-weather outbreaks originating on the Fraser Plateau in winter. These storms bring sustained high winds from the northeast and cause the formation of ice on the walls of the gorge. Mean annual temperature at Ross Dam is 48.7° F, while mean July and January temperatures are 84° and 25° F, respectively.

### Goode Fire– Site Description

The Goode fire burned in the upper Stehekin watershed in an area known as the Crystalline Core of the North Cascades Mountains. This area is underlain by fairly competent Skagit gneiss bedrock carved into a U-shaped valley by alpine glaciers during the Pleistocene Epoch. The fire

<sup>1</sup> Precipitation record from NOAA COOP station #455840 at Newhalem (1959-2013); streamflow data from USGS station #12178100 on Newhalem Creek (2007-2015).

burned mainly on the steep valley wall on the northeast side of Park Creek, about 4.5 miles above its confluence with the Stehekin River. The steep valley wall regularly produces debris flows that follow first-order stream channels to the floor of the Park Creek valley, where they have built debris cones. These debris flow events are caused by the ‘flashy’ runoff produced by southwest facing slopes, large fields of loose sediment left by retreating glaciers on the mountain top, long steep slopes that traverse 4500 feet of elevation from ridge top to valley floor, and periods of seasonal periods of heavy rainfall. The most recent debris flow that occurred in the area burned occurred in fall 2006 after sustained heavy rainfall in November. Steep slopes and heavy snowfall also produce large snow avalanches at the site of the fire. The avalanche chutes are covered by dense slide alders, and this vegetation type limited growth of the fire on its northwest edge.

The Goode Fire burned just east of the Pacific hydrologic crest in an area with a climate classified as continental with cold wet winters and dry hot summers. Temperature and precipitation vary considerably with aspect and elevation with this area, and the upper part of the fire may be considered to have a Highland climate with most precipitation falling as snow and a short growing season. The nearest meteorological station to the fire is a SNOTEL site located on Park Creek Ridge just south of the Goode Fire. This site has an elevation of 4592 feet and has been in service since 1978. Most precipitation falls between November and March, with mean annual precipitation of 67 inches and a reported December maximum monthly rainfall of 30 inches. Mean annual temperature at Park Creek SNOTEL is 38.8° F, with peak average monthly temperatures of 56.5 ° F occurring in August.

Although little precipitation falls in this area during summer, the upper Stehekin watershed is prone to intense thunderstorms in July and August. For example, on September 5 and 6, 2013 two powerful thunderstorms developed on the east slope of the North Cascades and migrated north along the east side of the Pacific Crest from Leavenworth, Washington to the Canadian border. The storms triggered debris flows all along its path, including several in Stehekin where the first event dumped 1.2” of rain at the Stehekin Airstrip in three hours and a second storm dropped 0.6” in an hour. A third downpour occurred around midnight on September 6, when 1 additional inch of rain fell at the airstrip. The storms left a combined 2.82 inches of rain within 18 hrs. It is possible that higher rainfall totals were received in the mountains above Stehekin. Based on Technical Paper 40 issued by NOAA, the September 5 and 6 three hour rainfall amounts would be expected to occur about every 25-50 years.

## **Wolverine Fire – Site Description**

The Wolverine Fire burned an area underlain by resistant Skagit Gneiss bedrock. The fire started on the mid slopes of Castle Rock, and spread laterally to adjacent drainages on the northeast, where it entered Lake Chelan National Recreation Area. The northeast-facing slopes of Castle Rock dip steeply down to the waters of Lake Chelan, the third deepest lake in the United States.

Steep valley walls were cut by multiple episodes of continental and alpine glaciation during the Pleistocene Epoch. The most recent ice to occupy this part of the Chelan valley was the mile-tick Cordilleran Ice Sheet, which occupied this part of the valley between about 18,000 and 16,000 years ago. The ice sheet left a patchy veneer of sand-textured glacial till and outwash along the

slopes of the valley, which are generally thicker at lower elevations near the valley floor.

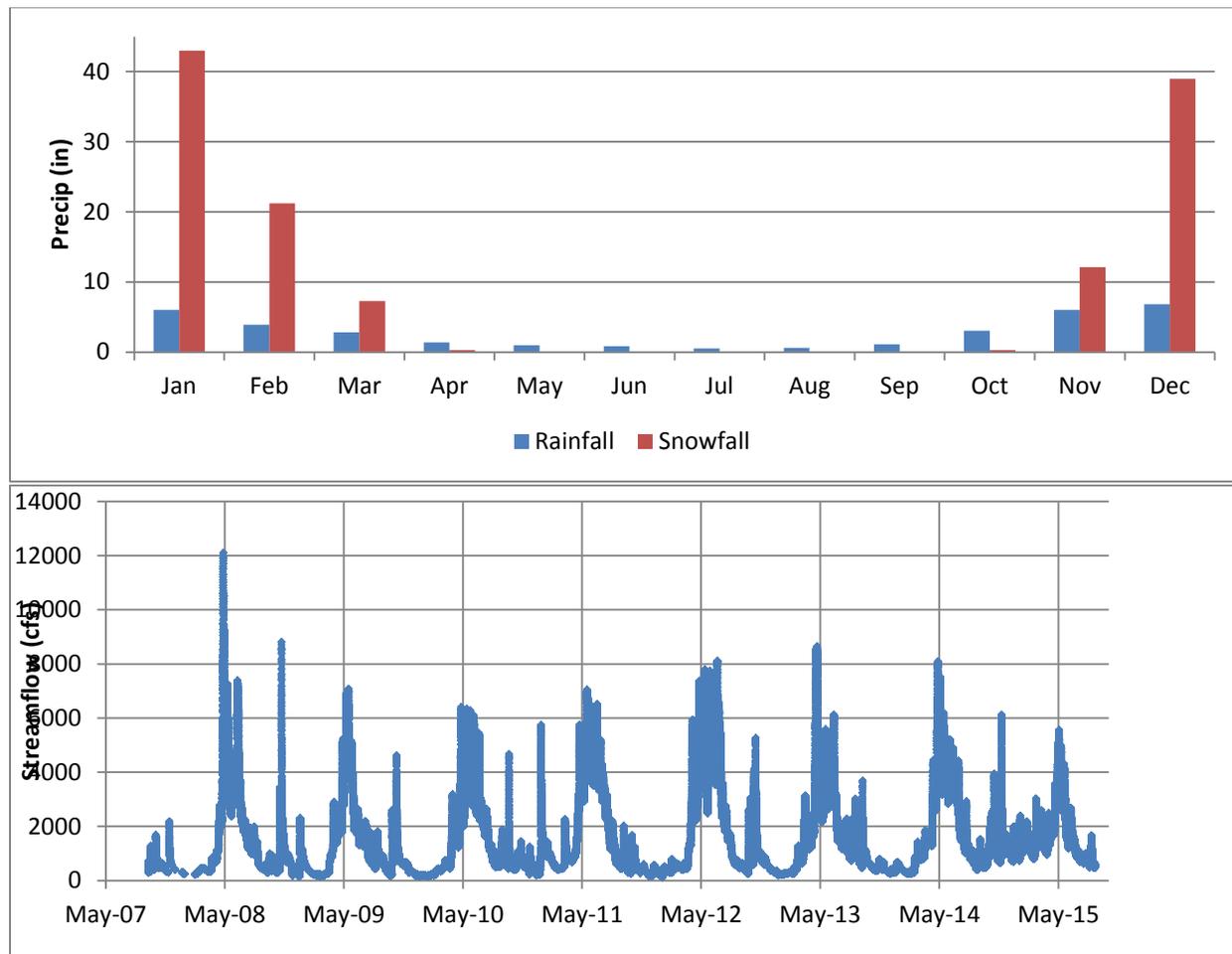


Figure 2. Average monthly precipitation (top) and streamflow (bottom) for Stehekin River Stehekin, WA.<sup>2</sup>

Several small steep first and second order streams cut across the burned slopes above Lake Chelan, including Castle Creek, Riddle Creek and Bridal Veil Creek. They all have deposited debris cones where they reach the waters of Lake Chelan. Several of these streams have undergone debris flows in the recent past. Canyon Creek carried a debris flow in September 2013, while Castle Creek had a debris flow after heavy fall rain in 2003.

Stehekin (1100 feet elevation) is located across the lake from the fire and has a continental type climate with cold, snowy winters and hot dry summers. Stehekin has a weather record that spans more than 100 years since 1906. Mean annual precipitation in Stehekin is 33 inches, with most falling as snow between November and March. Mean annual temperature at Stehekin is 47.3° F. Reflecting the strong continental influence mean July temperature is 58° F, while mean January temperature is 37° F. The area of the Wolverine Fire would be subjected to the same types of storms with similar impacts as detailed in the Goode Fire section above regarding the September

<sup>2</sup> Precipitation record from NOAA Coop station at Stehekin (1906-2015); streamflow data from USGS Station (#12451000) on the Stehekin River (2007-2015).

5 and 6, 2013 storm.

## **Soil Erosion/Debris Flow**

Soil erosion potential generally increases following a fire. This is largely due to loss of soil cover (forbs, grass, leaf, and needle litter), surface horizon soil organic matter responsible for structural stability, and in some cases, increased water repellency at or near the soil surface. The amount of increase over pre-fire condition is related to the degree of soil changes.

The soil factors most affected by fire are: 1) the amount of effective cover, 2) the susceptibility of particles to wind, water, or gravity (a function of soil texture and structural stability), and 3) the surface infiltration rate. Areas of high soil burn severity can be expected to show larger increases in sediment production than areas of low soil burn severity due to the concomitant decrease in soil cover, increase in susceptibility of soil particle detachment, and decrease in the infiltration capacity of the soil. It is important to understand pre-fire erosion behavior when assessing post-fire erosion, since some areas have water repellent surfaces and inherently high erosion potential even before the fire.

The major source of sediment delivery in these watersheds is in the form of debris flows from tributary streams or first order debris chutes into the main channels. This delivered sediment has and continues to contribute to the formation of debris cones and alluvial fans at the mouth of drainages. Debris flow deposits and alluvial fans tend to gradually heighten their debris cones by channel aggradation and overtopping which can cause channel migration. Consequently, structures on debris cones and fans are at risk of being damaged or destroyed during a debris flow event even if they are not located on the active channel.

Increased erosion rates induced by fire will substantially elevate the risk of debris flows for at least the next 5 years or until vegetation has substantially recovered in the burned areas. Even low-intensity precipitation and snow-melt events can trigger debris failures from burned areas.

The hazard from rockfall and falling debris on very steep slopes may increase below burned areas due to spalling of rock and loss of vegetation and roots supporting logs, rocks, and other debris. Spalling of rock occurs as a result of unequal heating of rocks in fire that causes rocks to shatter into potentially more mobile pieces. Rock, soil, logs, and other debris often accumulate behind trees and other vegetation on steep slopes. Loss of this vegetation during a fire can destabilize this material.

## **Watershed Response**

Overland flow occurs as a result of rainfall that exceeds soil infiltration capacity and the storage capacity of depressions. On the unburned forest floor, overland flow is often absent or meanders around organic obstacles. Fire removes these obstacles, resulting in higher energy, concentrated flows in straighter flow paths that can result in rill erosion. At the watershed scale, the formation of rills that have a high water conveyance capacity reduces the times of concentration or the amount of time for overland flow to reach a defined point within the watershed.

Raindrops striking exposed mineral soil with sufficient force can dislodge soil particles in a process known as splash erosion. These dislodged particles can fill and seal pores in the soil thereby reducing infiltration. Further, once soil particles are detached by splash erosion they are more easily transported in overland flow. Surface erosion is defined as the movement of individual soil particles by a force (wind, water, or gravity), and is initiated by the planar removal of material from the soil surface (sheet erosion) or by concentrated removal of material in a downslope direction (rill erosion). Surface erosion is a function of four factors: 1) susceptibility of the soil to detachment, 2) magnitude of external forces (raindrop impact or overland flow), 3) the amount of protection available by material that reduces the magnitude of the external force (soil cover), and 4) management practices that can reduce erosion.

Wildland fires typically cause an increase in watershed responsiveness to precipitation events. Burned watersheds can quickly yield runoff due to the removal of protective tree and shrub canopies and litter and duff layers, thus producing flash floods. Burned areas often respond to the local storm events in a much flashier way. The amount of water yield increase is variable and it is often orders of magnitude larger than pre-fire events. Fires may increase the number of runoff events as well since it generally takes a smaller storm to trigger runoff until vegetation begins to recover. Peak flow increases from the fire may also be augmented by floatable and transportable material within the active channels.

Throughout the fire area, vegetation recovery is largely dependent on climatic cycles. If wet winters occur, vegetation recovery could be rapid, with forbs and grasses providing ground cover similar to that observed in unburned areas throughout the fires. By the second winter season, forbs, grasses, and re-establishing shrubs should provide sufficient cover to reduce any increase in watershed response to near pre-fire levels. Once sprouting vegetation begins to produce brushy crowns and a duff/litter layer, watershed response will be reduced further. However, if winters are dry, vegetation recovery will be slow, and thus the establishment of ground cover and shrub communities will be slow, and watershed response will remain slightly elevated over pre-fire conditions.

A consequence of significant runoff, erosion, and sediment and debris delivery is a short-term degradation of water quality as ash, sediment, and burned organic debris are delivered to streams and lakes within and downstream of burned areas during the first few fall storms. The impacts of this effect depend largely on the vegetative recovery times in combination with storm characteristics in the same time period.

## **Soil Burn Severity**

Soil burn severity mapping is intended to reflect the degree to which fire has changed soil characteristics that affect soil health and hydrologic function, and hence erosion rate, and runoff potential. Watershed assessments were conducted using a combination of tools and methods: satellite imagery, helicopter surveys, and ground surveys. Due to terrain and time constraints, the Goode and Wolverine Fires could only be assessed through helicopter surveys and satellite imagery. These methods provided sufficient information to achieve the purpose of this analysis which was to make emergency recommendations.

Satellite images taken before and after the fires on the Landsat 8 platform<sup>3</sup> were utilized to derive a Burned Area Reflectance Classification (BARC) map by the USGS Earth Resources Observation and Science Center. This map classified burned areas into four categories: unburned, low severity, moderate severity, and high severity. BAER team members examined the accuracy of this image through field and helicopter observations from September 7-11, 2015. Given the extreme relief, remote locations, and time frame for assessment of fire effects observed on the ground, it was determined that a thorough calibration of all BARC maps was not possible, so true soil burn severity maps have not been developed. Although not a true soil burn severity map, given the field access limitations and time constraints, the raw BARC map is being used as a proxy for a soil burn severity map.

<b>Fire</b>	<b>Unburned Acres (%)</b>	<b>Low Severity Acres (%)</b>	<b>Moderate Severity Acres (%)</b>	<b>High Severity Acres (%)</b>	<b>Total Acres (%)</b>
Goodell	3,463 (47%)	1,302 (18%)	1,719 (23%)	844 (12%)	7,328 (100%)
Goode	122 (19%)	110 (17%)	242 (37%)	181 (28%)	655 (100%)
Wolverine (NPS)	971 (38%)	631 (25%)	774 (30%)	196 (8%)	2,572 (100%)
Wolverine*	1,670 (36%)	1,275 (28%)	1,369 (30%)	292 (6%)	4,606 (100%)

\*(within HUC 12 watershed containing NPS resources)

Table 1. Burn Severity Statistics derived from Raw BARC map.

For both the Goodell and the Goode fires, the last mapped fire perimeter shows minor discrepancies in the total number of burned acres from what was detected using the Landsat 8 satellite-derived Burned Area Reflectance Classification (BARC) map. For the Goodell Fire, 221 additional acres were included to reflect islands of significant burn severity, primarily in Newhalem Creek drainage (Figure 3). For the Goode fire, 39 acres were added, primarily in the northeast portion of the fire to include an area of mostly moderate burn severity (Figure 4). The BARC map acreages for the NPS portion of the Wolverine Fire (Figure 5) are very close to those calculated by fire mapping.

<sup>3</sup> Goode Fire: 8/7/14 & 9/11/15; Goodell Fire: 8/10/15 & 9/11/15; Wolverine Fire: 7/2/15 & 9/11/15

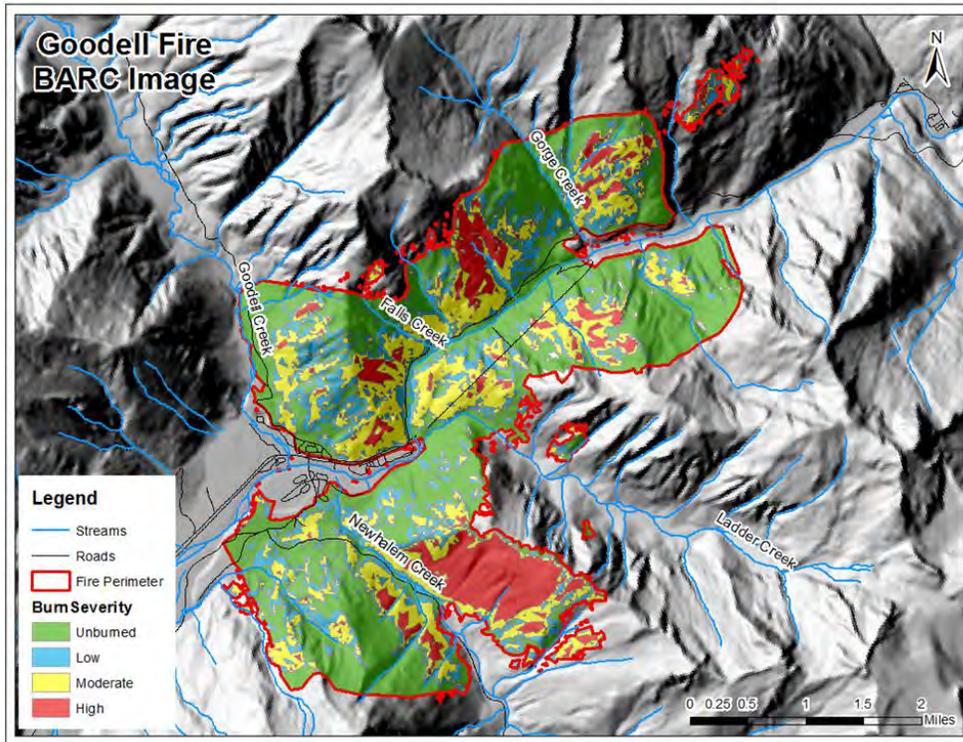


Figure 3. BARC map of the Goodell Fire.

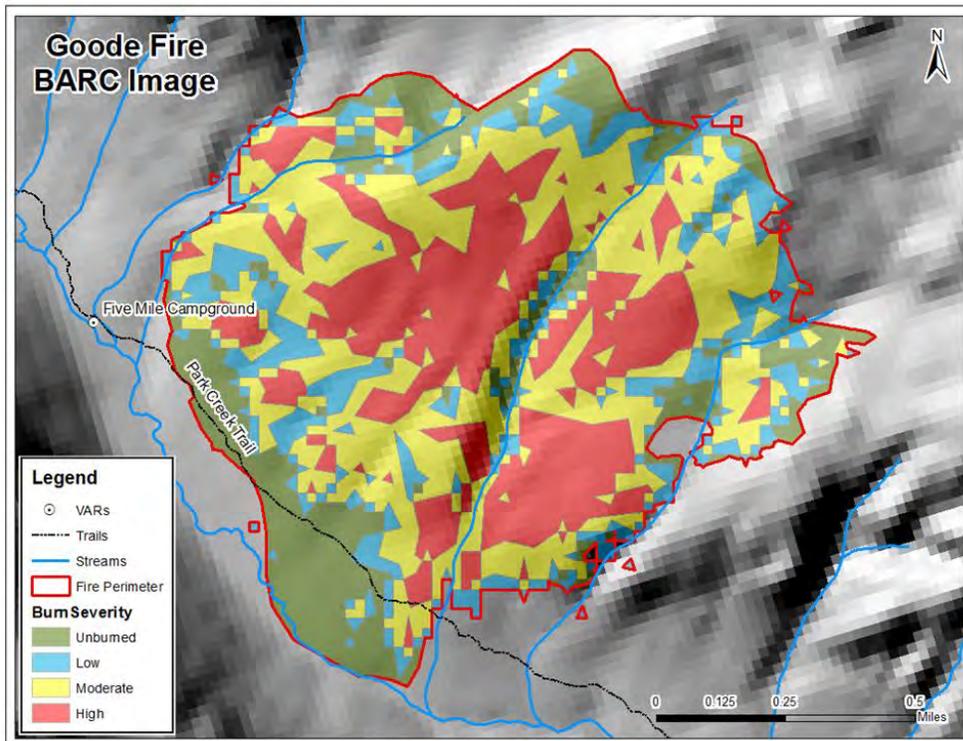


Figure 4. BARC map of the Goode Fire.

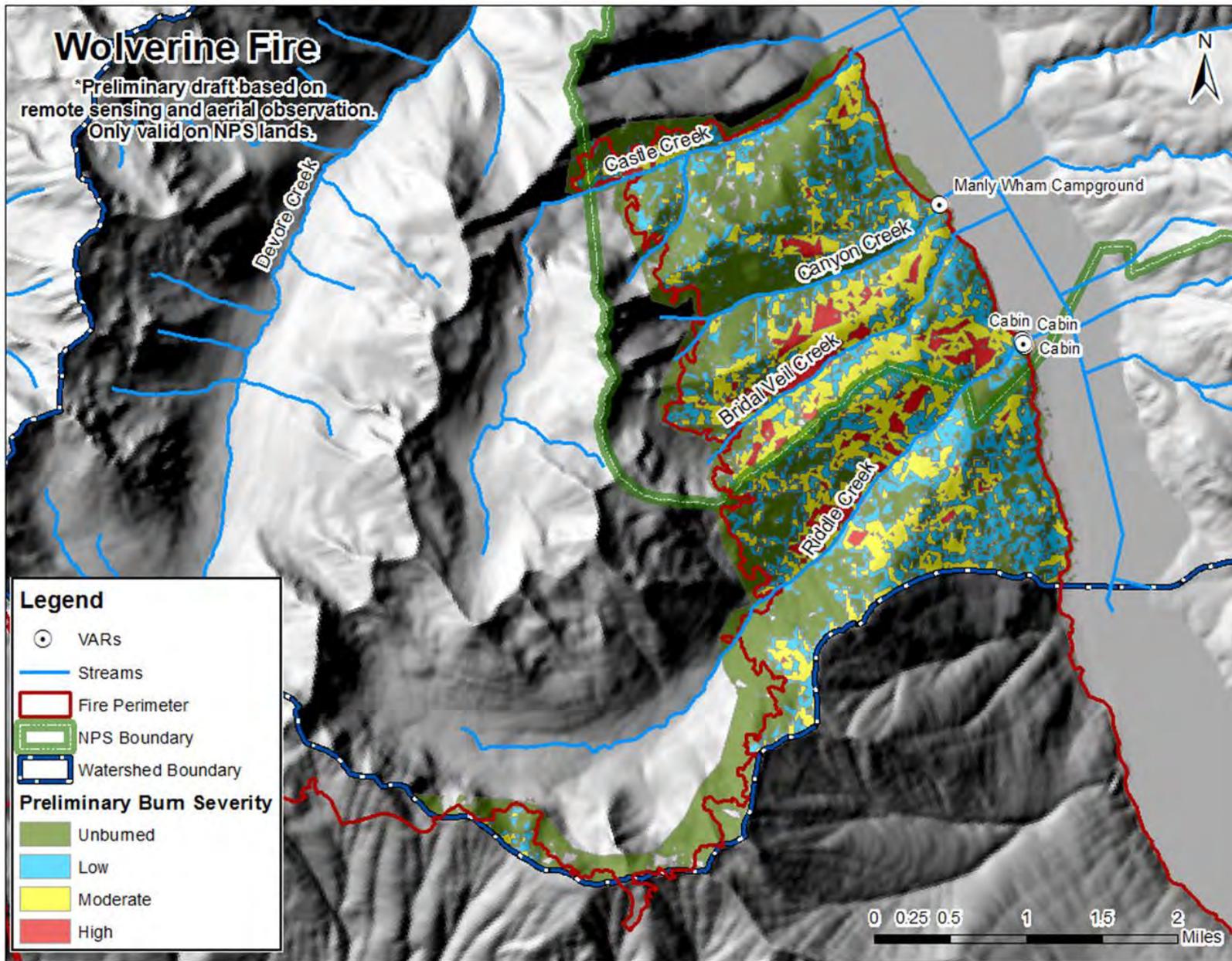


Figure 5. BARC map of the Wolverine Fire. Only watersheds that are partially or entirely within NPS jurisdiction are included.

## **Watershed Modeling**

One of the primary applications of a BARC or a Soil Burn Severity map is to spatially characterize changes to landscapes for watershed response analysis. The Automated Geospatial Watershed Assessment tool (AGWA) was used to perform hydrologic modeling for several of the watersheds affected by three of the NOCA Fires. Specific catchments were delineated for areas or points of greater concern. The AGWA tool uses a Digital Elevation Model (DEM) to define a watershed and break it up into modeling elements. Modeling elements are then intersected with soil and land cover geospatial layers to derive requisite model input parameters (Goodrich et al, 2005). Once parameters were assigned, the KINEROS2 (K2) model was used to estimate rainfall runoff response in both an unburned and a burned condition to get a sense of the anticipated change. AGWA is designed to provide qualitative estimates of runoff and erosion relative to landscape change for rapid assessments. It cannot provide reliable quantitative estimates of runoff and erosion without careful calibration. It is also subject to the assumptions and limitations of the component hydrologic model that is being run (Goodrich et al, 2005).

Although thunderstorms are not common in this region, they do happen and were the ignition source for the NOCA fires. The high intensity nature of this sort of convective storm is known to create post-fire flooding. For these reasons the AGWA/K2 model was run using a 25-year, 1-hour storm event that produces 1" (Hershfield, 1961). Additionally, the use of this duration and intensity of rainfall was used to emulate periods of higher intensity rainfall within the more common frontal sort of rainstorm that occurs on the western side of the Cascades.

Watershed modeling results are summarized in Table 2. Spatial representations of modeling results are provided throughout this report. Once again, it is reiterated that watershed modeling results provided here are for qualitative interpretation. Time constraints as well as model limitations prohibit quantitative use of this tool. However, model results are still quite useful in the qualitative capacity for management decisions.

## **Debris Flow Modeling for Increased Hazard**

Debris flow modeling was performed by USGS debris flow specialist Dennis Staley. Although the extreme topographic relief of the burned area makes it naturally prone to debris flow and does not fit model design structure well, efforts were made to investigate the potential for increased risk of debris flow due to the fire. Low and moderate increases to debris flow hazard result from the Goodell Fire and the NPS fraction of the Wolverine Fire. The Goode Fire was not modeled by Mr. Staley as the risk of debris flow at the 5 Mile Campground was not increased by the occurrence of the fire. Only the northernmost portion of the Wolverine Fire was modeled for debris flow as a part of the NPS BAER effort. Cartographical representations of elevated debris flow risk according to this modeling effort are provided in this report in the relevant sections.

Fire	Stream/Hillslope	Peak flow increase (%)
<b>Goodell</b>	Newhalem Creek (s)	<b>442</b>
	Goodell Creek (h)	<b>45</b>
	Ladder Creek (h)	<b>75</b>
<b>Goode</b>	Unnamed Creek (s)	<b>78</b>
<b>Wolverine</b>	Canyon Creek (s)	<b>84</b>
	Riddle Creek (h)	<b>439</b>

Table 2. Pre-fire & post-fire flow storm flow increases using 25-year return interval with 1 hour intensity storm event of 1.0 inches. Note: (s) signifies streamflow and (h) signifies hillslope runoff, the most significant change to runoff or streamflow close to the value was selected to illustrate increased hazard potential.

The primary watershed responses of these 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**

The interdisciplinary BAER team identified all known VARs within the burn area including cultural resources, natural resources, infrastructure, and locations of potential threat to life and property. The team systematically visited, evaluated, and discussed any needs for treatment for each VAR based on field observations and watershed modeling results (Table 3).

<b>Fire</b>	<b>Site</b>	<b>Issue</b>
<b>Goodell</b>	Water intake to powerhouse & road	Increased risk of flooding, debris flows, and rock fall
	Road to powerhouse	Increased risk of flooding, debris flows, and rock fall
	USGS stream gaging station on Newhalem Creek	Damaged by fire
	Goodell campsites	Exposure to rock fall, flooding, and debris flows
	Culvert near upper Goodell group campsite	Plastic culvert burned in fire
	State Route 20 near Gorge Falls	Increased risk of flooding, debris flows, and rock fall
	Footbridges over Ladder Creek	Increased risk of flooding, debris flows, and rock fall
	Settling tank near Ladder Creek	Scattered debris could mobilize during heavy rainfall; possible hazardous materials present
	Newhalem campground and Visitor Center	Increased risk of flooding, debris flows, and rock fall
	Structures north of SR 20 in Newhalem	Increased risk of flooding, debris flows, and rock fall
	Newhalem Picnic Area	Increased risk of flooding, debris flows, and rock fall
<b>Goode</b>	Five Mile Campsite	Increased risk of flooding, debris flows, and rock fall
	Park Creek Pass Trail	Increased risk of flooding, debris flows, and rock fall
<b>Wolverine</b>	Manly Wham Campground	Increased risk of flooding, debris flows, and rock fall
	Riddle Creek Cabins	Increased risk of flooding, debris flows, and rock fall

Table 3. Values at Risk identified within the three fires assessed for watershed response.

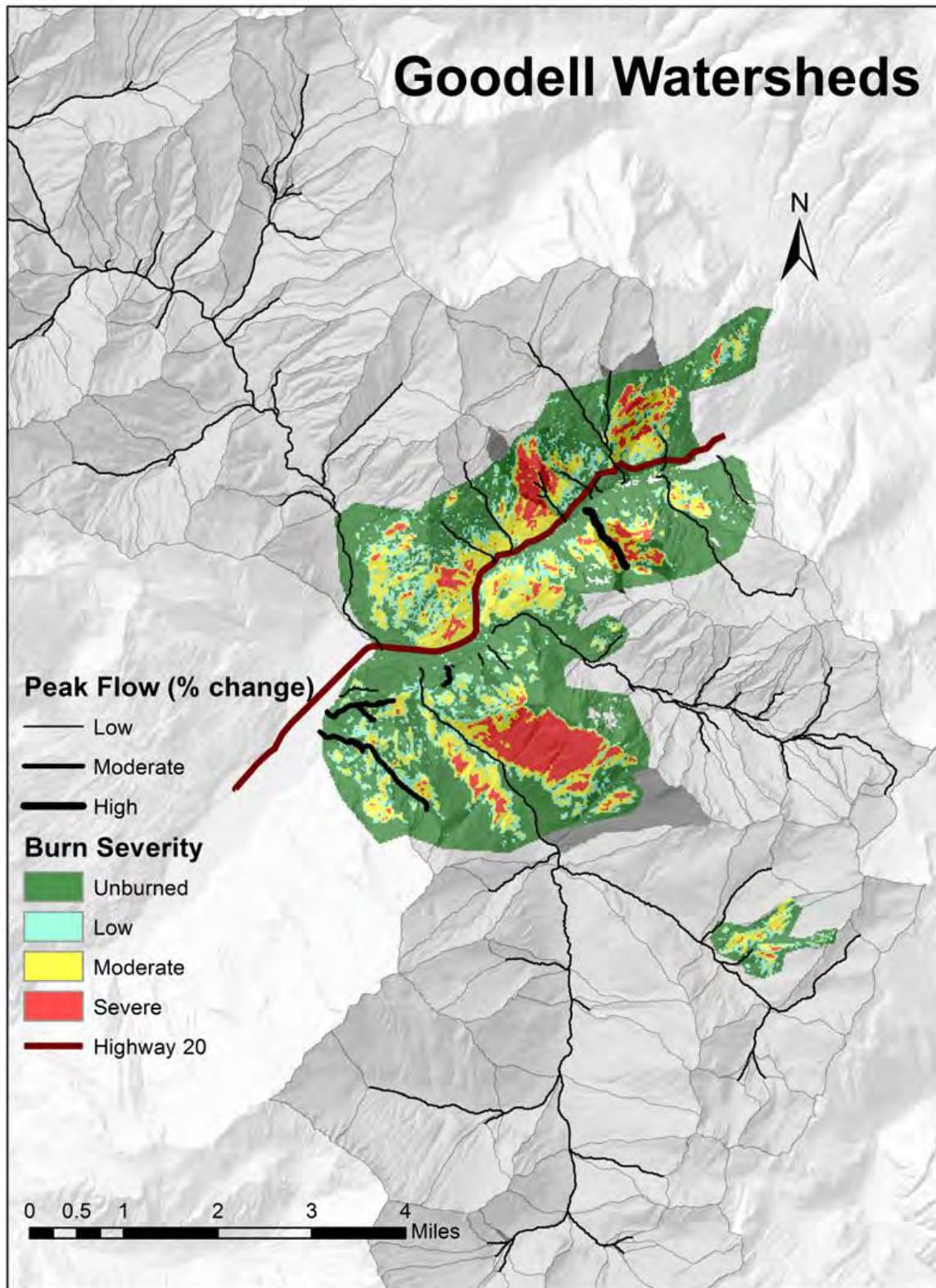


Figure 6. Burn severity and expected degrees of change to streamflow in the Goodell Fire area.

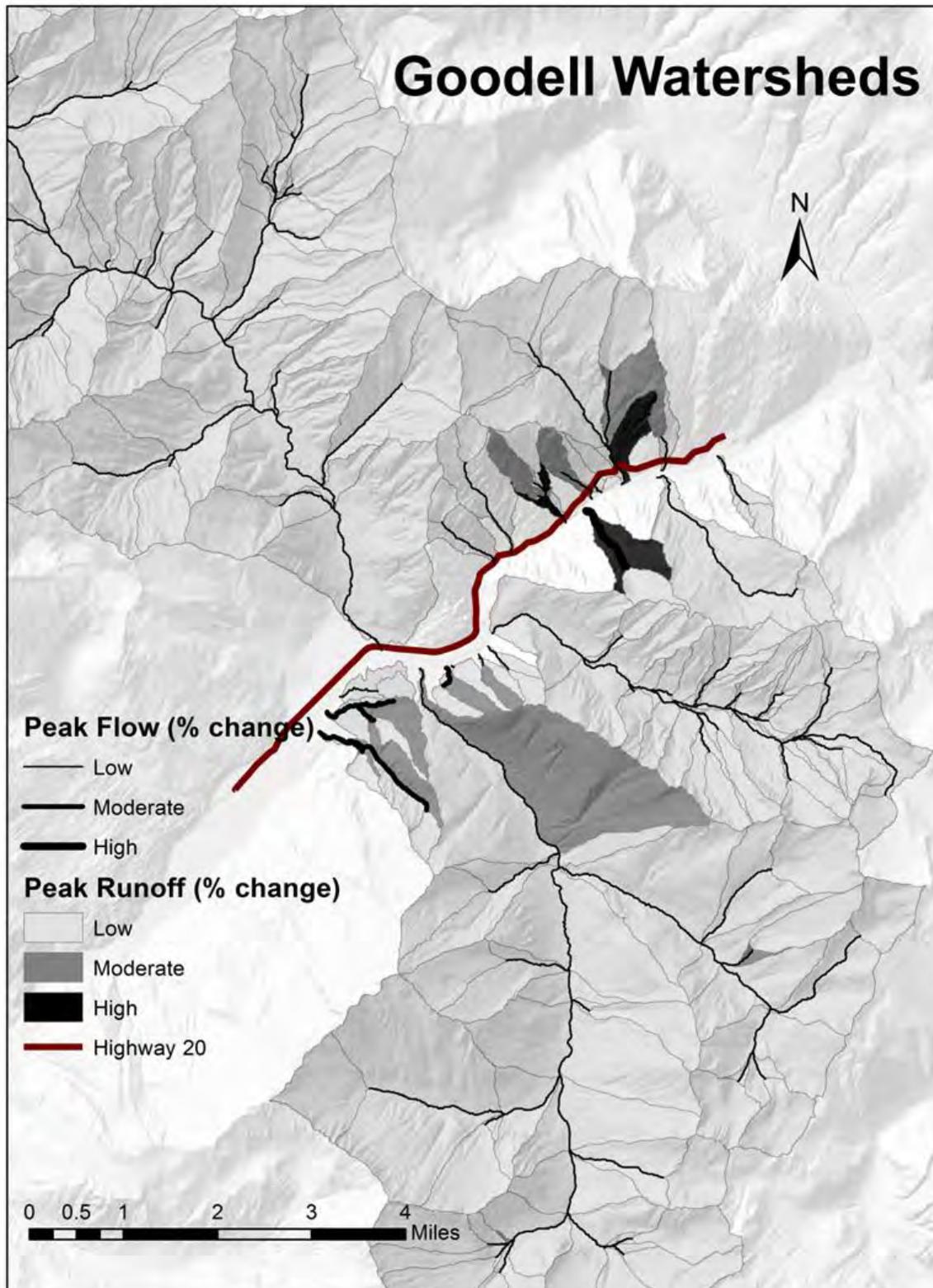


Figure 7. Predicted percent change for streamflow and hillslope runoff within the Goodell burn.

