2017 Fire Season Post Fire Response and Recovery

Fire Suppression Repair

Fire suppression repair is the first phase in recovery efforts that seek to repair damages resulting from fire suppression activities and to restore the area as close as possible to a “pre-event” state. Crews work to repair the hand and mechanical fire lines, roads, trails, staging areas, safety zones, and drop points constructed as part of the fire suppression efforts.

Emergency Assessment and Mitigations: Burned Area Emergency Response

The second phase of post-fire response and recovery is an assessment of natural and cultural resource damage and identification of rehabilitation and restoration needs. Both the Forest Service and BLM can conduct this assessment using Burned Area Emergency Response (BAER) teams. The Forest Service maintains a cadre of BAER team members at the local or regional level and typically uses a BAER team on every large fire. The Department of the Interior maintains an interagency cadre of BAER team members consisting of personnel from BLM, the National Park Service, Fish and Wildlife Service, and Bureau of Indian Affairs. Typically, DOI BAER teams are called out only on very large fires or when District staff are overwhelmed by the number of fires. Otherwise, BLM Districts use a local cadre of personnel with the same skills as a BAER team, but refer to this phase as emergency stabilization.

BAER teams assemble very soon after a fire is contained, or even before a fire is contained on very long duration fires, to conduct a rapid assessment of burned watersheds. This team of specialists and experts evaluate and identify imminent post-wildfire threats to human life and safety, property, and critical natural or cultural resources. They identify emergency stabilization measures to take before the first major storms of the season arrive. High intensity fires can result in loss of vegetation, increased exposure of soil to erosion, and increased water runoff that may lead to flooding, increased sediment accumulation in rivers and streams, debris flows, spread of invasive plants, and damage to critical natural and cultural resources.

Teams develop a Soil Burn Severity (SBS) map to document the degree to which soil properties had changed within the burned area. Fire damaged soils have low strength, high root mortality, and water repellant properties that increase water runoff and erosion. Using the SBS map, BAER team members run models to estimate changes in stream flows and debris flow potential in forests. Similar models are not available for rangelands so BLM teams use bare ground extent to assess water and wind erosion risks. In general, the higher the soil burn severity, the larger the watershed response and the higher the risk of erosion and flooding. The findings provide the information needed to prepare and protect against serious post-fire threats. Emergency stabilization measures may include include mulching, installation of erosion and water run-off control structures, temporary barriers to protect recovering areas, and installation of warning signs. BLM also includes herbicide treatments, seedings, culvert replacement, storm patrol, cultural resource stabilization, and monitoring as part of emergency stabilization. BAER work may replace fire-damaged facilities critical to public safety, such as stream crossings; remove safety hazards; prevent permanent loss of habitat for threatened and endangered species; and prevent the spread of invasive plants, and protect critical cultural resources.

Rapid Assessment and Long-Term Recovery

The third phase is the long-term recovery, or restoration, work. Restoration work consists of non-emergency actions to improve fire-damaged lands that are unlikely to recover naturally and to repair or replace facilities damaged by the fire that are not critical to life and safety. This phase may include restoring burned habitat, reforestation, other planting or seeding, monitoring fire effects, replacing burned fences, interpreting cultural sites exposed or damaged by the fire, treating invasive plants, and installing interpretive signs. Region 6 of the Forest Service uses a Rapid Assessment team process to evaluate these long-term recovery needs. BLM uses the same team that identifies emergency stabilization needs, however, this portion of the program is called Burned Area Rehabilitation.

***Eagle Creek Fire***

A BAER team consisting of scientists and experts in soils, geology, hydrology, engineering, botany, recreation, archaeology, and fisheries, along with GIS support and public information officers responded to Eagle Creek Fire. The team conducted a rapid assessment emergency stabilization needs starting September 25. Treatments recommended and approved for immediate implementation within the fire include rockfall protections at Multnomah Lodge, removing fallen rocks and trees on Highway 30 and accesses to State Parks, removing hazard trees along road edges and near facilities, emergency closure and hazard warning signs, and invasive plant treatments.

**Figure XX**. Percent of basal area mortality for the Eagle Creek Fire across all ownerships.

There was no Rapid Assessment Team assigned for the Eagle Creek fire due to the land use allocations that the fire burned in (administratively withdrawn lands and wilderness) that do not permit timber salvage.

