



# Wildfire and Water Quality

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Water Quality Committee

Western States Water Council  
Summer Meeting 2021

# Potential Water Quality Impacts from Wildfire

- Burning
  - Ash and other Vegetation Combustion Byproducts
  - Anthropogenic “Stuff” (Toxics)
    - Vehicles
    - Structures
    - Infrastructure
- Fire Fighting
  - Fire Lines
  - Suppression Water (source and delivery)
  - Retardant



# Potential Water Quality Impacts from Wildfire

- Post-Fire
  - Landslides and Debris Flows
  - Runoff and Erosion
    - Increased Storm Flows
    - Soil/Sediment
    - Woody Debris
    - Road Fill Failures
    - Changed Chemistry: Retardant, Nutrients, Metals, Combustion Byproducts
  - Release of Anthropogenic Toxics

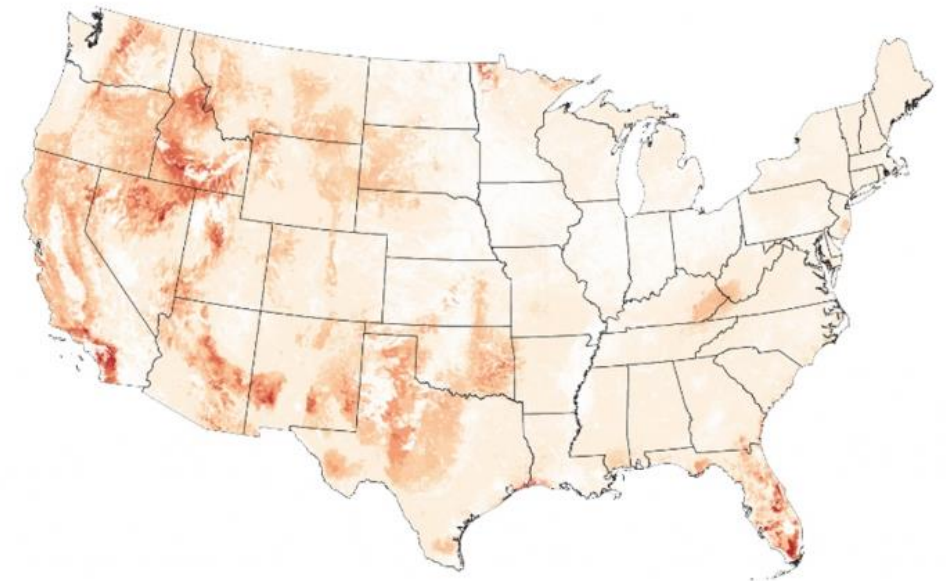


# Addressing Potential Water Quality Impacts

- Pre-Fire
  - Focused Fuels Treatments in Source Watersheds
    - Reduce Fire Risk
    - Reduce Fire Severity
  - Reinforce Water Supply Collection and Transport Infrastructure

## Made to Burn

Some American ecosystems are adapted to burn frequently



Adapted from modeling findings by Mark Finney and Karen Short of the Missoula Fire Sciences Lab and U.S. Forest Service.

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# Addressing Potential Water Quality Impacts

- During Emergency Response
  - Fire Fighting
    - Identifying source waters and infrastructure for protection
    - Avoiding water bodies and intakes during retardant drops
  - Immediate Post Fire
    - Stabilizing slopes
    - Rehabilitating emergency fire lines



# Addressing Potential Water Quality Impacts

- Post Fire/Post Emergency
  - Reconstruct Needed Infrastructure
  - Address Long-Term Water Quality (usually primarily sediment)
  - Rehabilitate and Restore Watersheds



# Some Programs Available to Address Impacts

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- Pre-Fire
  - USFS: Shared Stewardship, Joint Chiefs Partnership, Collaborative Forest Landscape Restoration, Watershed Investment Partnerships
  - EPA: Section 319 Non-Point Source Funds, State Revolving Funds (SRFs)
  - NRCS: Joint Chiefs Partnership, Environmental Quality Incentives Program Forest Management Plans
- Fire - National Cohesive Wildland Fire Management Strategy
  - National Interagency Fire Center
- Post Fire
  - Emergency: USFS/BLM Burned Area Emergency Response (BAER), NRCS Emergency Watershed Protection Program, FEMA
  - Rehab and Recovery: BLM Burned Area Rehabilitation, EPA SRFs



# Federal Agency Research and Information

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- Joint Fire Science Program: Fuel Treatment Effects and Effectiveness
- EPA: Burned Area Erosion Effects on Water Quality
- NOAA: Improving Detailed Severe Weather Prediction
- NASA: Identifying Wildfires and Tracking Impacts
- USFS: Burn Severity Assessment, Post-Fire Treatment Design and Effectiveness, Post-Fire Water Quality
- USGS: Post-Fire Slope Stability, How Wildfires Change Watersheds, Improve Prediction of Wildfire Impacts on Water Availability