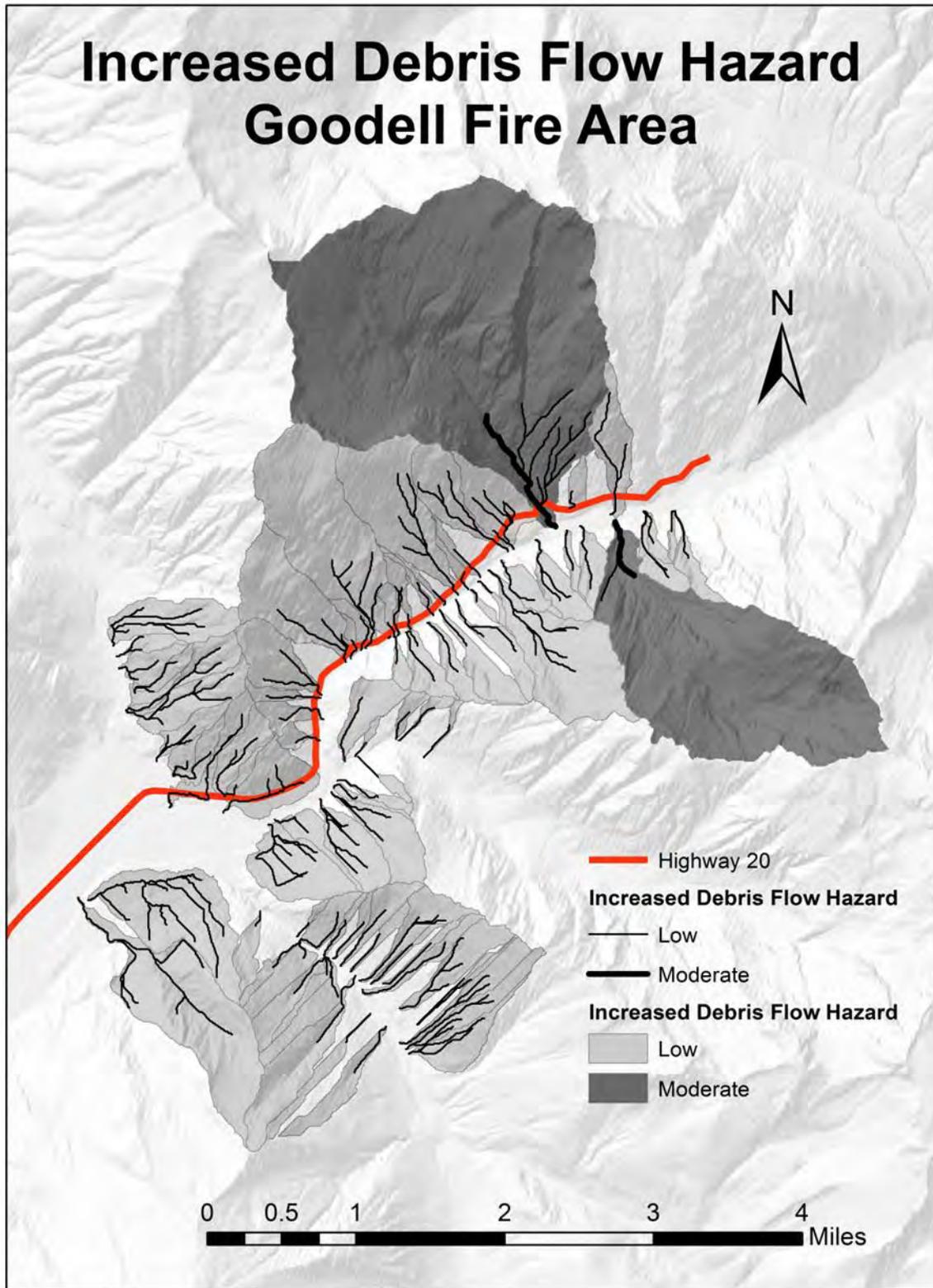


Figure 8. Predicted increases to debris flow hazards within the Goodell Fire burn.

## Goodell Fire

**Seattle City Light powerhouse and inlet on Newhalem Creek.** Seattle City Light operates a hydroelectric powerhouse in the Newhalem Creek drainage. The intake station is comprised of a small building and diversion dam. At the time of the assessment, burned woody debris was partially blocking the intake for the penstock (Photo 1). Accumulation of this debris could cause damage to the infrastructure at the site.



**Photo 1.** Seattle City Light hydroelectric intake station

**Road to powerhouse inlet along Newhalem Creek.** This road is primarily utilized by Seattle City Light. Debris slides have occurred on the road and have a greater likelihood with post-fire conditions. The road is maintained by Seattle City Light.

**USGS streamgage station on Newhalem Creek.** A USGS streamgage station was damaged during the Goodell fire. The mounting pole is bent parallel to the ground and the cross-stream cable is damaged (Photo 2).



**Photo 2.** Damaged USGS streamgage infrastructure.

**Goodell Campgrounds.** All Goodell Creek campgrounds were assessed for increased risk. Numerous hazard trees are present (Photo 3), but no heightened hydrologic risks were detected.



**Photo 3.** Upper Goodell Group Campground.

**Road to Upper Goodell Creek Group Campground.** This road was generally in good condition, but does have multiple hazard trees. A 25' long x 36" diameter plastic culvert in the road matrix of the Goodell Campground road was completely burned (Photo 4).



**Photo 4.** Tree with burned roots below roadbed destabilizing Upper Goodell Creek road (top) and burned culvert along Goodell Creek Road (bottom).

**State Route 20.** This highway through NOCA provides a travel corridor through the park and access between communities on the west and east side of the Cascades. This highway regularly experiences rock fall, debris slides, and tree falls (Photo 5). Additionally, culverts along this route are expected to experience increased flows and susceptibility to clogging with debris.



**Photo 5.** Debris slide mitigation area along State Route 20.

**Footbridges over Ladder Creek.** Two historic, wooden footbridges are located over Ladder Creek. Damage from flood-transported log debris is unlikely, given that both bridges survived the 2003 flood event and several other previous large floods. One bridge suffered significant damage from the fire and subsequent treefall (Photo 6).



**Photo 6.** Lower footbridge (L) and upper footbridge (R) in Ladder Creek drainage.

**Settling Tank near Ladder Creek.** This water settling tank historically provided water to the town of Newhalem and was later repurposed to supply irrigation water in the town. It is not currently used for any purpose (Photo 7). The corrugated aluminum roof burned during the fire.



**Photo 7.** Water settling tank exterior).

**Newhalem Campground.** This campground was unburned during the fire, but is located within burned watersheds. No hydrology issues were detected in the campground.

**Structures north of State Route 20 in Newhalem.** Several building and assets belonging to Seattle City Light, Washington Department of Transportation, and the NPS are located north of State Route 20 in Newhalem and below a steep cliff face (Photo 8). There is a discontinuous berm protecting the structures from nuisance flooding located along the northern side of the buildings. A gap in the berm, which appears to have eroded in a flood event, is located adjacent to the NPS building.



**Photo 8.** Location of recommended berm and channel clearing.

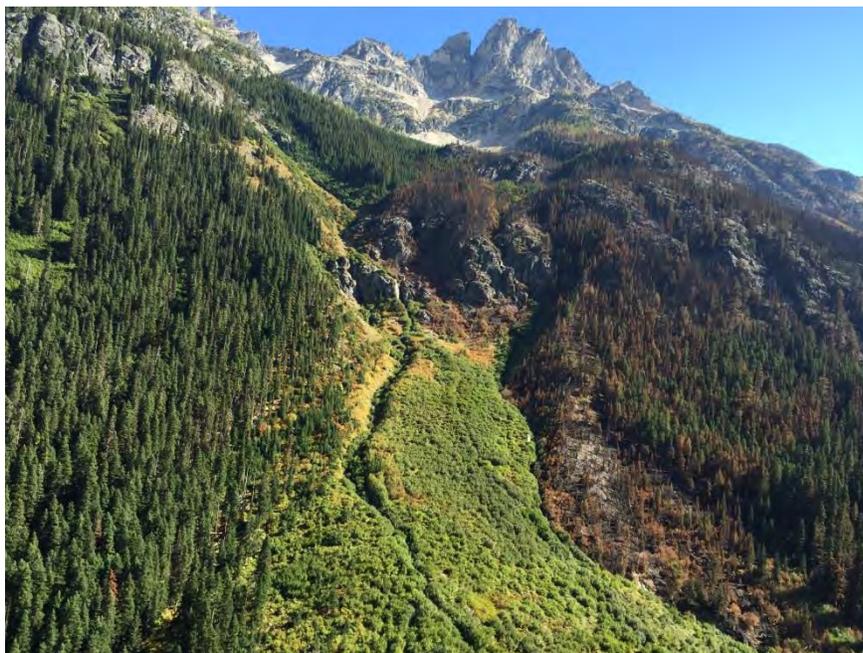
**Picnic Area, Electric Vehicle Charging Station, and Ross Crypt – Newhalem, WA.** A popular picnic area, electric vehicle charging station, and crypt for J.D. and Alice Ross is located north of State Route 20 and directly below of cliffs and steep hillslopes (Photo 9). Several large rocks are located along the base of the cliff, indicating that the area is prone to rock fall.



**Photo 9.** Electric vehicle charging station and picnic area near the Goodell Fire.

## Goode Fire

**Five Mile Campground.** This campground was evaluated during a helicopter survey (Photo 10), through the BARC map, and hydrological modeling. The campground is projected to have relatively low increases in runoff.



**Photo 10.** Burned area above Five Mile Campground

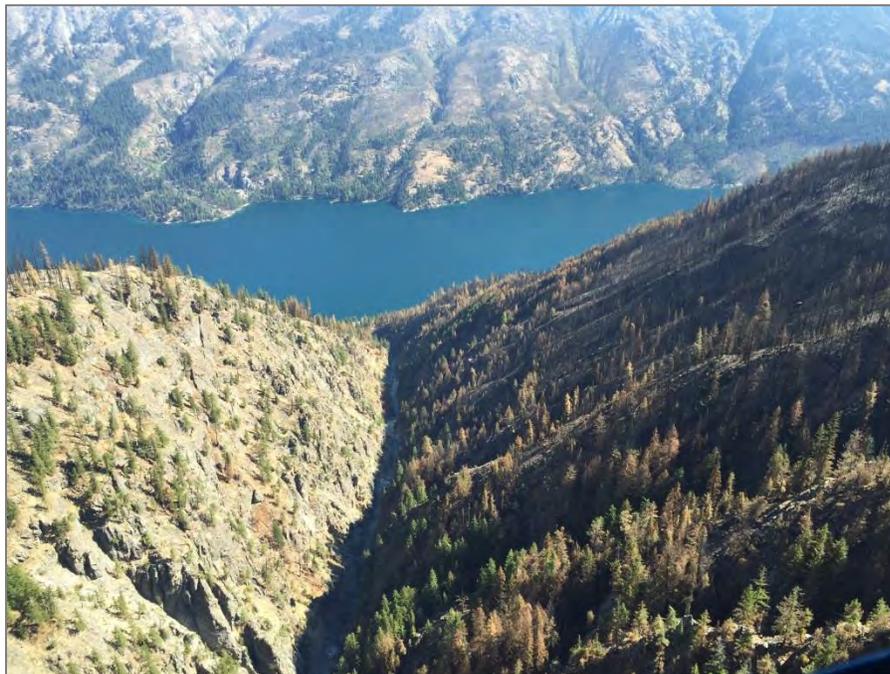
**Park Creek Pass Trail.** This trail was evaluated during a helicopter survey (Photo 11), through the BARC map, and hydrological modeling. The campground is projected to have moderate to high increases in runoff.



**Photo 11.** Burned slopes above Park Creek Pass Trail.

### Wolverine Fire

**Manly Wham Campground.** This campground was assessed during a helicopter survey (Photo 12), and determined to need additional assessment for impacts to life and property.



**Photo 12.** Burned area above Manly Wham Campground.

**Riddle Creek Cabins.** These cabins were assessed during a helicopter survey (Photo13) and through hydrologic modeling using the BARC map. Additional assessments from the ground are needed to determine potential impacts.



**Photo 13.** Burned slopes above Riddle Creek cabins.

## **RECOMMENDED TREATMENTS**

Even in areas affected by moderate to high burn severity, hillslope treatments (e.g., mulch, seeding, contour felling) are not recommended. The mosaic of high, moderate, and low/no burn severity helps to moderate runoff, rock fall, and mudslide risks in most areas adjacent to and below burned slopes. Additionally, it is well documented that hillslope treatments on slopes greater than 60% are ineffective at decreasing risk from flooding, debris flows, and rock fall and the hillslopes in much of the affected area exceed 60%. Site-specific treatment recommendations are described below.

### Goodell Fire

#### **USGS Stream Gage Station on Newhalem Creek**

The USGS gage station upstream of the powerhouse diversion is at greater risk of rock fall and debris flows from post-fire watershed conditions. The BARC map shows the area as high burn severity and modeling of those slopes show high hillslope runoff potential. Field observations show that the gage was damaged by a falling tree(s) and the USGS has been notified of this condition. The gage provides a record of flow conditions upon the creek and is an integral part of

the operation of the adjacent powerhouse diversion. Additionally, real-time flow data provided by the gage could provide advanced warning for the NPS lands downstream of the gage.

Immediate reconstruction of the gage is recommended. *Specification W8* provides \$20,000 to repair or upgrade of the gage. No treatments are advised to protect the gage from rock fall or debris flows; however, care should be taken to inspect, repair, and maintain the gage before or after large storm events to protect employees from rock fall and debris flow risks.

### **Campgrounds and Visitor Center**

Upper Goodell Group, Lower Goodell Group, Goodell, and Newhalem Campgrounds and the Visitor Center were inspected for post-fire watershed conditions. Threats considered include flooding, rock fall, and debris flows. Analysis of the BARC map and stream flow modeling show potential for increased flows on Goodell and Newhalem creeks; however, not enough to warrant concerns given that these areas did not flood in 2003 and 2006 storm events. Lower Goodell and Goodell Campgrounds are outside the burned area and not subject to either rock fall or debris flows. Upper Goodell Group Campground may be subject to rock fall, however the BARC map shows no substantial areas of high burn severity and limited areas of moderate burn severity. Field observations confirm these conclusions. Small scale rock fall (non-life or property threatening) and culvert plugging may occur after storms, but these concerns are covered by a watershed specification (*WI*) for clearing debris from roads and culverts. As a result of these analyses, no additional treatments are recommended.

### **Road to Upper Goodell Creek Group Campground**

Post-fire watershed conditions were evaluated for the Upper Goodell Group Campground road, including flooding, debris flows, and rock fall. Field observations show that flooding and debris flows are not likely; however, rock fall may be a concern. Additionally, two areas of the road have been compromised by the Goodell Fire. On the lower portion of the road a plastic culvert burned completely through, leaving the road unsupported. On the upper portion of the road near the campground, a large tree burned and followed the roots under the road surface, potentially compromising the road surface. Both areas present a safety concern for vehicular traffic and a rock barrier was placed in the road to prevent traffic from entering.

The culvert should be replaced (*F1*) and damage caused by the burned root should be repaired (*F5*) before opening the road. Additionally, damaged safety signs should be replaced and another warning sign for rock fall along the road should be installed. A safety sign replacement and installation specification (*W2*) will provide funds for these signs.

### **Settling tank near Ladder Creek**

A historic structure on a geomorphic bench near Ladder Creek burned in the Goodell Fire. The structure was a settling tank for the original Newhalem water system. The structure consisted of a wooden building that housed the metal settling tank. The wooden structure, which completely burned, prevented debris falling into the settling tank. The wooden building burned hot and melted the aluminum roofing. The metal settling tank survived the fire intact, but given the age of the structure, hazardous materials such as asbestos, volatile and semi-volatile organics, and metals may have been shed during the fire and now lie on the ground.

Stabilizing the potentially contaminated soil in and testing the soil for hazardous materials within the containment area is recommended. *Specification W3* proposes to install coir erosion logs around the structure to prevent or reduce mobilization of the possibly contaminated soil. Additionally, an environmental consulting firm should be contracted to sample the soil for hazardous materials to determine the extent of contamination if any. If results exceed state or federal limits, a plan should be devised with Seattle City Light to clean up the site.

### **Seattle City Light, Washington Department of Transportation, and NPS Storage Buildings**

Several NPS and SCL buildings exist at the base of the slopes beneath the Goodell Fire. The area was evaluated for post-fire watershed conditions, including flooding, debris flows and rock fall. A berm has been constructed between the buildings and slopes to divert water away from the buildings. In most cases the ditch is intact. However, there is one missing section behind a NPS storage building. To the west, the berm turns into a ditch and flows southwest toward a road and culvert and then drains into an excavated area used for gravel storage. It is unclear if that area is able to drain. The slopes are near vertical and no clear drainage channels exist, so stream flow modeling was not possible. The BARC map shows slopes are dominated by unburned to moderate burn severity. Field observation showed rock fall as a concern; however, no large rocks were identified near the buildings, either because the rock fall does not reach the structures or that the rocks that do approach the building have been removed. The buildings do not appear to have been damaged by rock fall or flooding and no geomorphic evidence of debris flows were observed. In most cases, the buildings are fairly old, suggesting that past rock fall or flooding has not affected the area.

Two treatments are recommended to protect the structures and a road culvert. The first treatment reconstructs the berm behind the NPS storage building (*Specification W5*) to contain potential increased flows and divert those flows away from buildings. The second treatment (*Specification W6*) clears the construct drainage of trash and woody debris to provide greater capacity and protect the culvert and road downstream. The area may contain cultural features, and cultural compliance must be completed prior to implementation of both specifications.

### Goode Fire

#### **Five Mile Campground (Figure 9)**

The Five Mile Campground was evaluated by aerial reconnaissance. The pilot, who is very familiar with the area, identified the location of the campground from the air. Based upon this information, the campground appears to be safe from post-fire watershed conditions such as debris flow, rock fall, and flooding. No action is necessary to protect or move the campground.

#### **Park Creek Pass Trail**

Park Creek Pass Trail traverses the fire at the base of the slopes through the burned area. Geologically, the entire area is very unstable as evidenced by recent large debris flows and debris cones. Post-fire conditions will only exacerbate this condition. Stream flow modeling shows a two-fold increase in discharge to this area. The BARC map shows several areas of high and moderate burn severity above the trail. Given these factors, the trail is at high risk to post-fire watershed conditions, and will continue to be for up to five years after the fire.

We recommend that this section of the Park Creek Trail remain closed through at least spring 2016. The NPS should post warning signs in appropriate locations on both side sides of the burned area. Signs should be placed close to the burned area (considering the area is designated Wilderness). The warning signs should include a map of the hazard area, warning language to hasten travel through the area, and describe the risks of debris flow, rock fall, flash-flooding, and hazard trees, particularly in windy conditions. The signs should be remain for up to five years after the fire and inspected for integrity each spring after snow melt opens the trail.

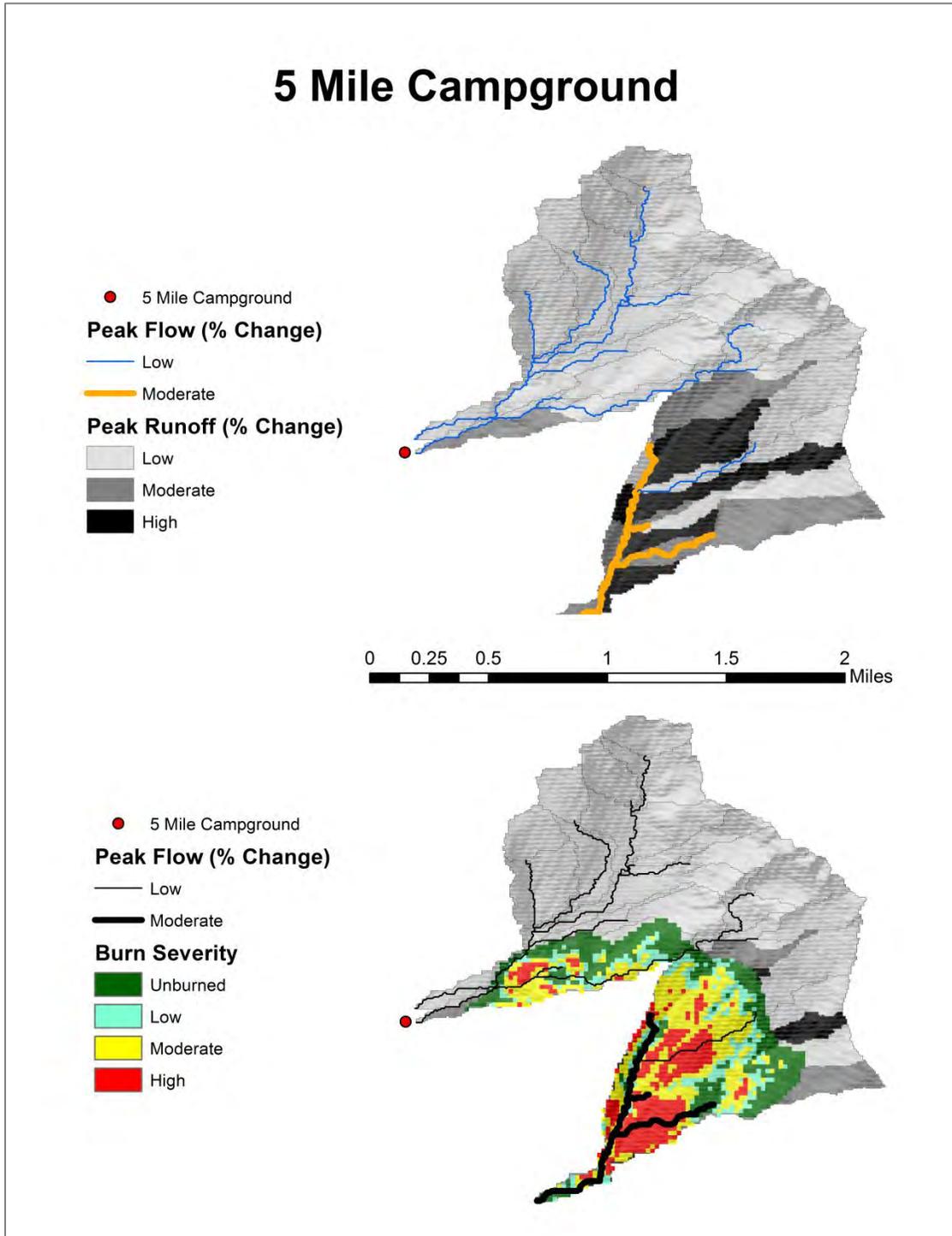


Figure 9. Expected changes to runoff volume in watersheds affected by the Goode fire.

Wolverine Fire

**Manly Wham Campground and Riddle Creek Cabins**

The Manly Wham Campground and Riddle Creek Cabins were assessed by aerial

reconnaissance. This method did not provide sufficient detail to determine the threats to these specific areas. Stream, hillslope, debris flow modeling based on the BARC map suggest significant risk to these areas (Figures 10, 11, 12).

Closure of these areas is recommended until a more detailed ground assessment can be made. *Specification W4* requests the funds to complete this assessment.

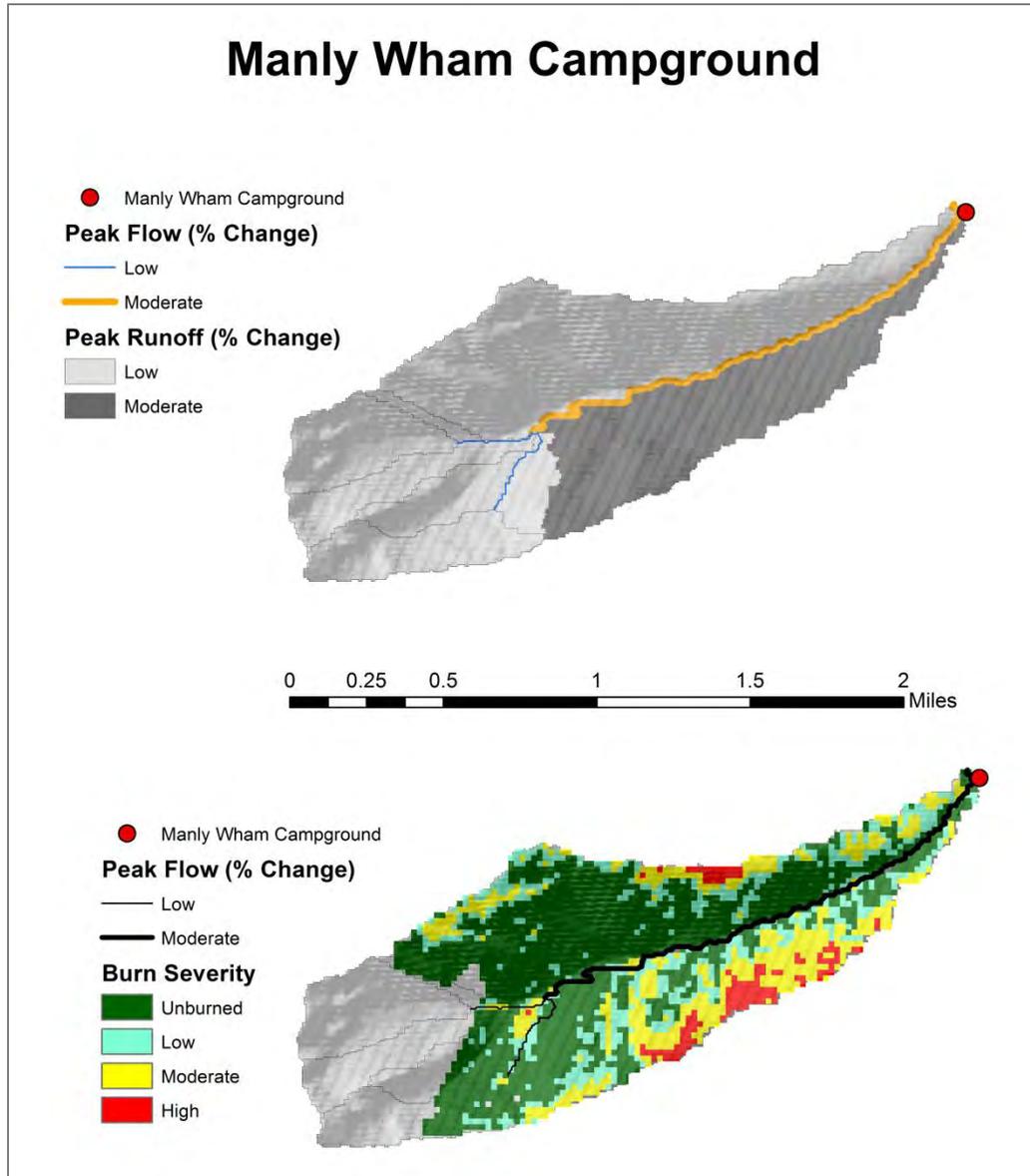


Figure 10. Watershed modeling results for the watershed above the Manly Wham Campground.

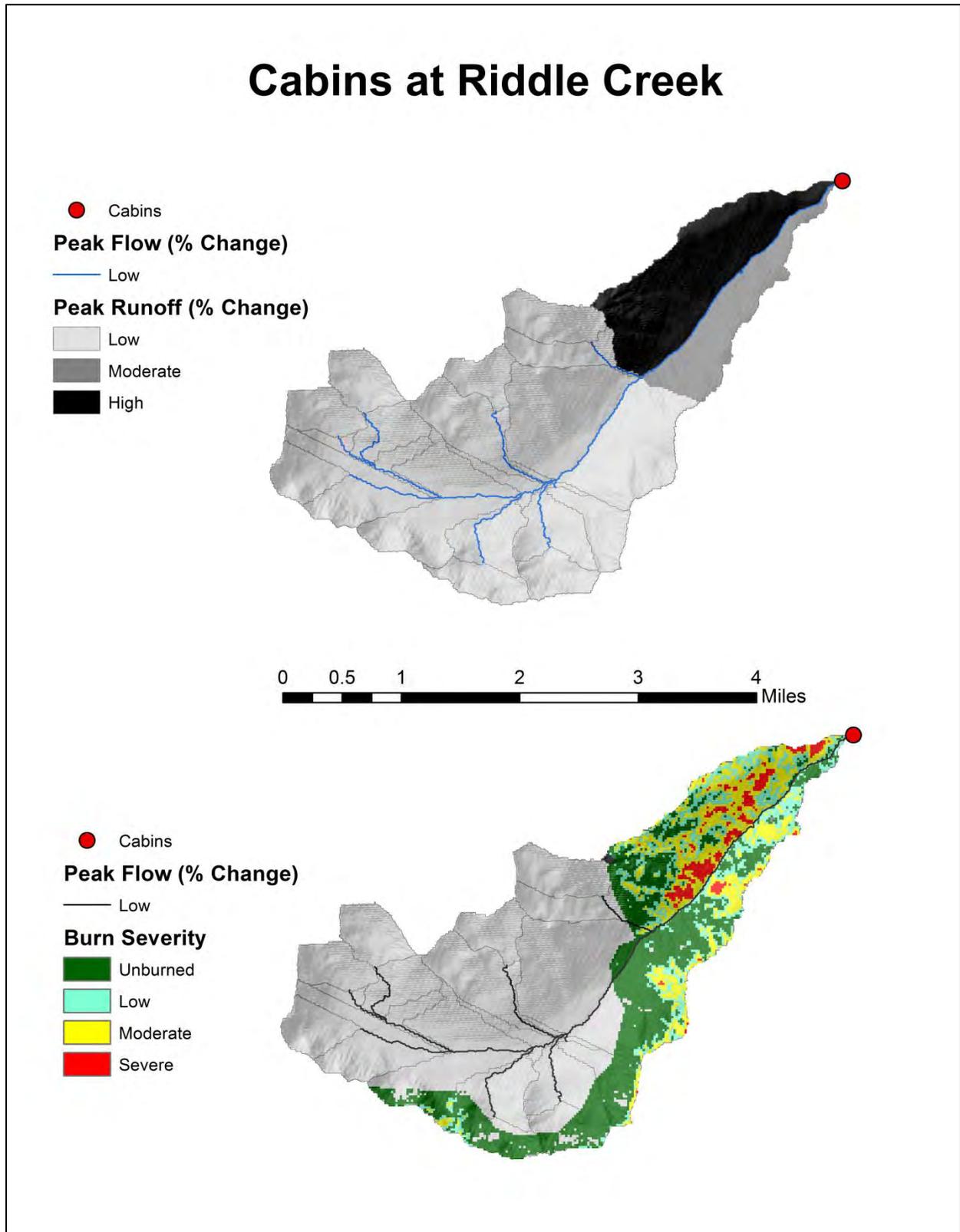


Figure 11. Anticipated changes to watershed behavior above the cabins at Riddle Creek.

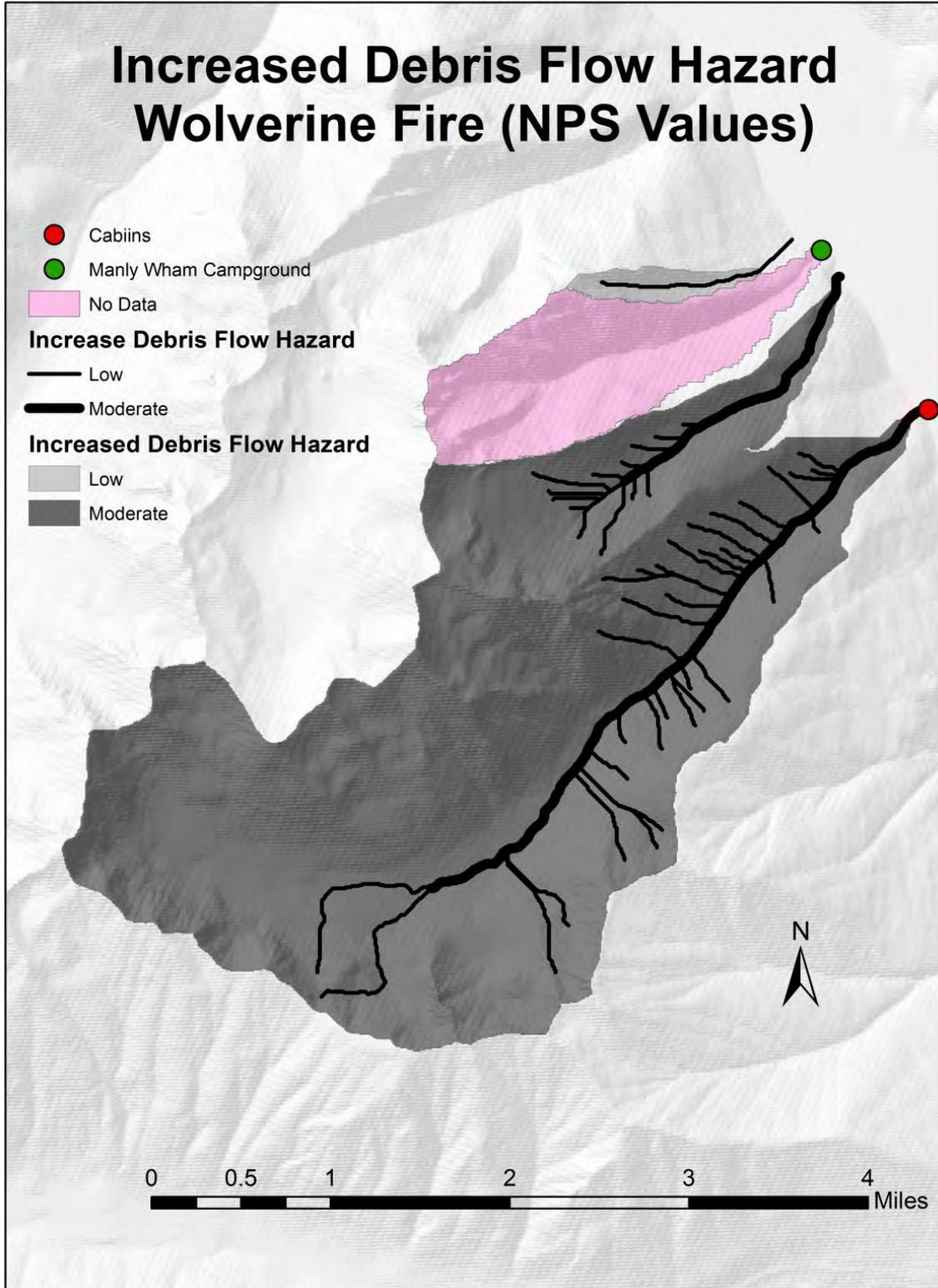


Figure 12. Anticipated changes to debris flow hazard in basins affected by northern portions of the Wolverine Fire.

