Here's Your Guide In Choosing The Best Type Of Water Well

2017-12-07 07:45:21 By Matilda Ollie Jose

Water wells are beneficial resources as they enable us to access free natural water. As a matter of fact, studies have deduced that 15 million households in the United States get their supply of fresh water from wells.

There are three main kinds of wells: the drilled well, the driven well, and the dug well, each having unique features. The drilled wells have deeper depths than the other types of wells. The driven wells simple in construction and cost-effective but can only tap shallow waters. The dug wells are manually constructed using hand shovels and dug until water appears.

But which one is fit for you? Here are the various factors you ought to consider while choosing the right type of well for your household.

14 Factors to Consider While Choosing the Right Type of Water Well

1. Unique Aquifer Characteristics

Groundwater is stored in aquifers, which are bodies of permeable rocks containing and transmitting groundwater. Their distinct characteristics may determine to a great extent the kind of well that they may be able to accommodate.

Examples of these distinct characteristics are the nature of the underlying rock, the capacity of the aquifer itself, the depth at which the aquifer is located beneath the ground, and the porosity of the underlying rocks, among others.

It is not humanly possible for you to know these characteristics. This is why you require the assistance of a qualified geologist, by all means.

As a general rule, if the aquifer is located deeper beneath the soil surface, your well has to be correspondingly deeper, and vice versa. The drilled type would suffice this role pretty well. You will, however, have to sink a shallower well like the dug well if the aquifer is closer to the soil surface or is larger in size.

2. Hydraulic Factors

Hydraulic factors are those that concern the smooth flow of water beneath the ground surface. They, too, have the ability to influence the performance of wells. This component includes the hydraulic gradient, the water pressure, and the volume.

Just like the aquifers, hydraulics are also undetectable by the ordinary homeowner. You will have to seek the intervention of a qualified geologist to help you out on this.

3. Intended Means of Drawing Water

Sinking a well is one thing, drawing water from the same well is yet another case to solve. Before settling on a given type of well, ask yourself the following questions: “Which equipment will I use to

draw water from the well?", "Do I have a storage tank, or will I be drawing water for immediate use only?"

Water may be drawn from the well by use of various equipment, including buckets, electric pumps, or manual screws. The kind of equipment determines the possible depth of the well. In relation to that, electrical pumps have the ability to draw water from deeper depths than buckets.

You should, therefore, consider opting for a deeper well like the drilled well if you intend to draw water by means of an electrical pump. If you want to use a bucket or manual means of getting the water, the shallower dug well is your better bet. If you, however, choose to use water screw to draw water, then the driven well would be your ideal type.

4. Cost Implications

'A plan is what you want to achieve, but a budget is why you can't,' so goes the old English proverb. Indeed, the ultimate decision as to whether you will have your well of choice largely depends on your financial resource endowment. This is because the expenses involved in digging a water well are potentially enormous. This, again, is dependent on the precise kind of well you desire.

The drilled well is. by far, the most expensive. It requires huge financial resource investments. This is due to the sophisticated equipment used to drill its depth and permanent structure. It is followed closely by the driven well type. The dug well comes at a distant third since it's done without any use of big machines.

With all that said, you have to ascertain your financial strength first and foremost before determining which well to settle for. Discuss this with the others in your area who have already dug theirs for a rough clue. You should also discuss the issue further with the company that you shall contract to do the job for you.

5. Water Table

This refers to the level of soil beneath the surface in which the ground is saturated with water. The water table is determined by various parameters. These include the amount of precipitation the area receives, the elevation of the area, and the nearness of the area to water body like streams, lakes, or rivers.

In case your intended well site is closer to a body of water, it means that the water table is also high. This also implies that your preferred well should be shallower. Because of this, consider settling for the dug well type. The same case should apply to areas that receive higher precipitation.

If, however, your intended well site is situated in an area that is far away from a water body, this means that the water table is lower. Your preferred well site should, thus, be deeper in nature, all the other factors held constant. You will have to choose between the driven and the drilled wells. The same case should apply if the area receives less precipitation.

6. Soil Type

Soils determine the nature of wells that may be sunk in several ways. A sandy soil is pervious, meaning that they allow water to pass through them easily. It is less likely to retain water. For you to sink a well in them, that structure has to be deeper than usual. Because of this, the drilled well would be your best option.


IDENTIFY YOUR SOIL TYPE
the jar test
water
clay
silt
sand
1 Fill a clear glass jar halfway with your soil sample.
2 Fill the remaining half with water, leaving 1" of air.
3 Attach lid, then shake the jar vigorously until you have broken up any clumps of soil.
4 Set the jar aside to rest, undisturbed, overnight.
After 24 hours your jar's contents will have settled into distinct layers:
SAND
SILT
CLAY
By examining the proportions of these layers, you can gain a sense of what type of soil you have, and what you need to add to improve your soil. Here are some examples to use for comparison. The middle jar is ideal soil:
25% clay
25% silt
50% sand
30% clay
40% silt
30% sand
50% clay
25% silt
25% sand
GardenersEDGE
A.M. Leonard's
GardenersEdge.com
888-556-5676

Meanwhile, grounds like clay are impervious, making them more effective in retaining water. As such, you do not have to sink your well to deep to access the aquifer. This being the case, you will be required to sink a relatively shallow well like the dug well.

