

Erosion Threat Assessment/Reduction Team (ETART)—Oregon 2020 Wildfires

Summary of Water Quality/Drinking Water Supply Resource Report

The team included Oregon Department of Environmental Quality, US Environmental Protection Agency, US Forest Service, National Weather Service, and the Federal Emergency Management Agency with significant assistance from Oregon Health Authority.

We used a combination of watershed condition and treatment engineering factors to rank the risk to public water systems affected by the western Oregon fires in 2020.

Fires result in changes to water quality and quantity that are likely to cause negative effects to drinking water sources and treatment capacity. Values at risk include life and safety, property and natural resources such as soil and water.

Techniques/Information included in the evaluation:

- Geographic Information System analysis
- Sediment and organic matter modeling to estimate post-fire increases
- Information from soils, hydrology, and geology teams
- OHA data and assessments of affected systems
- Updated Source Water Assessments from DEQ and OHA
- Published scientific information
- Water use data from Oregon Water Resources Department

Public Water System Assessment and Ranking:

- Watershed Vulnerability (Table A.2)
 - Interaction of burn severity and slope gradient
 - Debris flow hazard frequency within the source area (USGS estimates)
 - Percent of drinking water source area within the fire perimeter
 - Land ownership-related resource protection regulations
- Backup source availability
- Organic carbon and disinfection by-product risk
 - Modeled increases in organic carbon and sediment
 - Disinfection by-product history
- Treatment technology and capacity
- Staff certification and training
- Population (minor factor)

		Slope Category		
		>60%	30-60%	<30%
Burn Severity	H	H	H	M
	M	H	M	M
	L	M	L	L

Top threats to drinking water sources (see Critical Values table, Table A.1):

- Sediment—surface erosion and mass wasting
 - Interferes with drinking water treatment processes (fouling), shelters pathogens, fills water intake pools
- Natural organic matter—organic carbon and nutrients
 - Fouls treatment systems, precursor to disinfection by-products, contributes to harmful algal blooms, taste and odor issues
- Flow changes—floods, bed and bank erosion, possible summer flow changes
 - Threatens infrastructure, mobilizes sediment, possibly less shallow aquifer recharge

Examples of public water systems with high risk (complete rankings in Tables B.1-B.5):

- Detroit Water System, Gates, Lyons-Mehama Water District, Stayton (Beachie Creek, Lionshead)
- Panther Creek Water District (Echo Mountain Complex)
- City of Estacada (Riverside)
- City of Molalla (Beachie Creek, Riverside)
- Glide Water Association, City of Roseburg (Archie Creek)

In burned areas, distribution systems may have obvious or latent damage from heat. This damage can interfere with distribution or leach volatile organic compounds (from polyvinyl chloride and polyethylene pipes into drinking water. Damaged pipes may suddenly rupture during heavy use, such as fire suppression, and fire hydrant operation should be tested.

Recommendations to address watershed management, monitoring, risks from toxic substances, and treatment system operation include (pages 18-23):

- Identify locations where erosion treatments could be beneficial and implement remediation.
- Identify locations at high risk with further disturbance and minimize additional disturbance.
- Stabilize roads and drainage systems.
- Use opportunities for stream enhancement actions, such as woody debris recruitment and placement.
- Identify and remediate toxic substance threats from burned structures, etc. and heat damage or other fire-related impacts to distribution and treatment systems.
- Need for on-the-ground remediation and water quality monitoring/early warning of trouble for water systems.
- Need to ensure technical and financial assistance to public water systems and private well or surface intake owners in the burn area, including ensuring that water system staff are not overworked.
- Safety measures and resources for private well and private surface water intake users (Appendix C).
- Testing laboratories and other resources for public water systems (Appendix C).