**Date of Report:** 09/04/2021

# BURNED-AREA REPORT

## PART I - TYPE OF REQUEST

**A. Type of Report**

☒ 1. Funding request for estimated emergency stabilization funds

☐ 2. No Treatment Recommendation

**B. Type of Action**

☒ 1. Initial Request (Best estimate of funds needed to complete eligible stabilization measures)

☐ 2. Interim Request #___

☐ Updating the initial funding request based on more accurate site data or design analysis

## PART II - BURNED-AREA DESCRIPTION

**A. Fire Name:** Patton Meadow Fire (Fox Complex)

**B. Fire Number:** OR-FWF-210419

**C. State:** OR

**D. County:** Lake

**E. Region:** R6

**F. Forest:** Fremont-Winema NF

**G. District:** Lakeview

**H. Fire Incident Job Code:** P6N8EB

**I. Date Fire Started:** August 12, 2021

**J. Date Fire Contained:** September 2, 2021

**K. Suppression Cost:** $14,676,241.00 as of 9/2/21

**L. Fire Suppression Damages Repaired with Suppression Funds (estimates):** As of 9/1/21

1. **Fireline repaired (miles):** Approx. 20 miles of dozer line and 0.5 miles of handline
2. **Other (identify):** Between 7-12 locations of dozer pushouts, drop points, etc. potentially needing repair

**M. Watershed Numbers:**

*Table 1: Acres Burned by Watershed*

| HUC # | Watershed Name | Total Acres | Acres Burned | % of Watershed Burned |
|---|---|---|---|---|
| **180200010207** | Upper Cottonwood Ck | 22,139 | 1929 | 9 |
| **180200010104** | Drews Reservoir | 40,954 | 427 | 1 |
| **180200010105** | Drews Ck-Frontal Goose Lake | 38,480 | 1856 | 5 |
| **180200010208** | Muddy Creek | 13,453 | 4717 | 35 |

**N. Total Acres Burned:**

*Table 2: Total Acres Burned by Ownership*

| OWNERSHIP | ACRES |
|---|---|
| **NFS** | 7,679 |
| **OTHER FEDERAL (LIST AGENCY AND ACRES)** | |
| **STATE** | |
| **PRIVATE** | 1,251 |
| **TOTAL** | 8,930 |

**O. Vegetation Types:**

This fire ranges in elevation from approximately 5,000 to 7,000 feet. The vegetation types based on the plant association layer in GIS consists of Dry Mixed Conifer (75%) and Dry Ponderosa pine, Xeric pine, and Ponderosa pine/lodgepole (20%). Shrub step communities, meadow and juniper scab land occupy the remaining area (5%).

Overstory vegetation is dominated by ponderosa pine and white fir with minor amounts of lodgepole pine and incense cedar. Typically, north aspects contain higher concentrations of white fir where southern aspects favor ponderosa pine. Understory vegetation found within the conifer plant associations include manzanita, ceanothus, snowberry, serviceberry, bitter cherry (higher elevations), balsam root and Idaho fescue. The shrub/juniper and meadow communities include sage brush, bitter brush, mountain mahogany, juniper, and riparian vegetation.

**P. Dominant Soils:** Mod-Deep to Deep, Loamy to Clayey Skeletal

**Q. Geologic Types:** Basalt over Rhyolitic Tuff

**R. Miles of Stream Channels by Order or Class:**

*Table 3: Miles of Stream Channels by Order or Class*

| STREAM TYPE | MILES OF STREAM |
|---|---|
| **PERENNIAL** | 7.2 |
| **INTERMITTENT** | 7.2 |
| **EPHEMERAL** | 2.1 |
| **OTHER (ARTIFICIAL)** | 0.1 |

S. **Transportation System:**
**Trails:** *National Forest (miles):* 0 *Other (miles):* 0
**Roads:** *National Forest (miles):* 34.13 *Other (miles):* 0.3