In some areas, the soils are rocky in nature. It is not possible for you to dig a well singlehandedly. You will have to employ sophisticated drilling machinery to carry out the task. If you intend to dig a well in such areas, you will definitely have to opt for the drilled or the driven types.

7. Amount of Precipitation

Precipitation is the sum total of the amounts of rain, snow, dew, sleet, or hail, which either falls or condenses into the ground within a duration of time. It determines the amount of water that may be possibly accessed whenever a well is dug in the ground. It also determines the water table, which subsequently establishes just how deep a well ought to be.

Before commencing on the task of digging a well, ask yourself, “How much precipitation does this area receive per annum?” If your intended well site is located in an area that naturally receives higher precipitation, then you will have to settle for a shallower well such as the dug well. This is because the water table is naturally expected to be higher.

If the location of your well is in an area that hardly receives any meaningful precipitation such as a desert, you have to settle for a deeper well. The drilled or the driven wells may suffice. This is due to the expected lower water table.

8. Terrain/Topography

This refers to the nature of the land in your area. It touches on such pertinent aspects as the elevation of that land above sea level, the inclination of the said piece of land, and the nearness of the piece of land to natural water sources like streams.

The terrain or topography determines to a great extent the depth of the well and its possibility to supply you with water all throughout. If the site of your well is located in an area of higher elevation, you will definitely have to opt for the drilled well or the driven well. It’s because those types of wells are deep enough to reach the water table and guarantee the unhindered supply of water.

If the well is at a lower elevation, then you may consider settling for either the dug well or the driven well. This is due to their capability of reaching the water table even at shallower depths.

