

## Living with Well Water

According to the U.S. Census, about 15% of households in Maryland get their water from a private well rather than a municipal supply system. Most of these households are in rural areas, but the construction boom that started in the 1980s has brought municipal water and sewer to more of the region, which means that newer houses with city water and sewer could be right next door to houses still on well and septic.

The vast majority of private wells are drilled (as opposed to dug or driven). Wells can vary greatly in depth, volume, and quality. The most important variable is the depth of the aquifer, or water table, at the point where the well is to be dug. In our service area, the depth ranges from about 50 feet to more than 800 feet. This means that a well can be shallow (less than 100 feet), or deep (as much as 900 feet). The diameter of the well can range from 2 to 10 inches; a larger pipe will deliver more volume.

While city water is filtered, treated, and delivered under pressure to the home, well water is drawn from the aquifer.

This aquifer is supplied by rain water, runoff, underground springs, and other natural sources, and is filtered by the soil as it seeps into the ground. An electric pump delivers it to the house, where it is stored in a pressure tank until needed. It usually contains more minerals than city water, and is also vulnerable to environmental contaminants.

### Water Quality

When buying a house with a private well, it's a good idea to get a water quality test to determine if the water is safe to drink. The standard quality test covers bacteriological and some biological contaminants. A sample is drawn

and sent to the testing lab, and results are available within a few days. More comprehensive tests, such as for pesticides or heavy metals, are much more costly and can take up to five weeks to get results.

Well water is susceptible to contamination from a variety of sources:

- Bacteriological contaminants (bacteria, viruses, parasites)
- Biological contaminants (radionuclides, Radon, Nitrates/nitrites)
- Environmental contaminants (heavy metals, fluoride, leaking tanks, road salt, pesticides)

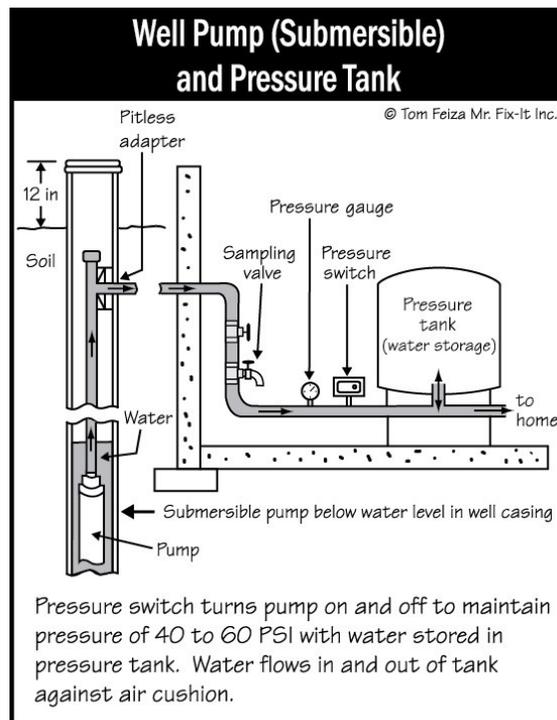
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If you have never lived in a home with private well water before, you might notice the difference in taste. Some people prefer the taste of well water over city water; it usually just takes getting used to. Well water's higher mineral content can mean issues with laundry as it can prevent soap from acting properly, and can also leave mineral deposits on clothing. This can usually be remedied by installing a water treatment system

to remove the minerals.

It is not uncommon for family members to experience some mild intestinal issues in the first few weeks of moving into a house with well water. The body is adjusting to the new environment. One way to ease the adjustment is to use bottled water for cooking and drinking, and mix in well water gradually.

One of the bigger issues with well water is that, unlike city water, when you lose power you lose your water supply. We recommend a standby generator for houses with well water.



P055

Pressure switch turns pump on and off to maintain pressure of 40 to 60 PSI with water stored in pressure tank. Water flows in and out of tank against air cushion.

## Lifespan of Wells and Equipment

The well itself can last a long, long time. In fact, the more a well is used, the longer it will last! It's not uncommon for a well to last nearly a century. However, the life of a well pump is much shorter than that: anywhere from six to 15 years. Several factors can affect the life of the pump, including the amount of sediment in the water and the size of the pressure tank. Pumps generally fail without warning, although you might notice a reduced water supply or that the pump is running constantly.

One of the best ways to help extend the life of your well pump is to install the largest pressure tank you can fit into the space. However, it needs to be properly sized for the well pump. Tank sizes range from 15 to 120 gallons. In general, a larger pressure tank means the well pump does not need to cycle on and off as much, which can reduce the wear and tear on the pump. The life of the pressure tank varies greatly, from 10 to 30 years, depending upon the quality of the water. High sediments, minerals, or acidity can corrode the equipment and lead to premature failure.

## Special Considerations

One of the features of city water is fluoridation, which has helped to greatly decrease the incidence of dental cavities in children. When you have well water, your children may need to have supplemental fluoride, which can be obtained from your dentist. Since well water can contain naturally-occurring fluoride, it is wise to have the fluoride level tested prior to getting supplemental treatment.

If the well head is located in an area prone to flooding, it is also wise to get a flood-proof cap installed to prevent

contamination of the well. Flood waters can contain a potentially toxic brew of whatever it flowed over on the way to your property, and the last thing you want is for all that to flow into your water supply.

## Warning Signs

Well water can be acidic, which can lead to corrosion and leaks in copper pipes. This can be fixed by installing a neutralizer. A neutralizer will also extend the life of your pressure tank and water heater.

If you notice a "rotten egg" smell in your water, the water contains hydrogen sulfide. The human nose can detect the odor at levels as low as 0.5 parts per million. At less than 1 ppm, it will give water a musty odor. At 1 to 2 ppm, the water will smell like rotten eggs. Hydrogen sulfide can be treated with various method, including carbon filtration or oxidizing filtration, and sometimes with shock chlorination (to remove the bacteria that produce hydrogen sulfide).

## Treating well water

There are many different ways to treat well water. In many cases, no treatment at all is needed. Other treatment systems are used when the homeowner experiences issues with the water (hardness, acidity) that affect the other systems in the home.

There are two different styles of water treatment: Point-of-entry (also called "whole house") systems, which treat the water as it enters the house and before it is fed into the supply pipes, and "Point of use" systems, which typically treat the water in batches at a single tap or faucet. POU systems include faucet-mounted filters and under-sink filtration units.

Typical treatment systems can include:

- Sediment filters
- Reverse-osmosis systems
- Distillation systems
- Softeners (for dissolved minerals in "hard" water)
- Neutralizers (to temper acidity)
- Sterilizers (Ultraviolet lamps to kill any bacteria)
- Oxidizers (to remove hydrogen sulfide)

## Information resources

National Sanitation Foundation (NSF) [nsf.org](http://nsf.org)

American Ground Water Trust ([agwt.org](http://agwt.org))

Environmental Protection Agency ([water.epa.gov](http://water.epa.gov))



*Well tank and treatment system. Water enters the house and is stored in the 119-gallon pressure tank. It then flows through a cartridge filtration unit, neutralizer, and UV sterilizer.*