



# Post-Fire BAER Assessment Burned Area Emergency Response (BAER) Information Brief

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## Uno Peak Fire 2500-8 Summary

November 14, 2017

Okanogan-Wenatchee National Forest

### FIRE BACKGROUND

The human caused Uno Peak Fire began on August 30, 2017 on the steep slopes of the east shore of Lake Chelan on the Chelan Ranger District and burned about 8,746 acres. The fire grew rapidly during the first several burn periods, attributed to the combined effects of extremely dry conditions, topography and winds. Uno was a full suppression fire which utilized air tankers, helicopters water drops, dozers and ground based firefighters. The Uno Peak Fire burned in an area that had burned in 2001 as part of the Rex Fire and in 1970 as part of the Safety Harbor Fire. Re-burn conditions factored into the higher than expected burn severities, where higher ground fuel loadings influenced longer residence time of the fire at the soil surface.

On October 23, 2017 the Central Washington Burned Area Emergency Response (BAER) team completed a report of their assessment of the burned area, and requested initial funding of \$84,470 for recommended emergency treatments. The report was submitted to the Pacific Northwest (Region 6) Regional Forester in Portland, Oregon.



### FS-2500-8 BURNED AREA REPORT ANALYSIS

#### Physical characteristics of the burned landscape

**Geology:** The majority of the Uno Creek Fire is underlain by massive crystalline rocks. Approximately 1,500 hundred acres of the Uno Creek Fire is underlain by foliated crystalline rocks, typically on the southern margins of the fire.

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

**Vegetation Types:** The Uno Fire covers a large amount of elevational landscape, ranging from 1,100 feet at the Lake Chelan shoreline at Safety Harbor Creek to Uno Peak at to 7,500 ft. At the higher elevations, these plant communities have seen frequent fire intervals and contain large stretches of lodgepole pine/ceanothus shrub lands to a rocky, whitebark pine/subalpine fir overstory with a grouse berry understory at higher elevations.

**Transportation System:** 13 miles of trails and 1 mile of road.

### ANALYSIS OVERVIEW

In early October the U.S. Forest Service Remote Sensing Application Center (RSAC) in Salt Lake City, Utah, provided the BAER team with an initial Burned Area Reflectance Classification (BARC) map derived from the LANDSAT 7 & 8 scene acquisitions. The team conducted reconnaissance and field verification surveys to finalize a soil burn severity map for this fire.

BAER team assessment estimated that the 8,746 acres burned on National Forest System (NFS) lands and classified an estimated 1,768 acres (21 % of the burned area) as unburned or very low burn severity, 1,471 acres (17 %) burned at low severity, 3,233 acres (38 %) at moderate burn severity and 2,086 acres (24 %) at high burn severity.

Field assessments of the burned area indicate that approximately 5,319 (62% of burned area) acres have strong water-repellent conditions, which was associated with all the moderate and high soil burn severity areas.

The post-fire area has an estimated soil erosion potential of 35 tons per acre from a 25-year/24-hour storm event of 4.1 inches compared with a pre-fire erosion rate of 5 tons per acre. The increased erosion can result in downstream sediment delivery that bulks flows, resulting in increased flooding effects. This additional sediment may impair habitat for aquatic species.

The loss of soil can also impair soil productivity in the short- and potentially long-term future. The burned area may require a period of estimated 5 years to re-establish vegetation and hydrologically recover. The major concern for vegetative recovery and, in turn, hydrologic recovery is in the high severity burn areas where the tree canopy and groundcover has been lost.

## **IDENTIFIED VALUES AT RISK**

The BAER team analyzed the fire related threats to the values-at-risk below for potential impacts from increased stream flows, loss of water control on trails and roads, increased debris flow risk, increased sediment delivery to streams, establishment of invasive weeds, and habitat degradation for federally threatened species.

The team used a risk matrix (Probability of Damage or Loss and the Magnitude of Consequences) to evaluate the risk level for each value identified during the BAER assessment.

A BAER team began assessing the area for post-fire emergencies on September 28, 2017. In that time the team has identified the following values at risk to post-fire threats.

