

# Eagle Creek Fire

## *A Watershed Perspective*



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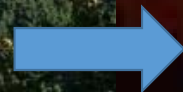


Caring for the land and serving people

# Fire Behavior



Ignition 9/2, Saturday  
afternoon of  
Labor Day weekend

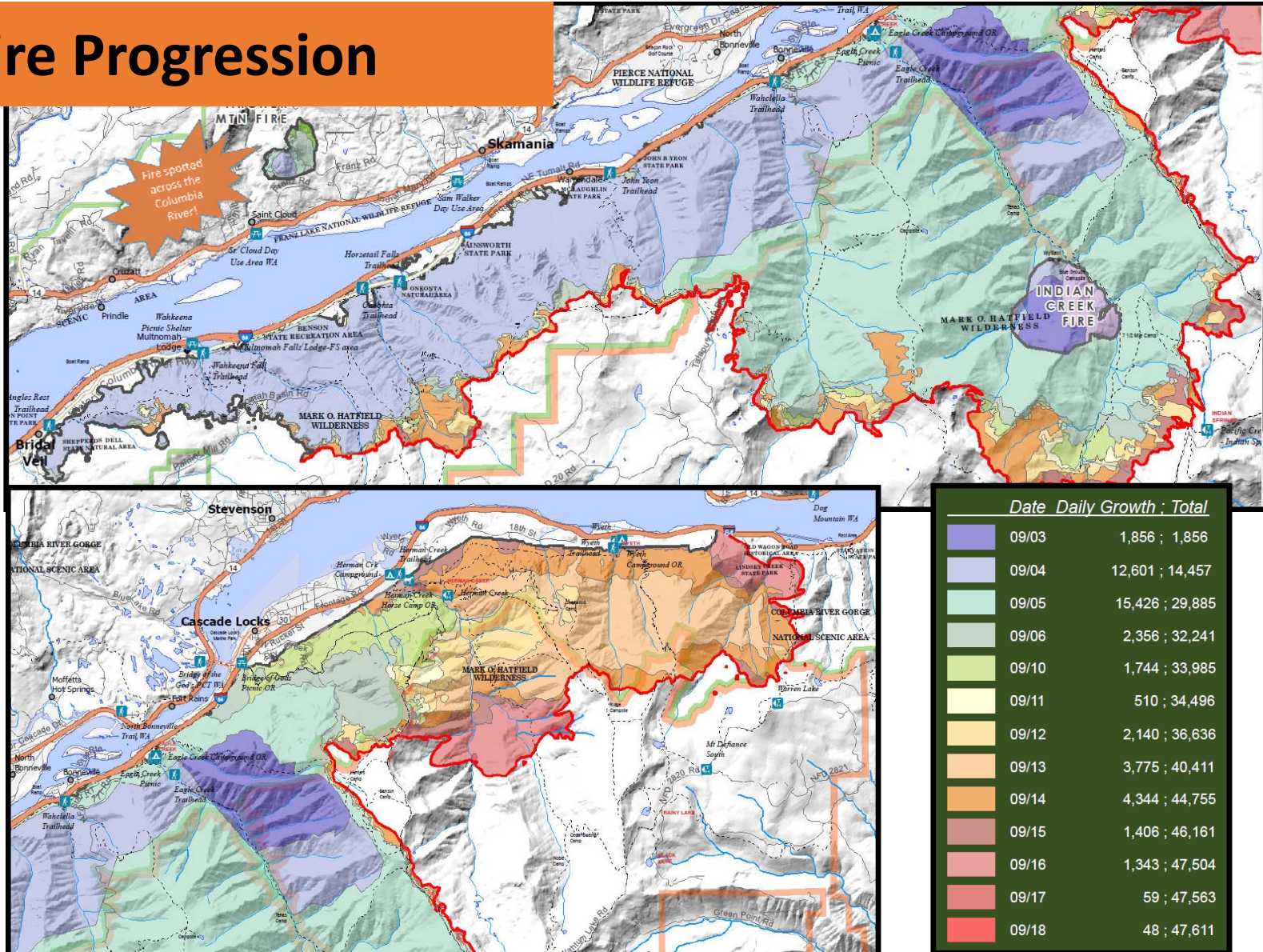


Fire made a 13 mile  
run during 16 hours  
over 9/4 & 9/5





# Fire Progression



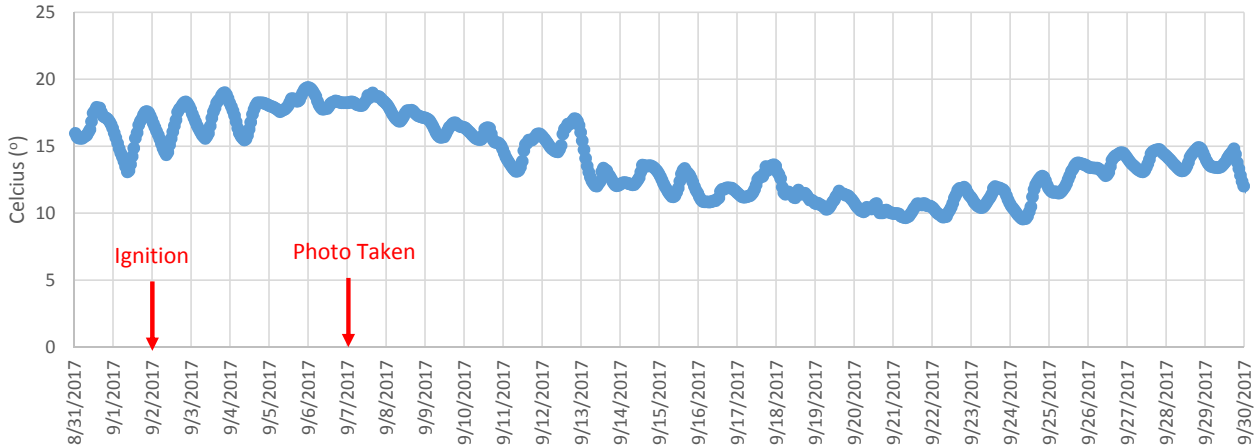
# Water Quality and Fisheries



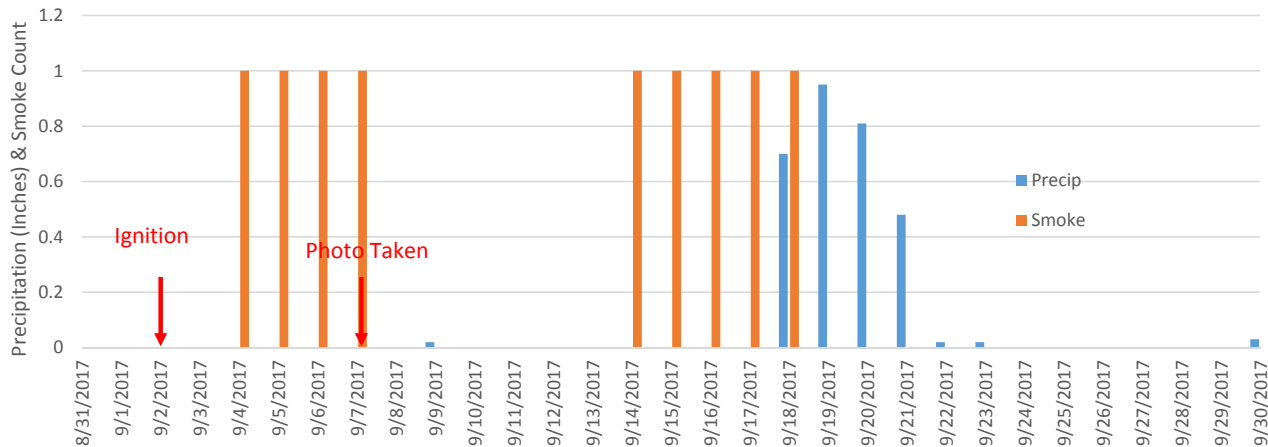
