



# Emergency Drinking Water Sources

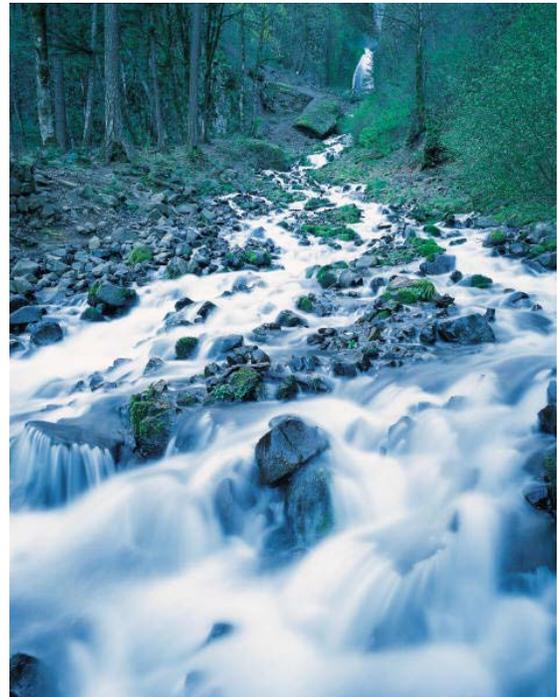
## Requirements for using emergency sources safely

Emergency sources are wells, springs, or other water sources drinking water systems use when their primary and seasonal sources are insufficient to meet consumer demands. Emergency sources can be a viable means of resolving a water supply shortage. The Department of Health Office of Drinking Water only allows water systems to use emergency water sources when they can show the sources are safe from a public health standpoint.

Water systems use emergency sources only during extreme, mostly unpredictable circumstances. A water system operator who anticipates using an emergency source must ensure, in advance, that the water is safe and the source will provide reliable production levels. In addition, the water system must issue a health advisory to its customers before it starts using an emergency source, unless it operates the source under conditions we specifically approve.

### State rule defines emergency water sources as:

- Approved for emergency purposes only.
- Not used for routine or seasonal water demands.
- Physically disconnected.
- Identified in the water system's emergency response plan.



### Monitoring is required

Water systems must test for coliform bacteria and nitrates before bringing an emergency source on line. We also highly recommend testing for inorganic chemicals, volatile organic chemicals, and synthetic organic chemicals.

The water system must apply appropriate treatment if tests indicate microbiological contaminants or nitrates exceed drinking water standards. We may determine the need for synthetic organic chemical tests on a case-by-case basis.

**Nitrate** – The water system must take special precautions, such as providing bottled water for at-risk individuals and blending if levels exceed the maximum contaminant level of 10 mg/L.

**Inorganic or organic chemicals** – The water system may still use the source when levels are elevated if we conclude there will be no significant health impacts over the expected duration of the emergency.

For precautions and advice, call our nearest regional office (see page 4).



## Emergency sources in order of preference

1. **The best** is water from an approved source, including an intertie with a neighboring water system.
2. **Next** are unapproved groundwater wells with satisfactory coliform and nitrate test results.
3. **Next** is water from wells or springs with unsatisfactory coliform and nitrate results. If the nitrate level exceeds the standard, the system must issue a health advisory and take special precautions.
4. **Least preferred** is unfiltered surface water and groundwater under the influence of surface water (GWI). Systems may use these sources only as a last resort. They must issue a health advisory that will remain in effect until water is adequately treated.



**Groundwater wells** – The water system must monitor weekly for coliform unless it can document that the source is safe for continued use. If coliform is present, the water system must issue a health advisory and provide continuous disinfection.

**Potential GWI and springs** – The water system must monitor weekly for coliform. If coliform is present, the water system must issue a health advisory and provide continuous disinfection.

**Unfiltered surface water and GWI** – These sources are at higher risk for contamination. The water system must issue a health advisory to remain in effect until the water system makes provisions for effective disinfection against viruses, bacteria and protozoa (3-log for *Giardia*, 2-log for *Cryptosporidium*).



## Before using an emergency source

**The water system should notify customers of water quality issues or changes in service that may occur while using the emergency source.** Even if the water is safe, changes in taste, color, or odor may concern consumers. An emergency plan can include the best ways to tell customers what to expect, and what the water system expects of them, before a water system has to use an emergency source.

**The water system should also review source facilities to find out what water quality issues it may need to address.** Even if there are no health-related concerns, aesthetic problems could occur if there are high levels of iron, lead or manganese; rust-encrusted casings, pumps and other rarely used equipment; or elevated turbidity.

### Preparing emergency source pumps, valves, gauges or other equipment

**Flush** the source to waste, and not into the distribution system (about three casing volumes for a well). Water quality changes can occur when activating an emergency source due to flow reversals, different velocity gradients, suspension of accreted sediments, or increased corrosivity. You may need to flush the distribution system before initiating service from the emergency source, and possibly periodically throughout the time of the emergency.

**Disinfect** the source (use-accepted procedures such as those in AWWA Standard C654), then flush to waste again, to ensure chlorine residual is zero before collecting coliform and nitrate samples.

**Exercise** all valves and operational controls to ensure they function properly.

**Ensure** control systems do not waste water through reservoir overflows. This is especially important if the emergency source will operate manually.