**NON-FUNDED TREATMENT RECOMMENDATIONS**

**Seattle City Light Powerhouse Diversion on Newhalem Creek**

The powerhouse diversion is a greater risk to rock fall and debris flows and at slight risk to flooding from post-fire watershed conditions. Field reconnaissance of these slopes was not possible due to access and threats from hazard trees in windy conditions. The BARC map shows the area as high burn severity and modeling of those slopes show high hillslope runoff potential (Figure 13). Field observations the intake is already clogged by woody debris; the diversion dam is anticipated to fill more rapidly from increased sedimentation from the burned slopes above.

Seattle City Light should increase patrols and maintenance of the diversion dam and basin for the next three to five years. No treatments are needed to protect from rock fall or debris flows; however, care should be taken to inspect and maintain structures before or after large storm events to protect employees from rock fall and debris flow risks.

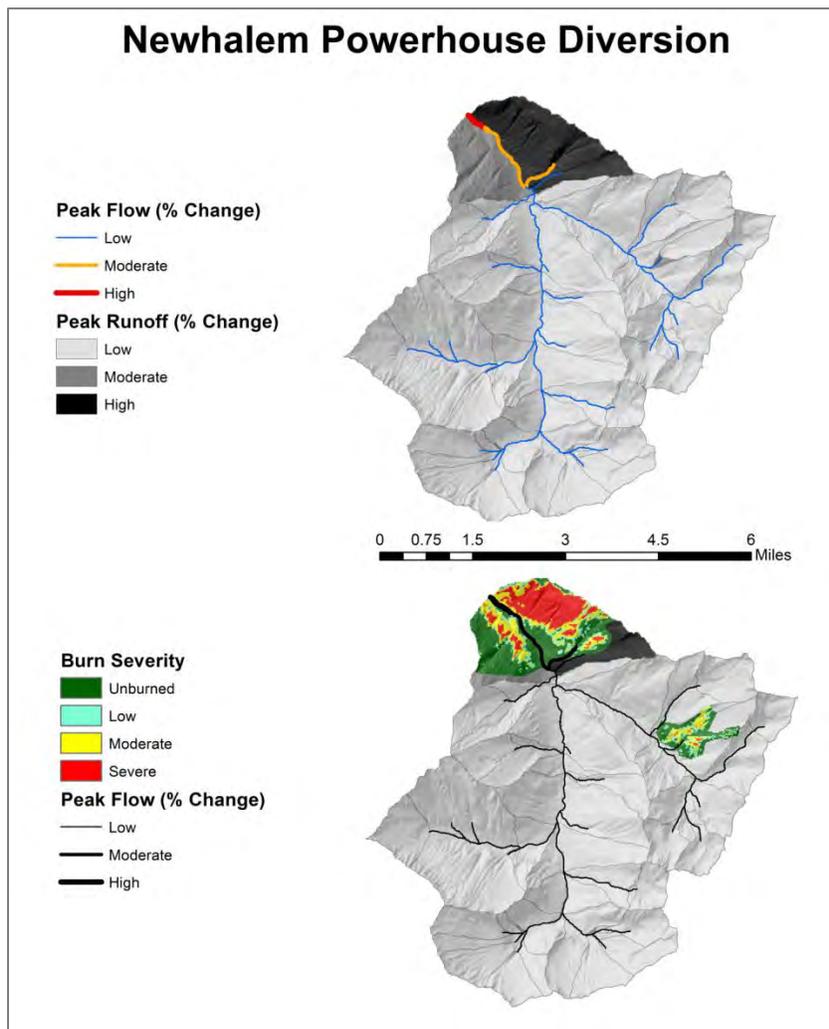


Figure 13. Anticipated changes to watershed behavior at and above the Newhalem diversion dam and powerhouse intake structure.

## **Road to Powerhouse Inlet along Newhalem Creek**

The graded dirt road that leads from the NPS Visitor Center to the powerhouse diversion has an increased risk to debris flows, rock fall, and flooding in post-fire watershed conditions. The BARC map shows areas of high and moderate burn severity upslope from the road. Field reconnaissance of those slopes was not possible due to access and threats from hazard trees. Field observations show two active slides along the road and this condition may be exacerbated by the burned slopes above. A greater degree of maintenance will be required to keep the road open for operation of the powerhouse diversion, including cleaning or adding culverts which drain the slopes above the road.

We recommend that Seattle City Light increase road patrols and culvert maintenance before and after storm events for the next three to five years. Seattle City Light should also clean all culverts as soon as possible to prepare for this winter's storms. No treatments are advised to protect from rock fall or debris flows, however care should be taken to inspect and maintain the road before or after large storm events to protect employees from rock fall and debris flow risks. As an added note, the slides along the road may be a product of water diversion and concentration from abandoned logging roads above these slides. It is recommended that a geologist examine the area above the slides to see if logging roads are present and a contributing factor or cause of the slides and prescribe treatments to disperse flows if possible.

## **State Route 20.**

Post-fire watershed effects to State Route 20 were evaluated by modeling, aerial reconnaissance, BARC maps, and ground observations. State Route 20 is at high risk to rock fall, debris flows, and to a certain extent flooding even without burned slopes above. Fire increases the risk to these natural processes. The area identified as at risk is within the gorge between mile marker 120 and 124 which is the area beneath the burned slopes of the Goodell Fire (Figure 14). All drainages below the burned slopes are subject to increased debris flow potential, with Falls Creek and Gorge Creek at highest risk due to areas of high and moderate burned severity above these areas. Flooding is a concern, but not as great of a risk as debris flows and rock fall. WDOT is aware of these conditions, and has good communications with the local National Weather Service office to receive advance warning of severe storm events that may impact the Gorge.

We recommend increasing patrols of the Gorge between mile markers 120 and 124, particularly during and after storm events. These increased patrols should continue up to 5 years after the fire. With that said, considerable risk to patrolling employees should be factored into this recommendation. To mitigate this risk, if a particularly large storm event is predicted within the first two years after the fire, consider closing the road in advance of these events to reduce risk.

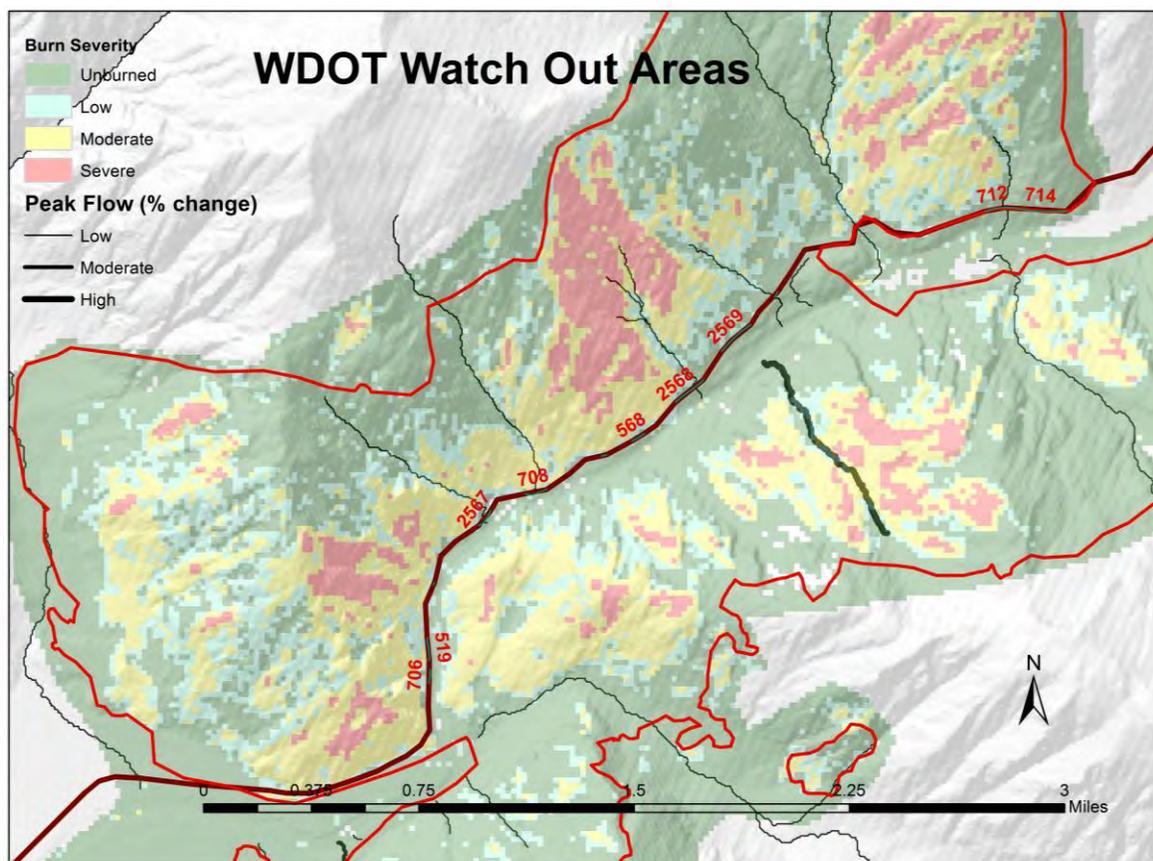


Figure 3 WDOT areas of concern for rock fall and debris issues. Labels are WDOT designations for the locations of concern.

### Ladder Creek

The footbridges over Ladder Creek and tributaries were evaluated for flooding, rock fall, and debris flows by request of Seattle City Light. Modeling of stream flows in Ladder Creek shows a moderate increase in flow; however, the small tributary north of Ladder Creek where the old light fixtures are located shows a 242% increase in hillslope runoff due to the large proportion of moderate and high burn severity. The bridges are also at increased risk of rock fall but should be safe from debris flows as they span the channel and older debris flow evidence was not observed. The bridges should also be safe from floods, as they survived the large storm events of 2003 and 2006. Concern of a woody debris log jam upstream of one of the bridges should not be a problem, as it was observed that other woody debris from 2003 or 2006 was stranded upon rocks below the bridge and passed under.

Removal of the old lighting fixtures and associated materials from the banks of Ladder Creek is recommended as flows are expected to be two to three times normal in post-fire watershed conditions. Clean-up would become much more difficult and costly if these abandoned items were to be mobilized. This should be performed as soon as possible before winter storms can cause high water conditions. Prior to removal, Seattle City Light should consult with NPS archeologists about the potential historic qualities of the abandoned infrastructure.

## **Picnic Area – Town of Newhalem, WA**

An area north of State Route 20 in the town of Newhalem has a picnic area and an electric vehicle charging area. Additionally, there are large transmission line towers in the area. This area was assessed for rock fall, debris flows, and flooding. A berm has been constructed between the near vertical cliffs and the above-mentioned facilities to divert water or possibly to capture rock fall. Stream flow modeling for this was not possible because of the extreme terrain. The BARC map show slopes are dominated by unburned to moderate burn severity, so a slight increase in discharge is expected over unburned values. We observed no debris flow deposits; evidence for flooding is lacking but possible. The highest concern should be rock fall. The constructed berm is not functional as it has been filled and compromised by older rock fall. Water discharging from the cliffs above will overflow into the developed areas. Evidence exists to suggest that rock fall in post-fire conditions may be exacerbated. If rock fall has entered these areas, the rocks have been removed, with the exception of two large rocks which are just west of the area. If these rocks are recent, it is an indicator that rock fall does have the potential to reach the picnic area and charging station. Clearly the transmission tower is at risk due to its proximity to the cliffs. Currently, there are warning signs along the highway to alert visitors that there is a falling debris hazard; however, these signs do not exist at the parking area.

Complete closure of the picnic area and vehicle charging area, upgrading warning signs, and keeping those closures in place for the first year after the fire are recommended. If rock fall continues past the first year, the area should be reevaluated and the closure maintained as needed. This iterative process should continue for three to five years after the fire, as the danger will decrease as time passes. Additionally, placement of K-Rails > 20 feet in front of the charging station is recommended to protect this facility. The power towers are at high risk of rock fall damage, even in unburned conditions.

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## VEGETATION BURNED AREA ASSESSMENT

### OBJECTIVES

- Evaluate hazard trees in developed areas within fire boundaries
- Recommend actions to protect infrastructure and to provide a safe environment for staff and visitors
- Evaluate the potential for non-native invasive plant species expansion and encroachment into native plant communities within the fire boundaries
- Recommend actions prevent and control the spread of invasive plant species

### ISSUES

- Potential hazard trees in high visitation areas including the Upper Goodell group campground, Newhalem Campground Loop C, Manly Wham campground on Lake Chelan, the Rock Shelter interpretive trail, the Ladder Creek Falls Trail, Trail of the Cedars, and the River Loop Trail
- Establishment and expansion of invasive plant species into burned areas.

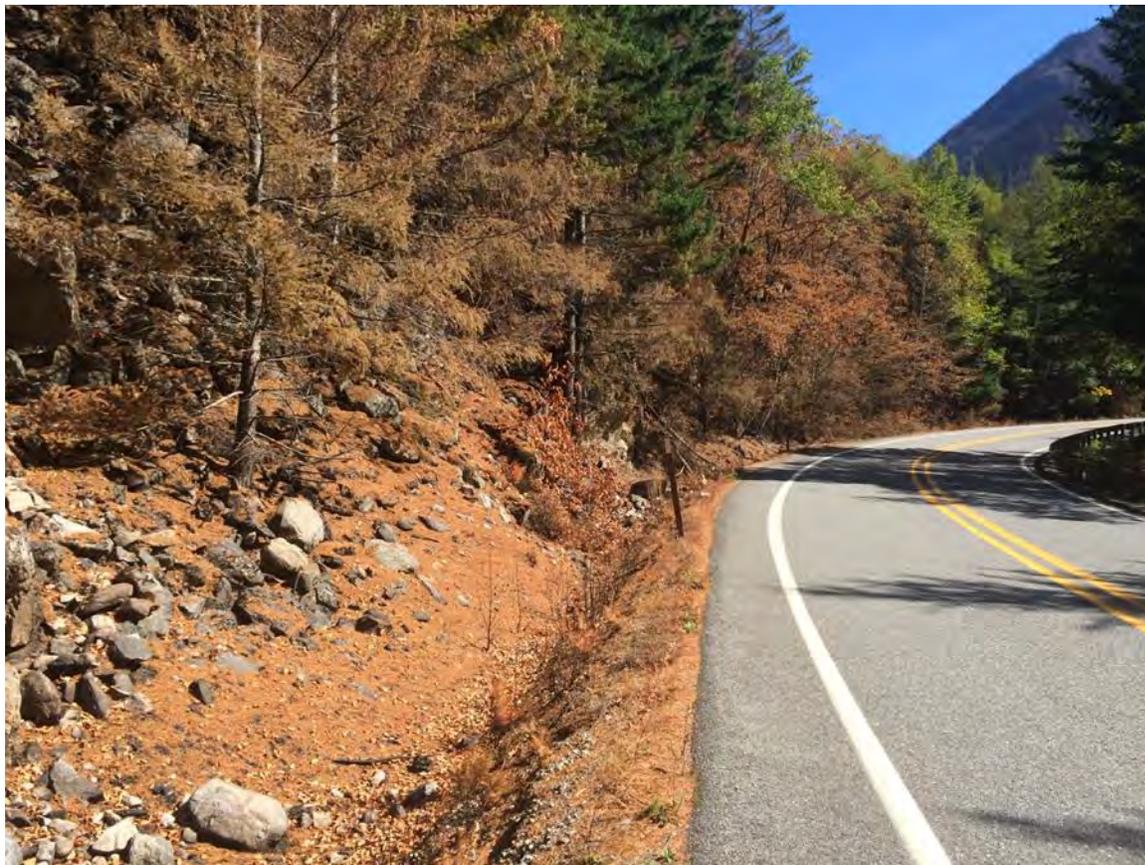


Photo 14. The Goodell Fire intermittently burned approximately five miles of roadside along State Route 20.

## OBSERVATIONS

Findings and recommendations contained within this assessment are based on ground surveys in the Goodell Fire on September 8-10, 2015 by NOCA Plant Ecologist Mignonne Bivin, North Coast and Cascades (NCCN) Exotic Plant Management Team (EPMT) Lead Cheryl Decker, and Olympic National Park Supervisory Botanist Janet Coles. Target areas within the Wolverine Fire were assessed by Vicki Gempko, NOCA Stehekin District Resource Manager on September 9<sup>th</sup>, 2015. The area burned by the Goode Fire was determined not to have significant concerns with either invasive plant species or hazard trees and is not considered in this report.

### Vegetation Description

NOCA is floristically diverse, with approximately 1400 vascular plant species. In 2004, the NPS Vegetation Inventory Program initiated a new vegetation inventory, classification, and mapping effort at NOCA. The vegetation map and classification for NOCA are expected to be completed by 2017.

Goodell Fire. The fire area is a mosaic of rocky outcrops, benches and has steep to very steep slopes. Forests are a mix of Western Hemlock (*Tsuga heterophylla*) and Douglas-fir (*Pseudotsuga menziesii*). These species are dominant on the lower to mid slopes, while Pacific silver fir (*Abies amabilis*) is found on higher slopes. Lodgepole pine (*Pinus contorta* var. *latifolia*) is found on drier sites and benches. On lower, moist slopes Western red cedar (*Thuja plicata*) may be co-dominant with Douglas-fir and Western hemlock. The forest understory ranges from very sparse to a dense cover of shrubs. In areas of sparse understory on very steep slopes or talus fields, the understory consists of a thick layer of moss and lichen. Where shrubs occur, the most common species are Oregon grape (*Mahonia nervosa*), salal (*Gaultheria shallon*) on dry sites and vine maple (*Acer circinatum*), and red huckleberry (*Vaccinium parviflorum*) on moist sites. Sword fern (*Polystichum munitum*) is also dominant in some moist sites. Riparian forests are found along the main stem and tributaries of the Skagit River. Riparian trees are typical of western Washington, dominated by red alder (*Alnus rubra*), big leaf maple (*Acer macrophyllum*) and black cottonwood (*Populus basamifera* ssp. *trichocarpa*).

Wolverine Fire. The Wolverine fire affected two NPS sites, the Riddle Creek cabins site and Manly Wham campsite. Both sites are vegetated alluvial fans surrounded by very steep rocky slopes. The vegetation is primarily riparian, mostly red alder (*Alnus rubra*), black cottonwood (*Populus basamifera* ssp. *trichocarpa*), and big leaf maple (*Acer macrophyllum*) with Western red cedar (*Thuja plicata*) as a minor component. The understory consists of streamside dogwood (*Cornus sericea*). On drier slopes, Douglas fir (*Pseudotsuga menziesii*) forms the canopy. Understory species include vine maple (*Acer circinatum*), Douglas maple (*Acer douglasii*), Oregon boxwood (*Paxistima myrsinites*) mock orange (*Philadelphus lewisii*) and serviceberry (*Amelanchier alnifolia*).

The town site of Newhalem (Seattle City Light property) is landscaped primarily with non-native ornamental species. There are also two historic garden sites. The grounds and gardens are maintained by Seattle City Light (SCL) employees. Under the current Federal Regulatory Commission (FERC) licensing agreement, two NPS-owned sites, Ladder Creek Falls and the

Trail of the Cedars, are within the project boundary but are also maintained by SCL.

## State Listed Species

NOCA has no known federally listed plant species but does include approximately 56 state-listed plant species. None of the state listed species are known to occur within the perimeters of the Goodell or Wolverine Fire (on NPS lands).

## FINDINGS

Invasive plant species. Approximately 223 species (16% of the NOCA flora) are invasive species. The complex has a long history of mapping and treating weeds both in the front country developed zones where they tend to be more common, as well as in the wilderness, where they tend to be carried by visitors, park staff, and wildlife.

At least 43 invasive plant species are known to occur within or immediately adjacent to the Goodell Fire area. The Goodell Fire burned through several developments along the Skagit River, including the Seattle City Light company-town of Newhalem, a power transmission line, NPS campgrounds, several interpretive trails and a state highway. Due to high levels of human activity in these front country sites, a large number of non-native species occur in the area and are at high risk of moving into adjacent burned areas.



Photo 18. Common Tansy sprouting after the fire along Highway 20 and knapweed within fire perimeter.

Seattle City Light developed a strategic plan for invasive plants on their Newhalem property in 2013 and has begun to control some species. Rory Denovan, Seattle City Light Plant Ecologist, indicated that several of their targeted species are highly likely to invade burned areas adjacent to the town of Newhalem (personal communication, September 9, 2015).

Exotic species documented in and adjacent to the Goodell Fire include 13 state-listed Class B non-native species and seven Class C species (Table 4). The state of Washington defines Class B weeds as designated for control in regions where they are not yet widespread. Preventing new

infestations in these areas is a high priority. Class C weeds are defined as widespread in the state. Washington State has enacted laws to control the introduction and spread of noxious weeds. The original goal was to limit Washington's economic losses due to noxious weeds in and around agricultural areas, but in 1987 this law was revised to incorporate noxious weed control in natural areas. The law holds landowners responsible for controlling and preventing the spread of all class B and class C noxious weeds.

In addition to state listed species, several ornamental species have escaped from cultivation in the town of Newhalem and have invaded NOCA property in and adjacent to burned areas (Table 5). These species were designated "First Priority Species" in the North Cascades National Park Service Complex Invasive Non-Native Management Plan (2012).

Scientific Name	Common Name	WA Classification	Goodell Fire	Wolverine Fire	Treatment Recommendations
<i>Artemisia absinthium</i>	Absinthe wormwood	C	x		Glyphosate spot treatment
<i>Buddleja davidii</i>	Butterfly bush	B	x		Hand pull, cut stump+triclopyr
<i>Centaurea stoebe</i>	Spotted knapweed	B	x		hand pull, clopyralid or aminopyralid
<i>Clematis vitalba</i>	Old man's beard	C	x		Hand pull, cut stump+triclopyr
<i>Convolvulus arvensis</i>	Field bindweed	C	x		Glyphosate spot treatment
<i>Cytisus arvensis</i>	Scotch broom	B	x	x	Hand pull, cut stump+triclopyr
<i>Daucus carota</i>	Wild carrot	C	x		Hand pull, triclopyr
<i>Geranium robertianum</i>	Herb-Robert	B	x		Hand pull, triclopyr
<i>Hedera helix</i>	English ivy	C	x		Hand pull, cut stump+triclopyr
<i>Hieracium sp.</i>	Hawkweeds	B	x		Clopyralid
<i>Hypericum perforatum</i>	Common St. Johnswort	C	x		Metsulfuron-methyl
<i>Impatiens glandulifera</i>	Policeman's helmet	B	x		Hand pull
<i>Leucanthemum vulgare</i>	Ox-eye daisy	B	x		Hand pull, metsulfuron-methyl
<i>Linaria dalmatICA</i>	Dalmatian toadflax	B	x		Glyphosate spot treatment
<i>Linaria vulgaris</i>	Yellow toadflax	C	x		Glyphosate spot treatment
<i>Potentilla recta</i>	Sulfur cinquefoil	B	x		Metsulfuron-methyl
<i>Rubus armenaicus</i>	Himalayan blackberry	C	x		Hand pull, triclopyr
<i>Rubus laciniatus</i>	Evergreen blackberry	C	x		Hand pull, triclopyr
<i>Senecio jacobaea</i>	Tansy ragwort	B	x		Glyphosate spot treatment
<i>Senecio vulgaris</i>	Common groundsel	C	x		Glyphosate spot treatment
<i>Tanacetum vulgare</i>	Common tansy	C	x		Metsulfuron-methyl

Table 4. Washington state listed noxious weeds present in fire vicinity with treatment options for control.

Scientific Name	Common name	Treatment recommendation(s)
<i>Acer ginnala</i>	Amur maple	Cut stump + triclopyr
<i>Acer negundo</i>	Box elder	Cut stump + triclopyr
<i>Acer platanoides</i>	Norway maple	Cut stump + triclopyr
<i>Acer pseudoplatanus</i>	Sycamore maple	Cut stump + triclopyr
<i>Acer rubrum</i>	Red maple	Cut stump + triclopyr
<i>Acroptilon repens</i>	Russian knapweed	Hand pull or aminopyrilad
<i>Aesculus hippocastanum</i>	Horse chestnut	Cut stump + triclopyr
<i>Arctim lappa</i>	Greater burdock	hand pull
<i>Cytisus scoparius</i>	Scotch broom	Cut stump + triclopyr
<i>Ilex aquifolium</i>	English holly	Cut stump + triclopyr
<i>Juglans cinerea</i>	Butternut	Cut stump + triclopyr
<i>Juglans nigra</i>	Black walnut	Cut stump + triclopyr
<i>Linaria purpurea</i>	Purple toadflax	hand pull
<i>Lunaria anua</i>	Annual honesty	hand pull
<i>Prunus avium</i>	Wild cherry	Cut stump + triclopyr
<i>Prunus cerasifera</i>	Thundercloud plum	Cut stump + triclopyr
<i>Prunus domestica</i>	Domestic cherry	Cut stump + triclopyr
<i>Prunus laurocerasus</i>	Cherry laurel	Cut stump + triclopyr
<i>Robinia hispida</i>	Bristly locust	Cut stump + triclopyr
<i>Robinia pseudoacacia</i>	Black locust	Cut stump + triclopyr
<i>Sorbus aucuparia</i>	European mountain ash	Cut stump + triclopyr
<i>Verbascum thapsus</i>	Common mullein	hand pull
<i>Vinca minor</i>	Small-leaved periwinkle	triclopyr

Table 5. First Priority NOCA non-native plant species that have escaped cultivation in Newhalem, with treatment options for control.

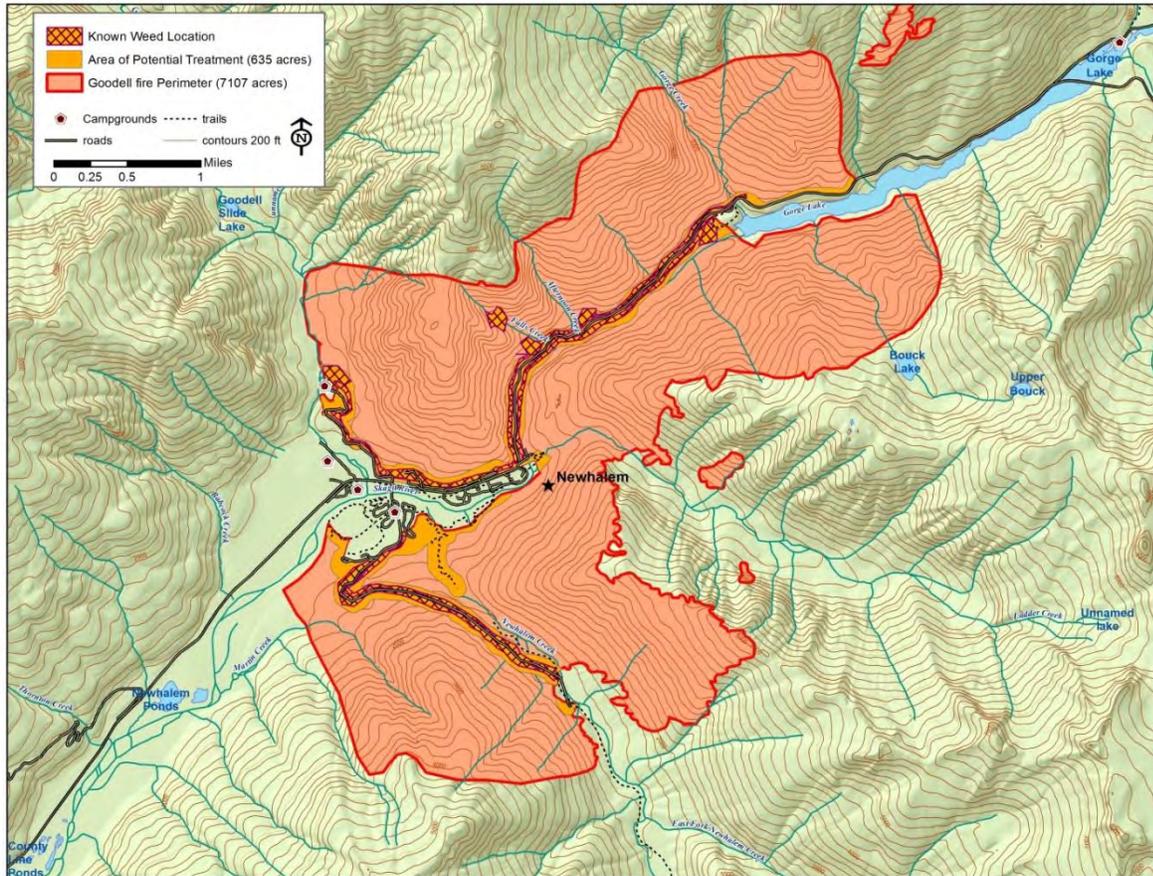


Figure 15. Map of the Goodell Fire area, highlighting areas with the highest potential for weed infestation as a result of the fire (371 acres).

Three non-native invasive species are known to occur within the fire boundary at the Riddle Creek cabin site in the Wolverine Fire: Scotch broom (*Cytisus scoparius*) (Photo 17), sweet pea (*Lathyrus latifolius*) and periwinkle (*Vinca minor*). Scotch broom and periwinkle are listed as “Medium-High” priorities for treatment under the NOCA Invasive Non-Native Management Plan (2012). Scotch broom is a Class B noxious weed. Although sweet pea and periwinkle are not state-listed, they are known to be highly invasive within the Stehekin Valley.



Photo 17. Scotch broom at Riddle Creek site.

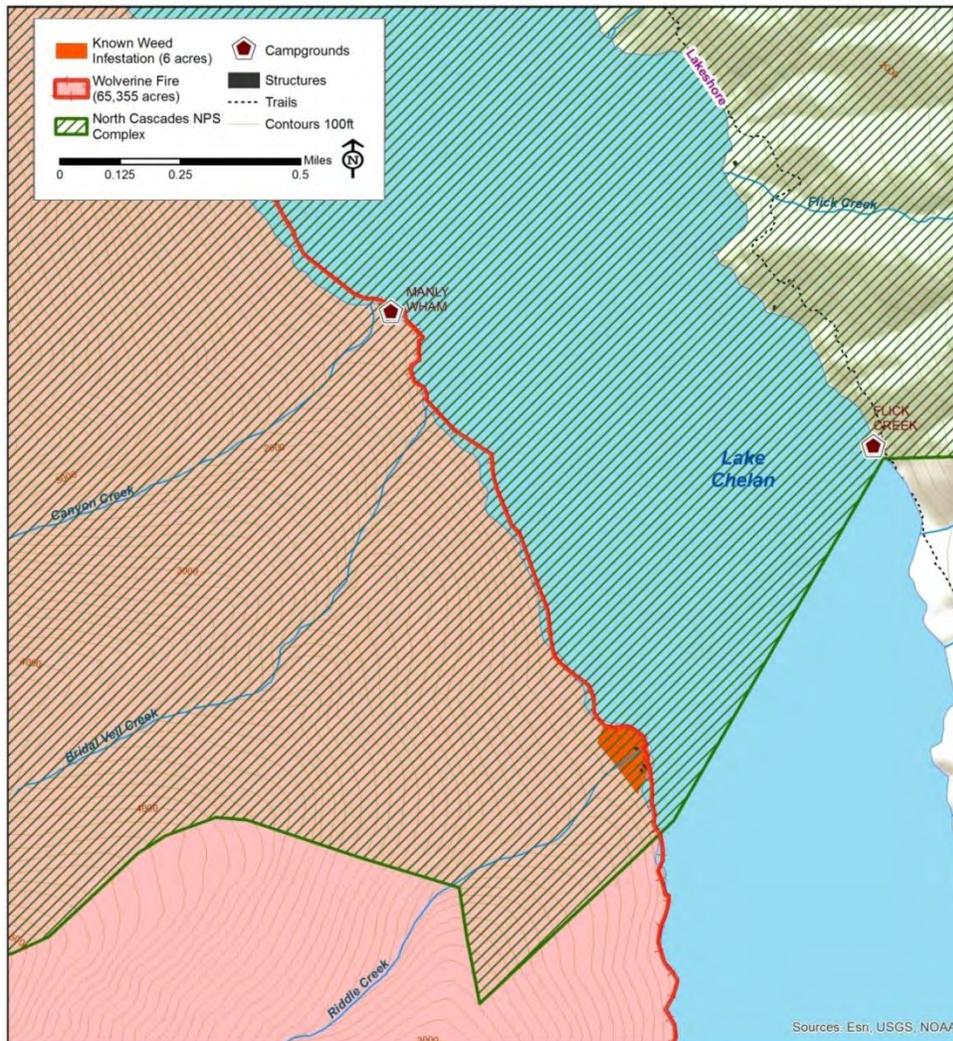


Figure 16. Map of the Wolverine Fire showing the location of Manly Wham camp and the known infestation of invasive plants at Riddle Creek.

Falls Creek Berm. In 2003, a landslide occurred in the Skagit Gorge area, damaging State Highway 20. In order to prevent damage from future slides in this area, Washington State Department of Transportation constructed a catchment basin with a 6,000 square foot berm to protect the road way from potential rock fall (Photo 15). The berm was faced with top soil and NOCA grew and installed native plants on the berm. This functioned both to enhance the aesthetics of the site and to prevent the berm from being infested with weed species. The site was monitored intermittently in the years following planting. These surveys documented decreasing weed cover with increasing native plant cover. 100% of the berm burned in the Goodell fire and is at high risk of exotic invasion due to disturbance and proximity to the road corridor.



Photo 15. The Falls Creek highway berm after the Goodell Fire.

Hazard Trees. The Goodell Fire burned part or all of the Newhalem Creek campground (Photo 18), the Upper Goodell Group campground, the Newhalem Creek penstock intake, and most of the trails in the Newhalem area. Numerous trees in these developed areas were killed by the fire or weakened enough that they pose threats to park staff, hikers, and campers. NOCA park management has closed Newhalem campgrounds and trails to prevent visitors from entering burned areas.



Photo 18. Newhalem Campground Loop C, part of which burned in the Goodell Fire.

