

TWISP RIVER FIRE: FS-2500-8 Burned Area Report Summary



October 24, 2015

Okanogan-Wenatchee National Forest
215 Melody Lane
Wenatchee WA 98801



Fire Background

The Twisp River Fire started near Twisp, Washington on August 19, 2015. The human-caused fire burned north of the Twisp River between the town of Twisp on the eastern flank and extending up into the Little Bridge Creek drainage and up to Cow Creek on the western flank. The burned area includes approximately 4,948 acres of National Forest System lands within the 11,220-acre fire perimeter. Other ownership includes 71 acres of BLM land, 4,732 acres of state land, and 1,469 acres of private land.



On October 15 the BAER team finalized its assessment report and requested initial funding of \$23,400 for recommended emergency treatments. It 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: Volcanic and marine and continental sedimentary rocks modified by alpine glaciations.

Soils: Ash cap soils, rock outcrops and rubble lands.

Vegetation: Douglas-fir, Ponderosa pine, pinegrass and Scouler's willow, with a dry shrub community of false boxwood/snowberry plants.

Transportation System: 12 miles of trails and 40 miles of roads (13 miles within high and moderate burn severity areas).

Analysis Overview:

On September 21 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 a LANDSAT 8 scene acquisition. The team conducted reconnaissance and field verification surveys to finalize a soil burn severity map for this fire.

The BAER team assessed 4,948 acres burned on National Forest System (NFS) lands and estimated 1,059 acres (21% of the burned area) as very low or unburned, 2,604 acres (53%) burned at low severity, 1,070 (22%) at moderate severity, and 214 acres (4%) at high severity.

Field assessments of the burned area indicated about 1,000 acres with strong water-repellent tendency; these portions were associated with the high soil burn severity areas and approximately half of the moderate burn severity areas.

The BAER team determined that the post-fire area's estimated soil erosion potential is 19 tons of erosion per acre from a 25-year/1-hour storm event of 0.70 inches compared with a pre-fire erosion rate of 0.18 tons per acre. This increased erosion can cause downstream sediment delivery that bulks flows, resulting in increased flooding effects.

Additional sediment delivery can impair critical habitat for Threatened and Endangered (T&E) species. The loss of soil can also negatively affect soil productivity in both the short- and long-term future.

Natural recovery of ground cover through needle cast and native vegetation is expected over the next 3-5 years. Under severely burned forest stands, the full function of the thick litter and duff layer that existed before the fire will not be fully recovered until a new forest stand is established.

Identified Values at Risk

Threats to the values at risk below were analyzed by the BAER team for negative effects of increased water flows, loss of water control, increased sediment delivery and debris flow, establishment of invasive weeds, and habitat degradation for federally threatened species.

Threats to Public Safety:

The fire burned areas of high and moderate severity above private lands on Myer Creek.

Additional threats to public safety exist from flooding, falling trees, rocks, and debris-laden flows in valley bottoms and in steep burned drainages throughout and downstream of the burned area.

Threats to Property:

The threat of damage to road infrastructure on FR 040 from postfire flooding, erosion, and debris jams is assessed as moderate. One undersized culvert on this road is at risk of debris blockage and will likely be unable to pass flows that could take out the road.

Threats to Natural Resources:

Threat to soil productivity is low. Sampling of post-fire soil burn severity and effective ground cover revealed that observations along transects indicated the presence and abundance of near-surface intact fine roots. Soil burn severity was usually deemed low despite the high fire intensity in these areas. Seeds, fungi, rhizomes, and pliable roots just below the surface indicate that the natural recovery of these sites could be rapid, i.e. within one or two growing seasons. Therefore, natural recovery of effective ground cover, which minimizes exposure to safety hazards, is considered the most efficient and cost-effective approach to emergency stabilization.

Invasive plant inventories conducted on the Methow Valley Ranger District documented five invasive plant species of concern (see table below). The threat from population expansion is intermediate to high.

Invasive Plant Species	Common name	Washington state
<i>Cadaria draba</i>	Whitetop	C
<i>Centaurea diffusa</i>	Diffuse knapweed	B
<i>Linaria dalmatica</i> ssp. <i>dalmatica</i>	Dalmatian toadflax	B
<i>Linaria vulgaris</i>	Butter and eggs	C
<i>Potentilla recta</i>	Sulfur cinquefoil	B

Threatened and Endangered Species and Critical Habitat:

The Twisp River supports runs of federally listed Upper Columbia River summer steelhead (threatened), spring Chinook salmon (endangered), Columbia River bull trout (threatened), and their designated Critical Habitat. The Twisp River provides spawning and rearing habitat for both steelhead and spring Chinook.

Little Bridge Creek supports spawning and rearing habitat for steelhead and rearing habitat for Columbia River bull trout – and also is designated Critical Habitat for those species. Steelhead spawn in Little Bridge Creek up RM 4.9 with rearing occurring up to RM 7.7. Little Bridge Creek enters the Twisp River at approximately RM 8.8. A series of intermittent tributaries including Cow Creek, Spring Creek, Coal Creek, Myer Creek, and Elbow Coulee flow directly from the fire area into the Twisp River. Cow Creek is the only perennial stream within the fire perimeter; however, no fish have been detected in this stream – most likely because of reaches of subsurface flow.

Within the burned area the team detected increased probability of erosion, mass wasting, and sediment delivery to the Twisp River, based on peak flow calculations and hill slope erosion models of the fire. The highest risk was assessed in the Myer Creek portion of the burn area, which is a catchment of approximately 900 acres. This area could deliver measurable amounts of sediment and debris to the Twisp River if a 25-year/1-hour storm occurs. If a 25-year storm event triggers mass wasting in this portion of the burn, moderate to large volumes of sediment and debris could be expected.

The probability of fine sediment or a debris flow reaching the Twisp River is a likely (90% to 100%) occurrence within 1-3 years, but the magnitude of consequences could be low (damage to critical fisheries resources resulting in considerable or long-term effects). Therefore, the risk determination is low.

Threats to Cultural and Heritage Resources:

There were no known cultural resources within the Twisp River Fire perimeter.

Recommended Emergency Mitigation Treatments

Emergency Treatment Objectives:

- Reduce the potential for accelerated surface runoff damaging Forest Service roads within and directly downstream of the fire areas in drainages directly affected by the fire.
- Coordinate with those agencies responsible for working with private landowners on emergency stabilization on private lands.
- Reduce the potential for roads to act as a conduit for overland flow and increased sediment loading.

Land Treatments:

- EDRR - Deferred. Will be requested with a future interim submission.

Channel Treatments:

- None proposed with this request.

Roads and Trails Treatments:

Remove undersized culvert on FS Road 4410-000-1.02 R-5 that could fail from post-fire flows.

- Install control gates at access points from FS Road 4410 at FS Road 4410-040 at FS Road 4410000-1.02 R-1 until road is safe for public use.

Install two signs at installed gates.

- Storm Inspection/Patrol: Patrol area during and immediately after storm events to unplug or aid with road drainage features along FS roads to reduce the risk of catastrophic road drainage failure and high sedimentation yield. As the remaining open access for administration and the public, it is important to monitor this road; two-person teams are recommended for these patrols.

Protection/Safety Treatments:

- Send Coordination Letters to Okanogan County Manager, Okanogan County Commissioners, and NRCS about potential increased run-off and sediment delivery onto lands under their jurisdictions.
- Work with the National Weather Service and Washington Department of Ecology to expedite permitting, location, and placement of Automated Local Evaluation in Real Time (ALERT) stations. An ALERT system provides real-time rainfall and flow/stage data to NOAA to evaluate the potential for flooding in specific areas.