Wildfire and Water Quality

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
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

• **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

• 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