The Forest Service hosted Eagle Creek Fire Response partnership meetings in Cascade Locks on October 4 and November 1. Local organizations and partner agencies discussed the status of the Eagle Creek Fire and began an open conversation regarding the recovery efforts to come. At the first meeting attendees brainstormed ideas and major topics grouping these into six over-arching themes to be discussed in small groups at the next meeting. The six themes included trail maintenance and repair, ecological restoration and citizen science, environmental education, creative and emerging volunteer roles, coordination and communication, and funding. Eventually the creative and emerging volunteer discussion was integrated into each of the other topic areas, and ecological restoration and citizen science group narrowed their focus to invasive species. Small groups of engaged volunteers and partners continue to meet and develop collaborative action plans addressing each of these themes. The larger group of Eagle Creek Fire Response partners will reconvene in late January to report progress and solicit feedback on the individual action plans.

**Table XX**. Unfunded post fire restoration and infrastructure needs for the Eagle Creek fire.

|  |  |
| --- | --- |
| **Activity** | **Unfunded Need** |
| Non-BAER Multnomah Falls Contingency (Hazard Trees) | $50,000 |
| Non-BAER Multnomah Falls Rock Catchment Fence Reinforcement | $280,000 |
| Trail Rebuilding and Trail Bridge Replacement | $8,000,000 |
| Project Management / Leveraging Support | $120,000 |
| Additional Trail Crew & Volunteer Coordination -- Increased Trail log out & routine maintenance | $215,000 |
| Eagle Creek Water System | $100,000 |
| Engineering Support -- Design, Contract Prep, Contract Oversight | $300,000 |
| Multnomah Falls Contingency (Hazard Trees) | $50,000 |
| Co-visioning -- Connective Partnerships | $50,000 |
| Public Affairs Assistance | $45,000 |
| NEPA/Consultation/Consistency Review | $180,000 |
| Field Rangers | $52,000 |
| Lidar Acquisition | $5,000 |
| **Eagle Creek Fire Total Funding Needs** | **$9,447,000** |

***Chetco Bar and the Fires on the Rogue River-Siskiyou National Forest***

Rogue-River-Siskiyou National Forest assembled four BAER teams over the course of the 2017 fire season. The BAER team for the Chetco Bar fire assembled in late September for two weeks to complete that assessment. Overall the soil burn severity for all fires on the forest were found to be much lower than originally anticipated but especially so for Chetco Bar with less than 6% found in high severity. Treatments authorized for the Rogue River-Siskiyou BAER include over 100 miles of road work, several miles of trail stabilization, limited hazard tree treatments, hazard signage, invasive plant treatments and cultural resource protections.

**Figure XX**. Percent of basal area mortality for the Chetco Bar fire across all ownerships.

Chetco Bar Fire on the Rogue River-Siskiyou burned across approximately 170,000 acres of National Forest System lands, with 48 percent of the fire occurring in wilderness, 33 percent in Late Successional Reserve and 17 percent in the matrix land use allocation. There were some larger patches of high severity crown fire runs, with 45 percent of the burned area experiencing >50 percent overstory tree mortality (Figure XX). Forest managers are working to reopen around 300 miles of roads impacted by the fire by felling roadside danger trees and about 100 miles of additional roadside danger tree removal within the perimeters of High Cascades and Miller complexes. Forest managers are also considering options for commercial timber salvage within the matrix lands of the Chetco Bar Fire along the private land boundaries in order to reduce fuel loadings along those boundaries, to assist in future fire management options, and to recoup some economic value from the burned trees. Finally, they identified approximately $7 million in currently unfunded post fire recovery needs to stabilize the road system, restore infrastructure damaged by the fires and mitigate impacts from the fire in some key habitats (Table XX). The Forest Service is pursuing options for funding some of these post-fire restoration needs as the Rogue River-Siskiyou National Forest does not have the funding to implement these activities at this time.

**Table XX**. List of currently unfunded post-fire recovery needs for the Rogue River-Siskiyou National Forest. This list is for all of the 2017 fires that occurred on the Rogue River-Siskiyou, not just the Chetco Bar fire.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Activity** | **Estimated Damage/ Needs** | **Units** | **Unit Cost** | **Cost** |
| Road prism repair | 360 | miles | $5,000 | $1,800,000 |
| Road structures (bridges or culverts) | 30 | structures | $25,000 | $750,000 |
| Trails | 117 | miles | $4,000 | $468,000 |
| Trail Structures | 3 | structures | $15,000 | $45,000 |
| Trail Signage | 2 | each | $5,000 | $10,000 |
| Hazard tree removal (roads, trails or other areas) | 477 | miles | $2,000 | $954,000 |
| Wildlife Guzzlers | 5 | structures | $3,000 | $15,000 |
| Fish Habitat Structures | 5 | each | $45,000 | $225,000 |
| Developed Rec Sites | 10 | sites | $5,000 | $50,000 |
| Administrative sites- Blue Ledge Mine CERCLA site | 1 | sites | $20,000 | $20,000 |
| Cultural site protection | 12 | sites | $7,000 | $84,000 |
| NEPA capacity | 1 | each | $100,000 | $100,000 |
| Revegetation Needs | 20000 | acres | $125 | $2,500,000 |
| Range Improvement Repair | 24 | structures |  | 51300 |
| Fence Replacement | 1 | miles | $30,000 | $30,000 |
| Assess, monitor range condition post fire | 50 | days | $500 | $25,000 |
| **Rogue River-Siskiyou Total Funding Needs** |  |  |  | **$7,127,300** |