Photos taken by Chuti Fiedler at Horsetail Falls



Multnomah Creek - Stream Temperatures



Cascade Locks Precipitation & Troutdale Airport Smoke







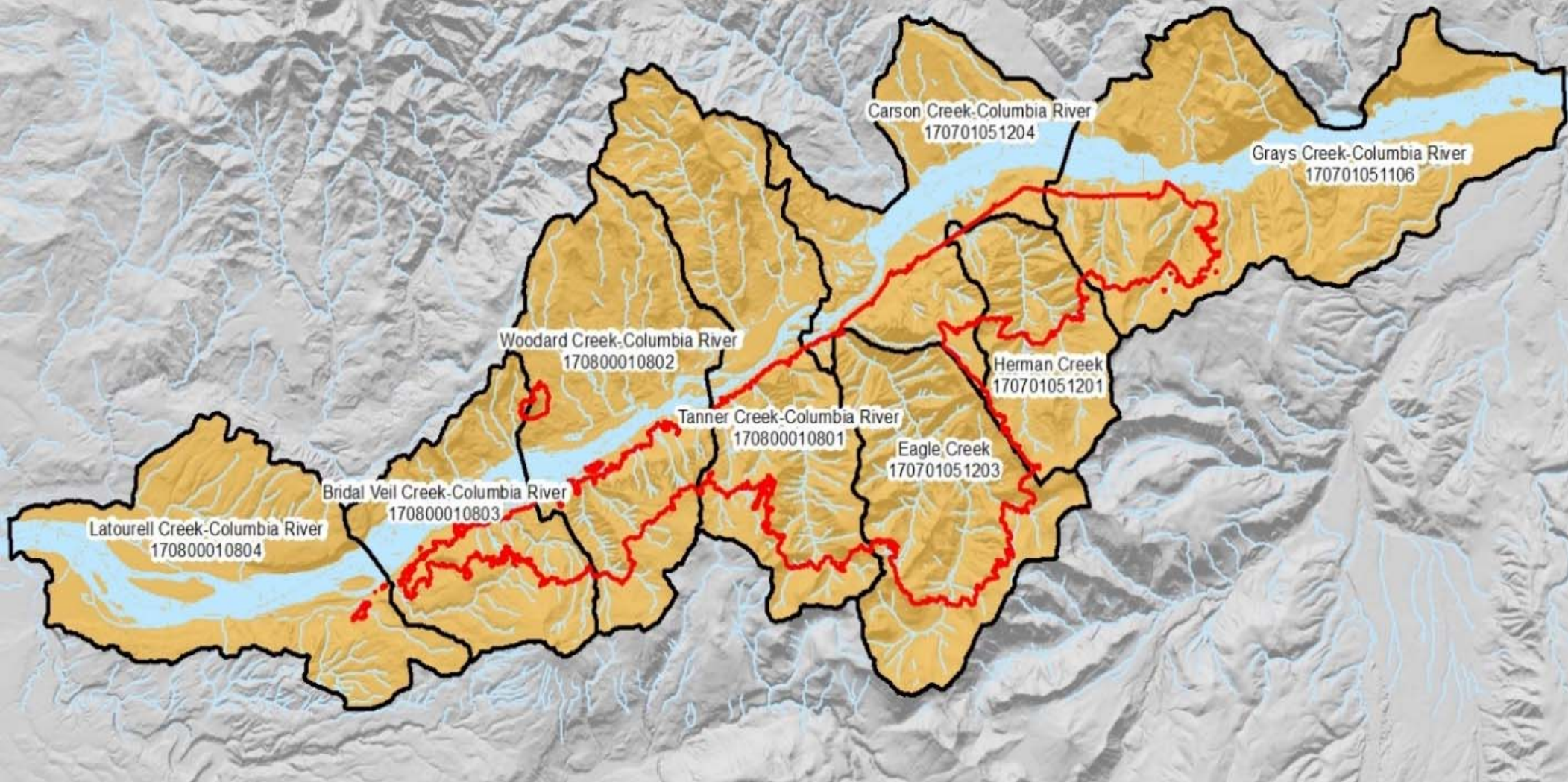
# Social/Economic Impacts

- Nearly 200 hikers safely rescued after night on trails
- 7 communities evacuated
- 4 structures lost
- Columbia River closed to all boat traffic 2 days
- Union Pacific Railroad closed 3 days
- I-84 closed 11 days Westbound and 19 days Eastbound