In addition to fire damage, trees at Riddle Creek within the Wolverine fire perimeter are diseased and pose a significant hazard. The area was surveyed for hazard trees in 2014 by Dan Omdal, Plant Pathologist, and Connie Mehmel, Entomologist with the USDA Forest Service. The survey identified root disease affecting many of the trees in the area surrounding the cabins and outbuildings. Because of the extent and advanced stage of the root disease the area was considered to be at high risk from hazard trees even prior to the fire.

Manly Wham, also within the Wolverine Fire, is accessible only by boat and has two campsites. The Manly Wham site was surveyed on September 9<sup>th</sup> 2015 by the NOCA Resource Management Specialist. Two Douglas fir trees (19” and 24” DBH) were identified for immediate removal near the boat dock. Additional hazard trees were identified near the site closest to the slope above the campground.

## **RECOMMENDED TREATMENTS**

### Specifications

#### ***V-1: Early detection and eradication of non-native species, Goodell and Wolverine Fires***

Detection surveys of non-native target species should be conducted concurrently with the eradication of target species in areas with high infestation potential for both the Goodell and the Wolverine Fires for three years post-fire. Management of target species should occur twice annually to cover varying weed phenologies and treatment windows. This will deplete weed propagules and allow natural recruitment of native species without competition from invasives. Treatment should include a combination of chemical and mechanical methods, specified in the North Cascades National Park Service Complex Invasive Non-Native Plant Management Plan November (2012). Treatments in subsequent years will be adjusted to ensure that only the most effective tools and methods of control are used.

Emphasis on the Goodell fire will be placed on a 300 ft. buffer from all developed areas and vector corridors within the burn perimeter (Figure 15). Emphasis in the Wolverine fire will be placed on early detection at the Manly Wham Campground and near Riddle Creek where hazard trees are not present (Figure 16).

Standard protocols for mapping and eradication of invasive plant populations will be used:

- Invasive species points or polygons will be mapped using NPS methodology
- Density, area, and cover class of plants will be recorded for each site
- Integrated Pest Management strategies will be utilized. Mechanical methods will be used where appropriate
- Herbicide use will be approved by the regional pesticide use coordinator and amounts

- used will be documented and reported
- Best Management Practices for Herbicide Use (outlined in the NOCA Invasive Non-Native Plant Management Plan) will be followed to ensure that the overall effectiveness of herbicides is maximized and the potential for negative impacts is minimized.
- Any invasive seed will be bagged and removed off site

## Timeline for invasive plant control - Goodell Fire:

### Spring/Summer 2016

Initiate control after 2016 detection surveys are completed along all roads, trails and facilities.

### Spring/Summer 2017

Evaluate efficacy of 2016 treatments. Initiate control after 2017 detection surveys are completed along all roads, trails and facilities. Adjust treatments based on results of efficacy evaluation.

### Spring/Summer 2018

Evaluate efficacy of 2017 treatments. Initiate control after 2018 detection surveys are completed along all roads, trails and facilities. Adjust treatments based on results of efficacy evaluation.

## Timeline for invasive plant control - Wolverine Fire:

### Spring/Summer 2016

Initiate control after detection surveys are completed at Riddle Creek and Manly Wham campsite.

### Spring/Summer 2017

Evaluate efficacy of 2016 treatments. Initiate Spring 2016 control after detection surveys are completed at Riddle Creek and Manly Wham campsite. Adjust treatments based on results of efficacy evaluation.

### Spring/Summer 2018

Evaluate efficacy of 2017 treatments. Initiate control after 2018 detection surveys are completed at Riddle Creek and Manly Wham campsite. Adjust treatments based on results of efficacy evaluation.

## ***V-2: Revegetate Falls Creek Berm***

Replanting a dense cover of native shrubs, forbs, and grasses with local genotypes will reduce the likelihood of weed establishment (V-2).

## Revegetation Timeline:

### Spring/Fall 2016

Remove burned vegetation from the berm. Collect seeds and cuttings from native plants gathered and propagated at the NOCA greenhouse in Marblemount. Any weeds observed at the site will be removed by hand pulling.

### Spring/Fall 2017

Weed control will continue as needed in the spring and summer of 2017. Native plants will be planted on the berm in the fall of 2017.

### Spring/Fall 2018

Weed control will continue as needed in the spring and summer of 2018. Additional native plants will be planted on the berm in the fall of 2018.

### ***V-3: Hazard Tree Assessment and Mitigation***

Evaluation of target sites for hazard trees, and removal if necessary, in both the Goodell and Wolverine Fires is recommended for three years post-fire. All NPS campgrounds, trails and facilities within both fires will remain closed through the winter of 2015-16. These sites should be surveyed each spring after natural processes have felled some trees over winter months. Hazard Tree assessments and removal should occur before sites are opened to the public. Identification of an excessive number of hazard trees may necessitate longer closures.

Riddle Creek cabins (Wolverine Fire) will remain closed. One tree leaning over a structure will be felled as soon as possible. The area will be surveyed for hazard trees prior to a cultural resource assessment of the cabins; at that point, management of the site will be decided by the NOCA Leadership Team. This area is expected to remain closed to all visitor use for the period covered under this BAER/BAR plan.

## **RESOURCES**

University of California Cooperative Extension & Agricultural Experiment Station Weed Research and Information Center [http://wric.ucdavis.edu/information/info\\_spec\\_weed.htm](http://wric.ucdavis.edu/information/info_spec_weed.htm)

Washington State Noxious Weed Board Noxious Weed List  
<http://www.nwcb.wa.gov/printable.htm> (accessed September 10, 2015).

North Cascades National Park Service Complex Invasive Non-Native Plant Management/ Environmental Assessment, November 2012.

North Cascades National Park Complex Hazardous Tree Management Plan, 1995.

Pacific West Region Directive: Hazard Tree Management, 2008

A Strategic Plan for managing Invasive Nonnative Plants on National Park System Lands, 1996

## **CONSULTATIONS**

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Scott Luchessa, Seattle City Light, Environmental Planner

**Vegetation Assessment written by Mignonne Bivin, Janet Coles, and Cheryl Decker**

## MINOR FACILITIES BURNED AREA ASSESSMENT

### OBJECTIVES

Identify and mitigate emergency and non-emergency damage to minor facilities within the burned area.

### ISSUES

Goodell Fire: Trail tread damage along the Newhalem Rock Shelter, River Loop, and Newhalem Creek access trails, the burning out of a culvert and root wad beneath the Upper Goodell Group Campground road, and fire damage to Newhalem automobile campground Loop C and the Upper Goodell Group Campground render these popular recreational facilities unusable by the public. Additionally, the Newhalem Rock Shelter boardwalk, which provided significant protection for the National Register archeological site at the end of the boardwalk, was completely lost.

Wolverine Fire: The fire burned down to the Manly Wham campground, creating potential hazards at two campsites, facilities, and the dock, and down to the Riddle Creek cabins on the Riddle Creek alluvial fan.

### OBSERVATIONS

#### Background

Goodell Fire: All the minor facility concerns related to the Goodell Fire are located within the Newhalem area, the small community that is the main base for Seattle City Light (SCL) hydropower operations on the Skagit River. The broader Newhalem area also includes numerous NPS visitor use facilities, including the NPS Visitor Center, Newhalem Campground, Upper Goodell Group Campground, and several interpretive day-use trails (Figure 17).

The Newhalem area hosts the largest number of NPS visitor use facilities within the entire park Complex, and coupled with the SCL operations and visitor use facilities represents the most significant NPS- and partner-developed area within the entire Complex. The Goodell fire burned into Loop C of the Newhalem campground; up to the road leading to the visitor center and to the parking lot at the visitor center; over the road leading to the Upper Goodell Group Campground and to the south edge of that campground; across the Newhalem Rock Shelter, Newhalem Creek access, and River Loop trails; and burned the Newhalem Rock Shelter boardwalk. All of the noted NPS facilities were closed during part of the fire, with the Visitor Center reopening on August 30 when the State Route 20 highway reopened. All the other NPS facilities (Newhalem and Upper Goodell Group campgrounds, interpretive trails) will remain closed at minimum through the winter of 2015-16.

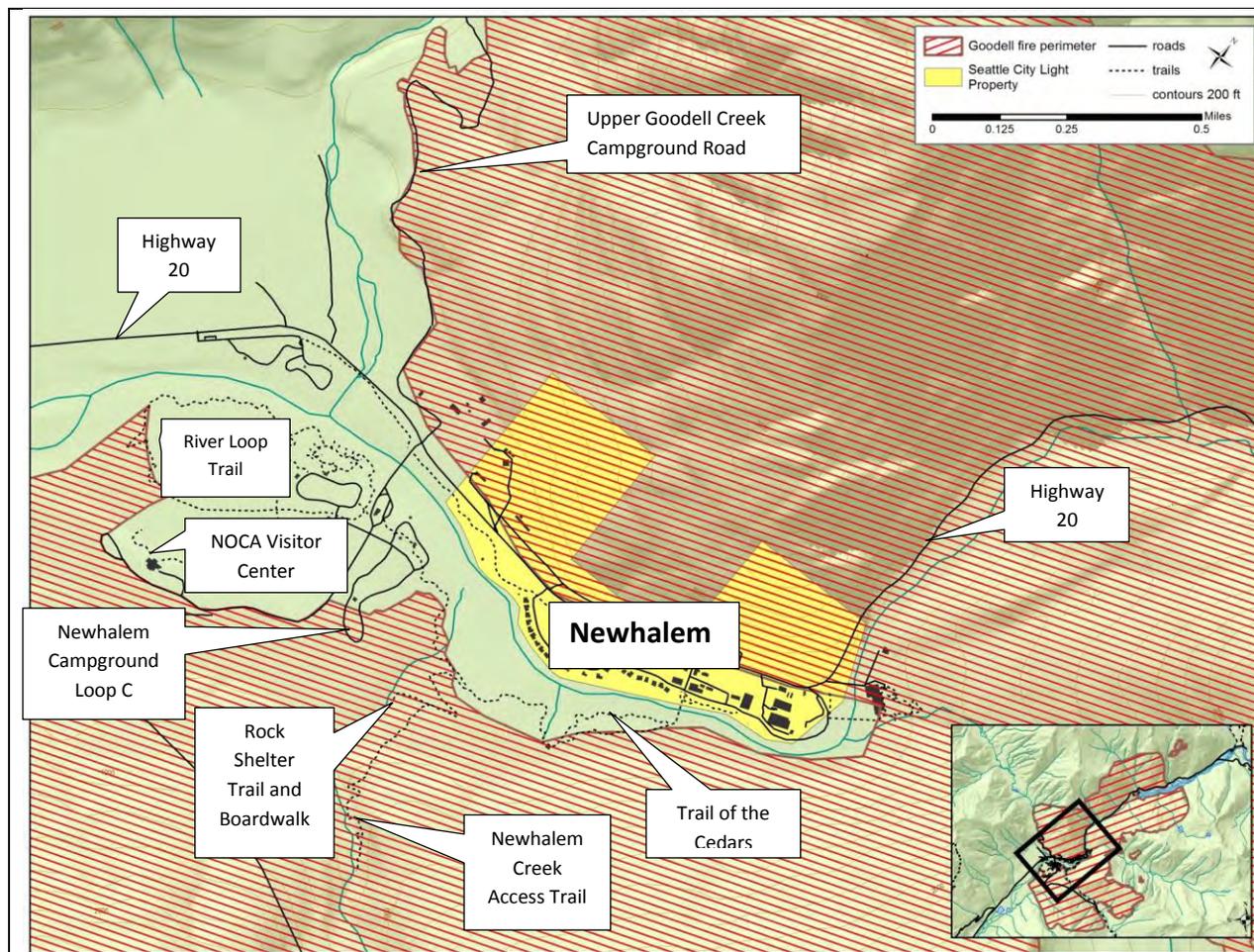


Figure 17. Detail map of the Newhalem area within the Ross Lake unit of the North Cascades National Park Service Complex. Minor facilities affected by the Goodell Fire and described in the assessment narrative are labeled on this map.

**Wolverine Fire:** The Manly Wham campground is a small boat-in campground located at the bottom of Canyon Creek along Lake Chelan. Although it only has two sites, it is a popular campground due to the private experience it provides for the visitors who camp there. The campground lies on the alluvial fan of Canyon Creek. The fire burned the campground in mid-August when it made a significant run.

There are three recently vacated cabins along the lakeshore on the Riddle Creek alluvial fan. The leases for these cabins were extinguished effective August 1, 2015 due to concerns about extensive root disease in the forest around these cabins as well as a lack of defensible space should a fire occur. The fire through the cabin area further weakened the trees in the area. The cabins themselves were wrapped and did not suffer directly from the fire.

### Reconnaissance Methods

All of the burned over facilities were surveyed during the week of September 7 as part of this

BAER Team assessment, by a variety of personnel including NOCA staff (Chief of Resource Management, Plant Ecologist, Stehekin Natural Resource Manager, Trails Foreman; Skagit District Maintenance Foreman), several of which were a part of the BAER Team, and several BAER Team members. The Riddle Creek cabins along the Lake Chelan shoreline were observed in August when the fire passed through that area, and several times since. Reconnaissance efforts concentrated on identifying and documenting trail tread and boardwalk, road, and campsite/campground/structure conditions associated with each fire.

## **Findings**

Goodell Fire: Upper Goodell Group Campground. The Upper Goodell Group Campground road had one plastic culvert completely burned out, destabilizing the road. Closer to the campground, a tree root was burned along and underneath the road, also making the road unstable. NOCA staff blocked vehicle access to this road on September 10 by placing large rocks across the road. The traffic counter used for NPS Visitor Statistics reporting burned completely. Some hazard trees were removed for firefighter safety during mop-up operations, but after the area goes through the winter, the roadway will be inspected again for potential hazard tree removal (see Vegetation Assessment). Several safety signs along the road were burned (addressed in the Watershed Assessment).

Goodell Fire: Newhalem Campground, Loop C. The fire burned into several campsites in Loop C, burning over some tent pads and causing loss of tent pad integrity. Many trees fell into the campsites, which will require extensive cleanup and removal of woody debris. Many Carsonite signs burned. Some picnic tables were destroyed or damaged.

Goodell Fire: Newhalem Area Trails. The side hill section of the trail to the Newhalem Rock Shelter suffered extensive damage to the rock walls and crib logs that support the trail tread. Many of the crib logs burned and the rock walls associated with them collapsed and fell downslope. This particular section of the trail is 400 feet in length; other sections of the trail also suffered tread damage (Photo 19). The Rock Shelter Boardwalk was destroyed and is included in the Cultural Assessments (page 77).

The River Loop interpretive day-use trail in the Newhalem Visitor Center area burned over, with one section of roughly 150' length suffering damage to supporting crib logs and the trail tread.

The Newhalem Creek access trail burned over completely, suffering tread damage and complete loss of trail through some heavily forested sections due to the high burn severity. The upper ¼ mile of this trail has many standing snags and is very dangerous to traverse.



Photo 19: Section of Newhalem Rock Shelter access trail; loss of crib logs led to failure of dry stack rock wall.

Goodell Fire: Newhalem Rock Shelter Boardwalk. This boardwalk was completed in 1997. It served a dual purpose; to give visitors a bird's-eye view of a well-known archeological site, while restricting direct access to the site. The boardwalk was created using all local, native wood materials to match the surrounding forest, and involved a considerable amount of hand-crafted mortise and tenon joints. Upright poles were cut and placed to mimic the uneven forest structure around it, which had many standing snags. It was a very artistically and aesthetically pleasing structure that fit into the surrounding forest while being very functional for its resource protection purpose. The boardwalk was completely burned by the fire. Engineered drawings from the original structure exist.

Goodell Fire: SCL Sediment Tank. A large metal structure near Ladder Creek that historically was a part of the Seattle City Light water treatment system was burned over. It may have hazardous material and structural integrity concerns. This structure is evaluated in the Watershed Assessment section.

Wolverine Fire: Manley Wham Campground. The fire burned down to the campground. No campground structures burned. The food storage box ("bear box") now has several potential hazard trees near it. One campsite lies close to a burned slope and may be at risk from rockfall or debris flows from the burned slope above; the other campsite is not at risk from either rockfall, debris flows or hazard trees. Detailed discussion is provided in the Watershed Assessment, and further assessment of the campground will be completed in the fall of 2016. This campground

will remain closed through the winter of 2015-16 until all hazard concerns are evaluated. The dock may be at risk from rockfall and also has two hazard trees threatening it.

Wolverine Fire: Riddle Creek cabins. The fire burned around the cabins, which had been wrapped in foil prior to the fire's arrival. The cabins did not burn. One cabin had a tree fall onto the roof. Fire operations personnel recommended no personnel enter the site unless the area's many hazard trees are removed or until winter storms and snowfall bring down weakened trees. One tree will be cut down that is posing imminent threat to one of the cabins if it is safe to do so.

Goode Fire: Park Creek Trail. The fire burned over roughly one mile of trail, causing tread damage along a portion of it and killing trees along much of that distance. Two key lessons have been learned from the 2006 Flick Fire and 2010 Rainbow Bridge Fire that relate to trails and maintaining safe visitor access. First, the incidence of windfall trees increases substantially for several years following the fire, requiring considerably more trail maintenance than before the fire. A second lesson learned is that vegetation will grow quickly and densely along the trails and on the trail tread itself. This forces hikers to use the outside edge of the trail which increases sloughing of the outer trail edge. This trail will remain closed through until trail clearing and repairs are completed in the summer of 2016.

## RECOMMENDATIONS

### Specifications

#### ***F1: Replace culvert***

The burned plastic culvert will be replaced with a galvanized steel culvert. This will be completed by the Spring of 2016.

#### ***F2: Replace traffic counter***

The burned traffic counter, which includes the counting mechanism and rubber cord that lies across the road, will be replaced in-kind. This will be completed by the Spring of 2016.

#### ***F3: Trail repair***

Note: All the trails discussed below will remain closed through the winter of 2015-2016 to enable fire-weakened trees to fall naturally.

Goodell Fire. The River Loop and Newhalem Creek access trails will be repaired by replacing burned crib logs and filling in or replacing lost tread. All trail work will be completed according to NOCA trails standards. The River Loop trail repair will be completed by summer, 2016. The Newhalem Creek access trail has many dangerous snags still standing; although it is expected the trail might be repaired and reopened by summer, 2016, if the snag issue has not been resolved by winter storms, the trail may need to remain closed.

The Newhalem Rock Shelter access trail suffered extensive damage. Crib logs and rock walls

that supported the trail tread will need to be replaced and rebuilt. All tasks will be completed by mid-summer 2016.

Goode fire. Trail tread will be rebuilt where fire-related damage has occurred, and the expected increase in windfall and trailside brush will be cleared annually for three years following the fire (2016-2018).

#### ***F4: Campground repair***

Downed trees and limbs will be removed from 10 sites in the Newhalem Campground Loop C. Burned over tent pads will be repaired by adding new pad material; Carsonite signs will be replaced, and picnic tables repaired or replaced. Upper Goodell Group Campground will also require repairs to the gravel surface of parking areas associated with the campground.

A hazard tree assessment (see Vegetation Burned Area Assessment) will be completed for both campgrounds in spring, 2016. Hazard trees identified in the spring survey will be removed or if there are still too many to mitigate, consideration will be given to keeping Loop C closed through the summer of 2016 and reassessed again in the spring of 2017.

#### ***F5: Upper Goodell Campground Road Stabilization***

The large root wad that burned out under the road will be filled in and the road compacted and stabilized.

#### ***F6: Newhalem Rock Shelter Boardwalk***

The boardwalk will be replaced in kind to replicate the structure that was in place before the burn. Work will commence in spring 2016, with expected completion by Fall 2016. Engineered drawings exist that will be used to guide reconstruction, and the three interpretive signs on the boardwalk will be replaced. The area will remain under an Area Closure until an effective boardwalk is in place to provide minimal protection to the archeological site. Interpretive materials talking about the archeological site will be removed from the trailhead bulletin and replaced with material discussing the fire and need for the area closure (focusing on hazard tree concerns and rebuilding of the trail).

## **CONSULTATIONS**

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Gabe Asarian, Skagit District Ranger

**Minor Facilities Assessment written by Jack Oelfke, BAER Team Leader**

## CULTURAL RESOURCES ASSESSMENT

### OBJECTIVES

- Determine if known or incidentally encountered cultural resources within, adjacent to or downstream of the 2015 NOCA Fires were impacted by the fires and/or are threatened by post-fire conditions. If applicable, prescribe emergency stabilization treatments or activities to minimize, negate, or mitigate those impacts.
- Determine if any proposed emergency stabilization treatments for the 2015 NOCA Fires might adversely impact cultural resources and, if so, prescribe actions to minimize, negate, or mitigate identified adverse effects to cultural resources to meet Section 106 of the National Historic Preservation Act requirements (NHPA).
- Meet all Federal cultural resources legal mandates, including consultation with appropriate American Indian Tribes.

### ISSUES

- Numerous cultural resources are known to exist on lands under NPS jurisdiction that include National Register of Historic Places (NRHP) listed historic districts, archaeological sites, historic structures, and cultural landscapes. Some of these resources are important to American Indian Tribes with strong traditional values linking them lands within the area burned during the 2015 NOCA Fires.
- The NRHP listed historic district consists of Newhalem, a functional company town owned/managed by Seattle City Light electric power company. Structures and other associated resources on company and NPS lands may be subject to post-fire impacts that may affect their historic integrity.
- The wooden boardwalk at the NRHP listed Newhalem Rock Shelter burned during the 2015 NOCA Fires. The boardwalk previously served a dual purpose of providing an educational experience to the public, while also steering visitors away from entering the rock shelter, thereby lessening the potential for vandalism or looting.
- Loss of vegetative cover exposed numerous archaeological artifacts and cultural features that prior to the fire were obscured by the vegetation. NPS lands affected by the 2015 NOCA Fires are adjacent to public roads and established trail system resulting in high visitation and use of these NPS lands. Potential for unauthorized artifact collection and looting is significantly increased with the loss of vegetative cover.
- The 2015 NOCA Fires burned large areas in watersheds that are above or include various cultural resources. The loss of vegetation in these watersheds has significantly increased the potential for surface water runoff during storm events that may result in increased erosion and sedimentation events with potential to impact known cultural resources.
- Many trees were burned or scorched during the 2015 NOCA Fires within the park area. These fire-killed trees can fall and directly impact cultural features such as stacked rock

walls and historic structures, or uproot and expose cultural materials that were previously buried and potentially impact these known significant cultural resources.

- Direct effects of the fire need to be assessed and NPS cultural resource base-line documentation updated. Spalling may occur at rock art sites, or flooding and debris flows may sweep away cultural materials or damage historical features. These impacts need to be identified and damage documentation completed to update NPS records.
- Other emergency stabilization treatments may be implemented for public safety, preservation of park infrastructure, or protection of natural resource values. These treatments may have the potential to impact known sensitive cultural resources especially if ground disturbing activities are required.

## OBSERVATIONS

This cultural resource assessment was completed to determine if post-fire conditions pose a risk to cultural resource values. The identification of cultural resource values at risk includes completing a cultural resources data records search for the fire area, consulting with individuals, tribes, and state agencies, and conducting field assessments. Not all values initially identified during the records search were determined to be at risk. Where emergency conditions have the potential to affect known cultural resources, treatment prescriptions are developed to protect the values at risk. The most significant factor leading to emergency watershed conditions is loss of ground cover, which exposes artifacts to looters and leads to increased erosion as a result of decreased infiltration, increased runoff, and increased exposure to wind.

### Cultural Context

This burned area assessment is to determine if post-fire conditions pose a risk to known cultural resource values. The 2015 NOCA Fires burned NPS lands that include a great diversity of cultural resource types that are known, or expected to exist across the affected landscape or that have the potential to be affected by post-fire effects. These include prehistoric habitation sites, seasonal camps, rock shelters, and artifact scatters, and historic-period artifact scatters, structures, and trails/roads. The following discusses those particular resources, or resource types that were affected by the 2015 fires, or the post-fire conditions.

**Prehistoric Resources.** Archaeological investigations have revealed human occupation of the Pacific Northwest for some 12,000 years (Piper and Shantry 2012) including use of the upper Skagit Valley over the past 10,000 years. Although this date is inferred from the presence of specific diagnostic projectile point types, absolute radiocarbon dates of 7,640±150 B.P were obtained at the Desolation Chert Quarry (45WH224) located within the valley (Mierendorf et. al 2011). Further archaeological studies have found that the most intensive use of the valley occurred during the Middle and Late Holocene with a higher frequency of sites dated to the period from 5500-3500 years ago. Prehistoric sites from the past 2000-3000 years appear to reflect greater mobility with more short term encampments and evidence of travel and trade throughout the Cascades (Piper and Shantry 2012). Within the park these archaeological sites can provide invaluable information regarding the adaptive transition of human lifeways in the upper Skagit Valley during the changing environmental conditions over the past ten thousand years. The Newhalem Rock Shelter (site 45WH477) consists of a floor area sheltered by an overhang

on the west side of a large, cabin-sized boulder overlooking a forested creek valley. The site was excavated in 1993 and formally determined eligible to the National Register of Historic Places in 1997 (NPS). Archaeological investigations at the rock shelter demonstrate recent occupation dating back over fifteen hundred years with radiocarbon dates for two cultural components between 1500 - 1200 and 280 - 260 years ago. Cultural materials recovered from the rock shelter include arrow points and other flaked-stone tools, ground-stone tools, abundant stone flaking debris, worked bone points, and faunal remains (fragmented mammal bones, fish bones, and marine shell). Obsidian artifacts were sourced to the Whitewater Ridge and Obsidian Cliffs quarries in Oregon, indicating active participation in the extensive regional exchange network. Data from the site clearly addresses research questions concerning regional exchange networks, cultural chronology, flaked-stone and ground-stone technologies, and local faunal resource procurement from lowland to subalpine mountain zones. (Mierendorf 2008; 1997). Cultural values central to the traditional beliefs, and oral histories and customs of Skagit River Indian bands are reflected in the archaeology at this site. These connections between the archaeological record and traditional heritage of the Skagit River people help elucidate the extent to which some interior Coast Salish bands adopted settlement and subsistence practices that depart significantly from those practiced along the coast by becoming more mountain-oriented. Thus the archaeological assemblage at the site reflects the Skagit River tradition and has contributed new and important information about local prehistory and the use of the upper Skagit River valley by Upper Skagit Indian people and their ancestors (Mierendorf 2008; 1997).

**Historic-period Resources** . Prospectors began searching for gold in Skagit River as early as 1850s even though access to the North Cascades could be particularly challenging (Luxenberg 1986). Water routes were used as far as they were navigable before miners were forced to set out on foot with all of their supplies. Following rivers and streams, it was the prospectors who established the first trails into the backcountry. Just east of the present town of Newhalem the steep-walled canyon of the Skagit River proved impassable, and early miners were forced to hike over Sourdough Mountain to reach the Ruby Creek placer mines. Alternatively, many miners traveled north to Canada, east to Hope, and then south down the Skagit River to the mines. After petitioning the state for funds to improve the trail through the Skagit River gorge, the government finally assisted in the 1880s. Their intent was to run a trail along the north bank of the Skagit River, as this was the most efficient way to the mines. Construction of this route required dynamiting a three sided ledge along the canyon walls and building several wooden suspension bridges over open gorges. This trail became known as the Goat Trail due to its precarious placement along the canyon wall. The most dangerous section of trail, the Devils Corner, was high above the Skagit River, on an extremely narrow ledge, where miners and their heavily-laden pack trains gingerly crossed a hanging puncheon bridge suspended beneath a blasted section of rock wall. When the Seattle City Light railroad extended its line from Newhalem to Diablo in 1920, the old Goat Trail was happily abandoned. Although the bridges are deteriorated, sections of the Goat Trail, including the Devil's Corner, can still be located today hugging the river's north bank. This unique and remarkable development representing efforts to create a reliable route into the North Cascades is still relatively intact although too dangerous for walking today. It was listed on the National Register of Historic Places in 1974.



Photo 20. Historic Photo of Devil's Corner Trail and Bridge above the Skagit River, n.d.

Following the initial draw to the upper Skagit area for gold and other mineral exploration, new explorers came to the area and saw the narrow gorge as an ideal location for hydropower development. Over the next century, hydropower significantly shaped the landscape of the Skagit Valley. The following is excerpted from the National Register of Historic Places nomination for the Skagit River and Newhalem Creek Hydroelectric Projects (Johnson 2010). The Skagit River Hydroelectric Project is an interconnected system of three hydroelectric plants -Gorge, Diablo, and Ross- and two company towns - Newhalem and Diablo- that are located on the upper Skagit River, which runs through the Cascade Range in northern Washington State. Associated with the project is the Newhalem Creek Hydroelectric Project, located on a tributary of the Skagit River. The plants and towns are owned by the City of Seattle and operated by the municipal utility, Seattle City Light. Developed over a 50-year span beginning in 1918, the projects have a wide range of historic and non-historic resources, including structures, objects, sites, and buildings, with an even broader range of functions. They are inextricably linked, both historically and physically, to the development of hydroelectric power for the city of Seattle. Collectively, the resources possess sufficient integrity both to represent the evolution of hydroelectric power development in the west, and to display the creation and growth of a rare type of planned community -the municipally-owned company town. In addition, some features of the project, such as the Diablo Dam and Powerhouse, have high aesthetic value in their own right, and one resource, Ladder Creek Falls Gardens, is a uniquely designed landscape. The Ladder Creek Falls Gardens occupy approximately two acres of steep terrain that rise to a comparatively flat area about 80 feet above Gorge Powerhouse. Unpaved paths with spurs wind

up the slope in serpentine fashion to concrete steps, which lead to a viewpoint of Ladder Creek Falls. Stone steps are set into the hillside in places to facilitate walking. There are level areas for resting and viewing spaced throughout. The landscape includes native trees and plants, although some exotics such as bamboo are woven into the scheme. The gardens contain artificial ponds and pools of concrete and stone; fountains; and three rustic wood benches dating to the mid-1930s. There are several wooden bridges, designed in a "Rustic" fashion, which span small streams or dry gullies. A lighting system once illuminated the gardens at night, and colored lights illuminate the falls. Since no site plan of the original designed garden exists, it is not known how many changes in specific plant material have occurred to impact the integrity of the original garden, designed and planned by James D. Ross. In the 1930s, tourists viewing the gardens at night were treated to a light show, created by an illumination scheme of plants and the falls, created by Ross, and a sound show, with selections by Ross. This was the highlight of the Skagit tours, and a major promotional tool in drawing the public to the Skagit. It is known that some exotic plants, carefully tended in winter months, died from neglect after the tours ceased in 1941. The garden today has over 150 species of flowers and plants and is significant for their association with Ross and for the promotion of the Skagit River Hydroelectric Project through the Skagit tours. In recent years, the Electric Garden had been re-established as a tourist attraction now using LED lights with remnants of the previous lighting system still in place. In the summer of 1918, the City Engineer's Office sent a hydrographer and an assistant to the Skagit to determine the location of a temporary generating station which would supply power for construction of the future dam and the camp that would have to be built to house workers. Initially intended as a temporary plant for construction purposes, the Newhalem power plant is the first and earliest of four hydroelectric plants built by Seattle City Light in the Skagit River area. The plant consists of a powerhouse, concrete diversion dam, power tunnel, and penstock. It began operation in August of 1921, and was semi-automated in the early 1950s. The plant remained in operation, supplying Newhalem with 2,000 kVA until July of 1966 when the powerhouse burned. The wood-framed powerhouse and the concrete diversion dam were built in 1969 after a fire destroyed the original power house, erected in 1921. During the fire, which fed rapidly on the dry cedar siding and old timber of the powerhouse, a gasket in the penstock behind the powerhouse blew out, creating a 70-foot high sheet of water behind it. This curtain of water prevented the spread of the fire and loss of trees and timber on the hill behind the powerhouse. During the fire, the machinery continued to run, which kept the shaft of the generator from warping from the heat. The new powerhouse encloses the original machinery, which survived the fire. The original power tunnel, built in 1920, is still in use, as is the 500-foot-long steel penstock, which supplies water to the two Pelton wheels. It is significant for its association with the Skagit River Hydroelectric Project as well as the company town of Newhalem.

On the east side of the Cascade Mountains, visitors to Lake Chelan began recognizing the beauty of the area coupled with boundless opportunities for tourism and recreation beginning in the 1890s (HFS 2002). Hotels began to arise along the lake's shores which were only accessible by boarding a steamer in Chelan. The USFS helped facilitate tourism and recreation in the uplake area with the building of campgrounds, trails, and ranger stations in the early part of the 20<sup>th</sup> century. In 1927 the Chelan Dam was constructed which raised the natural lake level up approximately 20 ft, flooding many of the original lake shore developments. In the 1940s, the USFS began actively promoting summer camps and cottages throughout the Wenatchee National Forest, including the shores of Lake Chelan, within the present boundaries of Lake Chelan NRA.

Many seasonally occupied cabins were built on the lake at this time, including three at Riddle creek, only accessible to the permittees by boat. Summer cabins such as these on the lake provided only modest accommodations for the owners which are well away from any municipal water or power sources. Heating, lighting, and cooking were all accomplished with wood or oil sources. A small water diversion system was set up on Riddle Creek and shared between the three cabins for outdoor showers and kitchen sinks. With the creation of Lake Chelan NRA in 1968, portions of the Wenatchee National Forest went to the park who inherited existing permits for summer cabins. In the summer of 2015 the permits expired and the three cabins became the possession of the park.

## **Background**

Impacts to cultural resources as a result of fire, fire management actions, and post-fire conditions can be conveniently divided into three categories: direct, operational, and indirect. Direct impacts are those caused by the wildland fire itself or its byproducts (e.g., smoke); operational impacts are caused by fire management actions made in response to wildland fires (e.g., fire line construction, retardant drops); and indirect impacts occur as a result of fire-induced changes to the context in which cultural resources are found (e.g., looting and erosion due to loss of vegetation cover).

Operational impacts to cultural resources are identified, assessed and mitigated as part of fire suppression activity damage repair and funded from the fire emergency suppression account. No significant suppression impacts were evident at cultural resources inspected during the initial post-fire fieldwork for the 2015 NOCA Fires. However, since only some of the known cultural resources within the 2015 NOCA Fires perimeters have been inspected to date, there is a possibility that operational impacts may still be discovered.

Emergency stabilization (BAER) funds are used to assess and, if necessary, mitigate the direct effect of fire and related indirect impacts such as erosion, as well as identify and mitigate resources that could be affected by emergency stabilization treatments (e.g., ground-disturbing activities). With regard to direct fire effects to material cultural resources, the level of threat is a function of the fuels and associated fire behavior and the nature of cultural materials present. Fire effects vary with fire intensity and duration of heating that is dependent upon fuel type, fuel loading, and burning conditions. Within the 2015 NOCA Fires area burn severity varied from unburned or low to high severity in a mosaic fashion with much of the inspected fire in forest stands. In general the fire consumed most of the light surface fuels and had varying effect on the forest cover with partial green canopy remaining in much of the area. However, burn severity was high in areas consuming most of the fuels available and generating high temperatures resulting in white ash and heavy spalling on bedrock and boulders at or near some archaeological sites. However, most of the site areas exhibited low to moderate burn severity and most likely resulted minor or negligible direct effects where fuel loading was not high. Generally speaking, in the areas with moderate to high burn severity, features and artifacts may suffer damage from heating or sooting.

