The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES

Thomas S. Burack, Commissioner

2016 Drought Guidance for Homeowners on Private Wells

Abnormally dry to extreme drought conditions have persisted through the majority of the summer, leading to the failing of some private wells. To prevent further water shortages, the New Hampshire Department of Environmental Services (NHDES) is advising water be reserved for only indoor uses and that wise indoor use be practiced per the actions below. Also, be aware that municipalities have the authority to restrict residential lawn watering for public and private well users to protect the resource for the whole.

Current drought information may be found at the NH Drought Management Program webpage: http://des.nh.gov/organization/divisions/water/dam/drought/index.htm. To determine the severity of drought in your town, under "Hot Topics" click on "U.S. Drought Monitor and U.S. Drought Outlook" and zoom into the "U.S. Drought Monitor".

CONSERVE WATER

To prevent your well from failing or if your well cannot keep up with demand, below are personal actions you can take that may help mitigate the problem until precipitation replenishes your well:

- Spread out the timing of water use so that multiple water uses do not co-occur and so the well has time to replenish.
- Cut-out non-essential uses such as outdoor water use for lawn watering and car washing. This can reduce water use by 25% to 50%.
- Conserve water by cutting back on shower times, only doing full loads of laundry when necessary, and turning off the faucet while brushing teeth, doing dishes, and washing hands.
- Top-loading washing machines built before 2003 and toilets older than 1994 are known to be the largest water-wasting culprits in the home. Showerheads older than 1994 can also waste a great deal of water, as can older bathroom sink aerators. For the greatest savings and guaranteed performance, replace old washing machines with ENERGY STAR® certified machines and replace old water fixtures with EPA WaterSense certified fixtures. For more details, see the water efficiency fact sheets at the NHDES Water Conservation Program webpage: http://des.nh.gov/organization/divisions/water/dwgb/water_conservation/index.htm

SYMPTOMS OF WELL FAILURE

Typically, dug wells, shallow bedrock wells, wells located near topographic high points and wells constructed in areas where bedrock is close to the ground surface are more susceptible to

failing when drought conditions are present. The typical homeowner does not have a means of determining a well's water level, although symptoms of well failure may be obvious. Symptoms may include:

- No water.
- Sudden drops in water pressure or pressure surges.
- Air bubbles coming out of non-aerated faucets.
- Cloudy or heavily silted water.

The cause of well failure may be a shortage of water or other problems associated with the well casing, valves, waterlines, pumps, or pressure tanks. It is important to work with a licensed pump installer and/or well driller to diagnose the problem and determine the appropriate corrective action to take.

If you are experiencing any of the above issues in your water system, address them immediately as completing the work in the winter may not be possible and/or could be more costly.

PRIVATE WELL INFORMATION

Maintain records regarding well construction and pump work, as well as records showing the exact location of the well and/or maintain a well location marker that can be identified during all seasons.

Since 1984, well drillers have been required to fill out and submit a well completion report for each well they construct. Records for wells may be found by clicking on the OneStop button at www.des.nh.gov and querying water well information or by contacting the NHDES Drinking Water and Groundwater Bureau. Records of wells constructed prior to 1984 may be available from the original well driller or pump contractors that previously provided maintenance on the well pump, who may know the depth of the well and pump. This information should be used by the licensed well driller or pump installer you work with.

WELL DEFINITIONS

Dug wells are commonly 3 or 4 foot diameter wells constructed by excavation and are usually not much deeper than 15 feet below land surface. Older dug wells are lined with fieldstone, and more recent construction utilizes inter-locking concrete tile. These wells are generally easy to identify in your yard because they are relatively large stone or concrete objects protruding from the ground and many have well houses built over them for protection or ornamental purposes.

Drilled bedrock wells are almost always 6 inch diameter wells drilled into solid bedrock and cased with steel pipe through the unconsolidated earth deposits into the upper surface of the bedrock. The remainder of the well is a 6 inch open hole drilled in bedrock. These wells range in depth from less than 100 feet to more than 1,000 feet. They should be easily identified as that odd looking 6 inch steel pipe sticking out of the ground.