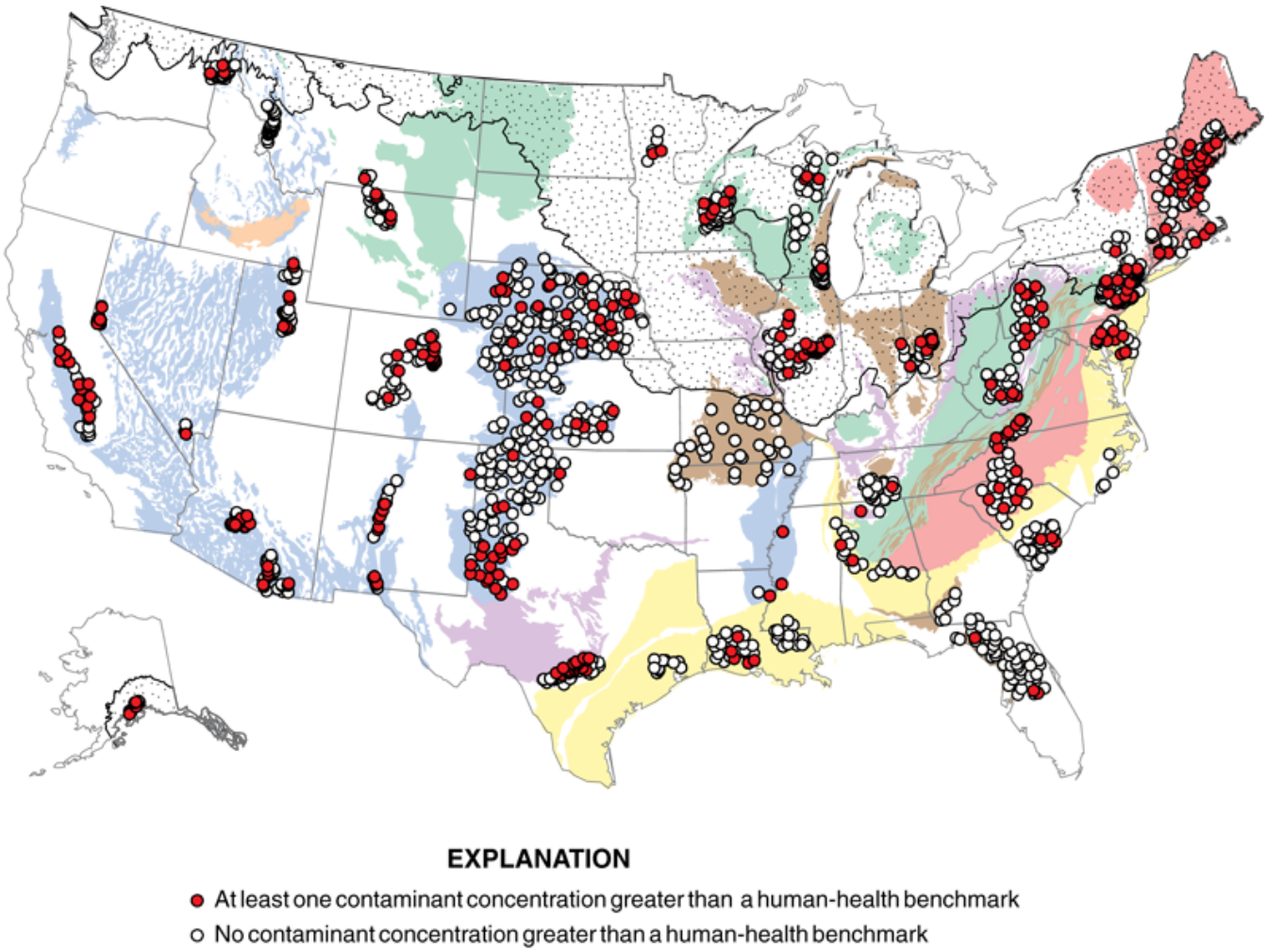
9. Possible Contaminants

Contaminants are substances that may poison, disparage, and defile the water in the well. They chiefly originate from industrial effluence, raw sewage, agricultural chemicals, decomposing bodies, and underground chemicals.

If these contaminants get into the water, people are at risk of acquiring water-borne diseases, food poisoning, and hygiene-related disorders such as Cholera and Typhoid.

In as much as all the various kinds of well may be impacted by these contaminants, some are more vulnerable to them than others. The dug wells are particularly vulnerable because they’re shallow

nature, and they are not securely sealed.



Your first task should be to ascertain whether these contaminants do exist in your area. If they do, then consider opting for the deeper and the more permanent well types such as the drilled and the drive wells.

10. Volume of Water Required

Under this consideration, you will basically aim at answering the following questions: "How much water will I require in a typical day?", "Which buildings or facilities am I digging this well for?", "Are there any other alternative sources of water?", and "Is this well going to be my only source of water?"

If the well is to be your one and only source of water, then it has to be deeper and more permanent in nature. The drilled well fits this particular bill perfectly well. If it is to be complemented by other alternatives, then it has to be shallower in depth. The dug well would serve the purpose well, in this case.

But if the well is to supply water for the typical household, then it also has to be shallower. The driven and the dug wells would be great choices. In case the well is for industrial, agricultural or large scale uses, then it has to be deeper and more permanent, hence, the drilled wells.

11. Expected Lifetime

The different kinds of wells are intended to supply water for varying durations of time. This is mainly dependent upon the entire length of time you intend to stay in a particular area. If you have plans of moving elsewhere, then you may consider having a dug well; it can tap shallow levels of water, it's easier to construct, and it's budget-friendly.

But if you're going to live in your residence for good, then you may want to settle for a drilled well, other factors considered yet again. This is for the sheer reason that this type of well is permanently constructed and ensures a relatively stable supply of underground water for your household.

12. Prevailing Legal Regimes

Different regimes impose various pieces of legislation to oversee the construction of these wells. In some municipalities, the residents are completely prohibited from constructing such wells at all. In others, they are allowed but are with a lot of restrictions, including the depth limit, the number of wells per unit area, the type of well or boring tools, among others.

You have to take the initiative of familiarizing yourself with these regulations. This is to avoid unnecessary frictions with the various government bodies. It is also to ensure that you get as many benefits as possible from the wells. Abiding by these regulations may also shield you from the possible dangers that may come along with flouting the rules. These include accidents, landslides, and the contamination of the water, to name a few.

13. The Number of the other Wells in the Vicinity

All wells get their water from underground aquifers. It goes without saying that the more the number of wells per unit area, the less the amount of water to be derived. This is due to the competition for a scarce resource.

If there are several other wells in the vicinity, you may opt for either the drilled or the driven wells. They provide more access to underground water. This being the case, your continued supply of the water is less likely to be interrupted even in moments of extreme drought.

14. Technical Skills

Different kinds of wells require varying degrees of technical skills to install. Deeper and more permanent wells like the drilled wells require more sophisticated equipment and technical expertise.

Moderately deeper wells like the driven wells don't need big machines to construct. Dug wells, on the other hand, require almost no technical skills to sink. The challenge is to ascertain whether you indeed have what it takes to sink the kind of well you want or not.

In Conclusion

The factors identified and explained above are by no means exhaustive. Make your own research and connect it to your own needs, so you could make the smartest choice when going further with providing your source of water!

This article has been written as a guest writer by Matila Ollie Jose from Costfreak for Survivopedia.

References:

https://pubs.usgs.gov/circ/circ1186/html/gen_facts.html

https://costfreak.com/average-cost-dig-well/