

Water Wells and Rural Living

You've found your rural *Shangri La*; unspoiled acreage with breathtaking views, a comfortable drive from home, and close to a charming small town.

There's one catch, however; no water company serves the area so you'll have to rely on your own well for water. While the seller assures you "the groundwater is sweet and abundant," you know nothing about water wells. So, you hesitate to commit to your dream property.

Read on to find out what you need to know about water wells to make a sound decision.

Background

First some background. Ground water is found in aquifers, geologic formations typically made up of porous materials. Aquifers may be as shallow as a few feet or be thousands of feet deep; likewise they can be close to the surface or miles below the surface.

Groundwater starts as precipitation and then travels from the earth's surface downward, until it reaches a water-saturated zone and becomes groundwater.

The quantity and quality of groundwater can differ widely and sometimes over just a short distance. Well production can change over time too, especially during prolonged droughts. Ultimately it's difficult to know with certainty the quantity and quality of the groundwater until a well has been drilled.

That said, groundwater wells are the principle source of water for most homeowners in rural areas. If there is adequate ground water, a professionally drilled domestic well will produce reliable and safe water for generations. Well drilling is a mature, regulated industry. (States typically distinguish between exempt (domestic) wells and non-exempt (commercial) wells; we're covering exempt wells here.) Drillers are licensed and follow strict protocols in locating, drilling, and equipping wells.

Property without a Well

If the property you're considering does not have a well, you'll want to review the performance of nearby wells. In most states this information is public and readily available from the state agency which regulates water resources. With the legal description of the property you are considering, that agency can provide you with the location and performance characteristics of these wells. (If your seller is a developer, have him provide this information to you, if he hasn't already.)

You'll want to know about depth of the well, the depth to water, and the well's production, which is stated in gallons per minute (gpm). Depending upon the size of your property you should also consider the location of neighboring wells; many states restrict wells to no closer than 100 feet. The profile of neighboring wells will give you a good idea of what to expect from a well on your site.

Next you'll want to get the expert opinion of several licensed well drillers *who have drilled wells in the area*. The state Registrar of Contractors can provide the names of licensed local well drillers. An experienced driller will typically have strong opinions about the location, quantity, and quality of the aquifer you plan to tap for domestic water, and they are generally happy to share that information with prospective clients. Also ask about the cost to drill and equip a well to serve your anticipated needs. You should also ask for the names of past customers in the same area. Call and inquire about the performance and quality of the well and if they were happy with the driller's work.

Combine what you've learned from your research with the judgment of well regarded local drillers and you're equipped to make a sound judgment about the likely performance of your well.

Property with a Well

If the well was drilled within the past few years, ask your seller for copies of the well drilling permit and the well driller's report. This report will tell you, among other things, the depth to water, the depth of the well, and the production of the well stated in gpm. Ask if the water quality has been tested, and if so ask for a copy of the lab results. You might also call the driller and ask about his experience in the area and how other nearby wells are performing.

If the well is older or if the seller didn't drill the well, have the seller obtain the information from the public records. At the same time ask the appropriate state or county agency for information on nearby wells. And don't forget to call the driller who drilled the well and get his opinion on the water production and quality characteristics of the area.

How Much Is Enough?

The answer to this question really depends on how you'll use your property. Do you envision a luxurious home with 4 or 5 bedrooms, multiple baths, and a deluxe kitchen with all the appliances, or a cozy, simple cabin with just one bathroom? The number of occupants and related toilets, sinks, and water using appliances are the most important variables used to calculate demand, and the production required to meet that demand.

And outdoors, will you be irrigating, and if so how much? An irrigated orchard requires a lot more water than a few shrubs and some lawn.

There are rules of thumb of minimum water well production for differing demands. Some suggest a family of four requires at least 5gpm to live comfortably. Others will say a well producing as little as 1.5 gpm can handle the same demands with thoughtful conservation.

As a practical matter, however, “how much is enough” may be the wrong question to ask. Modern well equipment can overcome the limitations of lower production wells through well management, water storage and pressurization systems. There’s abundant information on the internet, from local licensed contractors, systems manufactures and dealers, and from county extension boards to help you understand how to equip your well to adequately meet your water needs.

Water Quality

There are many factors that can affect the quality of well water; most are natural processes and relate to chemical composition underground, others are related to human activities. While water may be safe, there may be objectionable conditions such as sulfur smell or “hardness”. Most of these conditions can be mitigated through filtration or other treatment.

The easiest way to determine a well’s safety and the quality of its water is to have it tested. The county or state regulatory agency, county extension, or even a local well driller can give you the names of labs certified to test well water. Basic tests for nitrate and bacteria are inexpensive (under \$50); testing for other contaminants can be more expensive and typically are not necessary. If the lab results indicate a standard is exceeded it’s often a good idea to retest; false positive’s are common.

Most problems are easily handled, often simply by disinfection through chlorination or filtration. It’s a good idea to test water quality and inspect well equipment annually to identify and address potential problems early.

Conclusion

Keep in mind that water wells are the primary source for domestic water in rural areas. There are competent, respected drillers and equipment dealers as well as county and state agencies ready to answer your questions and help you make sound decisions. After reading this brief article you already know more than most people know about wells, and the minimum you need to know to make a correct decision about that dream property.

About the Author

Peter Gooding has developed Prescott Arizona property for 15 years. He specializes in developing the finest Arizona ranch land into high-end ranchette communities. His current project LV ranch Estates (www.lvranchestates.com) is located just outside of the popular northern Arizona city of Prescott. He's drilled more than 250 domestic wells over the past ten years. He can be reached at pgooding@truewest.com