# Hydrologic Unit Codes (HUC 12)






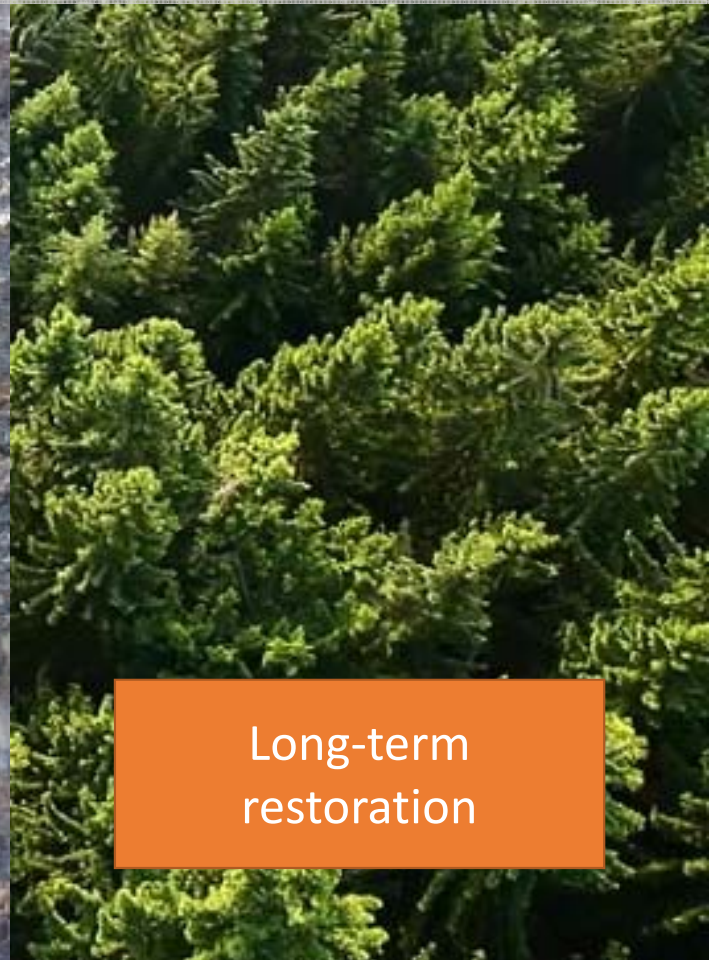
# Three Phases of Post-Fire Actions



Suppression Repair



Burned Area  
Emergency Response  
(BAER) 



Long-term  
restoration



## What is BAER ?

### Burned Area Emergency Response

A program to identify imminent post-wildfire threats on National Forest System lands to human life and safety, property and critical natural or cultural resources and take immediate actions to manage unacceptable risks.





# The BAER Process

**Values>Threats>Risk>Treatment**

Step 1. Identify critical values

Step 2. Assess for threats

Step 3. Evaluate risk

Step 4. Develop response strategy

Step 5. Implement the strategy



# Step 1. Identify critical values on National Forest Lands potentially affected by the burned area.

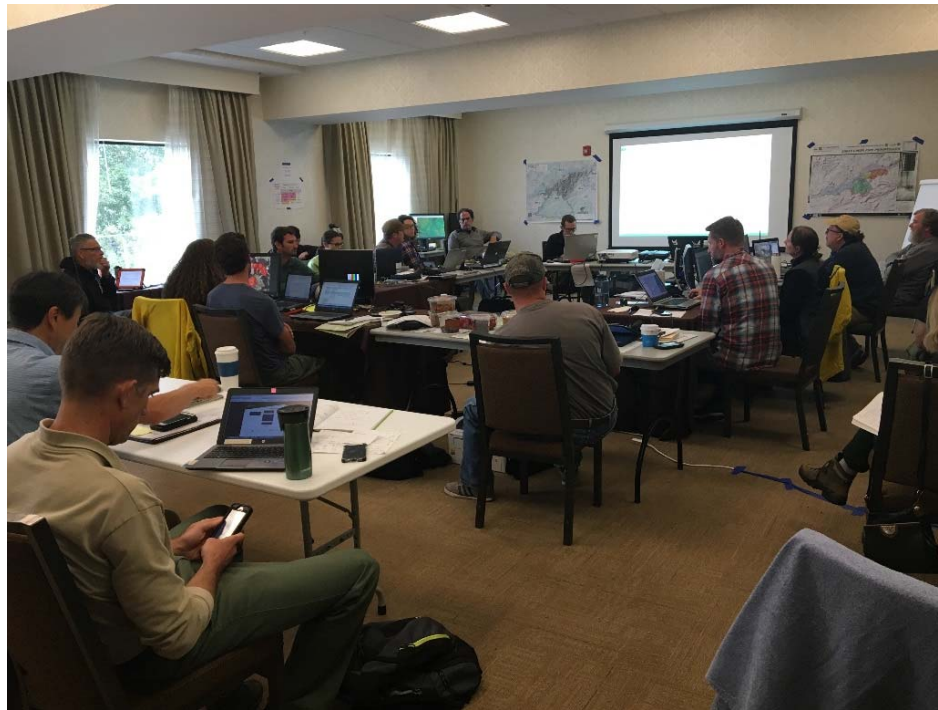
- Life/Safety
- Property
- Natural Resources
- Cultural Resources





# Eagle Creek BAER team

- Team Leader
- Soils
- Hydrology
- Geology
- Archaeology
- Engineering
- Recreation