### **Human Life & Safety**

Threats to life and exist at the outflow of Safety Harbor Creek on the shore of Lake Chelan and in the steep burned drainages throughout and downstream from the burned area. Campers, day visitors, boaters on Lake Chelan may be exposed to increased risk of flooding and debris laden flows at Safety Harbor and also on trails within the fire perimeter. The fire burned in small areas of the upper watershed of Lone Fir Creek, there are no developed recreation sites at this outflow, however there is a low risk to flood flows entering Lake Chelan where the dock, toilet, shelter and campground are located.

Safety Harbor Creek is projected to have increases in postfire flows by up to ~340%. The campground, dock, shelter and toilet location at the outlet of Safety Harbor Creek are all located on a alluvial fan at Lake Chelan and within a flood prone area. The burned watershed upstream from the campground and facilities is obstructed from view by the steep terrain and visitors to the fan area would not be aware of the increased flood hazard down at the lake shore.

### **Threats to Property**

A threat to property from post-fire conditions exists. Threats to recreation facilities located at the outflow of Safety Harbor Creek and Lone Fir Creek are at increased risk for flooding and debris flow. At Safety Harbor, recreation facilities are located on alluvial fans at the outlet of a severely burned upper watershed and incised gorge and are at increased risk for debris-laden flash flood flows.

The segments of Forest Service roads within the burned area are at a limited risk due to location on upper ridge above the fire (roads were utilized as control lines during fire suppression).

Forest Service Trails within the burned area are at risk from increased runoff, erosion, sedimentation, and/or debris. Impacts include damage to the trail bed and/or loss of access due to severe erosion of the trail surface, or deposition of sediment or debris.

### **Threats to Natural Resources**

The risk to natural resources such as soil productivity and hydrologic function is very high.

Impaired soil productivity is expected from loss of protective groundcover and increased risk of erosion. Accelerated erosion combined with the loss expected loss of the seed bank may impact plant species locally and result in a loss of species viability. Establishment and expansion of the invasive plant species into the burned area are a risk to become new infestations.

The probability is high that rates of soil erosion and sediment delivery to stream channels will be significantly higher from areas of moderate and high soil burn severity. This loss of water control, erosion and sediment delivery will impact essential fish habitat within and downstream of the burn area.

# RECOMMENDED EMERGENCY TREATMENTS

## Objectives

1. Mitigate the effects of flooding on human life and safety, particularly where FS recreation facilities are at risk of damage and where floods and debris-laden flows present a hazard to Forest Service visitors at Safety Harbor.
2. Coordinate with partner agencies to mitigate the risk to human life and safety on trails within the burned area and from flooding at the Lake Chelan access point to Safety Harbor Creek.
3. Mitigate the potential for loss of or damage to the trail infrastructure within the burn area from increased erosion.

## Land Treatments

Early Detection Rapid Response to control new invasive infestations within high and moderately burned areas along known vectors. Two treatments are proposed with one in the spring and another in the fall.

Implementation Support (for all treatments) Includes SO Coordinator, cost tracking support, as well as needed day-to-day coordination and support provided by the Chelan Ranger District.

## Channel Treatments

N/A

## Roads and Trails Treatments

Roads and Trail Treatments: Temporary Closure of “Safety Harbor Trail” and landing area at Safety Harbor (Lake Chelan). Nine miles of trail stabilization within area of high burn severity with an estimated 30 drainage structures per mile. No road treatments are proposed.

## Protection / Safety

Remove the dock at Safety Harbor and place into storage. Install a wing deflector to reduce potential high flow impacts to vault toilet and shelter area. Temporary Closure of 3 campsites at Safety Harbor Campground. (Note: All work at Safety Harbor requires a barge to transport materials and supplies in and out). Trail closure of the Safety Harbor Trail. Notification and outreach to affected parties to include the commercial and private boating communities utilizing Safety Harbor. Open house to provide public information related to closure of Safety Harbor sites and trail post fire effects on the landscape and public usage near the burned areas.



Interagency coordination to share findings of the Forest Service’s BAER assessment and establish a path forward related to treatments and other agency responsibilities such as; National Weather Service (NWS), National Resources Conservation Service (NRCS), County Emergency Services, Collaborative Partners, as well as others). Specifically will include, to provide public information related to closure of Safety Harbor sites and trails, post-fire effects on the landscape, and public usage near the burned areas.

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

## MONITORING NARRATIVE

Effectiveness monitoring is proposed for; protection and safety treatments and trail stabilization treatments.