

Wildfire and Drinking Water

Protecting surface water quality after 2020 wildfires

Drinking water systems using surface water intakes can experience effects long after the fire is out. The extent of longer term impacts (up to 10 years or more post-fire) will depend on burn severity, riparian and watershed conditions, and land management practices. Increased sediment and debris can directly impact infrastructure, and increased sedimentation to reservoirs can cause loss of storage capacity. Water systems served by surface water with significant burn areas in their watersheds may experience both water quantity and water quality changes. These changes include the magnitude, frequency and timing of extreme water discharge and sediment from increased surface runoff and eroded soils from the burned area. In addition, risk of landslides, flooding, and debris flows is increased.

These conditions may increase suspended sediment and turbidity, pH, organic carbon, manganese, iron, and nutrients like nitrogen and phosphorus, all of which can create challenges for treatment and possibly lead to harmful algal blooms that produce toxins. The timing of seasonal changes to water quality and the hydrological system may also be altered in a burned area until vegetation is re-established. As vegetation regrows, there may be a decrease in stream flow due to increased evaporation and increased plant water use.

DEQ and OHA [Source Water Assessment](#) reports can provide the water system and community information on the watershed or recharge area that supplies the well, spring or intake (the “drinking water source area”) and identifies potential risks and susceptible areas within the source area. Information in the assessment can be used in conjunction with burn severity maps and post-fire assessments to identify areas for stabilization and restoration.

Post-fire assessments

If a fire burns on federal lands, the federal agencies will generally identify and assign a team of scientists to complete a Burned Area Emergency Response evaluation. This is completed to ascertain specific threats to human life, property, cultural resources or environmental and habitat values. The assessment identifies short-term mitigation actions for federal lands to stabilize burned areas following wildfire. Information on the evaluation program can be found at the [U.S. Forest Service website](#). Reports specific to individual fires may be found on the [federal government’s Incident Information System \(InciWeb\)](#).

Fires that burn on nonfederal land, including private, state, and local jurisdictions, will be assessed by an Erosion Threat Assessment/Reduction Team of local, state and federal experts. The objective of the assessment is similar to that of the burned area team, including identifying risks to values in/on the burned landscape. The erosion team may also coordinate local efforts in long-term post-fire watershed restoration and recovery of the natural resources and agricultural infrastructure.



USEPA
Impacts from the Alameda Fire near Bear Creek in Jackson County.



State of Oregon
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Water Quality Program- Watershed Management

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www.oregon.gov/DEQ
DEQ is a leader in restoring, maintaining and enhancing the quality of Oregon’s air, land and water.



Oregon Health Authority Drinking Water Services

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Mitigation and restoration tools

Post-fire assessments can be used to identify and prioritize recovery and restoration activities as well as allow local entities and stakeholders to focus efforts on values-at-risk most affected by post-fire watershed conditions. Mitigation and restoration measures may include the following:

- Identify steep slopes, damaged roads and culverts, severely burned riparian areas, and other sites vulnerable to post-fire erosion.
- Perform short-term erosion control on fire lines and other disturbed soils that could contribute sediment to source waters. This can include mulching, straw bales and wattles, seeding with native plants and grasses, building water bars on roads and trails, unblocking culverts, emergency road and culvert repairs, and removal of damaged and destroyed vehicles and other trash.
- Avoid creating further disturbance whenever possible. Keep vehicles on road surfaces. Restrict public access for safety and disturbance prevention. Only remove trees and downed logs that present a hazard to public safety or infrastructure—trees and logs add stability to disturbed soils, filter mobilized sediment, and provide habitat structures that aid revegetation and reforestation.
- During planting, select a range of native grasses, herbs, shrubs, and trees. Avoid planting high densities of shrubs and trees. Leave legacies (surviving trees and shrubs, standing and downed dead wood, sprouting plants) intact whenever possible—these are allies in erosion prevention, and removal can increase erosion risk. Consider that only areas of severe burn will have a total vegetation loss. Vegetation in mosaic or lightly burned areas will that survive the fire and re-sprout.
- Maintain roads and stream crossings frequently during the first two or three post-fire rainy seasons to remove debris from crossings and catch road prism failures before they happen.
- Prioritize where restoration is needed the most; implement stormwater best management practices to reduce nutrient impacts on waterbodies and waterways; stabilize streambanks and lake shorelines; when feasible, reseed or replant.
- Use satellite imagery to detect and track cyanobacteria or harmful algal blooms.
- Continue to monitor raw water quality especially for turbidity, dissolved oxygen, pH, Total Organic Carbon, Dissolved Organic Carbon, and suspended solids.
- Tap into technical assistance or grants from Soil and Water Conservation District for agricultural lands; Oregon State University Extension for agricultural and family (private nonindustrial) forestlands; watershed councils; Natural Resources Conservation Service grants; grants from OHA; and Drinking Water Providers Partnership for lands within drinking water source areas.