***Umpqua National Forest***

Umpqua National Forest also convened multiple BAER teams over the course of the fire season to address the post-fire emergency needs. The majority of fires on the Umpqua showed high percentages (89 percent) of low to very low soil burn severities and therefore had a lesser need to post-fire emergency funding. BAER treatments approved for the Umpqua include road and trail drainage upgrades, emergency hazard signage, cultural resource protections and invasive plant treatments.

Figure XX. Percent of basal area mortality for all of the 2017 fires on the Umpqua National Forest.

Umpqua National Forest experienced fires scattered across three Ranger Districts totaling approximately 65,000 acres. These fires mostly burned at very low severities, with about 79 percent of the burned acres experiencing less than 25 percent overstory mortality (Figure XX). The Forest is working to reopen around 300 miles of roads impacted by the fires by felling roadside danger trees within the fire perimeters. Staff on the Umpqua are also considering options for commercial timber salvage on two fires that burned within matrix land allocations on the Tiller Ranger District. These salvage units are expected to be less than 250 acres each. Finally, the Umpqua has identified approximately $4 million in currently unfunded post fire recovery needs to stabilize the road system, restore infrastructure damaged by the fires and mitigate impacts from the fires in some key habitats (Table XX). The Forest Service is pursuing options for funding some of these post fire restoration needs as the Umpqua does not have the funding needed at this time.

**Table XX**. List of currently unfunded post fire recovery needs for the Umpqua National Forest. This list is for all of the 2017 fires that occurred on Umpqua National Forest.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Activity** | **Estimated Damage/ Needs** | **Units** | **Unit Cost** | **Cost** |
|  |  |  |  |  |
| Road prism | 184 | miles | $5,000 | $920,000 |
| Road structures (bridges or culverts) | 10 | structures | $25,000 | $250,000 |
| Developed Rec Sites | 5 | sites | $5,000 | $25,000 |
| Trail Bridges | 6 | structures | $90,000 | $540,000 |
| North Umpqua Trail Reconstruction | 11 | miles | $22,000 | $242,000 |
| Trail Reconstruction | 23 | miles | $1,500 | $34,500 |
| Horseshoe Bend Water System | 1 | each | $20,000 | $20,000 |
| Hazard tree removal (roads, trails or other areas) | 229 | miles | $2,000 | $458,000 |
| Developed Rec Sites | 5 | sites | $5,000 | $25,000 |
| Administrative sites | 2 | sites | $5,000 | $10,000 |
| Cultural site protection | 7 | sites | $7,000 | $49,000 |
| Huckleberry SIA restoration | 100 | acres | $150 | $15,000 |
| NEPA capacity | 1 | each | $50,000 | $50,000 |
| Invasive Species | 640 | acres | $70 | $44,800 |
| Revegetation Needs | 5000 | acres | $275 | $1,375,000 |
| Signs | 28 | Road Number | $25 | $700 |
| Signs | 9 | Site Identifier | $50 | $450 |
| Signs | 8 | Directionals | $150 | $1,200 |
| **Umpqua Total Post Fire Funding Needs** |  |  |  | **$4,060,650** |

***Milli Fire***

The BAER team for Milli Fire completed its assessment in mid-September. Milli Fire had one of the highest soil burn severities of the Oregon fires with 47 percent of the area in moderate and high. BAER treatments in the Milli Fire included road and trail treatments, hazard signs, cultural site protections, and invasive plant treatments.

**Figure XX**. Percent of basal area mortality for the Milli fire on the Deschutes National Forest.

Milli Fire on the Deschutes National Forest burned across approximately 24,000 acres of NFS lands, primarily in wilderness (39 percent) and late successional reserves (39 percent) with about 12 percent of the fire occurring in the matrix land allocation. Due to two days of rapid fire growth about 39 percent of the fire acres had greater than 50% overstory mortality (Figure XX). The Deschutes has focused on treating roadside danger trees to reopen roads to all safe public access. They are not pursuing area salvage at this time. Unlike other Forests in the region, the Deschutes does not have a backlog of unfunded post-fire restoration or infrastructure repairs needs.