*Table 4: Miles of Road by Maintenance Level*

| **ROADS: NATIONAL FOREST TOTAL R6 (MILES)** | **34.13** |
|---|---|
| 1 - BASIC CUSTODIAL CARE (CLOSED) | 9.79 |
| 2 - HIGH CLEARANCE VEHICLES | 23.30 |
| 3 - SUITABLE FOR PASSENGER CARS | 1.04 |
| 4 - MODERATE DEGREE OF USER COMFORT | 0 |
| 5 - HIGH DEGREE OF USER COMFORT | 0 |
| **OTHER (MILES)** | **0.3** |

## PART III - WATERSHED CONDITION

### A. Burn Severity (acres):

*Table 5: Burn Severity Acres, Pour point drainage areas for modelling road/stream crossing critical values*

| Soil Burn Severity | Antelope Creek (Acres) | Muddy Creek (Acres) |
|---|---|---|
| **Unburned** | 11 | 253 |
| **Low** | 302 | 1494 |
| **Moderate** | 200 | 545 |
| **High** | 13 | 8 |
| **Total** | 526 | 2300 |

*Table 6: Acres of Soil Burn Severity within the fire perimeter for each Watershed*

| Watershed Name | High | Moderate | Low | Unburned | Acres Burned |
|---|---|---|---|---|---|
| **Upper Cottonwood Ck** | 11 | 161 | 1358 | 399 | 1929 |
| **Drews Reservoir** | 0 | 90 | 310 | 27 | 427 |
| **Drews Ck-Frontal Goose Lake** | 14 | 493 | 1167 | 181 | 1856 |
| **Muddy Creek** | 29 | 1407 | 2917 | 364 | 4717 |

*Table 7: Burn Severity Acres by Ownership*

| Soil Burn Severity | NFS | Other Federal (List Agency) | State | Private | Total | % within the Fire Perimeter |
|---|---|---|---|---|---|---|
| **Unburned** | 772 | - | - | 199 | 971 | 11% |
| **Low** | 4,808 | - | - | 945 | 5753 | 64% |
| **Moderate** | 2,045 | - | - | 106 | 2151 | 24% |
| **High** | 54 | - | - | 1 | 55 | 1% |
| **Total** | 7,679 | - | - | 1,251 | 8930 | 100% |

**B. Water-Repellent Soil (acres):** 55

**C. Soil Erosion Hazard Rating:** Slight to Moderate

**D. Erosion Potential:** 0.12 Tons/Acre

**E. Sediment Potential:** 7.68 $yrds^3/mi^2$

**F. Estimated Vegetative Recovery Period (years):** Vegetation recovery will vary depending on plant association group, soil type, aspect, and soil burn severity. Areas that burned at low severity will generally recover within the first two years. Areas that burned with moderate soil severity are expected to recover the shrub layer in 3-5 years with canopy formation occurring much later. For sites with high soil burn severity and full vegetative stand- replacement, recovery may take decades.

**G. Estimated Hydrologic Response (brief description):** There is very little high burn severity on this fire, and the upper reaches of the drainage areas examined experienced low to moderate burn severity. WEPP PEP was used to estimate post-fire changes in discharge. Antelope Creek and Muddy Creek are estimated to have increased discharge potential of 137% and 277% over normal respectively. Thin, sparce, and patchy hydrophobicity was observed in the field, and soil infiltration rates are very high in this area. Watershed response is expected to be mild and post-fire sediment increases are also expected to be mild. These

estimates are aided by the dry and dissected nature of the fire area. Annual precipitation estimates range from 17-23 in/yr and drainage areas are small. These factors do not rule out saturation induced soil movement in these small drainages; however, the risk is mild.

## PART V - SUMMARY OF ANALYSIS

**Introduction/Background –**
The Patton Meadow Fire, part of the Fox Complex of fires, was caused by a dry lightning thunderstorm event on August 12, 2021 that moved through Klamath and Lake Counties, triggering multiple fires. The fire burned approximately 10 miles west of Lakeview, primarily on the Fremont-Winema National Forest, but also including some private lands. Due to extreme fire weather conditions, the fire grew by 2,000 acres during the first night, and made downhill runs due to downslope evening winds. The fire approximately doubled in size by August 14 due to continuing hot dry extreme fire weather. A smoke inversion and the implementation of successful burnout operations helped to slow fire progression by August 19th, dampering the rest of the fires growth through August 22nd. The fire was declared contained on September 2, 2021. The Fremont-Winema NF BAER Team began their assessment of the fire on August 31, 2021 with the final close-out with the forest expected on September 7, 2021. The Critical Values spreadsheet in the project file summarizes critcal values evaluated and the risk assessment to identify where a BAER emergency exists that warrants treatment. The risk assessment focused on the most probable damaging storm events, which are typically rain-on-snow events or high intensity thunderstorms.