Indirect impacts of the greatest concern within the 2015 NOCA Fires include erosion, fire-killed hazard trees, and looting or vandalism resulting from the post-fire exposure of artifacts. This includes incremental sediment loss and deposition, as well as catastrophic events such as debris flows. Onsite and upslope post-fire vegetation conditions influence erosion potential and the park

area lies at the bottom of burned watersheds. Fire-killed trees that fall can impact cultural resources if they impact cultural features or cause ground disturbance through impact and uprooting. Loss of vegetative cover due to fire can expose cultural features and surface artifacts that may be collected by uneducated park visitors or vandalized by unscrupulous looters in these burned areas. This is especial concern at the rock shelters and hunting blind sites exposed by loss of vegetative cover during the fire, or sites in close proximity to the park visitor center or other areas with heavy visitor use.

## **Reconnaissance Methods**

Assessments of known cultural resources within North Cascades National Park, Ross Lake NRA, and Lake Chelan NRA subject to post-fire threats related to the 2015 NOCA Fires were performed by the NPS BAER Team during the period of September 7-10, 2015. This effort was led by NPS Klamath Network Fire Program Archeologist Joe Svinarich and North Cascades NP Cultural Resources Program Manager Kim Kwarsick. Staff archaeologist Rachel Kannegaard assisted with record searches in the office and participated in one day of field assessments for training purposes. Record searches of archaeological records and historical information were conducted, and examination of known cultural resources in relation to the fire areas and in burned watersheds were completed to determine if sites were likely to have burned over or if there was a threat of erosion due to burned areas on steep slopes above identified cultural resources. The total number of cultural resources examined as at risk from the fire was 42 to include the Town of Newhalem Historic Area and other historical structures/features located within the Skagit Historic District that are managed by Seattle City Light (some resources are located on NPS land).

The initial phase of the assessment included obtaining the current fire perimeter data from the incident management team and identifying the risk potential for individual watersheds affected by fire. This in part relied upon watershed assessments by the BAER Team hydrologists and resource status reports by park, fire incident, and BAER Team members engaged in field activities. Ultimately 12 of the 42 resources initially identified as at risk due to the fire and post-fire environmental conditions were removed from consideration for BAER assessment due to confirmation of minimal fire related risk, or management of resources falling under other jurisdiction such as the Washington Department of Transportation and Seattle City Light. Some of the resources initially identified as at risk and removed from consideration include prehistoric sites near, but outside fire perimeters, the Gorge Bridge, Gorge Surge Tank, Penstock Supports, and buildings within the Town of Newhalem Historic Area.

The field assessments were based upon a prioritized list of remaining cultural resources identified as at risk. These included historic structures with wooden components and sensitive prehistoric sites such as rock shelters and artifact scatters located near heavy visitor use areas. The prioritized work was completed by examining fire and cultural resource data to identify resources most likely to be impacted by the fire and/or post-fire conditions, and completion of field assessments for significant sites that were easily accessible and in nonhazardous areas of the fire. However, given the number of cultural resources under NPS jurisdiction within the fire area, restricted access to some areas due to fire-related hazards, logistical issues for accessing the Lake Chelan area, and limited time allowed for developing the BAER plan, only sixteen of thirty

site assessments were attempted, with five incomplete assessments due to access issues or failure to relocate all recorded cultural features due to time constraints. In addition a site visit was completed to the historic period Ladder Creek Gardens that contain numerous cultural features and areas of artifact concentration which constitute a cultural landscape and are part of the Town of Newhalem Historic Area.



Photo 21. NPS Fire Archeologist examining scorched trees in the vicinity of an archeological site.

However, it is necessary to note certain difficulties that arose during the attempted assessments were due to logistical matters or safety concerns. Some areas simply were not accessible during the field assessments because of unsafe field conditions. In particular the Devil's Corner Trail is located on steep side slopes overlooking the Skagit River where it enters the Skagit River gorge. This is very steep and has many abrupt drop-offs down onto rocks or into the river. Assistance from the park climbing rangers trained to work in these conditions will be needed to access the site area to complete the assessment. The historic trail is comprised of several wooden bridges, including one suspension bridge, and there is clear evidence that the fire burned in a mosaic pattern in the vicinity of the site. Other logistical concerns consist of accessing area with downed power lines or obtaining boat rides across Lake Chelan requiring a park boat operator; both circumstances require advanced coordination to gain access to site areas. Finally, some of the assessments are for historic structures that may involve complex treatments that will require a professionally qualified historic architect to complete properly and to professional standards.

Documentation methods for the field assessments including taking field notes and completing BAER cultural resources assessment forms, photo documentation with digital cameras and collecting location data with a Garmin GPS where appropriate. In some cases during the field assessments collection of artifacts is needed to safeguard them from damage resulting from post-fire field conditions. Possible treatment that may be prescribed related to direct impacts of fire, potential impacts from fire-killed trees, erosion and sedimentation threats from strong storms, and concern over potential looting activities related to artifacts and features exposed after the fire were discussed with the park resource management staff. Strategies and methodology for completing cultural resource assessments and monitoring were also reviewed. In addition all of the BAER assessments and associated post-burn site monitoring generate field data and documentation that ultimately must be archived to meet NPS standards. This work is often completed by park curation staff that typically is not supported for this quantity of work and funding must be secured from projects as is authorized under the Director's Order 24.

### **The Newhalem Rock Shelter**

Record searches include review of professional literature, project reports, and other documents that provide information pertinent to the investigation, in this case assessing fire-caused impacts to cultural resources. Given the loss of the Newhalem Rock Shelter Boardwalk, information pertaining to the management concerns and subsequent actions are key to this assessment given the site significance and long history of park activity at the site.

In 1980 the Park began developing facilities in Newhalem including a new Visitor Center and large campground. Shortly thereafter, trails were built in the area for campers, including one that passed in front of and below a rock shelter which naturally attracted curious hikers. Access to the shelter entrance consisted of a short but steep ascent on the hillside along the west side of the boulder. A perceptive interpretive ranger notified the regional archeologist of this potential site. A small testing project in 1982 verified buried cultural deposits in the rock shelter. Following this, interpretive rangers brought visitors to the area to use as an informal place for education on Native American history. The increased visitation was noted to quickly result in the formation of a rutted, eroding path. In addition vandalism consisting of red spray paint graffiti and disturbed soils in the shelter floor area were noted by park staff. Concern was raised that continued deterioration of native plant cover and rutting of informal trail treads would cause increased erosion at the site and that artifact-bearing deposits were left unprotected from the threat of vandalism and looting. The evidence of resource degradation led to an attempted trail closure by the park due to concern over the cumulative effects of regular visitation to the site. Vegetation was placed on and near the site to obscure and disguise the site area and approach to discourage continued visitation, but regular monitoring of the site revealed knowledge of the site had spread and the site continued to experience undesired visitation (Mierendorf 1997).

Concern over impacts to the site despite efforts to discourage visitor access led the park to complete further archaeological investigations resulting in a formal determination of eligibility to the NRHP in 1997 (NPS) and development of a management plan for the Newhalem Rock Shelter (Mierendorf 1997). Site monitoring had provided clear evidence that lack of action by the park would likely result in the irretrievable loss of scientifically and culturally important information about local and regional prehistory. The desired goal was to actively protect the shelter and its intact deposits from vandalism and to control visitation through a designed

interpretive exhibit. The management plan proposed closing and revegetating certain trail segments close to the rock shelter while re-routing some new trail segments away, and to construct the boardwalk with interpretive exhibits to protect the site while providing for visitor education.

Through the use of local topography and natural landscape features such as trees, logs, and boulders, the new access trail that led to the boardwalk was designed in a manner that discouraged access to the rock shelter floor. In addition the boardwalk and viewing platform were specifically designed to incorporate the local topography to render access to the rock shelter impractical. The boardwalk was constructed of natural wood and rock materials leading to wooden viewing platform of similar construction. Upright poles, providing the structural support for the boardwalk, were purposely left long, and uneven, and modified to resemble snags. The cedar branch rails on the boardwalk handrails were handcrafted and were specially designed for viewing for visitors in wheelchairs. Concrete footings for the structure were covered by wood and natural rock so that they were not visible. The wooden viewing platform was placed where it provided a clear view of the rock shelter on one side and nearby Newhalem Creek on the other.

The interpretive exhibit for the viewing platform was intended to be both protective and interpretive for the rock shelter and archaeological resources in general with input given from the local tribes. Interpretive panels were placed on the rock shelter viewing platform to encourage visitors to consider archeological, historic, and Native American perspectives about the locality and the surrounding mountains. The carefully considered design of the boardwalk and viewing platform with interpretive displays was incorporated into features to physically protect the archaeological values of the Newhalem Rock Shelter and through visitor education in such a way to mitigate potential adverse effects to the site and to manage the site in a manner that results in no adverse effect to its significant qualities.



Photo 21. The Newhalem Rock Shelter and boardwalk before fire (left) and after fire (right).

Completed Assessments		
Visitor Center Displays	NPS	Smoke Impact to Display Items
45WH401	NPS	Erosion, Looting, Hazard Tree Potential
45WH476	NPS	Erosion, Looting, Hazard Tree Potential

45WH477 (Newhalem Rock Shelter)	NPS	Burned boardwalk & history of vandalism/looting; Erosion treatment; Hazard Tree Potential
45WH490	NPS	Assessment Incomplete; Erosion, Looting, Hazard Tree Potential
45WH491	NPS	Erosion treatment; Looting & Hazard Tree Potential
45WH698	NPS	Erosion, Looting, Hazard Tree Potential
Skagit Traditional Use Area	NPS	Proposed Watershed ES Treatments
Devil's Corner Trail	NPS	Assessment Incomplete, Access Concerns
Electric Forest	NPS/SC L	Assessment Incomplete, Extensive Site
Settling Tank & water distribution system	NPS/SC L	Assessment Incomplete; Proposed Watershed ES Treatments, extensive site
Ladder Creek Upper Bridge	NPS/SC L	Assessment Incomplete, Fire Impact (possible SCL Repair)
Ladder Creek Garden	NPS/SC L	No Treatment Required
Ross Crypt	NPS/SC L	No Treatment Required
Penstock Inlet	NPS/SC L	No Treatment Required
Newhalem Creek Powerhouse	NPS/SC L	No Treatment Required
<b><u>Need Assessments</u></b>		
45WH400	NPS	Within Fire Perimeter
45WH475	NPS	Within Fire Perimeter
45WH699	NPS	Within Fire Perimeter
Isolate #1	NPS	Within Fire Perimeter
Isolate #2	NPS	Within Fire Perimeter
River Loop Trail can scatter	NPS	Within Fire Perimeter
Riddle Creek #1	NPS	Within Fire Perimeter, Access Concerns
Riddle Creek #1 out building	NPS	Within Fire Perimeter, Access Concerns
Riddle Creek #2	NPS	Within Fire Perimeter, Access Concerns
Riddle Creek #2 out building	NPS	Within Fire Perimeter, Access Concerns
Riddle Creek #3	NPS	Within Fire Perimeter, Access Concerns
Riddle Creek #3 out building	NPS	Within Fire Perimeter, Access Concerns
Riddle Creek Shower	NPS	Within Fire Perimeter, Access Concerns
Riddle Creek can scatter	NPS	Within Fire Perimeter, Access Concerns
<b><u>Considered But Not Assessed</u></b>		
45CH635 (Submerged Site)	NPS	No threat of debris flows
45WH063	NPS	Outside Fire Perimeter; No threat of debris flows
45WH064	NPS	Outside Fire Perimeter; No threat of debris flows
45WH081	NPS	Outside Fire Perimeter; No threat of debris flows
45WH495	NPS	Outside Fire Perimeter; No threat of debris flows
45WH516	NPS	Outside Fire Perimeter; No threat of debris flows
45WH923	NPS	Outside Fire Perimeter; No threat of debris flows

Gorge Bridge	WSDOT	Managed by Wash DOT
Gorge Surge Tank	NPS/SC L	Managed by Seattle City Light (SCL)
Penstock saddles	NPS/SC L	Managed by Seattle City Light (SCL)
Ladder Creek Lower Bridge	NPS/SC L	No threat of debris flows
Newhalem Historic Area (Skagit Historic District)	NPS/SC L	Managed by Seattle City Light (SCL); No threat of debris flows

Table 6. Cultural Assessment Considerations

### Findings

Cultural resources located within the fire areas, or in areas subject to potential erosional impacts originating within the fire area were determined using the park GIS data and site record files. Fire data used in the analysis were obtained from the incident management team assigned to the fire for suppression. Site locations and site types were examined to assess for probable adverse effects resulting from fire. Resources determined to be at greatest risk were given the highest priority in completing assessments. The following discusses the identified impacts to known cultural resources and summarized the finding for completed cultural resource assessments.

#### Direct Fire Impacts to Cultural Features

Fire can directly affect cultural resources by damaging or altering elements or attributes of cultural materials that make them significant. Fire intensity and burn severity vary with fuel type and fuel loading, with greater burn severity occurring in areas with heavier fuel loading. While fire intensity and burn severity generally increase with heavier fuel loads, fuel arrangement plays a significant role in fire behavior as the presence or absence of ladder and intermediary fuels will allow or prevent fire from entering the tree crowns or igniting large heavy fuels. In these situations sites can be protected during wildfires in some instances by removing the ladder and intermediary fuels.

However, the fires burned in a mosaic pattern with small pockets of high burn severity, some of which were found within or near archaeological sites. In particular burn severity was high at the Newhalem Rock Shelter when the wooden boardwalk immediately in front of the rock shelter burned. The boardwalk was the most significant loss, both in terms of resource protection and facilities. Very high burn severity was also noted at the newly discovered rock shelter that is part of site 45WH698 where heavy rock spalling was noted on the interior rock face of the rock shelter.



Photo 22. Close up of burned hand rails and support posts of boardwalk with a sprinkler and hose still attached.

The 2015 NOCA Fires at one point threatened the park Visitor Center and museum collections located within. The Visitor Center includes interpretive artifact exhibits and Artist-in-Residence artwork. As such the Visitor Center serves also as a museum facility with collections on exhibit. Smoke from the fires accumulated in the valley for several days and reached significantly high concentrations posing a threat to sensitive cultural materials on display. All of the Artist-in-Residence paintings and artifacts were removed from exhibit and taken to the Marblemount collections facility in anticipation of possible fire damage. While the fire did not burn the Visitor Center, it did encircle the building. Due to this exposure, the interior did receive significant smoke infiltration. Potential smoke impacts to the museum displays and Artist-in-Residence paintings were identified as a possible concern. Therefore, on-site servicing of the central HVAC system and cleaning of exhibit cases is needed to remove smoke contamination resulting from the fire before smoke sensitive and perishable materials such as the display artifacts and Artist-in-Residence paintings can be returned. This is needed as the Visitor Center has already reopened and needs to continue to serve its' dual function as an interpretive museum facility.

#### Slope and Erosion Potential

Cultural resources located on or below steep slopes that burned at moderate to high severity may be subject to increased precipitation runoff that can erode archeological sites and historic features, or impact them with falling rock and debris flows. Up-slope values can be used to derive potential flows resulting from heavy storms when examined in conjunction with the soil burn severity and soil type. Results of the hydrologic assessment of watersheds indicate debris

flows are not a major concern for most cultural resources, but this assessment did not address increased water flow resulting in increased deposition of sediments and localized erosion. Most of the cultural resources assessed are located in areas with moderate to high slope values, although site level terrain variability can be significant and is not decipherable from the GIS data (in other words, field assessments are necessary to determine actual on-site erosion threats). Given the rugged terrain at the park post-fire erosion concerns were determined to potentially exist at all the known cultural resources subject to impacts from the 2015 fires.

Seven of the field assessments attempted to date included three sites with prehistoric rock shelters, one with stacked rock walls forming hunting blinds, and two artifact scatters that were all determined to be potentially subject to adverse fire-induced erosion impacts. Field inspections determined that current field conditions have increased the potential for water run off through two of the rock shelter sites that will require minor sandbag treatment to divert the water flow away from the rock shelter floors. In addition all the remaining prehistoric sites have potential erosion issues ranging from burned out stump holes near archaeological features or within archaeological site boundaries, to the sites being located on or at the base of steep slopes that may induce localized erosion or sedimentation impacting the sites. The one remaining site that was assessed is the documented J.D. Ross Crypt located in bedrock at the foot of the very steep slope above Highway 20 across from Newhalem. The site area includes planted vegetation in front of the crypt, however no impacts were noted during the field inspection. All of the assessed sites have the potential for future adverse impacts resulting from post-fire environmental conditions. Site monitoring is the best strategy to address the current situation with new protective treatments to be identified and implemented if needed.

Fire-Damaged, Fire-Killed Trees and Woody Debris

Archaeological sites with fire-killed trees located on or near site features such as rock shelters and stacked rock walls, or within recorded artifact concentration areas need to be assessed by a specialist with local experience identifying hazard trees. These trees will eventually fail, further disrupting site features and may pull up root balls that will impact subsurface archaeological deposits. The hazard level can vary significantly within the fire perimeter, with the potential greatest in areas of moderate to high burn severity. Completed field site assessments have demonstrated that most of the inspected sites have fire damaged trees; it is still speculative if these will regenerate. Due to this, the park Botanist and a faller will need to accompany the archeologist to sites to determine if trees in and adjacent to sites will survive, or if they need to be directionally fallen. The stacked rock features, or hunting blinds, are the most susceptible to damage from a tree landing on a wall, while all other archeological sites are more susceptible to root balls displacing artifacts and obliterating features.

<u>CR ID</u>	<u>ES Treatment Recommended</u>
Visitor Center Displays	HVAC Service, Clean Exhibit Cases & Replace Exhibits
45WH401	Monitor for Erosion, Looting, Hazard Trees
45WH476	Monitor for Erosion, Looting, Hazard Trees
45WH477 (Newhalem Rock Shelter)	Erosion treatment; LE Patrol and Surveillance; Monitor for Erosion, Looting, Hazard Trees
45WH490	Complete BAER Assessment; Monitor for Erosion, Looting, Hazard Trees

45WH491	Erosion treatment, Monitor for Looting, Hazard Trees
45WH698	Monitor for Erosion, Looting, Hazard Trees
Skagit Traditional Use Area	ES Treatment Monitoring & Tribal Consultation
Devil’s Corner Trail	Complete BAER Assessment
Electric Forest	Complete BAER Assessment
Settling Tank & water distribution system	Complete BAER Assessment
Ladder Creek Upper Bridge	Complete BAER Assessment

Table 7. ES Treatment Recommendations

Potential Looting of Archaeological Sites

Field examination of inspected sites during the initial assessment revealed the potential for looting or vandalism at archaeological sites. Loss of vegetation providing ground surface cover was noted to have clearly revealed cultural material at visited sites. This is most conspicuous at rock shelter sites that are generally obvious to even the most casual observer. Although, some sites within the fire area are more difficult to access, all of the sites are in close proximity to developed areas, campgrounds, trails, and roads. A regular presence of both archeological monitors and law enforcement will be needed to deter or document looting activities. The most vulnerable of all the archeological sites to post-burn effects is the Newhalem Rock Shelter, a well-known feature that has been interpreted by the park for over 20 years. Elevated concern of the threat to this site exists because it is easily accessible, is marked on park maps, and has a documented history of looting and vandalism (Mierendorf 1997). There is a very clear need for increased law enforcement presence and archeological site monitoring to address potential looting concerns.

Ground-Disturbing Emergency Stabilization Treatments

Proposed treatments for emergency stabilization (ES) were discussed with the BAER Team during team daily meetings. Five ES treatments were identified that will include some degree of ground disturbance or have other potential to impact known cultural resources. Two of these consist of road repair to eliminate diving safety hazards, one consists of ditch cleaning and berm construction at the foot of a steep slope to protect against falling debris, one consists of constructing a temporary replacement roof over the old Newhalem water system settling tank, and one consists of placing a silt fence type barrier to contain historic debris and possibly contaminated soils from mobilizing and entering the Skagit River watershed.

The two road repair treatments include replacement of a plastic culvert that melted during the fire and is collapsing on both ends creating a hazardous road crossing. The road provides access to the Upper Goodell Group Campground and is generally open to public use. The same road has partially failed in another area where tree roots that grew into the road corridor have burned and the root holes have subsequently collapsed creating large holes in the roadbed that are a driving hazard. These areas have not been subject to thorough archaeological survey and the proposed road work needs to be monitored by a professionally qualified archaeologist.

The ditch cleaning and berm building treatment is needed due to the close proximity of park

buildings to a steep slope. The work is needed to clean out an existing ditch and reinforce the existing berm because the post-fire conditions will result in greater debris fall from the steep slopes above. The proposed work area is in the general vicinity of a reported ethnographic use area, and Native American consultation and archaeological monitoring will be needed.

The temporary roof construction on the old Newhalem water system settling tank is needed to prevent undesired effects of the settling tank filling over the course of the winter from precipitation. The tank and associated cultural materials in the area including old water distribution lines are at least in part historic-period in age. Given that these materials and the settling tank have not yet been professionally evaluated for the NRHP, these resources need to be treated as potentially historically significant and any activities should not constitute an adverse effect to these resources. As such the temporary roof needs to be designed in such a fashion that it does not impact the cultural resources present and archaeological consultation and monitoring will be needed for all phases of this project.

The final treatment proposed is also located at the old Newhalem water system settling tank and is designed to contain potentially contaminated soils and loose man-made debris around the settling tank that might otherwise be mobilized during fall and winter precipitation. To avoid this undesirable potential series of events the emergency stabilization proposed consists of placing a silt fence type barrier to contain historic debris and possibly contaminated soils from mobilizing and entering the Skagit River watershed. As with the other proposed emergency stabilization treatments, these activities will need to be coordinated with the park archaeologist who will need to monitor all phases of this work.

Archaeological monitoring will be subject to concurrence from the Washington SHPO Office following emergency treatment consultation. This will require compiling the project specification data and information pertaining to any archaeological survey or known sites in the area in preparation for the emergency consultation. In addition archaeological monitoring will often consist of site visits by the archaeologist prior to commencing the emergency stabilization work, photo documentation and taking field notes during the field phase of monitoring, and finally preparing a small report or letter to file for documentation purposes or as required by the SHPO Office during the consultation.

BAER Assessment Summary	Total
Total Number of Cultural Resources Considered Under BAER	41
Number of Cultural Resources Not Assessed After Consideration	11
Total Number of Completed and Attempted BAER Assessments	16
Total Number of Assessments Remaining (Includes Incomplete)	19
Total Sites Currently Projected for Stabilization Treatment	23
Total Number of Sites Projected for Protection Treatment	12
Total Number of Sites Projected for Site Monitoring	26

Number of Sites Assessed With No Treatment Prescribed	4
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Table 8. Cultural BAER Assessment Summary.

## RECOMMENDATIONS

Treatment recommendations include both an emergency stabilization specification that is eligible for funding under BAER and non-specification management recommendations intended to meet general agency cultural resource management standards.

### Emergency Stabilization Specifications

#### *CR-1 (Cultural Resource Assessments)*

Cultural resources assessment begun in conjunction with the BAER planning and assessment process for the 2015 NOCA Fires needs to be completed. Preliminary analysis of park data revealed many archaeological and historical resources potentially affected by the 2015 fires or post-burn conditions. Although some were determined to not be at risk, not all of the archaeological sites and historic structures could be field inspected within the compressed time frame for completing the BAER assessment. In addition, logistical concerns drastically increase the time needed to visit some of the identified cultural resources at risk located along Lake Chelan. Access to other locations was restricted due to existing hazardous conditions due to the fire, or fire-related impacts. As such the accessible sites and historic structures were prioritized based on the resource type and susceptibility to fire, or fire-related impacts, with the most sensitive sites visited first if access allowed.

The remaining resources need to be assessed and these include approximately 16 archaeological sites and/or historic structures. In addition, while conducting an assessment of historic features that contribute to the Skagit Historic District, additional cultural materials were discovered that extend the length of Ladder Creek and the adjoining slopes related to the historical “Electric Forest” tourist attraction and the original water system for the town of Newhalem. The documentation and NRHP eligibility status is uncertain for these resources and additional records search and consultation with Seattle City Light historical architect is necessary.

Given the complexity of some of the needed assessments and logistical complications and/or safety concerns in accessing other resources, the staff time needed to complete these assessments is higher than might otherwise be expected. An assessment for the Devil’s Corner trail was attempted but it was determined that access could not be obtained due to the steep nature of the site. This site will be assessed with the assistance of a climbing ranger who will be able to employ safe measures to relocate the site. Additionally, numerous logistical and time restraints prevented the completion of the assessment for the three cabins and associated outbuilding at Riddle Creek. Accessing Riddle Creek requires a full day of combined car and boat travel each way as well as securing a boat operator that is certified by the park (MOCC). Lastly, the assessments for historic structures may involve complex treatments that will require a professionally qualified historical architect to complete properly and to professional standards. Both cultural resource BAER team member do not meet that qualification.

## *CR-2 (Cultural Resource Monitoring)*

Cultural resources within North Cascades National Park boundaries or Lake Chelan National Recreation Area are especially sensitive being of great importance historically and to contemporary American Indians. These areas are in close proximity to local communities, and private lands and parks, resulting in much higher exposure to the public. Unauthorized collection of artifacts is a concern, but also the need to protect heritage resources from increased erosion or sedimentation impacts following heavy precipitation events, and potential impacts from fire effected tree die off. As such periodic monitoring of cultural resources and following major flood events is needed to identify any additional indirect fire related impacts that may occur and to ensure that stabilization treatments remain effective.

Continued cultural resource inspections of selected archaeological sites and historic structures within North Cascades National Park boundaries will be completed quarterly and/or following significant rain events resulting in flooding with potential to impact sensitive cultural resources. Of special importance for monitoring is the Newhalem Rock Shelter on a monthly basis due to its documented history of being subject to unauthorized visitation that has resulted in site vandalism and likely looting. The park engaged in a planning process in 1997 whereby an educational and protective strategy was derived, and a wooden boardwalk with interpretive displays was constructed that effectively blocked access to the rock shelter. Unfortunately the boardwalk burned and now the rock shelter is more exposed than ever before with the additional loss of screening vegetation. The Newhalem Rock Shelter will continue to be monitored on a regular basis for fire related impact until the boardwalk is rebuilt (see F-06). Including the Newhalem Rock Shelter the park intends to monitor most of the cultural resources affected by the 2015 fires. Assuming completion of assessments (see CR-01) will result in the need to monitor sites, some 25 cultural resources will be monitored to include the extensive array of cultural materials composing the “Electric Forest,” the original Newhalem water system, and cabins with associated features at Lake Chelan.

Cultural resource monitoring will include documenting changes in site condition by evaluating current conditions against site baseline data. Any completed stabilization treatments will also be documented with photographs and field notes. Where necessary for protection of cultural materials, exposed artifacts will be collected that are subject to potential looting or impact from other identified site disturbance such as erosion or fire-killed tree fall. Curation of these artifacts and processing the BAER materials for the park archives will be completed by the park curator. This work is often completed by park curation staff who typically are not supported for this work however funding must be secured from projects as is authorized under the Director’s Order 24.

## *CR-3 (Cultural Resource Stabilization)*

Indirect impacts from the 2015 NOCA Fires are, or have the potential to, further degrade important attributes of archaeological sites or historical resources within the park boundaries or within the two national recreation areas. This includes the need to clear or removed fire-killed trees and other woody debris deposited during recent storm events immediately following the fire. In some instances these directly affect a cultural feature or may if tree fall occurs. As part of this treatment the park botanist will assist the park archaeologist in identifying trees that pose a

hazard to visited archaeological sites and historic structures. Tree falling will be accomplished by a certified faller. Strategic sandbag placement is also needed to redirect water flow during storm events to avoid erosional impacts to cultural features. This need has been identified at two rock shelter sites currently, but is anticipated at other prehistoric sites and historic structures as the assessments are completed (see CR-1). Multiple archaeological sites and/or historic structure require one or more of these stabilization treatments and it is anticipated that more will be identified following completion of the remaining site assessments.

One additional fire-related impact occurred that requires stabilization work to meet park operational needs and prevent additional fire-related impacts that may result in continued adverse effects to sensitive cultural resources. The park Visitor Center and the building's contents were subjected to extremely heavy smoke exposure. The building serves a dual purpose as a museum facility and includes several displays of cultural items comprised of sensitive materials such as Artist-in-Residence paintings and photographic prints, historical and ethnographic materials to include wood, paper, cloth, textiles, and leather items that are all subject to adverse impacts from smoke. These items were removed and placed in the park curation facilities during the fire, but need to be returned to the Visitor Center that has reopened. The main concern is the need to service the building HVAC system and clean exhibit cases to remove accumulated smoke deposits that may still impact display items when in operation.

#### *CR-4 (Cultural Resource Protection)*

Loss of vegetative cover due to the 2015 NOCA Fires have left vulnerable cultural resources that may be subject to unauthorized artifact collecting or looting of recently exposed artifacts and cultural features. Currently two rock shelters, including the Newhalem Rock Shelter and other prehistoric sites that include artifact scatters and one hunting blind site have significantly changed post-fire conditions resulting from the loss of vegetative cover that exposed cultural materials including artifacts and features subject to looting and/or vandalism. Additional cultural resource assessments remain to be completed (see CR-01) including for historic-period structures that most likely have historical bottles and other collectible items of interest found in association. Proposed treatments to alleviate degradation of the resource resulting from the loss of vegetation due to the fire include increasing security patrols and installing remote camera monitoring systems. Following completion of cultural resource assessments it is anticipated that some 15 sites will require increased monitoring/patrol for protection purposes.

The Newhalem Rock Shelter, a National Register listed archeological site, is particularly susceptible to looting due to the loss of the boardwalk. The boardwalk served a dual purpose, both protecting the site from looting and disturbance by corralling visitors into a raised platform, as well as providing a place for the public interpretation of archeology. In order to protect the Newhalem Rock Shelter site, the Newhalem Creek access trail, and rock shelter trail should remain closed until the boardwalk is rebuilt (see specification F-6). All reference to the site should be removed from the trailhead sign and replaced with a trail closed sign. Because this site is well known, marked on park maps, and easily accessible, law enforcement patrol of the site three times a week is proposed to look for evidence of unauthorized entrance and resource damage. While this role could be filled by lower graded position than budgeted in the summer, only GL-11 rangers are employed in this district 9 months of the year.

The Newhalem rock shelter site has a documented history of looting and vandalism so in addition to patrols, motion sensor infrared game cameras should be installed at the trailhead, along the trail, and at the rock shelter overhang. Due to the close proximity of the Ranger Station to the Newhalem rock shelter as well as it having cellular coverage, a cellular game camera should be installed. Cellular cameras have the ability to send images to email and cell phones so that rangers can immediately respond to suspicious activity as it is happening. A standard infrared game camera will be installed at the trailhead along the access road to capture license plates. The Ranger division will install and maintain all cameras with input from the Park Archeologist. Suspicious activities documented on film or patrol will be reported back to the Park Archeologist.

Although the Newhalem Rock Shelter is the primary focus of the proposed protection activities, there are other cultural resources that require protection. These include a second rock shelter that is also easily accessible and along an abandoned trail, however, it is not publically identified and interpreted. This rock shelter will also be included in scheduled ranger patrols but at less frequent intervals than the Newhalem Rock Shelter. This site is out of cellular range so standard infrared game cameras will be installed to capture any potential looting activities. Data cards from this camera will be exchanged while a ranger is patrolling the site. Rangers will review the film for suspicious activities and report back to the Park Archeologist. Similar strategies will be implemented at the other cultural sites that require protection due to the increased threat of looting and vandalism due to post-fire conditions.

The Special Agent duty stationed at NOCA will assist by providing training for the patrol rangers and in the event that resource damage occurs at one of the sites, will follow through with investigation of any ARPA cases. Any ARPA investigation will occur in coordination with the park archaeologist to document impacts and provide needed archaeological information to pursue legal action.

## **MANAGEMENT RECOMMENDATIONS (Non-Specification Related)**

Post-fire field conditions and data collected during fire suppression and BAER often lead to the need for management actions that were not addressed during the incident and are not eligible for emergency stabilization funding. The following recommendations are intended to assist the park meet general NPS management goals.

1. Record cultural resources to professional standards. Many archeological sites and cultural features assessed for emergency stabilization will require further documentation to meet professional standards. Current documentation in some cases consists of only of GPS locations, digital photographs, and some general field notes.
  - a. In particular the original components of the “Electric Forest”, uphill of the existing cultural landscape boundary in the Ladder Creek area, should be evaluated to determine whether it is contributing to the cultural landscape. Documented history of the culturally modified landscape follows the same historic theme for the area where attempts were made to develop tourist attractions in conjunction with development of the hydroelectric facilities.

- b. The water delivery system in the Ladder Creek area is reputed to be the original system developed for the town of Newhalem. The system still retains many component pieces in their original location and may have sufficient integrity to be evaluated independently or as part of the Skagit Historic District for the NRHP. If it is found to be contributing, it should also be added to the Historic Resources Management Plan.
    - c. The Gorge Powerhouse surge tank should be evaluated to determine whether it is a contributing structure to the historic district. This crucial component of the hydropower system appears to be inadvertently left out of the historic district. If determined to be contributing, it should also be added to the Historic Resources Management Plan.
  2. Complete Archeological Sites Management Information System (ASMIS) assessments from BAER and READ data. NPS policy requires scheduled monitoring of site condition to be entered into the service-wide archeological sites database (ASMIS). This information can be gleaned from READ and BAER field site assessments.
  3. Although the threat to submerged resources (part of the year) along the Lake Chelan shoreline were determined to be at low risk due to potential debris flows resulting from post-fire conditions into the lake, much work remains to evaluate numerous prehistoric archaeological sites that have never been fully evaluated for the NRHP. The data potential for these sites is significant given the landscape distribution in addition to the information that can be gleaned individually from each site. It is highly recommended that additional funding be secured to complete systematic archaeological investigations.
  4. Post-fire field conditions are often conducive to conducting field survey in archeologically sensitive areas due to the exposure of artifacts when vegetative cover is lost to fire. An archeological survey design can be derived based on historical literature and mapped fire severity to determine where field visibility is good due to reduced vegetative in archeologically sensitive areas.

## REFERENCES

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Mierendorf, Robert R.

2008 The Newhalem Rockshelter Site. *Archaeology in America, An Encyclopedia, Southwest and Great Basin/Plateau, Vol. 3*. Francis P. McManamon, General Editor. Greenwood Press, Westport, CT.

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1997 *National Register of Historic Places Registration Form, Newhalem Rockshelter (45WH477), North Cascades National Park Service Complex, Sedro-Woolley, Washington*. On file at the Washington State Historic Preservation Office, Olympia.

Piper, Jessie and Kate Shantry

2012 *Babcock Creek Archeological Survey, North Cascades National Park, Whatcom County, Washington*. Northwest Archeological Associates / SWCA, Seattle, WA.