***Willamette National Forest***

Three BAER teams assessed fires on Willamette National Forest over the course of the fire season. Like the Umpqua fires, the majority of the soil burn severities were low to very low. Several BAER treatments approved for these fires include road and trail work, including the Pacific Crest Trail; hazard warning signs; and invasive plant treatments.

**Figure XX**. Percent of basal area mortality for the Whitewater fire and then all other fires combined during the 2017 fire season on the Willamette National Forest.

Willamette National Forest had 17 fires for a total of approximately 70,000 acres. The largest fire, Separation (about 8,000 acres) was primarily in wilderness (91 percent), while the Whitewater fire, the next largest fire (about 11,500 acres) burned in wilderness (56 percent) and late successional reserves (44 percent). Whitewater fire had the highest amount of tree mortality with 37 percent of the total fire experiencing greater than 50 percent overstory mortality (Figure XX). The other fires across the Willamette primarily burned at low intensity, with over 50 percent of the total burned area experiencing less than 10 percent overstory mortality (Figure XX). Forest leaders are reopening the approximately 88 miles of road affected by the 2017 fires by removing roadside danger trees. Finally, forest managers have identified approximately $1.4 million in currently unfunded post-fire recovery needs to stabilize the road system, restore infrastructure damaged by the fires and restore vegetation (Table XX). The Forest Service is pursuing options for funding some of these post-fire restoration needs as the Willamette does not have the needed funding.

**Table XX**. List of currently unfunded post fire recovery needs for the all of the fires that burned Willamette National Forest in 2017.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Activity** | **Estimated Damage/ Needs** | **Units** | **Unit Cost** | **Cost** |
| Road prism | 85 | miles | $5,000 | $425,000 |
| Trails | 65 | miles | $3,000 | $195,000 |
| Trail Structures | 5 | structures | $10,000 | $50,000 |
| Hazard tree removal (roads, trails or other areas) | 90 | miles | $2,000 | $180,000 |
| Jefferson Park and PCT dispersed site hazard trees | 50 | sites | $2,000 | $100,000 |
| Developed Rec Sites | 15 | sites | $5,000 | $75,000 |
| Administrative sites | 3 | sites | $5,000 | $15,000 |
| Partnership Coordination | 1 | each | $15,000 | $15,000 |
| Invasive Species | 525 | acres | $70 | $36,750 |
| Revegetation Needs | 2500 | acres | $120 | $300,000 |
| **Willamette Total Post-Fire Funding Needs** |  |  |  | **$1,391,750** |

***Okanogan Wenatchee National Forest***

Two BAER teams assessed multiple fires on the Okanogan-Wenatchee National Forest in October 2017. The BAER teams found a much higher soil burn severity on these fires, potentially a reflection of repeated fires on the landscape. BAER treatments included hazard signage, road and trail treatments, recreation facility protections, and invasive plant treatments.

**Figure XX**. Percent of basal area mortality for the Norse Peak and Jolly Mountain Fires on the Okanogan Wenatchee National Forest.

The Okanogan Wenatchee National Forest had 9 large fires which burned over 175,000 acres within the Forest. About 130,000 acres were within designated wilderness. Two of the largest fires with portions outside of wilderness were the Jolly Mountain and Norse Peak fires, and their overstory mortality is displayed in Figure XX. Since most of the wildfire acres on the Okanogan Wenatchee were in wilderness, the Forest is not planning large scale roadside danger tree treatments and they are not pursuing area salvage. They did not identify any unfunded post-fire recovery items beyond the emergency treatments funded in the BAER process.

**State Summaries**

**Figure XX**. Combined basal area mortality for all fires assessed in 2017 in Oregon and Washington.

**Table XX**. Total Regional funding needs to support post fire recovery on the Columbia River Gorge National Scenic Area, Mt. Hood, Willamette, Umpqua and Rogue River Siskiyou National Forests.

|  |  |
| --- | --- |
| **Forest** | **Unfunded Post Fire Recovery Needs** |
| Umpqua | $4,060,650 |
| Willamette | $1,391,750 |
| Rogue River Siskiyou | $7,127,300 |
| Columbia River Gorge National Scenic Area and Mt. Hood | $9,447,000 |
| **Total** | **$22,026,700** |