

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

CentralWashingtonFireRecovery.info

Jack Creek Fire 2500-8 Summary

November 14, 2017 Okanogan-Wenatchee National Forest

FIRE BACKGROUND

On August 11, 2017 a cold frontal passage tracked across the region, producing lighting strikes and igniting several fires throughout the Okanogan-Wenatchee National Forest, which provided the ignition source for the Jack Creek Fire. The fire initially started approximately 15 miles southwest of Leavenworth within the Alpine Lakes Wilderness, and remained at about 7 acres for three weeks. With warm temperatures and low humidity levels, fire activity increased and the fire grew to 40 acres on September 1. The fire then burned into receptive fuels and grew to approximately 700 acres by September 3. On September 11, the fire made another run to the east, expanding the burn footprint by 700 acres within the Eightmile drainage, and 200 acres in the Stuart Lake drainage. The Jack Creek Fire was managed for Wilderness values and burned a total area of 4,606 acres on National Forest System lands within the Enchantment Permit Area of the Alpine Lakes Wilderness.

On October 23, 2017 the Central Washington Burned Area Emergency Response (BAER) team completed a report of their assessments of the burned area, and requested initial funding of \$12,385 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 eastern portion of the Jack Creek fire is predominately underlain by foliated crystalline and massive crystalline rocks. The western portion of the Jack Creek fire is underlain by pyroclastic rocks.

Undifferentiated rocks and significant inclusions are also found in the western portion of the fire in the Jack Creek drainage, and importantly adjacent to 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. These soils are derived from residuum and colluvium weathered from sandstone, schist, volcanic igneous rock, and interbedded metamorphics or glacial till. Surface textures are generally sandy loams, fine sandy loams or loamy sand which are highly erodible.

Vegetation Types: The Jack Creek Fire is dominated by subalpine habitat containing large rock content. Subalpine Fir/lodgepole pine/Douglas fir/western and mountain hemlock plant communities dominate the over story canopy. Highest elevation areas contain a whitebark pine plant association where rock content is highest. The understory in higher canopy contain huckleberry/Oregon grape and drier openings are dominated by blue bunch wheat grass/pine grass communities. Areas with high rock content mountain juniper/ivesia shrub cover. Herbaceous vegetation dominate the riparian areas lacking tree cover.

Transportation System: 4 miles of trails and 0 miles 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 4,606 acres burned on National Forest System (NFS) lands with classified estimates of; 1,147 acres (25% of the burned area) at very low or unburned, 1,157 acres (25%) burned at low severity, 1,287 acres (28%) at moderate burn severity and 509 acres (11%) burned at high severity.

Field assessments of the burned area indicate that approximately 1,796 (39%) acres have strong water-repellent conditions, which are attributed to all the moderate and high soil burn severity areas.

The post-fire area has an estimated soil erosion potential of 42 tons per acre from a 25-year/24-hour storm event of 5.5 inches compared with a pre-fire erosion rate of 5 tons per acre. The increased erosion may result in downstream sediment delivery that could bulks flows, resulting in increased flooding effects. This additional sediment may impair habitat for aquatic species in the Jack Creek drainage. Increased sediment delivery is expected to Eightmile Lake.

The loss of soil can also impair soil productivity in the short- and potentially long-term future. The burned area requires a recovery period of an estimated 5 years to reestablish vegetation. The major concern for vegetative recovery and, in turn, hydrologic recovery is in the high severity burn areas.

IDENTIFIED VALUES AT RISK

The Jack Creek Fire burned 4,606 acres on NFS lands with, 50% of the burned area at unburned, very low, or low severity, 28% classified as moderate and 11% at high burn severity, the remainder (11%) is dominated by rock outcrops.

A BAER team began assessing the area for post-fire emergencies on September 29 through September 30, 2017. In that time the team has identified the following values at risk to post-fire threats.

Threats to the values-at-risk below are analyzed by the BAER team for potential impacts from increased water flows, loss of water control, increased sediment delivery, increased debris flow, 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.

Human Life & Safety

This fire burned in the upper Jack Creek, Van Epps, Lake Stuart, and Eightmile drainages on NFS lands. Approximately 39% of high and moderate burn severity was limited to the Jack, Van Epps and Eighmile Creek upper basins.