What's next?

Additional work is needed in many drinking water source areas to promote and support collaboration among drinking water providers, landowners, and restoration/conservation practitioners to achieve stabilization and restoration goals. The [Drinking Water Protection Program at DEQ](#) can provide technical assistance to identify local partners and landowners, address watershed evaluation, prioritize areas for mitigation and leverage funding for restoration. Public water systems should be at the table to discuss water quality challenges and risk reduction strategies on forest lands, wildfire risks and preparedness, and funding opportunities.

Partners and Resources for Restoration:

Oregon's [Funds and Resources for Drinking Water Source Protection](#) provides descriptions and contact information for partners, resources and funds available to public water systems and others to assist with drinking water infrastructure and source protection projects including watershed stabilization and restoration. The following partners, programs and resources may be especially relevant:



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Water Quality

- [2020 Oregon Wildfire Response and Recovery](#)
- Oregon Health Authority/Infrastructure Finance Authority - [Drinking Water Source Protection Fund](#) including information on Emergency Grants for Public Water Systems
- [Drinking Water Providers Partnership](#)
- County [Soil and Water Conservation District](#)
- Local [Watershed Council](#)
- [Clean Water State Revolving Fund \(CW SRF\)](#) including information on Nonpoint Source Loans and Local Community Loans
- Oregon Department of Forestry (ODF) - [Help after a fire](#)
- Oregon Department of Agriculture (ODA) - [Drought and Disaster Resources](#), [Wildfire Resources](#)
- Oregon State University Extension - [Fire in Forests, Woodlands and Rangelands](#)
- Oregon Department of Geology and Mineral Industries – [Statewide Geohazards Viewer](#)
- [Oregon Watershed Enhancement Board \(OWEB\)](#)
- FEMA – see resources at [2020 Oregon Wildfire Response and Recovery](#)
- [Oregon DEQ Nonpoint Source Implementation 319 Grants](#)
- [Rural Community Assistance Corporation \(RCAC\)](#)
- [Oregon Association of Water Utilities \(OAWU\)](#)
- U.S. Environmental Protection Agency (EPA) [Catalog of Federal Funding Sources for Watershed Protection](#)
- U.S. Geological Society (USGS) – Cascade Fire monitoring group
- Natural Resource Conservation Service (NRCS) and US Forest Service (USFS) - Federal funding is available for short-term wildfire recovery activities.
 - The [Emergency Watershed Program \(EWP\)](#), within the U.S. Department of Agriculture (USDA) and administered by NRCS, is an emergency recovery program. It focuses on relieving imminent hazards to life and property in the aftermath of natural disasters, including wildfires ([USDA NRCS](#)). The EWP provides assistance to both public and private landowners who are able to provide matching funds. Also under the USDA, the [USFS Burned Area Emergency Response - BAER](#) program can provide funding for emergency post-wildfire response activities on National Forests and Grasslands.
 - The US Department of Interior’s [Burned Area Rehabilitation \(BAR\) program](#) provides assistance for post-fire flood and landslide prevention on DOI federal lands. Funds are available for activities conducted within one year of containment of the fire and for monitoring activities for up to three years after containment. DOI’s BAR program also carries out non-emergency restoration on fire damaged lands and provides assistance with [managing fuels](#).

Alternative formats

DEQ can provide documents in an alternate format or in a language other than English upon request. Call DEQ at 800-452-4011 or email deqinfo@deq.state.or.us.



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