### A. Describe Critical Values/Resources and Threats (narrative):

*Table 8: Critical Value Matrix*

| **Probability of Damage or Loss** | **Magnitude of Consequences** | | |
|---|---|---|---|
| | Major | Moderate | Minor |
| | **RISK** | | |
| Very Likely | **Very High** | **Very High** | **Low** |
| Likely | **Very High** | **High** | **Low** |
| Possible | **High** | **Intermediate** | **Low** |
| Unlikely | **Intermediate** | **Low** | **Very Low** |

#### 1. Human Life and Safety (HLS):

| Critical Value | Probability | Consequence | Risk Rating | Threat |
|---|---|---|---|---|
| People travelling on roads intersecting fire boundary and impacted by burned area | Possible | Major | High | Threat to public from falling trees and debris in roads |

#### 2. Property (P):

| Critical Value | Probability | Consequence | Risk Rating | Threat |
|---|---|---|---|---|
| Open Roads (Maintenance Level 2 Roads), including NFS roads 3870383 (Patton Meadow), 3870386, 3870175, 3870178 and 3870150. | Likely | Moderate | High | Road failures due to increased flows, accumulation of debris in ditches and culverts in moderate and high severity burn areas |

#### 3. Natural Resources (NR):

| Critical Value | Probability | Consequence | Risk Rating | Threat |
|---|---|---|---|---|
| Soil Productivity and Hydrologic Function | Possible | Minor | Low | Loss of hydrological function, increased runoff, erosion and sedimentation |

| | | | | |
|---|---|---|---|---|
| White Bark Pine Habitat – candidate for listing under the Endangered Species Act – currently under review. | Possible | Moderate | Intermediate | Invasive Species, habitat degradation |
| Native plant communities burned at moderate or high soil burn severity | Likely | Moderate | High | Invasive Species, habitat degradation. Observations of the 2002 Grizzly Fire portion in the Patton Meadow fire perimeter presents a good example of what happens when invasives are not treated immediately. Areas outside the Grizzly fire still have minimal invasive plant infestations and are at risk. |
| Supression related disturbance | Very Likely | Moderate | Very High | Invasive Species, habitat degradation |

**4. Cultural and Heritage Resources:**

| Critical Value | Probability | Consequence | Risk Rating | Threat |
|---|---|---|---|---|
| 10 cultural resource sites | Possible | Minor, impact will not detract from National Register of Historic Places eligibility | Low | Damage to site integrity and displacement of artifacts due to loss of ground cover, increased erosion. |

## B. Emergency Treatment Objectives:

Proposed Land Treatments

The objective of the land treatments are to:

1. Promote and protect native and naturalized vegetative recovery by reducing the spread of known populations of noxious weeds (L1a).
2. Retard the spread of invasive weeds as a result of suppression activities (L1b).

**Note -** No active land treatments are recommended for long-term soil productivity and hydrologic function. Allowing for natural recovery is the recommended course of action.

Proposed Road Treatments:

The objective of road treatments are to:

1. Protect road investments from damage or loss due to increased post-fire runoff and erosion by maintaining ditchline and culvert inlet capacities (R3).

Proposed Protection/Safety Treatments:

The objective of the protection/safety treatments are to:

1. Protect human life and safety by raising awareness through posting hazard warning signs along roads entering the burned area to warn users of potential hazards resulting from post-fire conditions (S1a).

Proposed Channel Treatments: None proposed.