There is a high risk of increased flows in the upper watershed which may translate to flooding downstream of the fire perimeter. Jack Creek is expected to have increases in postfire flows by \sim 40%. Eightmile Creek is expected to have increases in postfire flows by \sim 34%. Increased in erosion rates for the slopes immediately upslope of Eightmile Lake is projected to have 9,000 cubic yards of erosion per square mile on moderate and high burn severity areas and 1,100 cubic yards per square mile of that erosion may be delivered to the reservoir.

The Icicle-Peshastin Irrigation District (IPID) has historic water rights and easements that allowed it to store and divert water from the Enchantment Lakes in the Alpine Lakes Wilderness. The IPID easement lands are adjacent to the reservoir and allow for operation of the headgate / spillway regulating the outflow of Eightmile Lake.

Eightmile Lake is identified as one of seven potential water supply enhancement projects in the Enchantments. The proposal for Eightmile includes rebuilding of a dam/spillway structure on Eightmile Lake so that the lake level can be raised to store more water and, during drawdown, and can be lowered below current levels.

The IPID has scheduled necessary maintenance and improvements to the headgate and spillway structure in 2017, however it has was not completed due to the fire activity. Increased flows, accelerated erosion, sedimentation, and delivery of debris into the lake may reduce storage capacity and may further compromise existing conditions of the headgate and spillway. In the rare event that the headgate / spillway control is compromised, the magnitude of consequence of flooding downstream could be major with high consequence for increased downstream risk on the trail in the floodplain, at crossings and on downstream infrastructure.

An increased level of coordination is necessary to effectively communicate the potential post-fire flooding impacts to dam operators, State dam safety and downstream water diversions with the cooperative management agencies (community, County, State, NWS, DOE, and FS). Threats to life and safety exist in and below the areas of high and moderate burn severity (~1,800 acres) along the wilderness trail system from increased risk of flooding, hazard trees, and rockfall along ~4 miles of trails in the Jack Creek, Van Epps, Eightmile drainages (Trail #1558, 1594, 1552). There is a moderate risk of debris flows from steep drainages along the upper section of the Jack Creek Trail (#1558). The trail that accesses the permitted wilderness campsites on the north side of Eightmile Lake crosses slopes that are at an increased risk of debris flows.

Threats to Property

The threat to property from post-fire conditions exists for the IPID headgate / spillway and irrigation district water use. If there is a dam breach and flooding downstream to the Icicle it is possible that there would be impacts to the municipal water diversions downstream.

Approximately 4 miles of Forest Service Wilderness Trails are within the fire perimeter. Analysis of soil burn severity shows that, ~3 miles of those trails are at risk from increased water, erosion, sedimentation, and/or debris. Impacts include damage to the trail bed and/or loss of access due to severe erosion of the trail surface, or deposition of sediment or debris. Increased risk for temporary loss of access/egress exists on trails within the burned area.

Trail bridges below burned areas are likely to sustain damage from increased flows, and some bridges burned in the fire. One FS bridge downstream of the fire in Eightmile Creek is at increased risk to damage from possible flooding.

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 effects of changed post-fire watershed response on human life and safety, particularly where FS recreation facilities are at risk of damage.
- 2. Coordinate with partner agencies to mitigate the risk to human life and safety.
- 3. Mitigate the potential for loss or damage of trail infrastructure within the burn area.

Land Treatments

Early Detection Rapid Response (EDRR), for four acres is planned where existing weeds are projected to aggressively expand. Spring and fall weed control treatments on these identified areas.

Channel Treatments

N/A

Roads and Trails Treatments

Install additional trail drainage structures on 3 miles of trail located within high and moderate burn severity areas (Note; all moderate acres are identified as being waterrepellent)

Protection and Safety Treatments

Outreach / PIO – public involvement to include interagency contact/coordination, wilderness use changes, downstream users of storage reservoir, organization of a public open house and website support.

Close certain backcountry campsites along Eightmile Lake. Mitigate exposure resulting from burned toilets. Relocate toilets located in high burned severity areas to safer locations.

MONITORING NARRATIVE

Trail drainage Installation and effectiveness monitoring.