Thompson, E. N. and Laurin Huffman

1974 *National Register of Historic Places Nomination Form, Devil's Corner Trail*

## CONSULTATIONS

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**Cultural Assessment written by Kim Kwalsick and Joe Svinarich.**

**SPECIFICATIONS**

## PART F - INDIVIDUAL SPECIFICATION

<b>TREATMENT/ACTIVITY NAME</b>	Cultural Resource Assessments	<b>PART E SPECIFICATION #</b>	C1
<b>NFPORS TREATMENT CATEGORY*</b>	Assessment	<b>FISCAL YEAR(S)</b>	2016
<b>NFPORS TREATMENT TYPE *</b>	Risk Assessment	<b>WUI? Y / N</b>	No
<b>IMPACTED COMMUNITIES AT RISK</b>	N/A	<b>IMPACTED T&amp;E SPECIES</b>	N/A
		<b>FUNDING SOURCE (ES, BAR, OTHER)</b>	ES

\* 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:
<p><b>A. General Description:</b> Continuation of the cultural resources assessment begun in conjunction with the BAER planning and assessment process for the 2015 NOCA Fires. The large number of potentially vulnerable cultural resources and accessibility issues dictated that not all assessments could be completed prior to completion of the BAER plan. Immediate post-fire work focused on cultural resources most vulnerable to fire related impacts, and left many others in need of inspection. Assessments will include time for conducting additional record search, tribal consultation, and managing field data.</p> <p><b>B. Location/(Suitable Sites):</b> Known cultural resources including archaeological sites, historic structures, and a possible cultural landscape within North Cascades National Park or Lake Chelan NRA boundaries that are subject to post-fire threats related to the 2015 NOCA Fires. This includes those resources located within the area burned during the fire and in areas subject to increased threat of erosion and/or sedimentation resulting from the fire. At least 16 cultural resources will be assessed including the possible cultural landscape in the Ladder Creek area and cabins at Lake Chelan NRA.</p> <p><b>C. Design/Construction Specifications:</b> The assessment will follow the protocol established for the BAER planning and assessment phase, including documenting post-burn observations and photographic recordation of resource condition and threats. Compile, process, and archive field data to include GPS data, digital photographs, and field inspection notes to prepare an accomplishments report including an analysis of field methods and results and summarize the treatment specification success. The assessment will include conducting additional research for the potential cultural landscape and conducting tribal consultation with interested parties who have already contacted the park. Access to one site was determined to be dangerous and will require the assistance of climbing rangers. These activities will be performed by NPS employees and cooperating partners.</p> <p><b>D. Purpose of Treatment Specifications:</b> A large number of potentially vulnerable cultural resources are found within the 2015 NOCA Fires area. These need to be assessed for fire damage and susceptibility to looting, erosional effects, and other fire-related impacts to determine any needed emergency stabilization treatment. If identified fire-induced impacts can be stabilized and fire-related threats mitigated in a time and cost effective manner, additional funding will be requested to perform treatments.</p> <p><b>E. Treatment Effectiveness Monitoring Proposed:</b> Complete all proposed post-burn archaeological site inspections and assessments and, determine if additional emergency stabilization treatment specifications are needed. Present results in an accomplishments report and supplemental BAER plan request if needed.</p>

### LABOR, MATERIALS AND OTHER COST:

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).</b>	<b>COST / ITEM</b>
Archeologist GS-11 @ \$53/hr x 200 hrs (8 hrs/day x 25 days) x 1 FY	\$ 10,600
Archeological Technician GS-07 @ \$36/hr x 160 hrs (8 hrs/day x 20 days) x 1 FY	\$ 5,760
Historical Architect GS-12 @ \$63/hr x 80 hrs (8 hrs/day x 10 days) x 1 FY	\$ 5,040
Climbing Ranger GS-09 @ \$45/hr x 16 hrs (8 hrs/day x 2 days) x 1 FY	\$ 720
Boat Operator WG-09 @ \$41/hr x 16 hrs (4 hrs/day x 4 days) x 1 FY	\$ 656
<b>TOTAL PERSONNEL SERVICE COST</b>	<b>\$ 22,776</b>
<b>EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hr X # of Hrs X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.</b>	
N/A	-
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	<b>\$ 0</b>

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	
Miscellaneous Supplies @ \$1000 ea x 1 x 1 FY	\$ 1,000
<b>TOTAL MATERIALS AND SUPPLY COST</b>	<b>\$ 1,000</b>
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	
Travel for cultural resource specialist @ \$600 (per week) x 4 x 1 FY	\$ 2,400
GSA vehicle @ \$200 (per week) x 4 x 1 FY	\$ 800
<b>TOTAL TRAVEL COST</b>	<b>\$ 3,200</b>
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	
<b>N/A</b>	
<b>TOTAL CONTRACT COST</b>	<b>\$ -</b>

### 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
2016	10/01/15	12/01/15	F	Sites	\$ 1,686	16	\$ 26,976
<b>TOTAL</b>					<b>\$ 1,686</b>	<b>16</b>	<b>\$ 26,976</b>

Work Agent: **C**=Coop Agreement, **F**=Force Account, **G**=Grantee, **P**=Permittees, **S**=Service Contract, **T**=Timber Sales, **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.	M
3. Estimate supported by cost guides from independent sources or other federal agencies.	T
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

\*Note - assessments completed in Lake Chelan NRA pose logistical challenges and will require more time and travel for access and to complete the assessment work. Also the Ladder Creek potential cultural landscape is extensive and will require additional time to complete an assessment.

### TOTAL COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
NPS		\$ 26,976
<b>TOTAL COST</b>		<b>\$ 26,976</b>

## PART F - INDIVIDUAL SPECIFICATION

<b>TREATMENT/ACTIVITY NAME</b>	Cultural Resource Monitoring	<b>PART E SPECIFICATION #</b>	C2
<b>NFPORS TREATMENT CATEGORY*</b>	Heritage Resources	<b>FISCAL YEAR(S)</b>	2016, 2017, 2018
<b>NFPORS TREATMENT TYPE *</b>	Protect Heritage Sites	<b>WUI? Y / N</b>	No
<b>IMPACTED COMMUNITIES AT RISK</b>	N/A	<b>IMPACTED T&amp;E SPECIES</b>	N/A
		<b>FUNDING SOURCE (ES, BAR, OTHER)</b>	ES

\* 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:
<p><b>A. General Description:</b> Periodic monitoring of cultural resources within North Cascades National Park (NOCA), Ross Lake NRA (ROLA) and Lake Chelan NRA (LACH) boundaries that were affected by the 2015 NOCA fires for direct and indirect impacts. Fire has removed ground cover which makes sites more vulnerable to looting. Increased erosion or sedimentation impacts following flood events, and potential impacts from fire effected tree die off are expected to occur. As such periodic monitoring of cultural resources and following major flood events is needed to identify any additional indirect fire related impacts that may occur and to develop appropriate emergency stabilization treatments.</p>
<p><b>B. Location/(Suitable Sites):</b> Sites and structures are generally located off-trail at various locations within NOCA, LACH, and ROLA although most are within a half day's hike from the highway 20 corridor. The Newhalem Rockshelter, an interpretive trail that leads to an archeological site, is in a front country location easily accessible to the public. Accessing the structures at Riddle Creek (LACH) and the Devil's Elbow Trail require numerous logistical considerations and additional park staff.</p>
<p><b>C. Design/Construction Specifications:</b> Continued cultural resource inspections of sites and structures within the 2015 NOCA fires will be completed quarterly and/or following significant rain events resulting in flooding with potential to impact sensitive cultural resources. Cultural resources will be monitored for exposed artifacts that are subject to potential looting, assessed for new impacts resulting from erosion or sedimentation resulting from storm events, and to evaluate fire-effected trees for subsequent die off that may result in tree fall impacting cultural sites/structures or uprooting exposing cultural materials. The monitoring activities will include documenting indirect fire-related impacts with photographs and recording resource condition observations for comparison with baseline documentation collected during the cultural resource assessments. This will include compiling, processing, and archiving field data to include GPS data, digital photographs, and field inspection notes for inclusion in an accomplishments report that summarizes the cultural resource monitoring activities. Records created during monitoring will be processed and accessioned in the NOCA collection facilities. These activities will be performed by NPS employees.</p>
<p><b>D. Purpose of Treatment Specifications:</b> Numerous vulnerable cultural resources are found within the 2015 NOCA fires area. These need to be monitored for susceptibility to looting, erosional effects, and other fire-related impacts to determine any needed emergency stabilization treatment. If identified fire-induced impacts can be stabilized and fire-related threats mitigated in a time and cost effective manner, additional funding will be requested to perform treatments.</p>
<p><b>E. Treatment Effectiveness Monitoring Proposed:</b> Complete scheduled post-burn cultural resource monitoring and inspections, and determine if additional emergency stabilization treatment specifications are needed. Present results in an accomplishments report and supplemental BAER plan request if needed.</p>

### 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
Archeologist GS-11 @ \$55/hr x 141 hrs x 3 FY (8 hrs/day x 53 days)	\$ 23,760
Archeologist GS-07 @ \$36/hr x 168 hrs x 2 FY (8 hrs/day x 42 days)	\$ 12,096
Curator GS-11 @ \$55/hr x 80 hrs x 1 FY (8 hrs/day x 10 days)	\$ 4,400
<b>TOTAL PERSONNEL SERVICE COST</b>	<b>\$ 40,256</b>
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hr X # of Hrs X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
N/A	-
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	<b>\$ 0</b>
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	
Miscellaneous Supplies @ \$1000 x 1 x 1 FY	\$ 1,000
Curation Materials and Supplies @ \$500 ea x 1 x 1 FY	\$ 500
<b>TOTAL MATERIALS AND SUPPLY COST</b>	<b>\$ 1,500</b>

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	
Travel for two cultural resource specialists @ \$230 (per 3 day trip with ferry) x 4 x 1 FY	\$ 920
GSA vehicle @ \$200 (per week) x 4 x 1 FY	\$ 800
<b>TOTAL TRAVEL COST</b>	<b>\$ 1,720</b>
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	
N/A	-
<b>TOTAL CONTRACT COST</b>	<b>\$ 0</b>

## 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
2016	10/01/15	09/30/16	F	Sites	\$ 1,801	20	\$ 36,012
2017	10/01/16	09/30/17	F	Sites	\$ 1,316	4	\$ 5,264
2018	10/01/17	09/30/18	F	Sites	\$ 2,200	1	\$ 2,200
<b>TOTAL</b>						<b>25</b>	<b>\$ 43,476</b>

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales, 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.	M
3. Estimate supported by cost guides from independent sources or other federal agencies.	T
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

*Note - Logistical difficulties in accessing sites for assessment require additional funding for travel and salary to the LACH area. Given the extreme sensitivity of the Newhalem Rock Shelter frequent monitoring over three years is necessary.
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## TOTAL COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
NPS	sites	\$ 43,476
<b>TOTAL COST</b>		<b>\$ 43,476</b>

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

## PART F - INDIVIDUAL SPECIFICATION

<b>TREATMENT/ACTIVITY NAME</b>	Cultural Resource Stabilization	<b>PART E SPECIFICATION #</b>	C3
<b>NFPORS TREATMENT CATEGORY*</b>	Heritage Resources	<b>FISCAL YEAR(S)</b>	2016
<b>NFPORS TREATMENT TYPE *</b>	Site Stabilization	<b>WUI? Y / N</b>	No
<b>IMPACTED COMMUNITIES AT RISK</b>	N/A	<b>IMPACTED T&amp;E SPECIES</b>	N/A
		<b>FUNDING SOURCE (ES, BAR, OTHER)</b>	ES

\* 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:
<p><b>A. General Description:</b> Indirect impacts from the 2015 NOCA fires have the potential to further degrade archaeological sites and structures within the park. This specification consists of three components: (1) Assess and directionally fall fire-killed trees with the potential to damage archaeological sites and historical structures; (2) Install sandbag check dams at archeological sites; and 3) service HVAC to avoid further smoke damage to museum collections at the Newhalem Visitors center. Following the assessment of additional sites, additional stabilization measures may need to be taken.</p> <p><b>B. Location/(Suitable Sites):</b> Sites and structures are generally located off-trail at various locations within Lake Chelan NRA and Ross Lake NRA although most are within a half day's hike from the highway 20 corridor. The Newhalem Rockshelter, an interpretive trail that leads to an archeological site, is in a front country location easily accessible to the public. Accessing the structures at Riddle Creek (LACH) and the Devil's Elbow Trail require numerous logistical considerations and additional park staff.</p> <p><b>C. Design/Construction Specifications:</b> The Park Archeologist will accompany the Park Botanist who will assess fire killed trees at archeological sites to avoid any uprooting of archeological artifacts and/or imminent damage to historical structures. Faller will directionally fall trees away from sites and structures. With the assistance of an archeologist, a trail worker will construct sand bags of native materials in biodegradable bags on site. Sand bags will be placed at sites where threats of localized erosion and sedimentation exist due to the fire. Contract out the servicing and filter replacement of the HVAC system at the Newhalem Visitors center so that the atmosphere is returned to normal conditions and museum collections can be returned. Smoke infiltration in the exhibit space has made the environment damaging to organic collections on exhibit. Estimated up to 15 sites will be treated.</p> <p><b>D. Purpose of Treatment Specifications:</b> To prevent the irreplaceable loss of archeological sites, structures, and museum collections due to fire killed trees, erosion, and smoke.</p> <p><b>E. Treatment Effectiveness Monitoring Proposed:</b> Complete removal of fire killed trees near resources, (2) Complete installation of sand bags and evaluate effectiveness of treatment during monitoring, and improve air quality at the Visitors Center to return museum collections. Document results in the year-end accomplishments report.</p>

### 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
Archeologist GS-11 @ \$53/hr x 80 hrs x 1 FY (8 hrs/day x 10 days)	\$ 4,240
Botanist GS-12 @ \$63/hr x 80 hrs x 1 FY (8 hrs/day x 10 days)	\$ 5,040
Faller WG-10 @ \$42/hr x 80 hrs x 1 FY (8 hrs/day x 10 days)	\$ 3,360
Trail worker WG-07 @ \$37/hr x 80 hrs x 1 FY (10 hrs/day x 8 days)	\$ 2,960
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	<b>\$ 15,600</b>
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	
Miscellaneous Supplies @ \$500 x 1 x 1 FY	\$ 500
<b>TOTAL MATERIALS AND SUPPLY COST</b>	<b>\$ 500</b>
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	
Travel for two cultural resource specialists @ \$230 (per 3 day trip with ferry) x 4 x 1 FY	\$ 920
GSA vehicle @ \$200 (per week) x 4 x 1 FY	\$ 800
<b>TOTAL TRAVEL COST</b>	<b>\$ 1,720</b>
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	
Service HVAC at Newhalem Visitors Center	\$ 5,000
<b>TOTAL CONTRACT COST</b>	<b>\$ 5,000</b>

### SPECIFICATION COST SUMMARY

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
2016	10/01/15	09/30/16	F	sites	\$ 1,521	15	\$ 22,820
<b>TOTAL</b>					<b>\$ 1,521</b>	<b>15</b>	<b>\$ 22,820</b>

Work Agent: **C**=Coop Agreement, **F**=Force Account, **G**=Grantee, **P**=Permittees, **S**=Service Contract, **T**=Timber Sales, **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.	M, C
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**

Miscellaneous supplies include sand bags and other supplies for stabilization.
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**TOTAL COST BY JURISDICTION**

JURISDICTION	UNITS TREATED	COST
NPS		\$ 22,820
<b>TOTAL COST</b>		<b>\$ 22,820</b>

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

## PART F - INDIVIDUAL SPECIFICATION

<b>TREATMENT/ACTIVITY NAME</b>	Cultural Resource Protection	<b>PART E SPECIFICATION #</b>	C4
<b>NFPORS TREATMENT CATEGORY*</b>	Heritage Resources	<b>FISCAL YEAR(S)</b>	2015, 2016
<b>NFPORS TREATMENT TYPE *</b>	Protect Heritage Sites	<b>WUI? Y / N</b>	No
<b>IMPACTED COMMUNITIES AT RISK</b>	N/A	<b>IMPACTED T&amp;E SPECIES</b>	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:
<p><b>A. General Description:</b> Two archeological sites will be monitored by law enforcement rangers due to their increased vulnerability to looting. One of these is the highly sensitive Newhalem Rock Shelter with a long history of vandalism and looting concerns. The rock shelter is especially vulnerable now with the loss of the wooden boardwalk that had previously effectively denied visitor access to the rock shelter.</p> <p><b>B. Location/(Suitable Sites):</b> Both Rock shelter sites are easily accessible and located in or adjacent to developed areas in Ross Lake NRA.</p> <p><b>C. Design/Construction Specifications:</b> Increase law enforcement patrol of selected archeological sites to 3x weekly that are known to locals and designated on park maps. The board walk at the Newhalem Rockshelter formerly acted as a means to protect the site while also offering a place for visitors to learn about the archeology of the area. Rockshelter sites have a history of looting and vandalism in the park and without this means of protection these sites are particularly vulnerable. Patrols will include looking for evidence of illegal activity, retrieval of video, and camera maintenance. Due to the close proximity of the Ranger Station to the rock shelters, rangers will respond to instant video messages of unauthorized entrance in the Rockshelters as well as review the standard video. The Special Agent at NOCA will follow through with investigation of ARPA cases with archaeology assistance from the park archaeologist. The trailhead will be clearly marked as closed and an ARPA sign already exists at the sites.</p> <p><b>D. Purpose of Treatment Specifications:</b> To prevent the loss of critical cultural resources due to looting by creating a ranger presence at the sites and a surveillance system.</p> <p><b>E. Treatment Effectiveness Monitoring Proposed:</b> Documentation of site monitoring to include the number of incidents and outcome of visitor contacts and investigations. Summary information will be provided for the required annual ARPA report. Results of these activities will be summarized for the annual accomplishments report (excluding case sensitive or restricted information).</p>

### 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
Law Enforcement Ranger GL-11 @ \$55/hr x 392 hrs x 2 FY (8 hrs/day x 49 days)	\$ 43,120
Special Agent GL-12 (AUO) @ \$81/hr x 80 hrs x 2 FY (8 hrs/day x 20 days)	\$ 12,960
Archeologist GS-11 @ \$53/hr x 40 hrs x 2 FY (8 hrs/day x 10 days)	\$ 4,240
<b>TOTAL PERSONNEL SERVICE COST</b>	<b>\$ 60,320</b>
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hr X # of Hrs X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
N/A	-
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	<b>\$ 0</b>
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	
Motion Sensor Cellular Cameras @ \$1410 x 2 x 1 FY	\$ 2,820
Motion Sensor Cameras @ \$750x 4 x 1 FY	\$ 3,000
Miscellaneous Supplies and batteries @ \$1000 x 1 x 1 FY	\$ 1,000
<b>TOTAL MATERIALS AND SUPPLY COST</b>	<b>\$ 6,820</b>
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	
N/A	-
<b>TOTAL TRAVEL COST</b>	<b>\$ 0</b>
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	
Cell contract for camera @ \$75/month x 12 x 2 FY	\$ 1,800
<b>TOTAL CONTRACT COST</b>	<b>\$ 1,800</b>

## 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
2015	9/15/2015	9/30/2015	F	sites	\$ 2,820	1	\$ 2,820
2016	10/01/15	09/30/16	F	sites	\$ 17,980	2	\$ 35,960
2017	10/01/16	09/30/17	F	sites	\$ 15,080	2	\$ 30,160
<b>TOTAL</b>					<b>\$ 13,788</b>	<b>5</b>	<b>\$ 68,940</b>

Work Agent: **C**=Coop Agreement, **F**=Force Account, **G**=Grantee, **P**=Permittees, **S**=Service Contract, **T**=Timber Sales, **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.	M, C
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

Miscellaneous supplies include data cards, mounting supplies and batteries for cameras. Cameras often take 12 AA batteries that need to be replaced on a monthly basis. Cameras and data cards are often stolen or damaged.
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## TOTAL COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
NPS	sites	\$ 68,940
<b>TOTAL COST</b>		<b>\$ 68,940</b>

## PART F - INDIVIDUAL TREATMENT SPECIFICATION

TREATMENT/ACTIVITY NAME	Protect Historic Structure	PART E SPECIFICATION #	C5
NFPORS TREATMENT CATEGORY*	Heritage Resources	FISCAL YEAR(S)	2016
NFPORS TREATMENT TYPE *	Protect Heritage Sites	WUI? Y / N	Yes
IMPACTED COMMUNITIES AT RISK	Newhalem	IMPACTED T&E SPECIES	None
		Funding Source (ES, BAR, Other)	ES

\* 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):

<p><b>A. General Description:</b> A historic structure was burned in the Goodell Fire. A water settling tank (metal) with a roof and wall structure (wood/particle board?) burned exposing the water settling tank with no roof left over it. Without the roof, the water settling tank can fill with water as precipitation and snow and debris fall into it. It is uncertain the ability of the structure to handle the weight of water given its age and exposure to intense heat as demonstrated by the melted aluminum roof.</p> <p><b>B. Location/(Suitable) Sites:</b> Ladder Creek area. Coordinates NAD 83, UTM Zone 10, 629758 E, 5393006 N.</p> <p><b>C. Design/Construction Specifications:</b> Evaluation by an engineer to determine if the settling tank can structurally support full capacity after age and intense heat. If it determined that the structure can take the weight, than no action is taken. If it is determined that the structure cannot take the weight or if is unclear, than a design to exclude snow and water should be designed to protect the structure such as a roof or other means to exclude water and snow from the tank. The structure must be able to handle the weight of snow or shed snow accumulation. If action is taken to protect the structure the engineer should work closely with an archeologist to make sure that the proposed treatment does not affect the integrity of the structure and site. Any roof structure would be temporary in nature.</p> <p><b>D. Purpose of Treatment Specifications (relate to damage/change caused by fire):</b> To protect a historic structure after the Goodell Fire burned the surrounding protective structure.</p> <p><b>E. Treatment consistent with Agency Land Management Plan (identify which plan):</b> 2012 ROLA General Management Plan.</p> <p><b>F. Treatment Effectiveness Monitoring Proposed:</b> If action is taken to protect structure, the treatment should be monitored after rain and snow storms.</p>
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### LABOR, MATERIALS AND OTHER COSTS:

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):</b> Do not include contract personnel costs here (see contractor services below).	<b>COST / ITEM</b>
GS-12 Engineer @ \$60/hr. x 40 hrs. x 1 FY	\$2,400
GS-12 Archeologist @ \$60/hr. x 16 hrs. x 1 FY	\$960
<b>TOTAL PERSONNEL SERVICE COST</b>	<b>\$3,360</b>
<b>EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hrs X #Fiscal Years = Cost/Item):</b> Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
N/A	-
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	<b>\$0</b>
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	
N/A	-
<b>TOTAL MATERIALS AND SUPPLY COST</b>	<b>\$0</b>
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	
N/A	-
<b>TOTAL TRAVEL COST</b>	<b>\$0</b>
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	
N/A	-
<b>TOTAL CONTRACT COST</b>	<b>\$0</b>

### 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
2016	10/1/2015	9/30/2016	F	study	\$3,360	1	\$3,360
<b>TOTAL</b>							<b>\$3,360</b>

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

**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:

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## TOTAL COST BY JURSDICTION

JURSDICTION	UNITS TREATED	COST
NPS	1	\$3,360
	<b>TOTAL COST</b>	<b>\$3,360</b>

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

## PART F - INDIVIDUAL TREATMENT SPECIFICATION

<b>TREATMENT/ACTIVITY NAME</b>	Replace Burned Culvert	<b>PART E SPECIFICATION #</b>	F1
<b>NFPORS TREATMENT CATEGORY*</b>	Roads	<b>FISCAL YEAR(S)</b>	2016
<b>NFPORS TREATMENT TYPE *</b>	Culverts	<b>WUI? Y / N</b>	Yes
<b>IMPACTED COMMUNITIES AT RISK</b>	Newhalem	<b>IMPACTED T&amp;E SPECIES</b>	None
		<b>Funding Source (ES, BAR, Other)</b>	ES

\* 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):

<p><b>B. General Description:</b> A plastic culvert on Upper Goodell Group Campground Road burned completely through the road prism compromising the road.</p> <p><b>B. Location/(Suitable) Sites:</b> Upper Goodell Group Campground Road. Lat 48° 40' 38" Lon 121° 15' 57"</p> <p><b>C. Design/Construction Specifications:</b> Replace culvert with 42" x 20' 0.12 gauge Corrugated Metal Pipe (CMP) from the existing 36" pipe to increase capacity in post-fire watershed conditions. Install culvert at natural hydrologic grade avoiding discharge onto road fill. Harden inlet with dry stack rock construction. Install 2' or greater rock at outlet to reduce energy. Harden road with gravel that matches existing gravel. Compact road prism with vibra-compactor using water during reconstruction and upon completion. Dispose of spoils off-site in appropriate location.</p> <p><b>D. Purpose of Treatment Specifications (relate to damage/change caused by fire):</b> The Goodell Fire melted and destroyed a culvert on a campground access road which has created a safety hazard for the public and employees and needs repair before campground can be opened.</p> <p><b>E. Treatment consistent with Agency Land Management Plan (identify which plan):</b> 2012 NOCA Foundation Document.</p> <p><b>F. Treatment Effectiveness Monitoring Proposed:</b> Monitor culvert installation for plugging and capacity issues, clean or repair as needed.</p>
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### LABOR, MATERIALS AND OTHER COSTS:

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):</b> Do not include contract personnel costs here (see contractor services below).	<b>COST / ITEM</b>
WG-9 @ \$50/hr. x 16 hrs. x 1 FY	\$800
WG-7 @ \$40/hr. x 32 hrs. x 1 FY	\$1,280
WG-5 @ \$30/hr. x 32 hrs. x 1 FY	\$960
GS-12 @ \$60/hr. x 16 hrs. x 1 FY	\$960
<b>TOTAL PERSONNEL SERVICE COST</b>	<b>\$4,000</b>
<b>EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hrs X #Fiscal Years = Cost/Item):</b> Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
Rent Backhoe including delivery @ \$75/hr x 16 hours x 1 FY	\$1,200
Rent Vibra-Compactor including delivery @ \$50/hr. x 16 hrs. x 1 FY	\$800
Rent Water Tender including delivery @ \$75/hr. x 16 hrs. x 1 FY	\$1,200
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	<b>\$3,200</b>
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	
Culvert @ \$500 x 1 culvert x 1 FY	\$500
Misc. Supplies @ \$500 x 1 x 1 FY	\$500
<b>TOTAL MATERIALS AND SUPPLY COST</b>	<b>\$1,000</b>
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	
N/A	-
<b>TOTAL TRAVEL COST</b>	<b>\$0</b>
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	
N/A	-
<b>TOTAL CONTRACT COST</b>	<b>\$0</b>

### 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
2016	10/1/2015	9/30/16	F	Culvert	\$8,200	1	\$8,200
<b>TOTAL</b>							<b>\$8,200</b>

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

### SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	E
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:**

See map within plan.
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**TOTAL COST BY JURSDICTION**

JURSDICTION	UNITS TREATED	COST
NPS	1	\$8,200
	<b>TOTAL COST</b>	<b>\$8,200</b>

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

## PART F - INDIVIDUAL SPECIFICATION

<b>TREATMENT/ACTIVITY NAME</b>	Replace traffic counter	<b>PART E SPECIFICATION #</b>	F2
<b>NFPORS TREATMENT CATEGORY*</b>	Facility and Infrastructure	<b>FISCAL YEAR(S)</b>	2016
<b>NFPORS TREATMENT TYPE *</b>	Replace administrative facility	<b>WUI? Y / N</b>	Y
<b>IMPACTED COMMUNITIES AT RISK</b>	Newhalem	<b>IMPACTED T&amp;E SPECIES</b>	None
		<b>FUNDING SOURCE (ES, BAR, OTHER)</b>	BAR

\* 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):

<b>Number and Describe Each Task:</b>
A. General Description: Fire burned across the roadway into the Upper Goodell Group Campground, destroying the traffic counter which provides important visitor use statistics for the national Public Use Statistics program.
B. Location/(Suitable Sites): beginning of roadway leading to Upper Goodell Group Campground.
C. Design/Construction Specifications: replacement in kind of the lost traffic counter, which includes the counter mechanism and cord across the roadway.
D. Purpose of Treatment Specifications: replace lost infrastructure important to the management of the campground system in the park and used for long-term planning in the park regarding visitor use of the park.
E. Treatment Effectiveness Monitoring Proposed: Replacement of unit.

### LABOR, MATERIALS AND OTHER COSTS:

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).</b>	<b>COST / ITEM</b>
N/A	
<b>TOTAL PERSONNEL SERVICE COST</b>	\$ -
<b>EQUIPMENT PURCHASE, LEASE OR RENT (Item @ Cost/Hr X # of Hrs X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.</b>	
"Traffic Tally 2" and road tube kit, plus shipping	\$350
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	\$350
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	
N/A	
<b>TOTAL MATERIALS AND SUPPLY COST</b>	\$ -
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	
N/A	
<b>TOTAL TRAVEL COST</b>	\$ -
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	
N/A	
<b>TOTAL CONTRACT COST</b>	\$ -

### SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNIT S	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
FY 16	03/15/16	3/15/2016/	F	1	\$350	1	\$350
<b>TOTAL</b>					\$350	<b>1</b>	<b>\$350</b>

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

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

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** = Force Account, **S** = Suppression

**RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT**

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**TOTAL COST BY JURISDICTION**

JURISDICTION	UNITS TREATED	COST
NPS - North Cascades National Park Service Complex	1	\$350
	<b>TOTAL COST</b>	<b>\$350</b>

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

## PART F - INDIVIDUAL SPECIFICATION

<b>TREATMENT/ACTIVITY NAME</b>	Trail Repair	<b>PART E SPECIFICATION #</b>	F3
<b>NFPORS TREATMENT CATEGORY*</b>	Trails	<b>FISCAL YEAR(S)</b>	2016, 2017, 2018
<b>NFPORS TREATMENT TYPE *</b>	Trail Repair	<b>WUI? Y / N</b>	Y
<b>IMPACTED COMMUNITIES AT RISK</b>	Newhalem	<b>IMPACTED T&amp;E SPECIES</b>	None
		<b>FUNDING SOURCE (ES, BAR, OTHER)</b>	BAR

\* 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:
<p><b>A. General Description:</b> Those sections of trails that have been lost or damaged will be reworked to provide a standard trail surface (tread reconstruction, rock removal, clearing fallen trees. The Newhalem Rock Shelter Access trail is a major tread reconstruction project, while the other three trails (Park Creek trail on the Goode Fire, Newhalem Creek access and River Loop on the Goodell Fire) are tread reconstruction and continued windfall and brush removal.</p> <p><b>B. Location/(Suitable Sites):</b> Goode Fire: Park Creek trail; Goodell Fire: Newhalem Rock Shelter Access trail; Newhalem Creek Access and River Loop trails.</p> <p><b>C. Design/Construction Specifications:</b> 1) Repair sections of trail tread and crib logs damaged due to fire effects; 2) Remove higher levels of windfall and brush from across trails; 3) Repair rock walls damaged due to fire effects.</p> <p><b>D. Purpose of Treatment Specifications:</b> Provide safe access for public and employees along trails within the burn area.</p> <p><b>E. Treatment Effectiveness Monitoring Proposed:</b> Completion of proposed work.</p>

### LABOR, MATERIALS AND OTHER COSTS: 2016

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
Goode fire: WG-8 Maint. Mechanic (Trails) @ \$39/hr x 80 hrs	\$ 3,120
Goode fire: WG-5 Laborer (Trails) @ \$34/hr x 80 hrs	\$ 2,720
Goodell fire (Interp trails): WG-5 Laborer (Trails) @ \$30.50/hr x 160 hrs	\$ 4,880
Goodell fire (Interp trails): WG-5 Laborer (Trails) @ \$31/hr x 160 hrs	\$ 4,960
Goodell fire (Rock Shelter trail): WG-8 Maint. Mechanic (Trails) @ \$42/hr x 400 hrs	\$ 16,800
Goodell fire (Rock Shelter trail): WG-5 Laborer (Trails) @ \$30.50/hr x 400 hrs	\$ 12,200
Goodell fire (Rock Shelter trail): WG-5 Laborer (Trails) @ \$31/hr x 320 hrs	\$ 9,920
Goodell fire (Rock Shelter trail): WG-5 Laborer (Trails) @ \$23.50/hr x 320 hrs	\$ 7,520
Goodell fire (Rock Shelter trail): WG-5 Laborer (Trails) @ \$28.50/hr x 320 hrs	\$ 9,120
<b>TOTAL PERSONNEL SERVICE COST</b>	<b>\$ 71,240</b>
<b>EQUIPMENT PURCHASE, LEASE OR RENT (Item @ Cost/Hr X # of Hrs X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.</b>	
GSA vehicle to support projects	\$ 6,000
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	<b>\$ 6,000</b>
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	
Supplies and materials (crib logs, rock, gravel, hardware, tools)	\$ 12,200
<b>TOTAL MATERIALS AND SUPPLY COST</b>	<b>\$ 12,200</b>
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	
Per diem – 2 people x 7.5 days x \$20/day	\$ 300
<b>TOTAL TRAVEL COST</b>	<b>\$ 300</b>
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	
N/A	
<b>TOTAL CONTRACT COST</b>	<b>\$ -</b>

### LABOR, MATERIALS AND OTHER COSTS: 2017

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

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

Goode fire: WG-8 Maint. Mechanic (Trails) @ \$39/hr x 40 hrs	\$ 1,560
Goode fire: WG-5 Laborer (Trails) @ \$34/hr x 40 hrs	\$ 1,360
<b>TOTAL PERSONNEL SERVICE COST</b>	<b>\$ 2,920</b>
<b>EQUIPMENT PURCHASE, LEASE OR RENT (Item @ Cost/Hr X # of Hrs X #Fiscal Years = Cost/Item):</b> Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
N/A	
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	<b>\$ -</b>
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	
N/A	
<b>TOTAL MATERIALS AND SUPPLY COST</b>	<b>\$ -</b>
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	
Per diem - 2 people x 3.5 days x \$20/day	\$ 140
<b>TOTAL TRAVEL COST</b>	<b>\$ 140</b>
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	
N/A	
<b>TOTAL CONTRACT COST</b>	<b>\$ -</b>

### LABOR, MATERIALS AND OTHER COSTS: 2018

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):</b> Do not include contract personnel costs here (see contractor services below).	<b>COST / ITEM</b>
Goode fire: WG-8 Maint. Mechanic (Trails) @ \$39/hr x 40 hrs	\$ 1,560
Goode fire: WG-5 Laborer (Trails) @ \$34/hr x 40 hrs	\$ 1,360
<b>TOTAL PERSONNEL SERVICE COST</b>	<b>\$ 2,920</b>
<b>EQUIPMENT PURCHASE, LEASE OR RENT (Item @ Cost/Hr X # of Hrs X #Fiscal Years = Cost/Item):</b> Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
N/A	
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	<b>\$ -</b>
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	
N/A	
<b>TOTAL MATERIALS AND SUPPLY COST</b>	<b>\$ -</b>
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	
Per diem - 2 people x 3.5 days x \$20/day	\$ 140
<b>TOTAL TRAVEL COST</b>	<b>\$ 140</b>
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	
N/A	
<b>TOTAL CONTRACT COST</b>	<b>\$ -</b>

### 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	10/01/15	09/30/15	F	Site	\$ 29,913	3	\$ 89,740
FY 17	06/01/16	06/15/16	F	Site	\$ 3,060	1	\$ 3,060
FY 18	06/01/17	06/15/17	F	Site	\$ 3,060	1	\$ 3,060
<b>TOTAL</b>					<b>\$ 19,172</b>	<b>5</b>	<b>\$ 95,860</b>

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

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

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**

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**TOTAL COST BY JURISDICTION**