## C. Probability of Completing Treatment Prior to Damaging Storm or Event:

**Land**: NA- EDRR not necessarily influenced by damaging storm or event
**Channel:** NA
**Roads/Trails:** 85%
**Protection/Safety:** 90%

## D. Probability of Treatment Success

*Table 4: Probability of Treatment Success*

| | 1 year after treatment | 3 years after treatment | 5 years after treatment |
|---|---|---|---|
| ***Land*** | 75 | 85 | 90 |
| ***Channel*** | - | - | - |
| ***Roads/Trails*** | 85 | 90 | 90 |
| ***Protection/Safety*** | 90 | 90 | 90 |

**E. Cost of No-Action (Including Loss):** $1,676,127 (refer to cost/benefit analysis in files)

**F. Cost of Selected Alternative (Including Loss):** $496,465 (refer to cost/benefit analysis in files)

**G. Skills Represented on Burned-Area Survey Team:**

☒ Soils ☒ Hydrology ☒ Engineering ☒ GIS ☒ Archaeology
☒ Weeds ☐ Recreation ☐ Fisheries ☐ Wildlife
☐ Other:

**Team Leader:** Joni D. Brazier
**Email:** joni.brazier@usda.gov **Phone(s):** 541-471-6760

**Forest BAER Coordinator:** Robert Reed
**Email:** robert.m.reed@usda.gov **Phone(s):** 541-514-7394

**Team Members:** *Table 5: BAER Team Members by Skill*

| Skill | Team Member Name |
|---|---|
| *Team Lead(s)* | Joni Brazier |
| *Soils* | David Watson |
| *Hydrology* | Matt Robinson |
| *Engineering* | Terry Orton |
| *GIS* | Dino Borghi |
| *Archaeology* | Steven Highland |
| *Weeds* | Erin Rentz |
| *Recreation* | |
| *Other* | |

**H. Treatment Narrative:**

**Land Treatments:**

**L1a. Invasives EDRR - BAER:** Early Detection and Rapid Response (EDRR) treatments are proposed for sensitive habitats and roadside areas (57 acres) within 200 feet of documented high priority weed infestations where the fire burned with moderate to high soil burn severity (SBS). No BAER treatments are proposed for areas within the footprint of the 2002 Grizzly fire because of the high amount of pre-existing invasive sites – these will be treated using other resources.

**L1b. Invasives EDRR - Suppression:** Above and beyond the Incident Suppression Repair efforts, BAER EDRR treatments are proposed for dozerlines, drop points and other ground disturbing areas caused by fire suppression activities (34 acres) and will be essential to protect native and naturalized communities. The likelihood that heavy equipment working on the fire brought in propagules from outside the fire perimeter is high. Early detection and treatment will help prevent new invasive species from getting established in these disturbed areas. EDRR for suppression is proposed on 1.2% of the NFS acres within the fire perimeter.

Most of the EDRR work is expected to go into an existing agreement with Lake County Cooperative Weed Management Area to implement.

| Treatment | Units | Unit Cost | # of Units | Total Cost |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| P1a. Invasives EDRR - BAER | Acres | 120 | 57 | $6,840 |
| P1b. Invasives EDRR - Suppression | Acres | 120 | 34 | $4,080 |
| | | | TOTAL | $10,920 |

**Channel Treatments:** None.

**Roads Treatments:**

**R3- Storm Inspection and Response:** Storm inspection and response will keep culverts and other drainage features functional by cleaning sediment, rockfall and debris from in and around features between or during storms. Increase the frequency of storm inspections and availability of equipment to clean out culvert inlets and ditches due to local weather events. This work will be accomplished through Forest Maintenance Contracts, equipment rental, and/or general labor. Work is concentrated on roads on steep sideslopes below moderate or high burn intensity areas and roads with multiple stream crossings.

- NFS roads identified include but are not limited to: NFS roads 3870383 (Patton Meadow), 3870386, 3870175, 3870178 and 3870150.

| Treatment | Units | Unit Cost | # of Units | Total Cost |
|---|---|---|---|---|
| R3. Storm Inspection & Response | Day | $3,138.00 | 2 | $6,276.00 |

**Protection/Safety Treatments:**

**S1a – Road Hazard Signs:** Signs will inform users of the dangers associated with entering and recreating within the burned area. Location of signs are shown on the treatment map included in the 2500-8 close-out packet. Sign plan is included.