- Botany
- Aquatics
- Wildlife
- Public Information
- GIS
- Safety

# Steps 2 and 3. Assess threats and evaluate risk caused by the post-fire environment to the critical values.

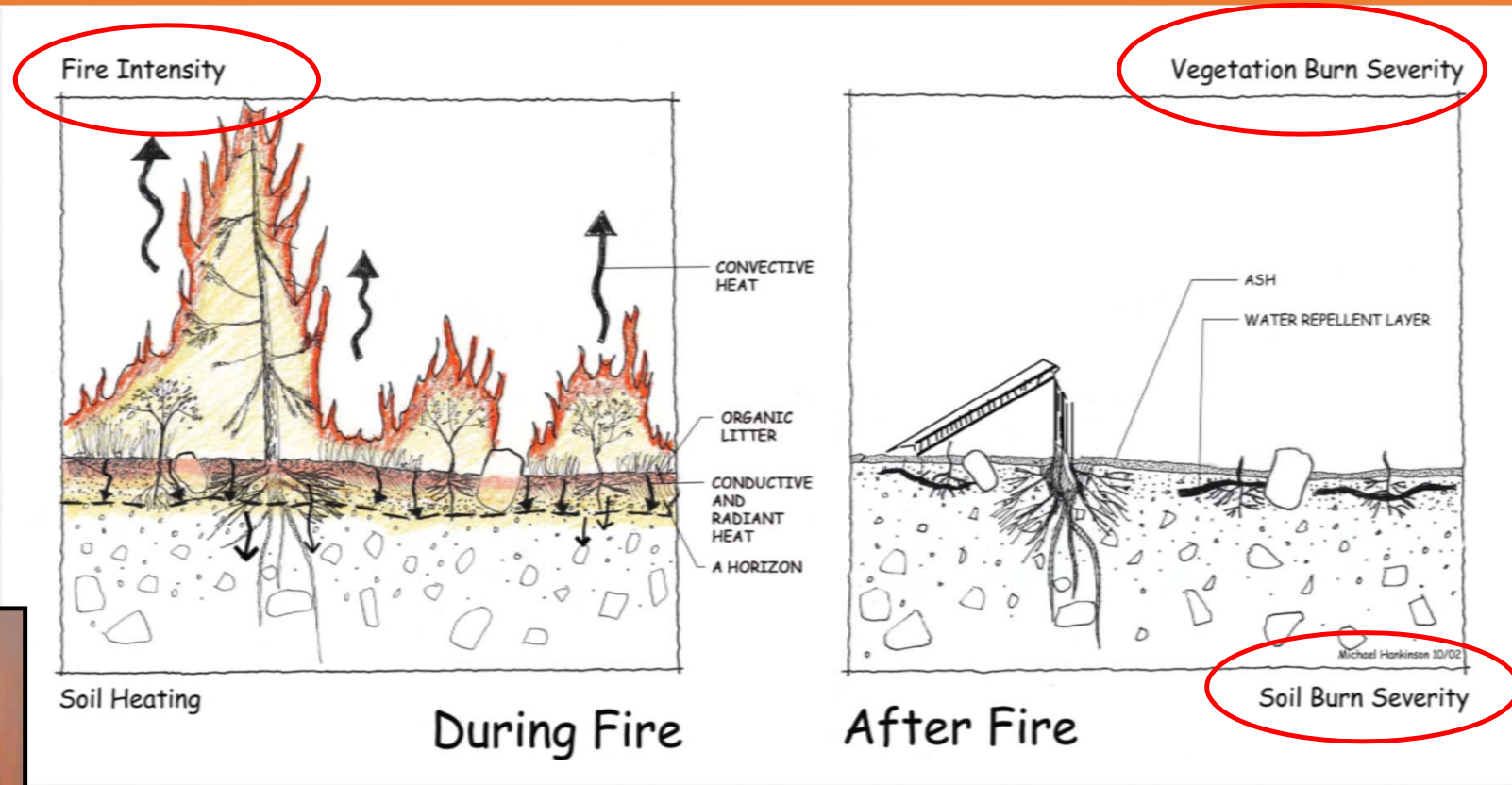
- Soil Burn Severity
- Geologic Hazards
- Erosion and Flooding
- Hazard and Danger Trees
- Non-native species





# Fire Intensity and Fire Severity

Fire intensity = energy or heat release during the consumption of organic matter.



Fire intensity does not always indicate fire effects on soils.