JURISDICTION	UNITS TREATED	COST
NPS - North Cascades National Park Service Complex	3	\$ 95,860
	<b>TOTAL COST</b>	<b>\$ 95,860</b>

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

## PART F - INDIVIDUAL TREATMENT SPECIFICATION

TREATMENT/ACTIVITY NAME	Repair Campgrounds	PART E SPECIFICATION #	F4
NFPORS TREATMENT CATEGORY*	Facility & Infrastructure	FISCAL YEAR(S)	2016
NFPORS TREATMENT TYPE *	Repair Recreation Facility	WUI? Y / N	Yes
IMPACTED COMMUNITIES AT RISK	Newhalem	IMPACTED T&E SPECIES	None
		Funding Source (ES, BAR, Other)	BAR

\* 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):

<p><b>C. General Description:</b> Repair campgrounds including downed limbs and tree removal, sign replacement, and tent pads.</p> <p><b>B. Location/(Suitable) Sites:</b> Newhalem Loop C and Upper Goodell Group Campgrounds.</p> <p><b>C. Design/Construction Specifications:</b> Repair campground as needed including downed limbs and tree removal, in-kind sign replacement, tent pad repair, and other undiscovered treatments as necessary.</p> <p><b>D. Purpose of Treatment Specifications (relate to damage/change caused by fire):</b> The Goodell Fire damaged two campgrounds and repairs are needed to prepare the campgrounds for public visitation.</p> <p><b>E. Treatment consistent with Agency Land Management Plan (identify which plan):</b> 2012 ROLA General Management Plan.</p> <p><b>F. Treatment Effectiveness Monitoring Proposed:</b> Inspect campgrounds prior to opening for public visitation to insure visitors have a safe and enjoyable stay ☺.</p>
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### LABOR, MATERIALS AND OTHER COST:

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):</b> Do not include contract personnel costs here (see contractor services below).	<b>COST / ITEM</b>
WG-10 @ \$50/hr. x 80 hrs. x 1 FY	\$4,000
2 WG-5 @ \$30/hr. x 80 hrs. x 1 FY	\$4,800
<b>TOTAL PERSONNEL SERVICE COST</b>	<b>\$8,800</b>
<b>EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hrs X #Fiscal Years = Cost/Item):</b> Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
N/A	-
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	<b>\$0</b>
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	
General Supplies @ \$1,000 x 1 x 1 FY	\$1,000
<b>TOTAL MATERIALS AND SUPPLY COST</b>	<b>\$1,000</b>
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	
N/A	-
<b>TOTAL TRAVEL COST</b>	<b>\$0</b>
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	
N/A	-
<b>TOTAL CONTRACT COST</b>	<b>\$0</b>

### 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
2016	10/1/2015	9/30/2016	F	Campgrounds	\$4,900	2	\$9,800
<b>TOTAL</b>							<b>\$9,800</b>

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

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
NPS	2	\$9,800
	<b>TOTAL COST</b>	<b>\$9,800</b>

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

## PART F - INDIVIDUAL TREATMENT SPECIFICATION

TREATMENT/ACTIVITY NAME	Road Stabilization	PART E SPECIFICATION #	F5
NFPORS TREATMENT CATEGORY*	Roads	FISCAL YEAR(S)	2016
NFPORS TREATMENT TYPE *	Prism	WUI? Y / N	Yes
IMPACTED COMMUNITIES AT RISK	Newhalem	IMPACTED T&E SPECIES	None
		Funding Source (ES, BAR, Other)	ES

\* 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):

<p><b>D. General Description:</b> Roots from a large tree burned under the road damaging the road prism creating a potential safety hazard if driven over.</p> <p><b>B. Location/(Suitable) Sites:</b> Upper Goodell Group Campground Road. Lat 48° 40' 56.178" Lon 121° 16' 7.999" NAD 83</p> <p><b>C. Design/Construction Specifications:</b> The site should be evaluated by an engineer to determine what actions, if any, need to be taken to stabilize to the damage to the road prism. If road stabilization is required, funds are provided to complete the recommended work. Harden road with gravel that matches existing gravel. Compact road prism with vibra-compact using water during reconstruction and upon completion. Dispose of spoils off-site in appropriate location.</p> <p><b>D. Purpose of Treatment Specifications (relate to damage/change caused by fire):</b> Burned roots under the road prism may have compromised the road creating a potential safety hazard to the public and employees.</p> <p><b>E. Treatment consistent with Agency Land Management Plan (identify which plan):</b> 2012 NOCA Foundation Document.</p> <p><b>F. Treatment Effectiveness Monitoring Proposed:</b> Monitor road repair for the first season to insure road stability. Repair as necessary.</p>
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### LABOR, MATERIALS AND OTHER COSTS:

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
<b>Do not include contract personnel costs here (see contractor services below).</b>	
GS-12 Engineer @ \$60/hr. x 8 hrs. x 1 FY	\$480
GS-12 Archeologist \$60/hr. x 16 hrs. x 1 FY	\$960
WG-9 @ \$50/hr. x 8 hrs. x 1 FY	\$400
WG-7 @ \$40/hr. x 8 hrs. x 1 FY	\$320
WG-5 @ \$30/hr. x 8 hrs. x 1 FY	\$240
<b>TOTAL PERSONNEL SERVICE COST</b>	<b>\$2,400</b>
<b>EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hrs X #Fiscal Years = Cost/Item):</b>	
<b>Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.</b>	
Backhoe including delivery @ \$75/hr. x 8 hrs. x 1 FY	\$600
Vibra-compact including delivery @ \$50/hr. x 8 hrs. x 1 FY	\$400
Water Tender including delivery @ \$75/hr. x 8 hrs. x 1 FY	\$600
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	<b>\$1,600</b>
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	
Road Fill Material Delivered @ \$150/cubic yard x 1 cubic yard x 1 FY	\$150
<b>TOTAL MATERIALS AND SUPPLY COST</b>	<b>\$150</b>
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	
N/A	-
<b>TOTAL TRAVEL COST</b>	<b>\$0</b>
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	
N/A	-
<b>TOTAL CONTRACT COST</b>	<b>\$0</b>

### 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
2016	10/1/2015	9/30/2016	F	Repair	\$4,150	1	\$4,150
<b>TOTAL</b>							<b>\$4,150</b>

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.	E
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.	F & 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:**

See map within plan.
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**TOTAL COST BY JURISDICTION**

JURISDICTION	UNITS TREATED	COST
NPS	1	\$4,150
	<b>TOTAL COST</b>	<b>\$4,150</b>

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

## PART F - INDIVIDUAL SPECIFICATION

<b>TREATMENT/ACTIVITY NAME</b>	Replace Rock Shelter Boardwalk	<b>PART E SPECIFICATION #</b>	F6
<b>NFPORS TREATMENT CATEGORY*</b>	Facility and Infrastructure	<b>FISCAL YEAR(S) (list each year):</b>	FY2016
<b>NFPORS TREATMENT TYPE *</b>	Replace Recreation Facility	<b>WUI? Y / N</b>	Y
<b>IMPACTED COMMUNITIES AT RISK</b>	Newhalem	<b>IMPACTED T&amp;E SPECIES</b>	None
		<b>FUNDING SOURCE (ES, BAR, OTHER)</b>	BAR

\* 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 entire Newhalem Rock Shelter Boardwalk was destroyed by the fire. Complete reconstruction of the structure is needed to protect the well-known archeological site that lies within 1/4 mile of a large NPS automobile campground (Newhalem). The boardwalk will be reconstructed as an in-kind replacement of the former structure.
B. Location/(Suitable Sites): Newhalem Rock Shelter boardwalk
C. Design/Construction Specifications: The previous boardwalk was constructed in 1997; many photographs exist to base engineering drawings off of to reconstruct the structure, as well as the presence of NPS employees who were involved in the original construction. Engineered drawings will be completed prior to reconstruction. The Interpretive site panels will be replaced with updated language to reflect today's standards, but as in the past, fit into the scene in an unobtrusive manner.
D. Purpose of Treatment Specifications: Primary purposed is to reconstruct the archeological site protection feature - the boardwalk. A very popular and successful by-product of this site protection is enabling the public to see the site without impacting the site.
E. Treatment Effectiveness Monitoring Proposed: completion of project, coupled with resource site monitoring steps taken by Cultural Resources staff of the archeological site.

### LABOR, MATERIALS AND OTHER COST: FY2016

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).</b>	<b>COST / ITEM</b>
WG-9 Historic Preservationist @ \$40.50/hr x 1200 hrs	\$ 48,600
WG-5 Laborer @ \$31/hr x 1040 hrs	\$ 32,240
WG-5 Laborer @ \$23.5/hr x 1040 hrs	\$ 24,440
WG-5 Laborer @ \$29/hr x 1040 hrs	\$ 29,640
GS-12 Engineer @ \$63/hr x 80 hrs	7,000
<b>TOTAL PERSONNEL SERVICE COST</b>	<b>\$ 141,920</b>
<b>EQUIPMENT PURCHASE, LEASE OR RENT (Item @ Cost/Hr X # of Hrs X #Fiscal Years = Cost/Item): Note: Purchases require justification that demonstrates cost benefits over leasing or renting.</b>	
GSA vehicle rental to support project	\$ 6,000
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	<b>\$ 6,000</b>
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	
Poles, Decking, Lumber, Concrete, Fasteners, Tools and Equipment	\$ 27,000
<b>TOTAL MATERIALS AND SUPPLY COST</b>	<b>\$ 27,000</b>
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	
N/A	
<b>TOTAL TRAVEL COST</b>	<b>\$ -</b>
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	
Interpretive site panels replacement - \$1500 each x 3	\$ 4,500
<b>TOTAL CONTRACT COST</b>	<b>\$ 4,500</b>

### 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

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

FY16	04/01/16	09/30/16	Force	1	\$ 177,460	1	\$ 179,420
<b>TOTAL</b>					\$ 177,460	<b>1</b>	<b>\$ 179,420</b>

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

Pictures of former boardwalk; information from Archeological Site Management Plan - Newhalem Rock Shelter (1997)
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### TOTAL COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
NPS - North Cascades National Park Service Complex	1	\$ 179,420
	<b>TOTAL COST</b>	<b>\$ 179,420</b>

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

## PART F - INDIVIDUAL TREATMENT SPECIFICATION

<b>TREATMENT/ACTIVITY NAME</b>	NOCA Fires BAER/BAR Plan Prep	<b>PART E SPECIFICATION #</b>	O1
<b>NFPORS TREATMENT CATEGORY*</b>	Planning	<b>FISCAL YEAR(S) (list each year):</b>	2015
<b>NFPORS TREATMENT TYPE *</b>	ES/BAER Plan	<b>WUI? Y / N</b>	Yes
<b>IMPACTED COMMUNITIES AT RISK</b>	Newhalem, WA	<b>IMPACTED T&amp;E SPECIES</b>	None
		<b>FUNDING SOURCE (ES, BAR, OTHER)</b>	ES

\* 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):

<p><b>A. General Description:</b> Specialists from the North Cascades National Park Service Complex, other NPS park units, University of Arizona, NCCN EPMT, and NCCN Fire developed the BAER Plan for the NOCA Fires incident. The team assembled in Newhalem to conduct the assessments and coordinated the Plan with the PWR BAER Leader.</p> <p><b>B. Location/(Suitable) Sites:</b> Team was based out of Newhalem, WA. This plan covers three NOCA fires: Goodell Fire (7,111 ac), Goode Fire (816 ac), and Wolverine Fire (2,656 ac).</p> <p><b>C. Design/Construction Specifications:</b> Complete a BAER/BAR Plan ("Post-Fire Response Plan") for the NOCA Fires.</p> <p><b>D. Purpose of Treatment Specifications (relate to damage/change caused by fire):</b> No treatments are prescribed under this specification. The planning activity is submitted as a specification in order to detail BAER planning costs for full transparency.</p> <p><b>E. Treatment consistent with Agency Land Management Plan (identify which plan):</b> GMP, actions to protect visitor safety and infrastructure.</p> <p><b>F. Treatment Effectiveness Monitoring Proposed:</b> Not applicable</p>
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### LABOR, MATERIALS AND OTHER COSTS:

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):</b> Do not include contract personnel costs here (see contractor services below).	<b>COST / ITEM</b>
NOTE: GRADES AND COST/HR AVAILABLE UPON REQUEST	
Natural Resource staff (Bivin, Gempko, Decker)	\$10,213
Watershed staff (Rasmussen, Sheppard, Springer, Riedel)	\$19,858
Cultural staff (Kwarsick, Svinarich)	\$13,691
Overhead (Oelfke, Coles)	\$19,665
GIS (Kopper)	\$1,590
<b>TOTAL PERSONNEL SERVICE COST</b>	<b>\$65,017</b>
<b>EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item):</b> Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
N/A	-
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	<b>\$0</b>
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	
N/A	-
<b>TOTAL MATERIALS AND SUPPLY COST</b>	<b>\$0</b>
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	
NOCA staff travel, rental car (Oelfke)	\$460
WHIS staff travel and per diem, rental car (Rasmussen, Svinarich)	\$2,504
OLYM staff travel and per diem, rental car (Coles)	\$1,230
EPMT staff travel and per diem, POV (Decker)	\$190
TUMA staff travel and per diem, rental car (Springer)	\$1,434
AD travel and per diem (Sheppard)	\$2,004
<b>TOTAL TRAVEL COST</b>	<b>\$7,822</b>
<b>CONTRACT COST (Item @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	
Helicopter overflight of Goodell, Goode and Wolverine fires	\$5,975
<b>TOTAL CONTRACT COST</b>	<b>\$5,975</b>

### 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
FY15	9/7/15	9/21/2015	F	Plan	\$78,814	1	\$78,814
<b>TOTAL</b>							<b>\$78,814</b>

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

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

Specifications for emergency treatments, rehabilitation treatments, and future assessment needs for (1) Cultural resource protection, (2) Watershed response (3) Exotic plants, (4) Hazard trees, (5) Minor facilities. Maps of treatment sites included in the report.
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## TOTAL COST BY JURSDICTION

JURSDICTION	UNITS TREATED	COST
NPS – North Cascades National Park Service Complex	1	\$78,814
	<b>TOTAL COST</b>	<b>\$78,814</b>

## PART F - INDIVIDUAL TREATMENT SPECIFICATION

TREATMENT/ACTIVITY NAME	BAER/BAR Implementation Leader	PART E SPECIFICATION #	O2
NFPORS TREATMENT CATEGORY*	Administration	FISCAL YEAR(S) (list each year):	2016, 2017, 2018
NFPORS TREATMENT TYPE *		WUI? Y / N	Y
IMPACTED COMMUNITIES AT RISK	Newhalem	IMPACTED T&E SPECIES	None
		FUNDING SOURCE (ES, BAR, OTHER)	ES

\* 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):

<p><b>General Description:</b> Provide funding to support a part-time BAER Implementation Leader to ensure prompt implementation of BAER and BAR rehabilitation specifications. Because of the geographic scope of this project (3 fires), the overall leader will be assisted by a site leader for projects on the east side of the park (Wolverine Fire).</p> <p><b>B. Location/(Suitable) Sites:</b> Facilities and sites directly and indirectly affected by the Goodell, Goode, and Wolverine fires in the North Cascades National Park Service Complex.</p> <p><b>C. Design/Construction Specifications:</b></p> <ol style="list-style-type: none"> <li>1. Coordinate all aspects of rehabilitation actions approved in the North Cascades 2015 Fires Post-Fire Response Plan, including contracting of treatment specifications and activities, administering contracts, implementation monitoring and documentation, tracking costs and maintaining financial records, reporting progress, submitting supplemental requests for funding, ensuring completion of all approved treatments, ensuring information is entered in NFPORS, coordinating with Seattle City Light, tribes, universities, research groups, and other affected agencies.</li> <li>2. Contract and coordinate on-the-ground implementation of treatments, including site orientation of contractors, developing daily/weekly work plans and supervising implementation activities.</li> <li>3. Monitor implementation activities to ensure compliance with all relevant Federal laws and regulations, including NEPA, NHPA, ESA, and Clean Water Act. Monitor to ensure that mitigations are followed and OSHA safety standards and regulations are met.</li> <li>4. Document accomplishments and expenditures: Provide quarterly accomplishment reports in NFPORS, written fiscal year annual accomplishment reports detailing the percentage of each specification that is completed, completion reports, funds expended, quality control inspection reports, and treatment effectiveness monitoring reports.</li> <li>5. At the conclusion of the one-year funding cycle for treatments, prepare an annual accomplishment report and budget request for the following year. At the end of three years, prepare a final report to summarize all quarterly reports and provide a comprehensive, objective compendium of lessons learned regarding the effectiveness of prescribed treatments based on the monitoring prescribed in the BAER/BAR plan.</li> </ol> <p><b>D. Purpose of Treatment Specifications (relate to damage/change caused by fire):</b> To provide financial support for proper administration and documentation of the short- and long-term treatments prescribed for the North Cascades 2015 Fires.</p> <p><b>E. Treatment consistent with Agency Land Management Plan (identify which plan):</b> GMP, actions to protect visitor safety and infrastructure.</p> <p><b>F. Treatment Effectiveness Monitoring Proposed:</b> The Implementation Leader will review projects, assume financial responsibility, and provide written and electronic monitoring reports as prescribed by DOI policy and by the BAER/BAR plan.</p>
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### LABOR, MATERIALS AND OTHER COSTS (FY16):

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
GS-12/6 Implementation Leader @ \$65/hr x 320 hours	\$20,800
GS-11/6 Site implementation Leader (east side) @ \$50/hour for 120 hours	\$6,000
<b>TOTAL PERSONNEL SERVICE COST</b>	\$26,800
<b>EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hrs X #Fiscal Years = Cost/Item):</b> Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
N/A	
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	-
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	
N/A	
<b>TOTAL MATERIALS AND SUPPLY COST</b>	-
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	
N/A	
<b>TOTAL TRAVEL COST</b>	-
<b>CONTRACT COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	
N/A	

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

<b>TOTAL CONTRACT COST</b>	-
<b>TOTAL FY16 SPEC COST</b>	<b>\$26,800</b>

**LABOR, MATERIALS AND OTHER COSTS (FY17):**

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).</b>	<b>COST / ITEM</b>
GS-12/6 Implementation Leader @ \$65/hr x 160 hours	\$10,400
GS-11/6 Site implementation Leader (east side) @ \$50/hour for 80 hours	\$4,000
<b>TOTAL PERSONNEL SERVICE COST</b>	<b>\$14,400</b>
<b>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.</b>	
N/A	
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	-
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	
N/A	
<b>TOTAL MATERIALS AND SUPPLY COST</b>	-
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	
N/A	
<b>TOTAL TRAVEL COST</b>	-
<b>CONTRACT COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	
N/A	
<b>TOTAL CONTRACT COST</b>	-
<b>TOTAL FY17 SPEC COST</b>	<b>\$14,400</b>

**LABOR, MATERIALS AND OTHER COSTS (FY18):**

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).</b>	<b>COST / ITEM</b>
GS-12/6 Implementation Leader @ \$65/hr x 120 hours	\$10,400
GS-11/6 Site implementation Leader (east side) @ \$50/hour for 80 hours	\$4,000
<b>TOTAL PERSONNEL SERVICE COST</b>	<b>\$14,400</b>
<b>EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hrs X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.</b>	
N/A	
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	-
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	
N/A	
<b>TOTAL MATERIALS AND SUPPLY COST</b>	-
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	
N/A	
<b>TOTAL TRAVEL COST</b>	-
<b>CONTRACT COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	
N/A	
<b>TOTAL CONTRACT COST</b>	-
<b>TOTAL FY18 SPEC COST</b>	<b>\$14,400</b>

**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
2016	10/1/2015	9/30/2016	F	Year	\$13,440	1	\$26,800
2017	10/1/2016	9/30/2017	F	Year	\$11,800	1	\$14,400
2018	10/1/2017	9/30/2018	F	Year	\$11,800	1	\$14,400
<b>TOTAL</b>							<b>\$55,600</b>

**Work Agent:** C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales, 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
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
NPS – North Cascades National Park Service Complex	1	\$55,600
	<b>TOTAL COST</b>	<b>\$55,600</b>

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

## PART F - INDIVIDUAL SPECIFICATION

<b>TREATMENT/ACTIVITY NAME</b>	Invasive Plant Species	<b>PART E SPECIFICATION #</b>	V1
<b>NFPORS TREATMENT CATEGORY*</b>	Invasive Plant Species	<b>FISCAL YEAR(S)</b>	2016, 2017, 2018
<b>NFPORS TREATMENT TYPE *</b>	Herbicide Treatment	<b>WUI? Y / N</b>	Yes
<b>IMPACTED COMMUNITIES AT RISK</b>	Newhalem/Stehekin	<b>IMPACTED T&amp;E SPECIES</b>	None
		<b>FUNDING SOURCE (ES, BAR, OTHER)</b>	BAR

\* 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:
<p><b>A. General Description:</b> Survey and map invasive plant species within the fire perimeter of the Goodell and Wolverine fires. Populations of weeds are expected to increase in the newly exposed ground.</p> <p><b>B. Location/(Suitable Sites):</b> Populations along State Route Highway 20, Newhalem SCL facilities, Newhalem campground and trails, Riddle Creek Cabin Site and the Manly Wham campsite.</p> <p><b>C. Design/Construction Specifications:</b> Herbicide treatments will be conducted in the spring and fall. Herbicide treatments and schedule will be provided by the North Coast and Cascades Networks Exotic Plant Management Team Coordinator.</p> <p><b>D. Purpose of Treatment Specifications:</b> The spread of invasive plants into the wilderness of Ross Lake NRA and Lake Chelan NRA is heightened with the highly infested areas adjacent to newly burned areas.</p> <p><b>E. Treatment Effectiveness Monitoring Proposed:</b> Plants will be treated with appropriate chemical in the appropriate manner for individual species. Areas adjacent to known populations will be searched for additional plants and seedlings. Each treatment will be monitored to access treatment effectiveness and to determine if additional treatments are needed.</p>

### 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
GS-07 Seasonal Biological Technician @ \$36/hour x 560 hours x 3 FY	\$ 60,480
GS-05 Seasonal Biological Technician @ \$29/hour x 560 hours x 3 FY	\$ 48,720
GS-11/6 Resource Management Specialist @ \$50 x 40 hours x 3 FY	\$ 6,000
GS-12/6 Plant Ecologist @ \$63/hour x 80 hours x 3 FY	\$ 15,120
<b>TOTAL PERSONNEL SERVICE COST</b>	<b>\$ 130,320</b>
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hrs X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
N/A	
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	<b>\$ -</b>
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	
Herbicides \$750/yr x 3 FY	\$ 2,250
Backpack sprayers: 4 @ \$150/each x 1 FY	\$ 600
<b>TOTAL MATERIALS AND SUPPLY COST</b>	<b>\$ 2,850</b>
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	
N/A	
<b>TOTAL TRAVEL COST</b>	<b>\$ -</b>
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	
Washington Conservation Corps @ \$20/hour X 200 hours x 3 FY	\$ 12,000
<b>TOTAL CONTRACT COST</b>	<b>\$ 12,000</b>

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

## 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
2016	05/01/16	9/30/16	F	Acres	\$132	371	\$ 48,790
2017	05/01/17	9/30/17	F	Acres	\$130	371	\$ 48,190
2018	05/01/18	9/30/18	F	Acres	\$130	371	\$ 48,190
<b>TOTAL</b>							<b>\$ 145,170</b>

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

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## TOTAL COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
NPS	371	\$ 145,170
<b>TOTAL COST</b>		<b>\$ 145,170</b>

## PART F - INDIVIDUAL SPECIFICATION

<b>TREATMENT/ACTIVITY NAME</b>	Revegetate Berm	<b>PART E SPECIFICATION #</b>	V2
<b>NFPORS TREATMENT CATEGORY*</b>	Prevention/seeding	<b>FISCAL YEAR(S)</b>	2016, 2017, 2018
<b>NFPORS TREATMENT TYPE *</b>	Invasive Plant Species	<b>WUI? Y / N</b>	No
<b>IMPACTED COMMUNITIES AT RISK</b>		<b>IMPACTED T&amp;E SPECIES</b>	None
		<b>FUNDING SOURCE (ES, BAR, OTHER)</b>	BAR

\* 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):

<b>Number and Describe Each Task:</b>
<p><b>A. General Description:</b> Establishment of native plants to reduce invasive weeds</p> <p><b>B. Location/(Suitable Sites):</b> Newhalem Gorge</p> <p><b>C. Design/Construction Specifications:</b> 6000 square foot berm</p> <p><b>D. Purpose of Treatment Specifications:</b> The berm was planted with native vegetation prior to the fire. This treatment would reduce the likelihood of establishment of invasive plants and restore the aesthetics of the site.</p> <p><b>E. Treatment Effectiveness Monitoring Proposed:</b> This treatment for the berm was highly successful prior to the fire. It is likely that re-establishment of native plants on the site will be successful in future plantings.</p>

### LABOR, MATERIALS AND OTHER COST:

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).</b>	<b>COST / ITEM</b>
GS-09/3 term horticulturalist @ \$44/hour x 80 hours x 3 FY	\$ 10,560
GS-07/1 seasonal biological technician @ \$22/hour x 80 hours x 3 FY	\$ 5,280
GS-05 seasonal biological technician @\$18/hour x \$ 80/hours x 3 FY	\$ 4,320
<b>TOTAL PERSONNEL SERVICE COST</b>	<b>\$ 20,160</b>
<b>EQUIPMENT PURCHASE, LEASE OR RENT (Item @ Cost/Hr X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.</b>	
N/A	
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	<b>\$ -</b>
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	
Pots, soil fertilizer @ \$800/yr x 3 FY	\$ 2,400
<b>TOTAL MATERIALS AND SUPPLY COST</b>	<b>\$ 2,400</b>
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	
N/A	
<b>TOTAL TRAVEL COST</b>	<b>\$ -</b>
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	
N/A	
<b>TOTAL CONTRACT COST</b>	<b>\$ -</b>

### SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISH MENTS	PLANNED COST
2016	5/1/2016	10/30/16	F	square feet	\$1.25	6000	\$ 7,520
2017	5/1/2017	10/30/17	F	square feet	\$1.25	6000	\$ 7,520

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

2018	5/1/2018	10/30/18	F	square feet	\$1.25	6000	\$ 7,520
<b>TOTAL</b>							<b>\$ 22,560</b>

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

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### TOTAL COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
NPS	6000 square feet	\$ 22,560
	<b>TOTAL COST</b>	<b>\$ 22,560</b>

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

## PART F - INDIVIDUAL SPECIFICATION

<b>TREATMENT/ACTIVITY NAME</b>	Hazard Tree Assessment/Mitigation	<b>PART E SPECIFICATION #</b>	V3
<b>NFPORS TREATMENT CATEGORY*</b>	Roads;Trails	<b>FISCAL YEAR(S)</b>	2016, 2017, 2018
<b>NFPORS TREATMENT TYPE *</b>	Hazard removal	<b>WUI? Y / N</b>	Yes
<b>IMPACTED COMMUNITIES AT RISK</b>	Newhalem, Stehekin	<b>IMPACTED T&amp;E SPECIES</b>	None
		<b>FUNDING SOURCE (ES, BAR, OTHER)</b>	BAR

\* 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):

<b>Number and Describe Each Task:</b>
<b>A. General Description:</b> Trees will be assessed each spring and several sites and any hazardous trees mitigated.
<b>B. Location/(Suitable Sites):</b> Newhalem campground, Trail of the Cedars, Ladder Creek Trail, River Loop Trail, Riddle Creek Cabin site, and Manly Wham Campground.
<b>C. Design/Construction Specifications:</b> Hazard tree assessments will follow the NOCA Hazard Tree Management Plan and PWR Directive for Hazard Trees (2008).
<b>D. Purpose of Treatment Specifications:</b> Removal of hazardous trees that pose a threat to life or property.
<b>E. Treatment Effectiveness Monitoring Proposed:</b> Assessments each spring for 3 years.

### LABOR, MATERIALS AND OTHER COSTS: FY 2016

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).</b>	<b>COST / ITEM</b>
GS-12/6 Plant Ecologist @ \$63/hour 40 hours	\$ 2,520
2 WG-10 fallers @ \$42/hour X 40 hour x 2 people	\$ 3,360
GS-11/6 Resource Management Specialist @ \$50/hour X10 hours	\$ 500
<b>TOTAL PERSONNEL SERVICE COST</b>	\$ 6,380
<b>EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hr X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.</b>	
N/A	-
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	\$ 0
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	
Saw gas, bar oil, chain saw chain	\$ 100
Caution signs for campgrounds and trails	\$ 600
<b>TOTAL MATERIALS AND SUPPLY COST</b>	\$ 700
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	
N/A	-
<b>TOTAL TRAVEL COST</b>	\$ 0
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	
N/A	-
<b>TOTAL CONTRACT COST</b>	\$ 0

### LABOR, MATERIALS AND OTHER COSTS: FY 2017

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).</b>	<b>COST / ITEM</b>
GS-12/6 @ \$63/hour x 30 hours	\$ 1,890

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2 WG-10 fallers @ \$42/hour X 30 hours x 2 people	\$ 2,520
GS-11/6 Resource Management Specialist @ \$50/hour X10 hours	\$ 500
<b>TOTAL PERSONNEL SERVICE COST</b>	<b>\$ 4,910</b>
<b>EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hr X # of Hours X #Fiscal Years = Cost/Item):</b> Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
N/A	-
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	<b>\$ 0</b>
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	
saw gas, bar oil, chain saw chain	\$ 100
<b>TOTAL MATERIALS AND SUPPLY COST</b>	<b>\$ 100</b>
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	
N/A	-
<b>TOTAL TRAVEL COST</b>	<b>\$ 0</b>
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	
N/A	-
<b>TOTAL CONTRACT COST</b>	<b>\$ 0</b>

### LABOR, MATERIALS AND OTHER COSTS: FY 2018

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):</b> Do not include contract personnel costs here (see contractor services below).	<b>COST / ITEM</b>
GS-12/6 @ \$63/hour x 20 hours	\$ 1,260
2 WG-10 fallers @ \$42/hour X 20 hour x 2 people	\$ 1,680
GS-11/6 Resource Management specialist @ \$50/hour X 10 hours	\$ 500
<b>TOTAL PERSONNEL SERVICE COST</b>	<b>\$ 3,440</b>
<b>EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hrs X #Fiscal Years = Cost/Item):</b> Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
N/A	-
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	<b>\$ 0</b>
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	
saw gas, bar oil, chain saw chain	\$ 100
<b>TOTAL MATERIALS AND SUPPLY COST</b>	<b>\$ 100</b>
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	
N/A	-
<b>TOTAL TRAVEL COST</b>	<b>\$ 0</b>
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	
N/A	-
<b>TOTAL CONTRACT COST</b>	<b>\$ 0</b>

### 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
2016	04/01/16	06/30/16	F	Acres	\$ 354	20	\$ 7,080
2017	04/01/17	06/30/17	F	Acres	\$ 251	20	\$ 5,010
2018	04/01/18	06/30/18	F	Acres	\$ 177	20	\$ 3,540
<b>TOTAL</b>						<b>60</b>	<b>\$ 15,630</b>

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

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**TOTAL COST BY JURISDICTION**

JURISDICTION	UNITS TREATED	COST
NPS	20	\$ 15,630
	<b>TOTAL COST</b>	<b>\$ 15,630</b>

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

## PART F - INDIVIDUAL TREATMENT SPECIFICATION

<b>TREATMENT/ACTIVITY NAME</b>	Road & Culvert Cleaning	<b>PART E SPECIFICATION #</b>	W1
<b>NFPORS TREATMENT CATEGORY*</b>	Roads	<b>FISCAL YEAR(S)</b>	2016, 2017, 2018
<b>NFPORS TREATMENT TYPE *</b>	Culverts	<b>WUI? Y / N</b>	Yes
<b>IMPACTED COMMUNITIES AT RISK</b>	Newhalem	<b>IMPACTED T&amp;E SPECIES</b>	None
		<b>Funding Source (ES, BAR, Other)</b>	ES

\* 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):

<p><b>E. General Description:</b> Clear roads and culverts of trees and debris generated by post-fire watershed conditions.</p> <p><b>B. Location/(Suitable) Sites:</b> Roads on federal lands (excluding State Route 20) in and below burned areas of the Goodell Fire.</p> <p><b>C. Design/Construction Specifications:</b> Clear culverts in early October and clean roads and culverts as needed after storm events. Specification provides for 6 culvert cleaning and road clearing events in 2016, 4 culvert and road clearing events in 2017, and 2 culvert and road clearing events in 2018. Haul debris away for proper storage and/or disposal.</p> <p><b>D. Purpose of Treatment Specifications (relate to damage/change caused by fire):</b> Rock and woody debris is discharged onto roads and into culverts in post-fire watershed conditions causing road blockage and plugging culverts in and below burned areas. Plugged culverts can cause road failures.</p> <p><b>E. Treatment consistent with Agency Land Management Plan (identify which plan):</b> 2012 NOCA Foundation Document and 2012, ROLA General Management Plan.</p> <p><b>F. Treatment Effectiveness Monitoring Proposed:</b> Monitor culverts for plugging and clear as needed. Monitor roads for debris and clear as needed.</p>
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### LABOR, MATERIALS AND OTHER COSTS:

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):</b> Do not include contract personnel costs here (see contractor services below).	<b>COST / ITEM</b>
WG-9 x \$50/hr. x 64 hrs. x 3 FY	\$9,600
WG-7 x \$40/hr. x 69 hrs. x 3 FY	\$8,280
WG-5 x \$30/hr. x 69 hrs. x 3 FY	\$6,210
<b>TOTAL PERSONNEL SERVICE COST</b>	<b>\$24,090</b>
<b>EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hrs X #Fiscal Years = Cost/Item):</b> Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
Rental Front Loader including delivery x \$75/hr x 64 hours x 3 FY	\$14,440
Rental Dump Truck including delivery x \$45/hr x 64 hours x 3 FY	\$8,640
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	<b>\$23,080</b>
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	
Diesel Fuel @ \$3.50/gal x 128 gals. X 3 FY	\$1,344
General Supplies @ \$500 x 1 x 3 FY	\$1,500
<b>TOTAL MATERIALS AND SUPPLY COST</b>	<b>\$2,844</b>
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	
N/A	-
<b>TOTAL TRAVEL COST</b>	<b>\$0</b>
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	
N/A	-
<b>TOTAL CONTRACT COST</b>	<b>\$0</b>

### 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
2016	10/1/2015	9/30/2016	F	Storm Event	\$4,168	6	\$25,007
2017	10/1/2016	9/30/2017	F	Storm Event	\$4,168	4	\$16,671
2018	10/1/2017	9/1/2018	F	Storm Event	\$4,168	2	\$8,336
<b>TOTAL</b>							<b>\$50,014</b>

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

### SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	E
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 JURSDICTION**

JURISDICTION	UNITS TREATED	COST
NPS	12	\$50,014
	<b>TOTAL COST</b>	<b>\$50,014</b>

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

## PART F - INDIVIDUAL TREATMENT SPECIFICATION

<b>TREATMENT/ACTIVITY NAME</b>	Replace Safety Signs	<b>PART E SPECIFICATION #</b>	W2
<b>NFPORS TREATMENT CATEGORY*</b>	Roads	<b>FISCAL YEAR(S)</b>	2016
<b>NFPORS TREATMENT TYPE *</b>	Signs	<b>WUI? Y / N</b>	Yes
<b>IMPACTED COMMUNITIES AT RISK</b>	Newhalem	<b>IMPACTED T&amp;E SPECIES</b>	None
		<b>Funding Source (ES, BAR, Other)</b>	ES

