Drought-proof your well

Helping you plan for your future water needs

Fast Facts

• Florida is subject to a wide variety of climatic conditions, including extended droughts.

• Fluctuations in aquifer levels (and pressure in confined artesian aquifers) are normal. There are periods of high water levels and periods of low water levels.

• All of Florida's groundwater is replenished by rainfall.

• Rainfall deficits of even a few inches can cause people to use more water for nonessential uses, thereby causing water levels and pressure to decline in the various aquifers that are used for withdrawing water from wells.

• Well depth and pumping capacity affect the ability of a well to produce water during periods of low groundwater.

• Problems with loss of pressure and flow in wells are generally caused by shallow well depths or inadequate drop pipes, pumps or tanks.

• If you construct a well during a high water level period and stop drilling when you reach water, the well may not be deep enough to produce during low water levels (dry periods), especially if inadequate pumping equipment has been installed.

• When installing or upgrading (known as retrofitting) a well, it is important to consider the full range of potential water level fluctuations.

• District staff members can provide technical assistance to homeowners regarding installing or upgrading a private well.

• For technical assistance, call (800) 451-7106.

Where does your water come from?

In the St. Johns River Water Management District, three aquifer systems are used for water supply: the surficial aquifer system, which is the shallowest, the intermediate aquifer system and the Floridan aquifer system, which is the deepest and most productive aquifer system.

An aquifer is an underground body of rock, consisting of sand, cemented shell or limestone, that is sufficiently permeable to transmit and yield significant quantities of water to wells.

The Floridan aquifer is a major source of drinking water in Florida. However, the surficial aquifer is a
significant source of water in St. Johns, eastern Volusia, Seminole, Brevard and eastern Indian River counties. Flagler, Baker, Clay, Nassau, Duval, Putnam and eastern Orange counties have intermediate aquifers capable of supplying varying quantities of potable (drinkable) water.

**How deep should your well be?**
Where you are in the District determines how deep your well must be to get water.

For example, throughout central Florida, the Floridan aquifer is 100 to 200 feet beneath the land’s surface. In north-central Florida, the aquifer is very close to the ground’s surface. In the northeastern and southeastern portions of the District, the top of the Floridan aquifer can be as much as 450 feet below land surface.

Intermediate aquifers, where present, are generally found at depths less than 150 feet below land surface.

Surficial aquifers are found closest to land surface and are generally less than 50 feet deep.

In some areas, the Floridan aquifer is a confined artesian aquifer. This means the water in the aquifer is under so much pressure from the land mass above that the water level in a well will rise above the top of the producing aquifer. In some areas of the District, the artesian pressure is large enough to cause the well water to flow naturally from a well without the use of a pump. These wells are “flowing Floridan artesian wells.”

**Does water quality depend on the depth of your well?**
Again, it depends on where you are in the District. Water from deeper wells is generally better than water from shallow wells because deeper aquifers are less susceptible to contamination from the land surface.

Because there are wide variations in water quality throughout the District, it is best to check with your local county health department or building department, or call the District for assistance.

**What do you do if your well goes dry?**
Shallow wells — wells less than 50 feet deep — are typically used for lawn irrigation. If a shallow well goes dry, replacing the centrifugal pump with a jet pump and deeper drop lines may help. An alternative would be to drill to a deeper, more reliable aquifer.

Some intermediate wells are used for drinking water. These wells range from 50 to 125 feet deep in the central and southern portions of the District, while they range from 50 to 300 feet deep in the northeastern portion of the District. When the water levels in the well drop to 25 feet or more below land surface, a centrifugal pump is no longer adequate. In this case, you will need to add 20 or more feet of drop pipe and may even require a jet pump.

When flowing Floridan artesian wells stop flowing due to pressure loss, you can install a two-pump system. One pump is used to pump water from the well to the aerator, and the other pump is used to pump water from the aerator to the house.

For nonflowing Floridan artesian wells, make sure you have adequate pumping equipment and make sure it is working properly. Add a sufficient amount of drop pipe to handle low groundwater levels.

**What does it cost to install or drought-proof a well?**
Depending on the well depth and the capacity of the pumping equipment, private well costs can range from $400 to $5,000.

It is advisable to get at least three quotes from licensed well construction contractors to ensure competitive pricing.

Drought-proofing your well before it goes dry can help avoid expenses related to emergency situations.

The ideal well for most homeowners is a 3- or 4-inch-diameter well adequately equipped with a pump.

**What should you know about permits or other regulations?**
To help prevent pressure and flow loss due to low groundwater levels, some counties have adopted well construction ordinances that provide minimum standards for construction and for adequate pumping equipment.