- S1a-1. Road Hazard Signs – Warning
  - Warning signs will be located along entrance roads into the fire area.
  - Sign configuration (wording, color and size) was coordinated with the Region 6 Sign Coordinator, Yigiang (Kevin) Gu.

| Treatment | Units | Unit Cost | # of Units | Total Cost |
|---|---|---|---|---|
| S1a. Road Hazard Signs - Warning | Each (Sign & Post) | $242.00 | 3 | $726.00 |

**I. Monitoring Narrative:** No Level 1 monitoring proposed.

## PART VI – EMERGENCY STABILIZATION TREATMENTS AND SOURCE OF FUNDS

| | | | NFS Lands | | | | Other Lands | | | | All |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Unit | # of | | Other | # of | Fed | # of | Non Fed | Total |
| Line Items | Units | Cost | Units | BAER $ | $ | units | $ | Units | $ | $ |
| | | | | | | | | | | |
| **A. Land Treatments** | | | | | | | | | | |
| L1a. Invasives EDRR | Acres | 120 | 57 | $6,840 | $0 | | $0 | | $0 | $6,840 |
| L1b. Invasives EDRR Suppr | Acres | 120 | 34 | $4,080 | $0 | | $0 | | $0 | $4,080 |
| *Insert new items above this line!* | | | | $0 | $0 | | $0 | | $0 | $0 |
| *Subtotal Land Treatments* | | | | $10,920 | $0 | | $0 | | $0 | $10,920 |
| **B. Channel Treatments** | | | | | | | | | | |
| | | | | $0 | $0 | | $0 | | $0 | $0 |
| | | | | $0 | $0 | | $0 | | $0 | $0 |
| *Insert new items above this line!* | | | | $0 | $0 | | $0 | | $0 | $0 |
| *Subtotal Channel Treatments* | | | | $0 | $0 | | $0 | | $0 | $0 |
| **C. Road and Trails** | | | | | | | | | | |
| R3. Storm Inspection/Respo | Day | 3,138 | 2 | $6,276 | $0 | | $0 | | $0 | $6,276 |
| | | | | $0 | $0 | | $0 | | $0 | $0 |
| *Insert new items above this line!* | | | | $0 | $0 | | $0 | | $0 | $0 |
| *Subtotal Road and Trails* | | | | $6,276 | $0 | | $0 | | $0 | $6,276 |
| **D. Protection/Safety** | | | | | | | | | | |
| S1a. Road Hazard Signs | Each | 242 | 3 | $726 | $0 | | $0 | | $0 | $726 |
| | | | | $0 | $0 | | $0 | | $0 | $0 |
| *Insert new items above this line!* | | | | $0 | $0 | | $0 | | $0 | $0 |
| *Subtotal Protection/Safety* | | | | $726 | $0 | | $0 | | $0 | $726 |
| **E. BAER Evaluation** | | | | | | | | | | |
| Initial Assessment | Report | $14,327 | 1 | --- | $0 | | $0 | | $0 | $0 |
| | | | | $0 | $0 | | $0 | | $0 | $0 |
| *Insert new items above this line!* | | | | --- | $0 | | $0 | | $0 | $0 |
| *Subtotal Evaluation* | | | | $0 | $0 | | $0 | | $0 | $0 |
| **F. Monitoring** | | | | | | | | | | |
| | | | | $0 | $0 | | $0 | | $0 | $0 |
| | | | | $0 | $0 | | $0 | | $0 | $0 |
| *Insert new items above this line!* | | | | $0 | $0 | | $0 | | $0 | $0 |
| *Subtotal Monitoring* | | | | $0 | $0 | | $0 | | $0 | $0 |
| | | | | | | | | | | |
| **G. Totals** | | | | $17,922 | $0 | | **$0** | | **$0** | **$17,922** |
| Previously approved | | | | | | | | | | |
| Total for this request | | | | **$17,922** | | | | | | |

## PART VII - APPROVALS

1. _____

Forest Supervisor Date