WELL IMPROVEMENT OPTIONS

A licensed well driller or licensed pump installer will be able to assist you with determining if your water supply is diminishing, troubleshooting other well issues, and recommending actions to help remedy the problem. To search for a licensed well water contractor, go to: http://www2.des.state.nh.us/OneStop/Water_Well_Contractors_Query.aspx

In New Hampshire, most residents on private wells have a dug well or a bedrock well. If your well is failing due to lack of supply, below are options which may help to mitigate the issue and factors you should discuss with a licensed well driller or licensed pump installer.

- Lowering the pump or pump intake into the bedrock or dug well to access more usable storage. As lowering the pump means the pump will have to work harder, a larger pump may be necessary. There are also potential water quality issues that could occur as a result of lowering the pump.

- Increase the atmospheric tank size to provide additional water storage. For a well with a slow recovery rate, the additional storage will reduce demands on the well during high water use periods and store water extracted from the well during lower use periods.

- Deepen the existing well to increase the yield of the well and/or to lower the pump to increase usable storage in the borehole. The yield of a bedrock well will only increase if new water bearing fractures are encountered. A dug well can only be deepened if it is not underlain by bedrock. Driving a steel metal rod into the bottom of a dug well is a common test to determine if bedrock is present.

- Construct a new well to be used in tandem with or replace an existing water source. It is advisable to check the well database on OneStop with respect to the depths and yields of other wells in the area, to determine if there is good chance of a new well supplying the yield needed.

- Purchase water tanks which may be filled by a bulk water hauler. A list of bulk water haulers may be found at http://des.nh.gov/organization/divisions/water/dwgb/wseps/documents/bulk-haulers-providers.pdf.

- Hydro-fracture the existing bedrock well to increase yield by flushing out and opening fractures in surrounding rock to increase water flow. Factors to discuss with a licensed well driller/pump installer include:

    - If the well was previously developed by hydro-fracturing and the yield has again diminished, a second attempt to hydro-fracture may be initially successful, but it will likely not be sustained over time.

- It is recommended that shallow bedrock wells be deepened to 400 or 500 feet to obtain additional supply prior to considering hydro-fracturing. This provides adequate surface area in the well borehole to develop deeper and more sustainable water-bearing fractures, providing a good chance of increasing yield.

- A completely dry hole is not a great candidate for hydro-fracturing because the well must have some water-bearing fractures to start with.

SAFETY & SANITATION

All wells should be disinfected after completing any of the above work. See the fact sheet WD-DWGB-4-11 Disinfecting a Private Well at: http://des.nh.gov/organization/commissioner/pip/factsheets/dwgb/documents/dwgb-4-11.pdf.

Do not share water between homes by interconnecting two homes' plumbing systems. This is a contamination risk. Backflows may spread bacteria from one home to the other home.

If using water from a neighbor's home, do not use water from a hose for drinking or cooking, as the hose may have bacteria in it, as well as other contaminants. Hose water may be used for bathing, washing clothes, cleaning, and flushing toilet.

Do not fill wells with water delivery by a tanker truck. This is a violation of Underground Injection Control regulations, is usually ineffective in providing a sustained water supply, and could damage the well and contaminate groundwater not only in the well being filled but also other nearby wells.

You do not need running water to flush a toilet. Use a hose or a bucket of water and dump approximately 1 gallon of water into the toilet bowl all at once and gravity will flush the toilet.

FINANCING

There is limited financial assistance available explicitly to assist with mitigating a problem with a private water system. Households should identify savings or other financing options for addressing failed water supply wells. Below is one financial assistance option for very low income households:

- The US Department of Agriculture (USDA) Rural Development Home Repair Loan/Grant Application Section 504 provides private well financial assistance to people who live in rural communities (population less than 20,000) and make less than fifty percent of the median household income in the area. In some instances, grants are available to people that are over the age of sixty-two. For more information go to: http://des.nh.gov/organization/divisions/water/dam/drought/documents/wellfinancialassist.pdf

The Concord Office of the USDA can be contacted by telephone at (603) 223-6035 for more information regarding the availability of funds to assist with water supply shortages in a privately owned water supply.

FOR MORE INFORMATION

For additional information, please contact the Drinking Water and Groundwater Bureau at (603) 271-2513 or dwgbinfo@des.nh.gov or visit www.des.nh.gov, click on the "A-Z List", then click "Drinking Water and Groundwater Bureau". All of the Bureau's fact sheets are on-line at http://des.nh.gov/organization/-commissioner/pip/factsheets/dwgb/index.htm.