



Periodic droughts or extended periods spanning more than one season with below normal rainfall occur in Ohio. When seasonal or longer term drought conditions occur, private water systems such as water wells, spring, ponds, rainwater cisterns and hauled water storage tanks will likely be impacted. This fact sheet discusses basic steps each property owner should follow to protect their private water system. Replacing or altering the private water system may be necessary to ensure a safe drinking water supply. It is important to note that any replacement, addition, or alteration to a private water system requires a permit from the local health district. A permit ensures that the change to the system will be inspected and tested for safety and proper construction.

Water Wells

Water wells are drilled into geologic formations or aquifers of varying depths that contain ground water. Ground water is replenished by the slow leakage of rainfall into the subsurface during the winter and spring months. When rainfall levels persist below normal over the recharge season, ground water levels decline. When ground water levels drop below the pump level in a well, or below the bottom of the well, the water supply from the well ceases. Alternate water supply options to consider when wells yields are reduced or the well become dry:

1. **Drill a new well** or deepen an existing well- This option may be an alternative if there are deeper aquifers that can yield enough water of good quality, and if the construction of the existing well can be altered to allow the well to be deepened. Wells less than 4 inches in diameter are often difficult to deepen.
2. **Install a hauled water storage tank** as a temporary or permanent emergency auxiliary water supply for the private water system. Hauled water must be purchased from a registered water hauler.
3. **Install a rainwater cistern** as a permanent additional source of water supply. Rainwater cisterns do require additional treatment equipment to filter and disinfect the water.

Do not fill a well with hauled water from any source. This is a complete waste of water and money because the well formation will take up the water and does nothing to improve the yield of the well and may cause contamination.

Private Water Systems Ponds

Ponds may experience multiple problems during a drought period that includes lower water levels and a decrease in quality due to the formation of harmful algal blooms

(<http://www.odh.ohio.gov/~media/ODH/ASSETS/Files/eh/HAS/HABsWaterTreatmentforPonds.ashx>).

Ponds usually required a larger watershed for initial filling. Once a pond is filled and the evaporation rates equal the average normal rainfall rates, a pond to watershed ratio of 1 acre area to 1 acre-foot of pond storage (approximately 325,000 gallons) is usually sufficient to supply a household. However, many pond watersheds in Ohio are not sufficient in size to keep a pond filled for extended drought periods. When evaporation rates exceed the rainfall over a period of time, the pond will lose water by leaking and evaporation faster than it can recover. Alternate water supply options to consider when ponds levels are extremely low include:

1. **Construct a new well to recharge a pond and/or supply the home.** This may be a reasonable option in areas where ground water yields are adequate, but ground water quality is poor due to hardness or hydrogen sulfide. The aeration of the ground water by pumping into the pond will naturally treat or dilute these constituents.
2. **Install a hauled water storage tank** as a permanent or temporary emergency auxiliary water supply for the private water system. Hauled water must be purchased from a registered water hauler.

3. **Install a rainwater cistern as a permanent additional source of water supply.** The treatment used for pond water systems may also be used to safely treat the rainwater in the cistern.

Springs

Springs are shallow ground water that discharges naturally to the surface of the ground. Flows from springs can seasonally diminish. Flow from a spring may stop during a drought period because the ground water level declines in the aquifer that is discharging water to the spring. Alternate water supply options to consider when spring flows have slowed or stopped include:

1. **Install a hauled water storage tank** as a permanent or temporary emergency axillary water supply for the private water system.
2. **Drill a new well** - - This option may be an alternative if there are aquifers present that can yield enough water of good quality. A properly constructed well may require treatment if water hardness or other naturally occurring minerals are present.
3. **Install a rainwater cistern as a permanent additional source of water supply.** Disinfection and filtration equipment used for spring water systems may also be used to safely treat the rainwater in a cistern.

Hauled Water Storage Tanks and Rainwater Cisterns

Rainwater cisterns and hauled water storage tanks are approved concrete or plastic tanks installed as the primary private water system in many areas of Ohio where ground water yields are low or in areas of poor ground water quality.

Rainwater cisterns are a minimum of 2500 gallons in size and receive water from rainfall off of the roof, or can receive water hauled from registered water hauler from an approved public water source. Rainwater cisterns must have continuous disinfection and cyst filtration to treat the roof water. Rainwater cisterns will have to be supplemented with hauled water during times of drought.

Hauled water storage tanks are 1000 gallons or more in size. Permanent hauled water storage tanks that are used as private water systems and receive chlorinated water exclusively from an approved public water source are not required to install continuous disinfection equipment to treat the water.

Temporary Emergency Hauled Water Storage Tank Installations

Temporary hauled water storage tanks can be installed under extreme emergencies (drought or flood conditions). Temporary plastic water storage tanks that meet approved materials and specifications may be installed above grade and at locations on a property that may not meet all of the requirements for a permanent hauled water storage tank installed as a private water system. Emergency temporary tanks may not become permanent private water systems and must be removed when the emergency is over. These emergency temporary hauled water storage tanks require a permit from local health district with specified time restrictions for operation and dismantling.

Water Haulers are registered annually by the local health district, and the trucks and tanks are inspected each year to ensure the prevention of contaminating hauled water supplies. Water haulers are required to haul water from approved public water systems and must maintain records of the water sources and deliveries. Local health districts maintain a list of water haulers registered in their jurisdiction. Contact information for local health districts can be obtained at

<http://www.odh.ohio.gov/localhealthdistricts/lhddirectory.aspx>.

Where can I get more information?

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