



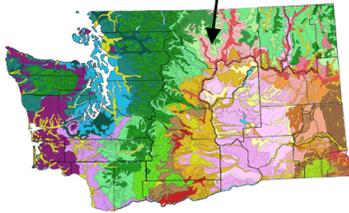
FEMA

Best  
practices

Whole Community Partnerships Working in Washington 4188-DR-WA

## Flash Flooding and Erosion Follow Wildfire

### Carlton Complex Fire



**Okanogan County** – In the aftermath of the 2014 Carlton Complex Fire, the largest wildfire in Washington state history, forest and emergency management experts knew that a secondary threat would arrive with the next rainstorm. The burned landscape had little or no vegetation to soak up rainwater, creating a severe risk of flash floods, mudslides, debris flows, and other erosion. This danger can persist for many years after a major wildfire.

The U.S. Forest Service (USFS) promptly deployed its Burn Area Emergency Response (BAER) team to measure soil quality, assess watershed changes, identify downstream risks, and develop recommendations to treat burned federal lands.

Non-federal forests and properties would require a separate, yet integrated approach. State, county and private roads, infrastructure, and all downstream communities and property were in peril.



### Severe erosion and property damage five weeks after fire

With a critical need to collaborate across multiple jurisdictions and take coordinated and collective action, the Federal Emergency Management Agency (FEMA) and State of Washington formed the Erosion Threat Assessment Reduction Team (ETART). This group would address the post-fire threats to vast areas of burned state, tribal and private lands, consistently and simultaneously with BAER.

ETART brought together biologists, engineers, hydrologists, mapping experts, range

specialists, soil scientists and support staff from more than 17 entities, and mission assigned USFS to provide BAER training. Together, the teams provided detailed assessments of changes in the landscape, identified risks, and developed recommendations for action across the entire burned area.

Local partners, including USFS and Okanogan Conservation District, also proved to be vital to the success of ETART, with their up-to-the-minute information on road conditions, knowledge about seed mixtures that work best for their areas,

existing partnerships, and more.

The team quickly found ways to share their geographic information system (GIS) data to comprehensively map land ownership, wildlife habitats, watersheds, ongoing projects, and more. They were able to identify potential emergency treatments, and begin planning for the short and long-term recovery of the area.

Potential erosion control treatments were evaluated on their practical and technical feasibility, and included seeding and other ground treatments, debris racks, ditch protection, temporary berms, low-water crossings, sediment retention basins, and other measures.

Certain emergency protective measures such as erosion control may qualify for FEMA's Public Assistance grant program under the FEMA-4188-DR-WA disaster declaration. Eligible tribes, state agencies, local governments and



Remote rain monitoring station

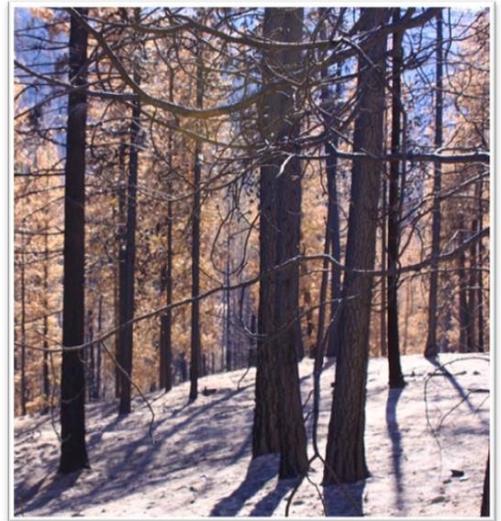
certain private nonprofits in Okanogan and Kittitas counties can receive 75 percent federal funding for the cost of eligible projects.

Other ETART recommendations included better early warning systems, more warning signs on county roads, and electronic message signs to aid residents evacuating via highways.

Even a short period of moderate rainfall on burned areas can lead to destructive and life-threatening flash floods. In response, the NWS, Conservation District, and ETART partners made a joint effort to quickly install 15 real-time portable rain gauges to monitor rainfall in and around the Carlton Complex Fire burn area.

As conditions warrant, the NWS will issue advisory Outlooks, Watches and Warnings to the public and emergency management personnel through the NWS Advanced Weather Information Processing System.

The successful ETART was able to provide greater coordination of restoration and recovery activities following the Carlton Complex Fire. Future ETARTs may help to formalize interagency memorandums of understanding, and encourage more comprehensive community wildfire protection plans. This team approach may also be seen as a model that can be adapted to any disaster event that requires a highly coordinated, collective and rapid response.



Fine white ash covers forest floor

#### ETART participants include:

Cascadia Conservation District, Federal Emergency Management Agency (FEMA), Methow Conservancy, National Weather Service (NWS), Okanogan Conservation District, Skagit Conservation District, Spokane Conservation District, U.S. Army Corps of Engineers (USACE), U.S. Bureau of Land Management (BLM), U.S. Department of Agriculture, U.S. Department of the Interior, United States Forest Service (USFS), Washington State Department of Natural Resources, Washington State Department of Fish and Wildlife, Whatcom Conservation District and Yakama Nation Fisheries.

#### More information:

<http://centralwashingtonfirerecovery.info/>

<http://www.okanogancd.org/Carlton>

[http://landslides.usgs.gov/hazards/postfire\\_debrisflow/](http://landslides.usgs.gov/hazards/postfire_debrisflow/)