# Field Assessing Soil Burn Severity

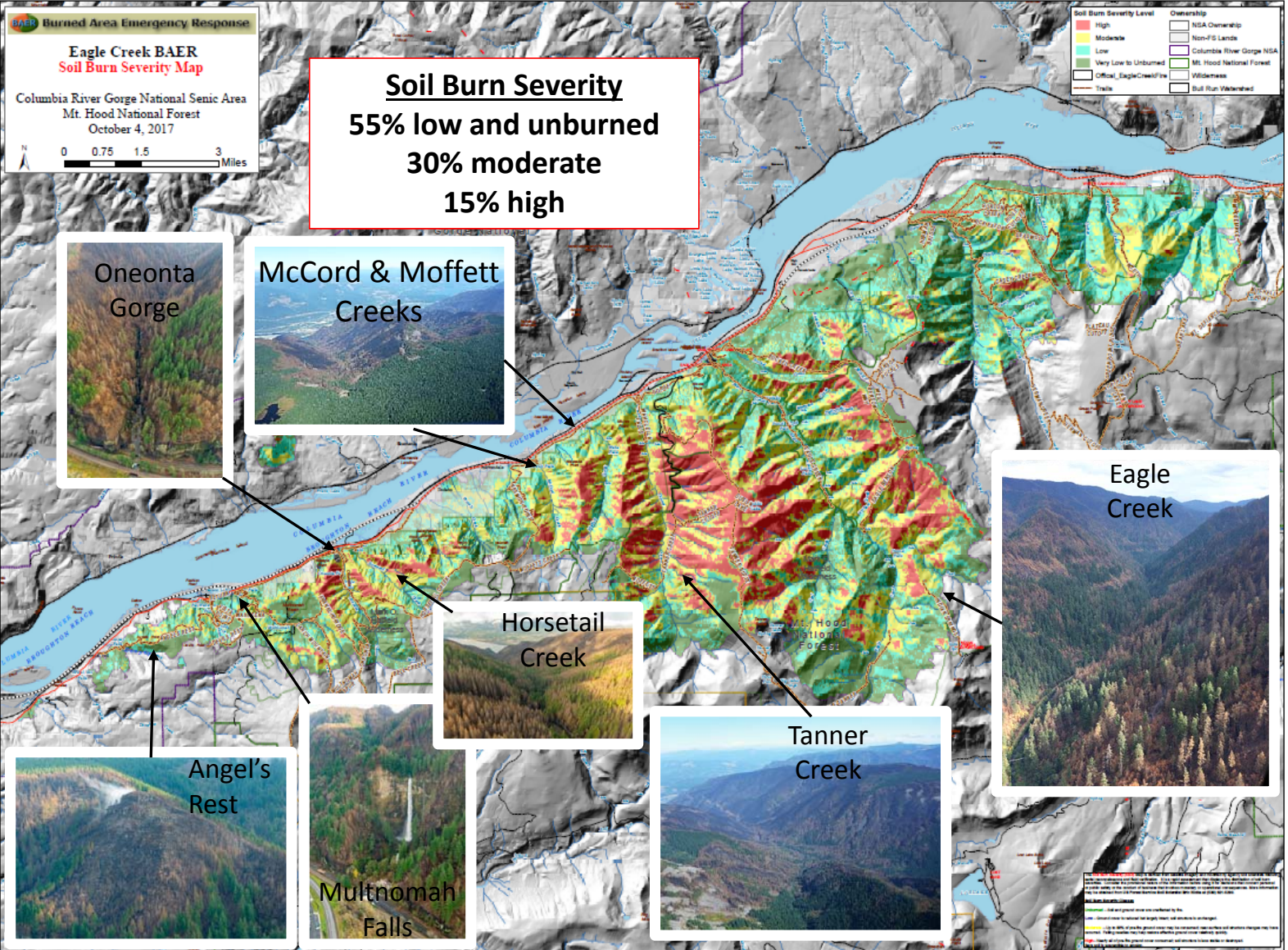


**Unburned – High root density, 100% soil cover**



**High - Surface structure destroyed, soil cover completely consumed, roots consumed**





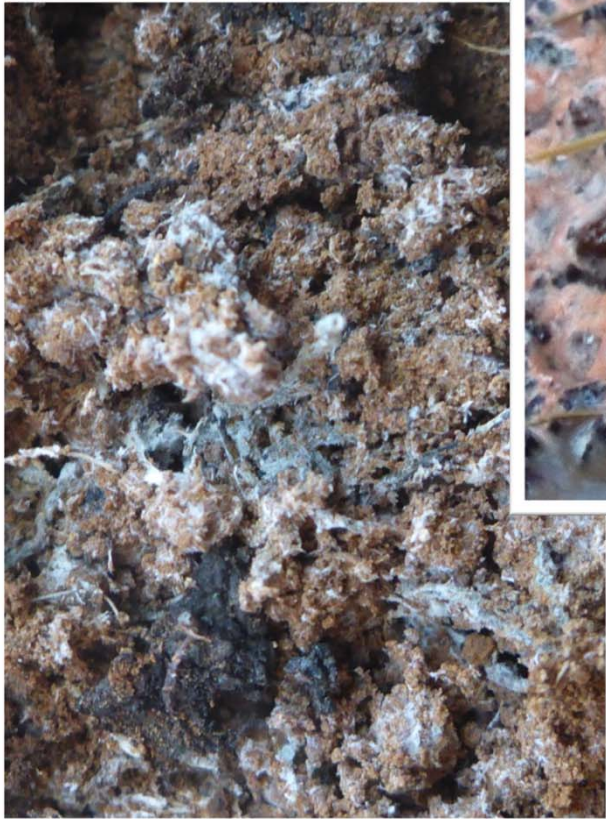


# Triple Falls (Oneonta Creek)



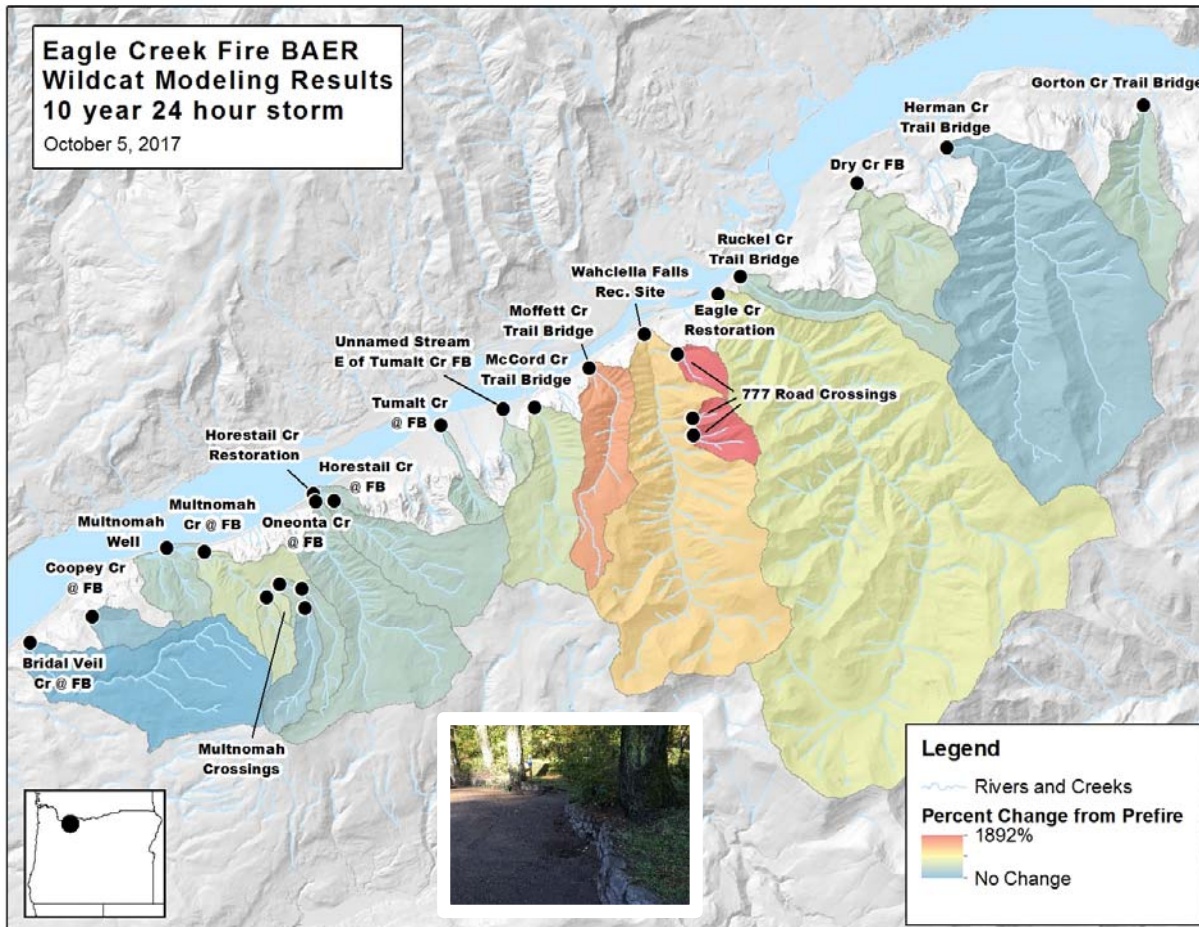


# Rapid Natural Recovery Observed!





# Hydrology Assessment



- Tanner Creek is expected to experience the largest post-fire response (1000%+)
- Eagle Creek also has the potential for a large post-fire response (400%)
- In previous flood events Tanner Creek, Multnomah Creek, Oneonta Creek, Eagle Creek and others have experienced infrastructure damage in pre-fire conditions
- Rain on snow events present the greatest risk for large/widespread floods



# Erosion

- Post-fire erosion factors:

- Climate
- Topography
- Surface Rock Armoring
- Litter fall
- Fire Severity

- 2 distinct soil types



Eagle Creek

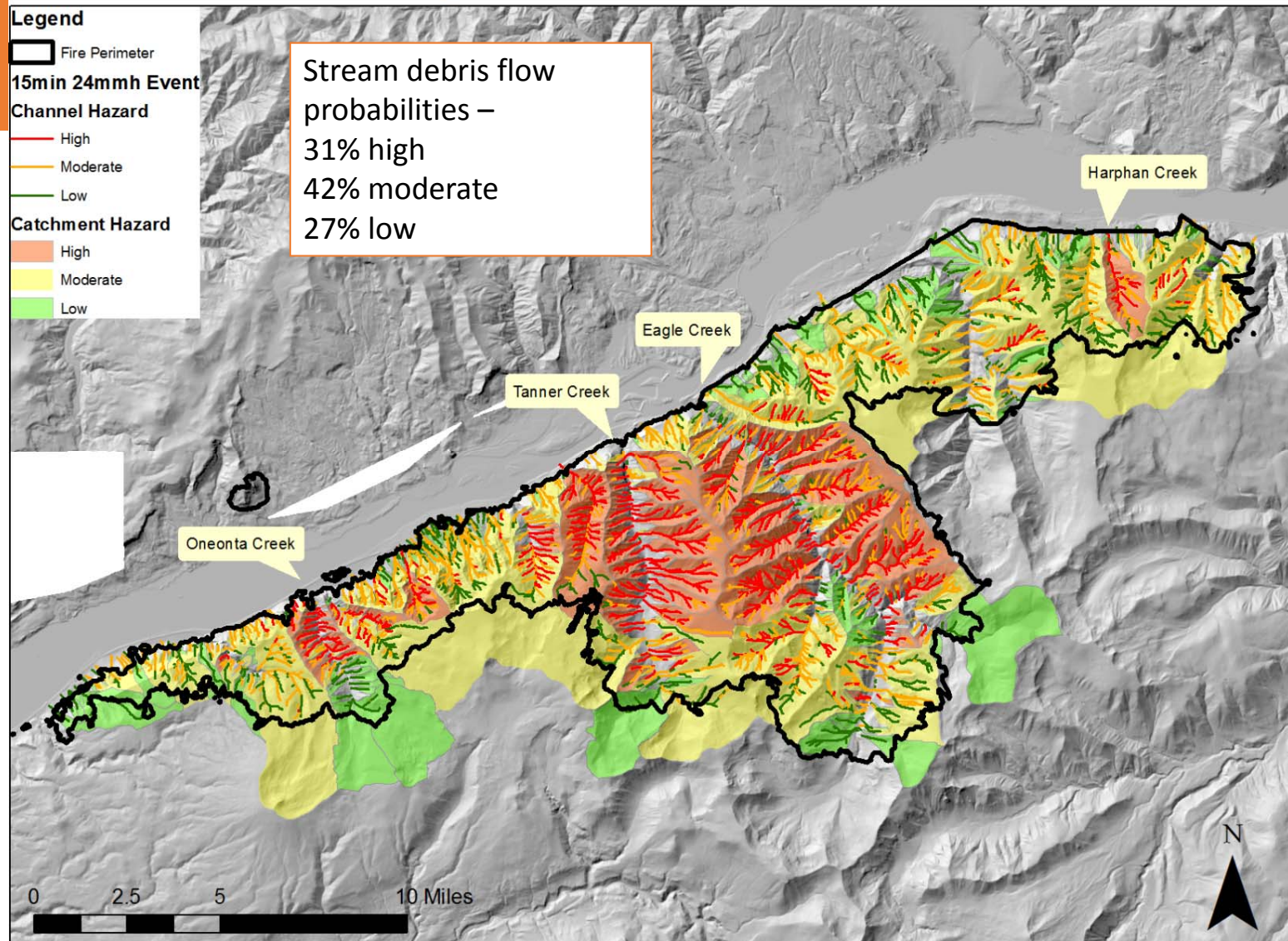
|                        |           |         |
|------------------------|-----------|---------|
| 9/28/17 perimeter      | 0 - 1.3   | 18 - 22 |
| <b>Sediment Storm4</b> | 3.7 - 6.5 | 23 - 26 |
| <b>tons / acre</b>     | 6.6 - 9.9 | 27 - 33 |
| 1.4 - 3.6              | 10 - 14   | 34 - 46 |



# Geology Assessment

- Increased probability of rockfall/rockslides throughout burn perimeter (moss effect)
- Most affected: Eagle, Tanner, Moffett, McCord, Horsetail and Oneonta Creeks
- Multnomah Falls and Oneonta Creek – rockfall!