\* 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):

<p><b>F. General Description:</b> Replace safety signs damaged by fire along roads and trails to protect public and employees.</p> <p><b>B. Location/(Suitable) Sites:</b> Roads and trails in and below areas burned by Goodell Fire on federal lands, easements, and right-of-ways.</p> <p><b>C. Design/Construction Specifications:</b> Signs must conform to WA DOT and/or NPS standards.</p> <p><b>D. Purpose of Treatment Specifications (relate to damage/change caused by fire):</b> To protect the public and employees along roads and trails damaged by fire or fire-related conditions.</p> <p><b>E. Treatment consistent with Agency Land Management Plan (identify which plan):</b> 2012 NOCA Foundation Document.</p> <p><b>F. Treatment Effectiveness Monitoring Proposed:</b> Monitor replaced signs for damage or vandalism and replace as necessary.</p>
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### LABOR, MATERIALS AND OTHER COST:

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):</b> Do not include contract personnel costs here (see contractor services below).	<b>COST / ITEM</b>
WG-7 x \$40/hr. x 60hrs. x 1 FY	\$2,400
WG-5 x \$30/hr. x 60hrs. x 1FY	\$1,800
<b>TOTAL PERSONNEL SERVICE COST</b>	<b>\$4,200</b>
<b>EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hrs X #Fiscal Years = Cost/Item):</b> Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
Rental Back-hoe w/ auger including delivery @ \$50/hr. x 24 hrs. x 1 FY	\$1,200
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	<b>\$1,200</b>
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	
Signs @ \$250/sign x 20 x signs 1 FY	\$5,000
General Supplies x \$100 x 20 signs x 1 FY	\$2,000
Fuel @ \$3.50/gal. x 40 gals. x 1 FY	\$140
<b>TOTAL MATERIALS AND SUPPLY COST</b>	<b>\$7,140</b>
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	
N/A	-
<b>TOTAL TRAVEL COST</b>	<b>\$0</b>
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	
N/A	-
<b>TOTAL CONTRACT COST</b>	<b>\$0</b>

### 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
2016	10/1/2015	9/1/2016	F	sign	\$627	20	\$12,540
<b>TOTAL</b>							<b>\$12,540</b>

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales, 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, E, & 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:**

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**TOTAL COST BY JURSDICTION**

JURISDICTION	UNITS TREATED	COST
NPS	20	\$12,540
	<b>TOTAL COST</b>	<b>\$12,540</b>

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

## PART F - INDIVIDUAL TREATMENT SPECIFICATION

<b>TREATMENT/ACTIVITY NAME</b>	Investigate and Stabilize Potential Hazmat Site	<b>PART E SPECIFICATION #</b>	W3
<b>NFPORS TREATMENT CATEGORY*</b>	Protection & Warning	<b>FISCAL YEAR(S)</b>	2016
<b>NFPORS TREATMENT TYPE *</b>	Toxic Substance Mitigation	<b>WUI? Y / N</b>	Y
<b>IMPACTED COMMUNITIES AT RISK</b>	Newhalem	<b>IMPACTED T&amp;E SPECIES</b>	None
		<b>Funding Source (ES, BAR, Other)</b>	ES

\* 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):

<p><b>G. General Description:</b> A historic structure (tank) burned and potentially deposited hazardous materials onto the soil surface. The soil needs to be stabilized and contained in situ and should be sampled for contaminants.</p> <p><b>B. Location/(Suitable) Sites:</b> Ladder Creek area. Coordinates NAD 83, UTM Zone 10, 629758 E, 5393006 N.</p> <p><b>C. Design/Construction Specifications:</b> Install coir erosion barriers around structure 15 feet out from steel frame to contain burned construction materials ASAP. Use coir products to reduce the potential introduction of weeds. Test 10 soil samples for asbestos, volatile organics, semi-volatile, organics, and metals (CAM 18). Consult with Registered Geologist or Hydrologist to compare sample analysis against state and/or federal action limits to determine if a clean-up is necessary, and document results in a report.</p> <p><b>D. Purpose of Treatment Specifications (relate to damage/change caused by fire):</b> A historic structure (tank) burned and potentially deposited hazardous materials onto the soil surface.</p> <p><b>E. Treatment consistent with Agency Land Management Plan (identify which plan):</b> 2012 NOCA Foundation Document and 2012 ROLA General Management Plan.</p> <p><b>F. Treatment Effectiveness Monitoring Proposed:</b> Monitor site to make sure soil is not transported by rain beyond the perimeter of containment. Treat as necessary.</p>
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### LABOR, MATERIALS AND OTHER COSTS:

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):</b> Do not include contract personnel costs here (see contractor services below).	<b>COST / ITEM</b>
WG-7 @ \$40/hr. x 16 hrs. x 1 FY	\$640
WG-5 @ \$30/hr. x 16 hrs. x 1 FY	\$480
GS-12 Archeologist @ \$60/hr. x 80 hrs. x 1 FY	\$4,800
<b>TOTAL PERSONNEL SERVICE COST</b>	<b>\$5,920</b>
<b>EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hrs X #Fiscal Years = Cost/Item):</b> Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
N/A	-
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	<b>\$0</b>
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	
Coir erosion logs and wooden stakes @ \$10/ft. x 250 feet x 1 FY	\$2,500
<b>TOTAL MATERIALS AND SUPPLY COST</b>	<b>\$2,500</b>
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	
N/A	-
<b>TOTAL TRAVEL COST</b>	<b>\$0</b>
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	
Environmental Consultant @ \$15,000 x 1 FY	\$15,000
<b>TOTAL CONTRACT COST</b>	<b>\$15,000</b>

### 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
2016	10/1/2015	9/30/2016	F	Containment	\$8,420	1	\$8,420
2016	10/1/2015	9/30/2016	S	Study	\$15,000	1	\$15,000
<b>TOTAL</b>							<b>\$23,420</b>

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

### SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	M
2. Documented cost figures from similar project work obtained from agency sources.	C
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
NPS	2	\$23,420
	<b>TOTAL COST</b>	<b>\$23,420</b>

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

## PART F - INDIVIDUAL TREATMENT SPECIFICATION

<b>TREATMENT/ACTIVITY NAME</b>	Wolverine Fire Watershed Assessment	<b>PART E SPECIFICATION #</b>	W4
<b>NFPORS TREATMENT CATEGORY*</b>	Assessment	<b>FISCAL YEAR(S)</b>	2016
<b>NFPORS TREATMENT TYPE *</b>	Risk Assessment	<b>WUI? Y / N</b>	Yes
<b>IMPACTED COMMUNITIES AT RISK</b>	Stehekin	<b>IMPACTED T&amp;E SPECIES</b>	None
		<b>Funding Source (ES, BAR, Other)</b>	ES

\* 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):

<p><b>H. General Description:</b> Site assessment for Riddle Creek cabins and Manly Wham Campground in and below burned areas of the Wolverine Fire for flooding, rock fall, and debris flow hazards.</p> <p><b>B. Location/(Suitable) Sites:</b> Manly Wham Campground and Riddle Creek Cabin areas.</p> <p><b>C. Design/Construction Specifications:</b> Geologist for survey of area including report writing.</p> <p><b>D. Purpose of Treatment Specifications (relate to damage/change caused by fire):</b> The Manly Wham Campground and Riddle Creek cabins were assessed from the air assessment for post-fire watershed hazards; however, aerial recon provided insufficient detail to make a definitive assessment. An on-the-ground assessment of these areas to determine hazards is needed.</p> <p><b>E. Treatment consistent with Agency Land Management Plan (identify which plan):</b> 2012 ROLA General Management Plan.</p> <p><b>F. Treatment Effectiveness Monitoring Proposed:</b> Monitor Manly Wham Campground and Riddle Creek Cabins for damage in post-fire watershed conditions. If damage occurs, reassess areas and take appropriate actions to reduce future damage.</p>
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### LABOR, MATERIALS AND OTHER COST:

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):</b> Do not include contract personnel costs here (see contractor services below).	<b>COST / ITEM</b>
GS-12 Geologist @ \$60/ hr. x 40 hrs. x 1 FY	\$2,400
<b>TOTAL PERSONNEL SERVICE COST</b>	<b>\$2,400</b>
<b>EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hrs X #Fiscal Years = Cost/Item):</b> Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
N/A	-
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	<b>\$0</b>
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	
N/A	-
<b>TOTAL MATERIALS AND SUPPLY COST</b>	<b>\$0</b>
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	
Geologist Per-Diem plus travel and boat @ \$700 x 1 RT x 1 FY	\$700
<b>TOTAL TRAVEL COST</b>	<b>\$700</b>
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	
N/A	-
<b>TOTAL CONTRACT COST</b>	<b>\$0</b>

### 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
2016	10/1/2015	9/30/2016	F	Assessment	\$3,100	1	\$3,100
<b>TOTAL</b>							<b>\$3,100</b>

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

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TOTAL COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
NPS	1	\$3,100
	<b>TOTAL COST</b>	<b>\$3,100</b>

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

## PART F - INDIVIDUAL TREATMENT SPECIFICATION

<b>TREATMENT/ACTIVITY NAME</b>	Restore Flood Control Berm	<b>PART E SPECIFICATION #</b>	W5
<b>NFPORS TREATMENT CATEGORY*</b>	Erosion/Sedimentation	<b>FISCAL YEAR(S)</b>	2016
<b>NFPORS TREATMENT TYPE *</b>	Build Impoundments or Flow Control Structures	<b>WUI? Y / N</b>	Yes
<b>IMPACTED COMMUNITIES AT RISK</b>	Newhalem	<b>IMPACTED T&amp;E SPECIES</b>	None
		<b>Funding Source (ES, BAR, Other)</b>	ES

\* 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):

<p><b>I. General Description:</b> Reconstruct flood control berm to divert water away from structures.</p> <p><b>B. Location/(Suitable) Sites:</b> Newhalem behind storage shed. See map and/or consult with Jon Riedel, NOCA Geologist. (628,143 E 5,392,802 N NAD 83)</p> <p><b>C. Design/Construction Specifications:</b> Consult with Jon Riedel for recommendations for type and source of materials taken from the quarry near Goodell Creek. Reconstruct berm using water and vibra-plate for compaction in 1-foot or less lifts. It is estimated that a minimum of 125 cubic yards will be needed for reconstruction of berm 225 feet in length. Do not start until cultural compliance is complete.</p> <p><b>D. Purpose of Treatment Specifications (relate to damage/change caused by fire):</b> Post-fire watershed conditions will increase water delivery to the base of the slopes where a berm was constructed to divert water away from structures. A section of the berm that controls flow has been compromised and needs reconstruction to reduce risk of flooding to NPS structures.</p> <p><b>E. Treatment consistent with Agency Land Management Plan (identify which plan):</b> 2012 ROLA General Management Plan.</p> <p><b>F. Treatment Effectiveness Monitoring Proposed:</b> Monitor replaced section and other sections after storm events and repair as needed.</p>
---

### LABOR, MATERIALS AND OTHER COST:

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):</b> Do not include contract personnel costs here (see contractor services below).	<b>COST / ITEM</b>
Geologist GS-12 @ \$60/hr. x 8 hrs. x 1 FY	\$480
Archeologist GS-12 @ \$60/hr. x 40 hrs. x 1 FY	\$2,400
2 WG-10 @ \$50/hr. x 24 hrs. x 1 FY	\$2,400
WG 7 @ \$40/hr. x 24 hrs. x 1 FY	\$960
WG-5 @ \$30/hr. x 24 hrs. x 1 FY	\$720
<b>TOTAL PERSONNEL SERVICE COST</b>	<b>\$6,960</b>
<b>EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hrs X #Fiscal Years = Cost/Item):</b> Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
Rent Front End Loader including delivery @ \$75/hr. x 24 hrs. x 1 FY	\$1,800
Rent Dump Truck including delivery @ \$75/hr. x 24 hrs. x 1 FY	\$1,800
Rent Water Tender including delivery @ \$75/hr. x 24 hrs. x 1 FY	\$1,800
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	<b>\$5,400</b>
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	
Fuel @ \$3.50/gal x 60 gals. x 1 FY	\$210
<b>TOTAL MATERIALS AND SUPPLY COST</b>	<b>\$210</b>
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	
N/A	-
<b>TOTAL TRAVEL COST</b>	<b>\$0</b>
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	
N/A	-
<b>TOTAL CONTRACT COST</b>	<b>\$0</b>

### 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
2016	10/1/15	9/30/16	F	Berm	\$12,570	1	\$12,570
<b>TOTAL</b>							<b>\$12,570</b>

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

**SOURCE OF COST ESTIMATE**

1. Estimate obtained from 2-3 independent contractual sources.	E
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:**

See map within plan.
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**TOTAL COST BY JURISDICTION**

JURISDICTION	UNITS TREATED	COST
NPS	1	\$12,570
	<b>TOTAL COST</b>	<b>\$12,570</b>

## PART F - INDIVIDUAL TREATMENT SPECIFICATION

<b>TREATMENT/ACTIVITY NAME</b>	Channel Debris Removal	<b>PART E SPECIFICATION #</b>	WS-6
<b>NFPORS TREATMENT CATEGORY*</b>	Erosion/Sedimentation	<b>FISCAL YEAR(S)</b>	2016
<b>NFPORS TREATMENT TYPE *</b>	Channel Debris Removal	<b>WUI? Y / N</b>	YES
<b>IMPACTED COMMUNITIES AT RISK</b>	Newhalem	<b>IMPACTED T&amp;E SPECIES</b>	None
		<b>Funding Source (ES, BAR, Other)</b>	ES

\* 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):

<p><b>J. General Description:</b> Clear trash and woody debris from stream channel (ditch) to increase capacity and protect a road and culvert.</p> <p><b>B. Location/(Suitable) Sites:</b> Goodell Creek area behind structures extending from culvert (627,643 E, 5,393,041 N) to (628,143 E 5,392,802 N NAD 83) approximately 800 feet upstream of culvert. Consult with NOCA Geologist Jon Riedel for locations.</p> <p><b>C. Design/Construction Specifications:</b> Remove woody debris over 1.0 feet in length, trash, and other debris excluding rocks from channel. Do not dig in channel. Use hands only, no equipment except chainsaws if needed. Dispose of trash properly and place woody debris downhill/downstream from channel and/or culvert or remove completely from site. Clean debris away from culvert including rocks within 5 feet upstream and downstream of culvert. If possible, clean interior of culvert, by pushing debris through with PVC pipe or similar device. Do not implement specification until cultural compliance is complete.</p> <p><b>D. Purpose of Treatment Specifications (relate to damage/change caused by fire):</b> Post-fire watershed conditions will increase flows from areas in and below the burned area. Channel clearing will increase capacity and remove debris that could plug a downstream culvert, potentially causing failure of the road.</p> <p><b>E. Treatment consistent with Agency Land Management Plan (identify which plan):</b> 2012 ROLA General Management Plan.</p> <p><b>F. Treatment Effectiveness Monitoring Proposed:</b> Monitor stream and culvert for debris and remove as needed to prevent plugging of culvert.</p>
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### LABOR, MATERIALS AND OTHER COST:

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):</b> Do not include contract personnel costs here (see contractor services below).	<b>COST / ITEM</b>
4 WG-7 @ \$40/hr. x 24 hrs. x 1 FY	\$3,840
<b>TOTAL PERSONNEL SERVICE COST</b>	<b>\$3,840</b>
<b>EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hrs X #Fiscal Years = Cost/Item):</b> Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
N/A	-
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	<b>\$0</b>
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	
General Supplies @ \$500 x 1 x 1 FY	\$500
<b>TOTAL MATERIALS AND SUPPLY COST</b>	<b>\$500</b>
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	
N/A	-
<b>TOTAL TRAVEL COST</b>	<b>\$0</b>
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	
N/A	-
<b>TOTAL CONTRACT COST</b>	<b>\$0</b>

### 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
2016	10/1/15	9/30/16	F	Clearing	\$4,340	1	\$4,340
<b>TOTAL</b>							<b>\$4,340</b>

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales, 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.	
5. No cost estimate required - cost charged to Fire Suppression Account	

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

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

## RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

See Map Within Plan.

## TOTAL COST BY JURSDICTION

JURISDICTION	UNITS TREATED	COST
NPS	1	\$4,340
	<b>TOTAL COST</b>	<b>\$4,340</b>

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

## PART F - INDIVIDUAL TREATMENT SPECIFICATION

TREATMENT/ACTIVITY NAME	Road Closure	PART E SPECIFICATION #	W7
NFPORS TREATMENT CATEGORY*	Roads	FISCAL YEAR(S)	2016, 2017, 2018
NFPORS TREATMENT TYPE *	Closures	WUI? Y / N	YES
IMPACTED COMMUNITIES AT RISK	Newhalem	IMPACTED T&E SPECIES	None
		Funding Source (ES, BAR, Other)	ES

\* 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):

<p><b>K. General Description:</b> It is expected that rock fall, debris flows, and flooding will close State Route 20 within the Gorge area. The NPS will have to respond to these closures with Law Enforcement personnel for enforcement of each closure.</p> <p><b>B. Location/(Suitable) Sites:</b> The Gorge Area between Newhalem and Diablo.</p> <p><b>C. Design/Construction Specifications:</b> Funding is provided for closure for six events in 2016, 4 events in 2017, and 2 events in 2018. Two closure points will be enforced, one at the Diablo area and one at the Newhalem area. In some cases, a ranger may have to travel up to 8 hours to cover the Diablo area if needed.</p> <p><b>D. Purpose of Treatment Specifications (relate to damage/change caused by fire):</b> To protect and enforce public safety during road closures in post-fire watershed conditions below the Goodell Fire.</p> <p><b>E. Treatment consistent with Agency Land Management Plan (identify which plan):</b> 2012 ROLA General Management Plan.</p> <p><b>F. Treatment Effectiveness Monitoring Proposed:</b> Monitor Gorge for traveler injury or fatalities as a result of post-fire watershed conditions. If injuries or fatalities occur, consider a more pro-active approach and close road before large storm events.</p>
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### LABOR, MATERIALS AND OTHER COST:

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):</b> Do not include contract personnel costs here (see contractor services below).	<b>COST / ITEM</b>
2 GL-11 @ \$52/hr. x 32 hrs. x 3 FY	\$9,984
<b>TOTAL PERSONNEL SERVICE COST</b>	<b>\$9,984</b>
<b>EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hrs X #Fiscal Years = Cost/Item):</b> Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
N/A	-
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	<b>\$0</b>
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	
General Supplies @ \$400 x 1 x 3 FY	\$1,200
<b>TOTAL MATERIALS AND SUPPLY COST</b>	<b>\$1,200</b>
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	
N/A	-
<b>TOTAL TRAVEL COST</b>	<b>\$0</b>
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	
N/A	-
<b>TOTAL CONTRACT COST</b>	<b>\$0</b>

### 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
2016	10/1/2015	9/30/2016	F	Closure	\$932	6	\$5,592
2017	10/1/16	9/30/2017	F	Closure	\$932	4	\$3,728
2018	10/1/17	9/30/2018	F	Closure	\$932	2	\$1,864
<b>TOTAL</b>							<b>\$11,184</b>

**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.	M
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	P

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

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:**

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**TOTAL COST BY JURSDICTION**

JURISDICTION	UNITS TREATED	COST
NPS	12	\$11,184
	<b>TOTAL COST</b>	<b>\$11,184</b>

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

## PART F - INDIVIDUAL TREATMENT SPECIFICATION

<b>TREATMENT/ACTIVITY NAME</b>	Repair USGS Gaging Station	<b>PART E SPECIFICATION #</b>	W8
<b>NFPORS TREATMENT CATEGORY*</b>	Facility & Infrastructure	<b>FISCAL YEAR(S)</b>	2016
<b>NFPORS TREATMENT TYPE *</b>	Water System Reconstruction	<b>WUI? Y / N</b>	Yes
<b>IMPACTED COMMUNITIES AT RISK</b>	Newhalem	<b>IMPACTED T&amp;E SPECIES</b>	None
		<b>Funding Source (ES, BAR, Other)</b>	ES

\* 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):

<p><b>L. General Description:</b> A gaging station located on Newhalem Creek just upstream of the Newhalem Power Plant Diversion was damaged from a falling tree burned by the Goodell Fire. The USGS is aware of the damage incurred.</p> <p><b>B. Location/(Suitable) Sites:</b> Newhalem Creek upstream of the Newhalem Power Plant Diversion.</p> <p><b>C. Design/Construction Specifications:</b> USGS evaluate and repair gage station as needed.</p> <p><b>D. Purpose of Treatment Specifications (relate to damage/change caused by fire):</b> The gage station was damaged as a result of the Goodell Fire. The gage station is an integral part of management of the diversion and power plant operations as well as providing valuable information in real-time of flow conditions on Newhalem Creek above Newhalem. It is very important to reestablish operation of the station in a timely manner to potentially protect property below including power plant operations.</p> <p><b>E. Treatment consistent with Agency Land Management Plan (identify which plan):</b> Ross Lake General Management Plan (2012) supports ongoing natural resource monitoring such as provided by this gaging station.</p> <p><b>F. Treatment Effectiveness Monitoring Proposed:</b> Monitor gage station operations after repair and repair as needed.</p>
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### LABOR, MATERIALS AND OTHER COST:

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):</b> Do not include contract personnel costs here (see contractor services below).	<b>COST / ITEM</b>
N/A	-
<b>TOTAL PERSONNEL SERVICE COST</b>	<b>\$0</b>
<b>EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hrs X #Fiscal Years = Cost/Item):</b> Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
N/A	-
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	<b>\$0</b>
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	
Gage Repair Items @ \$20,000 x 1 repair x 1 FY	\$20,000
<b>TOTAL MATERIALS AND SUPPLY COST</b>	<b>\$20,000</b>
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	
N/A	-
<b>TOTAL TRAVEL COST</b>	<b>\$0</b>
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	
N/A	-
<b>TOTAL CONTRACT COST</b>	<b>\$0</b>

### 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
2016	9/1/2015	11/30/15	C	Repair	\$20,000	1	\$20,000
<b>TOTAL</b>							<b>\$20,000</b>

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

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**TOTAL COST BY JURSDICTION**

JURISDICTION	UNITS TREATED	COST
NPS/USGS	1	\$20,000
	<b>TOTAL COST</b>	<b>\$20,000</b>

**APPENDIX 1: ENVIRONMENTAL COMPLIANCE**

## NORTH CASCADES 2015 FIRES POST-FIRE RESPONSE PLAN North Cascades National Park Service Complex Environmental Compliance Considerations and Documentation

### **Federal Environmental Compliance Responsibilities**

All projects proposed in the North Cascades 2015 Fires Post-Fire Response Plan, which includes recommendations for Burned Area Emergency Response (BAER) and Burned Area Rehabilitation (BAR) mitigation actions, that are prescribed, funded, or implemented on park lands are subject to compliance with the *National Environmental Policy Act (NEPA)* in accordance with the guidelines provided by the *Council on Environmental Quality (CEQ) Regulations (40 CFR 1500-1508)*. This Appendix documents the BAER Team considerations of NEPA compliance requirements for prescribed emergency stabilization, rehabilitation and monitoring actions described in this plan for NPS lands affected by the Goodell, Goode, and Wolverine fires, North Cascades National Park Service Complex, Washington.

This plan identifies specific emergency stabilization, rehabilitation, and monitoring actions and recommendations designed to mitigate damages to resources as a result of the North Cascades 2015 Fires and associated fire suppression activities. The park must complete separate NEPA analyses and compliance for fire response activities not addressed in this plan.

Agency Specific Guidance: This NEPA documentation has been developed in accordance with National Park Service specific guidelines. Emergency stabilization and rehabilitation actions proposed on National Park Service lands, involving the agencies permitting, funding, or implementation, must comply with regulations set forth in the *Department of the Interior Manual Part 516 (DM 12)*.

### **Related Plans**

Lake Chelan National Recreation Area General Management Plan (GMP), 1995. This plan provides management guidance and identifies land use decisions for the preservation of park resources and management of the Stehekin Valley and backcountry and designated wilderness portions of the NRA. One companion document to this GMP is the Stehekin Valley Forest Fuel Reduction Area plan, described below.

Lake Chelan National Recreation Area Forest Fuel Reduction Area Plan, 1995. The NPS manages 1209 acres of the Stehekin Valley floor as part of the Forest Fuel Reduction Area (FFRA) program. This action plan tiers off the GMP and provides detailed direction for implementing a forest fuels management program in the valley. The program is designed to reduce fuel loadings to mitigate the potential for a catastrophic wildfire to move through the valley floor. Treatments applied include large diameter mechanical thinning, hand thinning, and prescribed burns.

The North Cascades National Park Service Complex Foundation Document, 2012. This document calls out fire as one of the primary dynamic ecosystem processes operating on the park landscape.

North Cascades National Park Service Complex Invasive Non-Native Plant Management Plan, 2012. This plan provides Complex-wide guidance for management strategies for invasive non-native plant species, including both Wilderness and non-Wilderness lands.

North Cascades National Park Service Complex Wildland Fire Management Plan, 2007. This plan provides guidance for “Emergency Stabilization and Rehabilitation” actions following wildfires in the Complex. Specific allowable emergency stabilization actions include:

- Placing structures to slow soil and water movement
- Stabilizing soil to prevent loss or degradation of productivity
- Installing protective fences or barriers to protect treated or recovering areas
- Conducting assessments of critical habitat and significant heritage sites in areas affected by emergency stabilization treatments
- Seeding or planting to prevent impairment of designated critical habitat for federal and state-listed, proposed or candidate threatened and endangered species
- Stabilizing critical heritage resources
- Seeding to prevent establishment of invasive plants and direct treatment of invasive plants
- Using integrated pest management techniques to minimize the establishment of invasive species within the burned area.

Specific allowable burned area rehabilitation actions within the Complex include:

- Repair or improve lands unlikely to recover naturally from wildfire damage by emulating pre-fire ecosystem structure, function, diversity, and dynamics consistent with existing land management plans
- Chemical, manual, and mechanical removal of invasive species, and planting of native species to restore or establish a healthy, stable ecosystem even if this ecosystem cannot fully emulate historical or pre-historical or pre-fire conditions
- Repair or replace fire damage to minor operating facilities.

North Cascades National Park Service Complex Hazardous Tree Management Plan, 1995, revised 2000. This document outlines the Hazard Tree Assessment Protocol for rating and mitigating hazardous trees.

## **Cumulative Impact Analysis**

The emergency stabilization and rehabilitation treatments for the North Cascades 2015 Fires, as proposed in this plan, do not result in an intensity of impact (i.e., major ground disturbance, etc.) that would cumulatively constitute a significant impact on the quality of the environment. The treatments are consistent with the above park management plans and associated environmental compliance documents of the NPS, and the categorical exclusions documented below.

No direct or indirect unavoidable adverse impacts to the biological or physical environment would result from the implementation of the North Cascades 2015 Fires Post-Fire Response Plan.

**Summary of Compliance Documentation Relevant to the NOCA 2015 Fires Post-Fire Response Plan**

The following table summarizes the existing NEPA or NHPA compliance in place for the BAER/BAR treatments proposed for the Goodell, Goode and Wolverine fires. Several treatments may involve ground disturbance and thus would require archeological consultation. One treatment may require the preparation of a Minimum Requirements Analysis document for actions in designated wilderness.

Treatment or Action	NEPA documentation (EIS, EA, or CE)	Assessment Category	Findings of Significance
W1: Road and Culvert Cleaning	DO-12 CE: 3.4 G.2	Watershed	No Significant Impact; NHPA No Effect
W2: Replace Safety Signs	DO-12 CE: 3.4 C.5	Watershed	No Significant Impact; NHPA No Effect
W3: Investigate/Stabilize Potential HAZMAT Site	DO-12 CE: 3.4 E.5	Watershed	No Significant Impact; <b>will require NHPA identification</b>
W4: Wolverine Fire Watershed Assessment	DO-12 CE: 3.4 E.5	Watershed	No Significant Impacts expected; NHPA No Effect
W5: Restore Flood Control Berm	DO-12 CE: 3.4 C.18	Watershed	No Significant Impact; <b>will require NHPA consultation</b>
W6: Channel Debris Removal	DO-12 CE: 3.4 G.2	Watershed	No Significant Impact; <b>will require NHPA consultation</b>
W7: Road Closure Response	DO-12 CE: 3.3 E	Watershed	No Significant Impact; NHPA No Potential to Cause Effect
W8: Repair USGS Gaging Station	DO-12 CE: 3.4 C.3	Watershed	No Significant Impact; NHPA No Effect
F1: Replace Burned Culvert	DO-12 CE: 3.4 G.2	Minor Facilities	No Significant Impact; NHPA No Effect
F2: Replace Traffic Counter	DO-12 CE: 3.4 G.2	Minor Facilities	No Significant Impact; NHPA No Potential to Cause Effect
F3: Trail Repair	DO-12 CE: 3.4 G.2	Minor Facilities	No Significant Impact; <b>will require NHPA consultation</b>
F4: Campground Repair	DO-12 CE: 3.4 G.2	Minor Facilities	No Significant Impact; NHPA No Effect
F5: Road Stabilization	DO-12 CE: 3.4 G.2	Minor Facilities	No Significant Impact; NHPA No Effect
F6: Replace Rock Shelter Boardwalk	DO-12 CE: 3.4 G.2	Minor Facilities	<b>Will require NOCA IDT input due to design considerations; will require NHPA consultation</b>
V1: Invasive Species Control	NOCA Invasive Non-Native Species Mgmt Plan (2012)	Vegetation	No Significant Impact; <b>will require Minimum Requirements Analysis if in Wilderness; will require NHPA consultation</b>
V2: Berm Revegetation	DO-12 CE: 3.4 G.2; NOCA Invasive Non-Native Species Mgmt Plan (2012)	Vegetation	No Significant Impact; NHPA No Effect
V3: Hazard Tree Assessment and Mitigation	NOCA Hazard Tree Mgmt Plan; PWR Hazard Tree Directive	Vegetation	No Significant Impact; <b>may require NHPA consultation near Newhalem Rock Shelter</b>
C1: Cultural Resource Assessments	DO-12 CE 3.3 T	Cultural	No Significant Impact; NHPA No Effect

C2: Cultural Resource Monitoring	DO-12 CE: 3.4 G.2	Cultural	No Significant Impact; NHPA No Effect
C3: Cultural Resource Stabilization	DO-12 CE: 3.4 G.2	Cultural	No Significant Impact; <b>may require NHPA consultation</b>
C4: Cultural Resource Protection	DO-12 CE: 3.4 G.2	DO-12 CE: 3.4 G.2	No Significant Impact; <b>will require NHPA consultation</b>
C5: Protect Historic Structure	DO-12 CE: 3.3Y		No Significant Impact; <b>will require NHPA identification</b>
O1: BAER/BAR Plan Production	DO-12 CE: 3.3V	Administration	No Significant Impact; NHPA No Potential to Cause Effect
O2: BAER/BAR Plan Implementation	DO-12 CE 3.3 A	Administration	No Significant Impact; NHPA No Potential to Cause Effect

**DOI Exceptions to Categorical Exclusions**

Council on Environmental Quality Regulations at 40 CFR 1508.4 require agencies to consider whether fairly routine actions involve extraordinary circumstances that, per NEPA, trigger an agency to prepare additional assessment and consideration. If it is determined that any of the exceptions listed in the table below apply to a proposed action, that action may not be categorically excluded, and an EA or an EIS must be prepared. The list below is a Department of the Interior list that applies to all DOI agencies (516 DM 2, Appendix 2); agencies often have additional items on their own list of Departmental exceptions, appendix 2). All treatments that are proposed as a Categorical Exclusion for North Cascades National Park Service Complex have been compared against the list of Extraordinary Circumstances listed below and were found not to trigger any exceptions.

Yes	No	Extraordinary circumstance. Would this action...
	X	Have significant impacts on public health or safety?
	X	Have significant impacts on such natural resources and unique geographic characteristics as historic or cultural resources; park, recreation or refuge lands; wilderness areas; wild or scenic rivers; national natural landmarks; sole or principal drinking water aquifers; prime farmlands; wetlands (Executive Order 11990); floodplains (Executive Order 11988); national monuments; migratory birds; and other ecologically significant or critical areas?
	X	Have highly controversial environmental effects or involve unresolved conflicts concerning alternative uses of available resources [NEPA Section 102(2)(E)]?
	X	Have highly uncertain and potentially significant environmental effects or involve unique or unknown environmental risks?
	X	Establish a precedent for future action or represent a decision in principle about future actions with potentially significant environmental effects?
	X	Have a direct relationship to other actions with individually insignificant but cumulatively significant environmental effects?
	X	Have significant impacts on properties listed, or eligible for listing, on the National Register of Historic Places as determined by either the bureau or office?
	X	Have significant impacts on species listed, or proposed to be listed, on the List of Endangered or Threatened Species, or have significant impacts on designated Critical Habitat for these species?

X	Violate a Federal law, or a State, local, or tribal law or requirement imposed for the protection of the environment?
X	Have a disproportionately high and adverse effect on low income or minority populations (Executive Order 12898)?
X	Limit access to and ceremonial use of Indian sacred sites on Federal lands by Indian religious practitioners or significantly adversely affect the physical integrity of such sacred sites (Executive Order 13007)?
X	Contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area or actions that may promote the introduction, growth, or expansion of the range of such species (Federal Noxious Weed Control Act and Executive Order 13112)?

**Consultations**

Elizabeth Boerke, Environmental Compliance Specialist, NOCA  
 Kim Kwarsick, Archeologist, NOCA  
 Dr. Jason Ransom, Wildlife Biologist, NOCA  
 Nelson Siefkin, PWR BAER Coordinator, National Park Service

All BAER and BAR treatments will be presented to the NOCA Interdisciplinary Team for discussion of the recommended compliance requirements described above prior to initiation of any of the actions.

No consultation was required with the US Fish and Wildlife Service for federally listed Threatened and Endangered species because no listed species or designated Critical Habitat is found within or adjacent to the Goodell, Goode, or Wolverine fire perimeters. Upon completion of this BAER plan they will be consulted to inform them of proposed BAER/BAR actions.

The Washington State Historic Preservation Officer will be contacted. Should any BAER or BAR treatments lead to activities that may impact cultural resources, consultation will be initiated before any actions are implemented.

Tribal consultation has been initiated (September 2015) by North Cascades National Park Service Complex staff (park archeologist) regarding fire suppression and fire effects resulting from the North Cascades 2015 Fires.

**CONCLUSION**

I have reviewed the treatments in the North Cascades 2015 Fires Post-Fire Response Plan in accordance with the criteria above. Those actions which require additional environmental review will be analyzed and appropriate NEPA compliance completed before they can be implemented; those actions with approved existing compliance would not involve any significant environmental effect and are approved for initiation. Burned area emergency response team technical specialists have completed necessary coordination and consultation to insure compliance with the National Historic Preservation Act, Endangered Species Act, Clean Water Act and other Federal, State and local environment review requirements

# North Cascades 2015 Fires Post-Fire Response Plan | 2015

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Prepared by: Jack Oelfke, NOCA 2015 Fires BAER Team Leader, Sept. 13, 2015

Approved:

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Superintendent, North Cascades NPS Complex

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Date