**Assess** the area around the source for contaminants that may be present during the time the system expects to use the source. Protect the source from all contaminating influences (chemicals, oil spillage, livestock and so on) to the extent possible.

**Ask the Department of Ecology** if you need to get “emergency water rights” before using an emergency source. Ecology’s staff directory is online at <http://www.ecy.wa.gov/org.html>



## Health Implications

A water system must use care when deciding whether to use an emergency source. It must test the water to ensure it meets drinking water health standards and treat it, as needed, to ensure it is safe.

### The main health concerns are:

**Microbiological contaminants** – Bacteria, viruses, and protozoa can quickly cause severe gastrointestinal illness, diarrhea, and dehydration. Surface water sources, groundwater directly affected by surface water, and shallow hand-dug wells are most vulnerable to microbial contamination. Activities near the wellhead can also contaminate groundwater (wells and some springs). Shallow, poorly constructed wells, or those recharged through porous rock formations, are especially at risk.

**Nitrates** – Special precautions are needed to protect unborn babies and children less than one year old.

**Interties with other utilities using unapproved surface or ground water sources** – This could occur if a water system uses an emergency intertie with an irrigation district, or any type of water provider that does not ordinarily provide drinking water.

**Primary inorganic contaminants** – Health effects depend on the concentration of the contaminant. They may be immediate or occur only after long-term exposure. Test all emergency sources and take precautions if the concentration exceeds levels that may affect health during the period the system plans to use the source.



Potential health effects from exposure to elevated levels of organic, and some inorganic, contaminants are less acute than microbiological contaminants. Volatile organic compounds and certain synthetic organic compounds could affect health when consumed over long periods – usually many years. They are of less concern in source water used for short duration under emergency conditions.



## Health Advisories

If a water system must bring an emergency source online and the safety of the water is in question, it must issue a health advisory.

A health advisory tells customers how to stay healthy when their drinking water could be unsafe. It is issued when a water system, or state or local health officials, determines health risks are sufficient to advise customers to take action. For example, if a water system brings an emergency source online without all required sampling, the advisory would inform customers the water is not, or may not be safe to drink; list ways to protect health; and let them know the water system will notify them when it has water quality results.

Health advisories usually take the form of a drinking water warning, boil-water notice, or bottled-water order. We work closely with water systems to help determine when they need to issue advisories. In any event, a health advisory must be well thought out and provide very clear messages.

We have tools to help water systems prepare to issue a health advisory. Learning about health advisories, and how to issue one before you need it, will make the process easier. Fact sheets, brochures, and templates are online at [http://www.doh.wa.gov/ehp/dw/our\\_main\\_pages/dw/flood.htm](http://www.doh.wa.gov/ehp/dw/our_main_pages/dw/flood.htm)



## Before you activate an emergency source

**Consult with our nearest regional office** about testing requirements, source construction issues, potential sources of microbiological contaminants in the wellhead area or watershed, and the pumping and pump control system. You may have to improve the source physically before using it.

**Flush and disinfect wells.** If an emergency water source is a well, plan to flush and disinfect it before using it.

### Sample water sources and treat them accordingly.

Collect at least two coliform samples and one nitrate sample from each emergency source before bringing it on line. If coliform is present, or nitrate exceeds the standard, you must apply appropriate treatment. For example, if you detect coliform in a well, you must provide continuous chlorination with sufficient contact time before the first point of service. Ask our regional office about disinfection treatment.

### Office of Drinking Water's Regional Offices

After-hours Hotline (877) 481-4901

Eastern - Spokane (509) 329-2100

Northwest - Kent (253) 395-6750

Southwest - Tumwater (360) 236-3030

**Warn your customers.** If you plan to use an unfiltered surface water source, you must issue a health advisory to all customers before and during the period the source is in service. You must work closely with our regional office if your emergency source is unfiltered surface water or inadequately treated ground water under the direct influence of surface water.

**Continue coliform sampling.** Once an emergency source is on line, expect to sample for coliform at least once a week, unless our regional office specifies an alternate monitoring schedule.

**Continue chemical sampling.** If the emergency source operates longer than two months, expect to sample for complete inorganic and organic chemicals as prescribed by our regional office.

**Finally,** if you bring an emergency source on line without advance planning or water quality testing, you must immediately issue a health advisory to remain in effect until the water quality is established.



## Keeping your emergency source ready for use

Water systems use emergency sources only during emergencies. Sometimes water systems have problems getting them into operational condition when they need them. Most problems occur when water quality changes or operational components deteriorate during the vast majority of time, when systems are not using them.

To ensure emergency sources are ready to use, water systems should have a maintenance strategy, make needed repairs in a timely manner and keep good records of inspections. The strategy should include:

**Testing** – To protect water quality, periodically test the source water for coliform and nitrates. Quarterly testing is usually appropriate. A water system may need more frequent testing, possibly monthly, if it expects to use the source more often during a particular time of the year, or a drought. A good practice is to assess the source and develop a sampling plan to fit the water system's needs.

**Inspecting** – To keep components in good working order, inspect physical facilities and operational controls at least quarterly. Check electrical connections and components for corrosion; inspect the sanitary seal, vents and other hardware; and clear undesirable items away from the source.

**Operating** – To ensure the source is ready to produce a water sufficient supply, periodically operate the pump(s). It is also important to check and exercise all valves and controls.