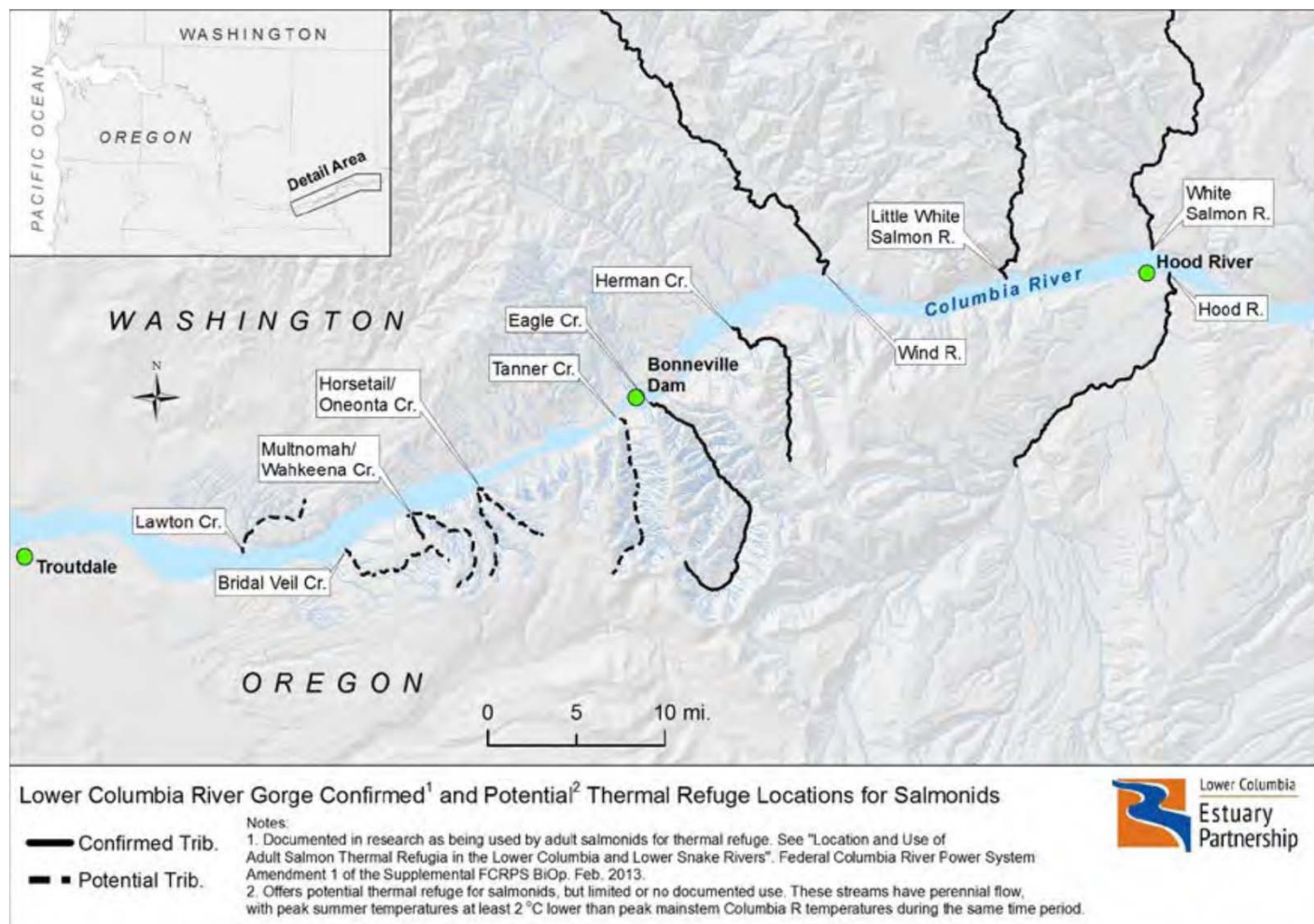
Eagle Creek Fire Debris Flow Hazard





# Fisheries Assessment

- Federally listed critical habitat within or immediately downstream
- Documented thermal refuge
- Hatcheries:
  - Oxbow
  - Bonneville
  - Cascade



# Unique BAER Challenges



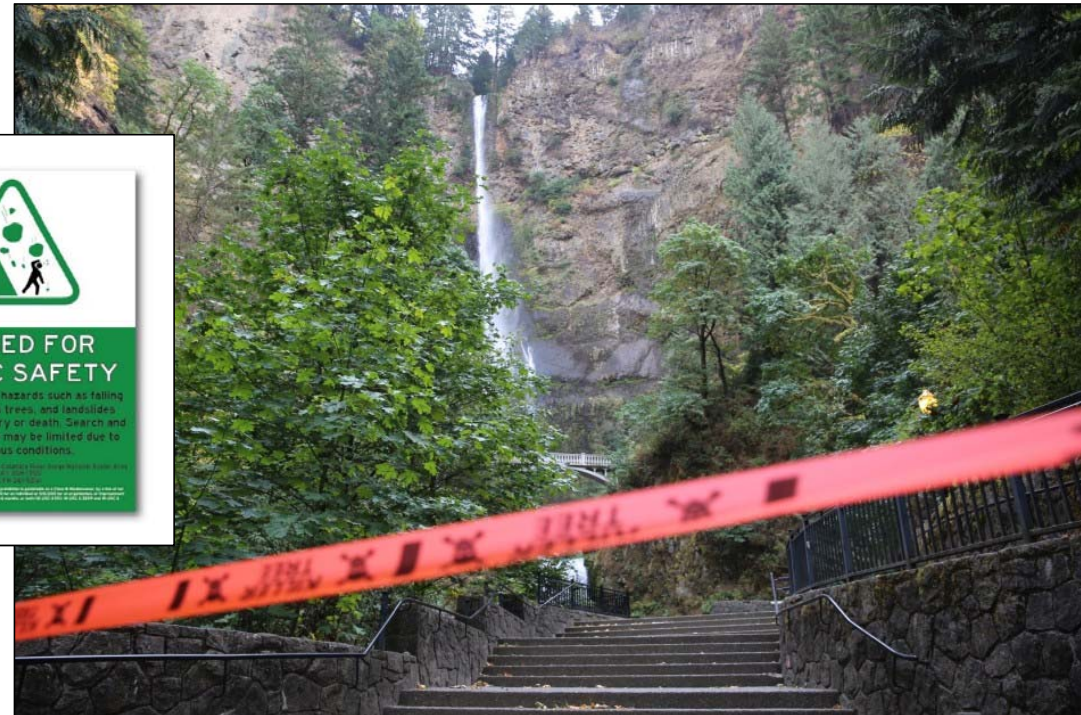
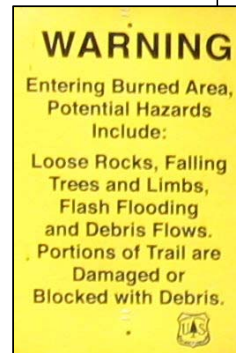
- BAER Team Safety Concerns from geologic instability & 'forested scree'
- High Profile Situation Politically and in Public View
- High visitation area with dispersed access points created closure enforcement concerns
  - 122 miles of trails in fire area
  - over 50 access points to closed fire area
  - 3-5 weekly Search & Rescue operations pre-fire
  - To date more nearly 4,000 'turnarounds', 600 verbal warnings, and 50 citations



# Proposed Treatments

## Life and Safety

- Notification of risk to cooperators/agencies
  - Interagency coordination (Counties, NWS, USGS, ODOT, ACOE, etc.)
    - Early Alert System (NWS)
    - Hazard Trees
- Administrative closures
- Warning signs





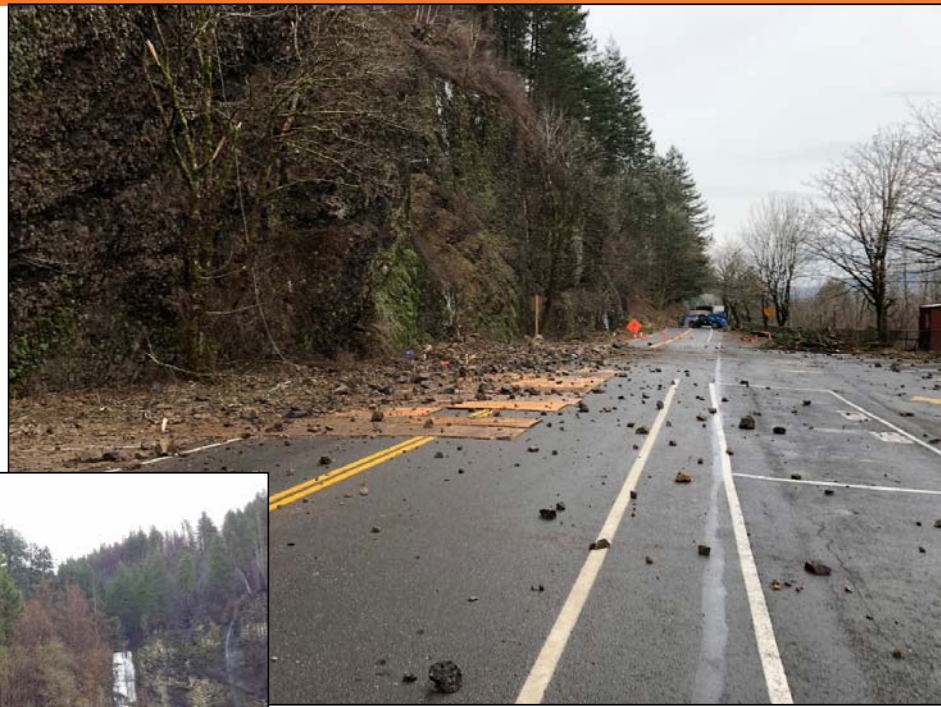
**Very high potential for threats to human life and safety from hazard trees on and off of NFS lands**



USFS, ODOT with limited BAER funding



# Very high potential for threats to human life and safety from rock fall on and off of NFS lands



USFS, ODOT with limited BAER funding



# Multnomah Falls

## Cultural/Life and Safety

Multnomah Lodge is part of National Historic Landmark designation for Columbia River Gorge (Reopened 11/29/2017)

- Fire and prevention damage repair
- Hazard trees
- Rock fall fencing









# Proposed Treatments

## Roads

- Culvert removal
- Increased Drainage
- Bridge stabilization
- Storm inspection and response
- Traffic Signs
- Gates







# Proposed Treatments Roads







## Proposed Treatments: Natural Resources

- Invasive Plant survey and treatment-Early Detection Rapid Response (EDRR)
- Treat new and expanding populations
- Key focal species include false brome and garlic mustard
- Funding for up to one year

CGCWMA: Col. Gorge Cooperative Weed Management Area  
OR State Parks  
US Forest Service  
Skamania County weed Dept.  
EMSWCD  
Friends of Trees  
Friends of Columbia Gorge  
Cape Horn Conservancy





# Proposed Treatments Recreation



- 90 Miles of Forest System Trails in Burned Area
  - BAER Implement Trail Stabilization Treatments on Steep Slopes in Burned Area – 33 ¼ Miles
- Trail Bridges
  - Eagle Creek
- Recreation Infrastructure



Eagle Creek  
Trail Bridge  
Replacement

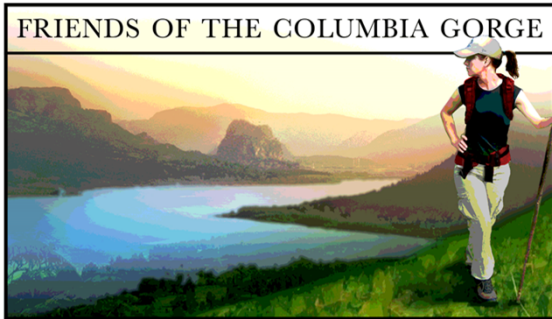


# Trail Assessments





# GORGE TRAILS RECOVERY TEAM



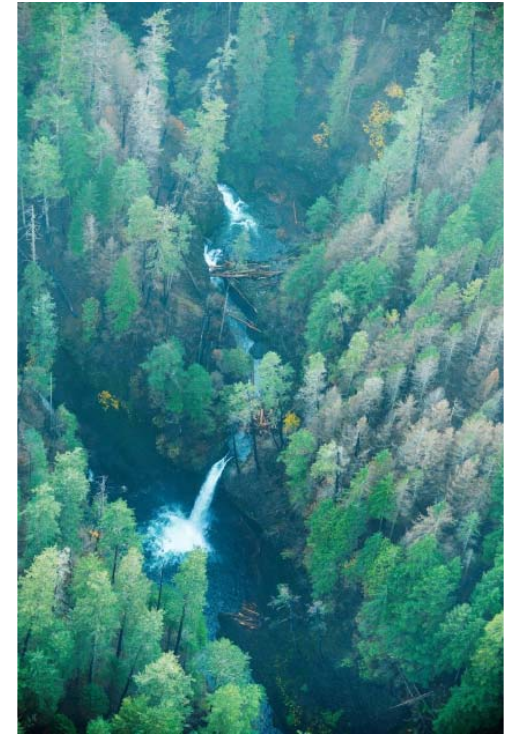
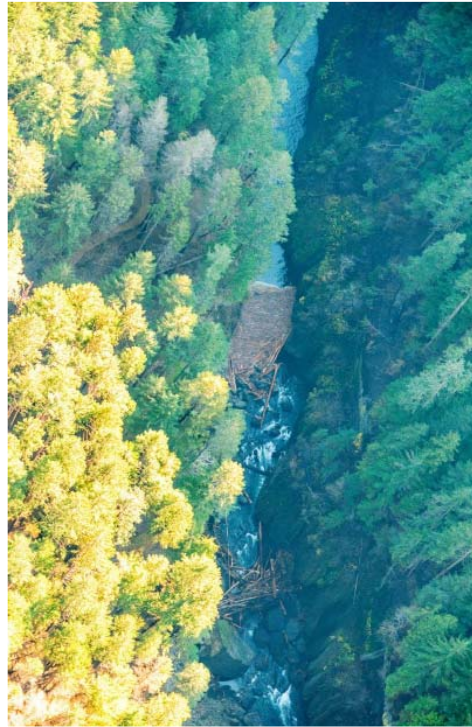
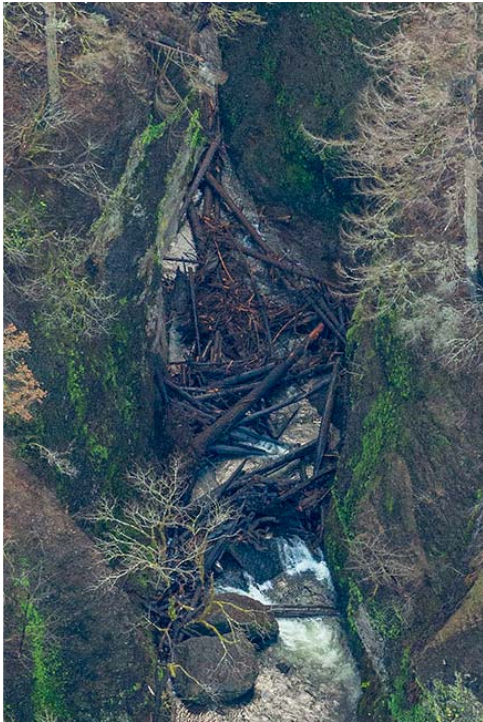
## Trail Stats in the Scenic Area

|                                      |    |
|--------------------------------------|----|
| Miles of trails in burned area       | 90 |
| Miles of trail assessments completed | 53 |
| Miles of tread work completed        | 12 |
| Miles of log out completed           | 26 |





# Large Wood Accumulation





# Questions ?



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