

Why Drill A Water Well?



Over 3000 years ago, a man fashioned together a strange apparatus of bamboo, cord, rocks, and timber and began twirling, twisting, and pounding his way into the earth in search of that most precious of all minerals - WATER! As far as we know, these were the first drilled wells.

Today, there are more reasons than ever for drilling a well. The most obvious is to provide water for basic human consumption: drinking, cooking and bathing. And of course, most wells are drilled with that in mind. In fact, more and more people who have access to city water are turning to the fresh, clean-tasting, pure water from a water well instead of chemical-laden city water which is costing more and more each day.

But there are more reasons for drilling a well. Since the first Oriental well driller hit water, people have literally been standing in line to pay well drillers to drill wells for them. Certainly, few business could claim the year-round demand that well drillers enjoy. The fact is, most well drillers never "catch-up" with the demand. People need water as much during times of economic prosperity as during times when other businesses are failing.

Gardeners need a lot of water, and the high cost of city water is quickly making the backyard garden costly to maintain. It takes 66 gallons of water to produce just one pound (dry weight) of vegetables. It's a shame to miss out on those fresh, unspoiled vegetables that home gardeners (and their friends!) enjoy.

Drilling a well for a garden makes great sense. And just like people, plants grow better with natural, unspoiled water from a well. Remember, more and more cities are getting their water from open reservoirs, lakes, lagoons, and rivers and thus have to treat the water with strong, harsh chemicals to kill bacteria.



No filter in the world can equal the purifying, cleansing effect of just a few feet of Mother Earth. One thing is for sure: the water from a city water tap will never equal the water from a well.

How to Drill Your Own Water Well



Consider the special satisfaction you get by drilling a well, knowing that you are removing yourself from dependence on someone else for one of life's basic necessities. By drilling a well, you reduce the demand on the city water system and thus help out your friends and neighbors, especially during dry times.

Many wells are drilled by farmers who need water for livestock and watering. Also, a lot of wells are drilled to fill fishponds, providing recreation and lots of good eating for us all.

New swimming pool owners can testify to the benefits of a water well. It doesn't take many fillings of a 35,000 gallon pool to realize a pay off from drilling a well.

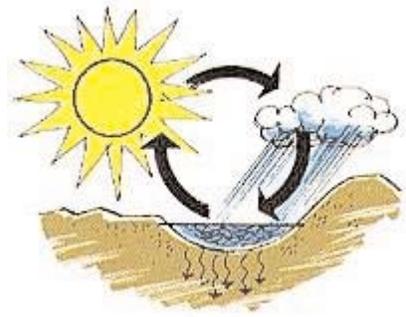
Some wells are drilled to replace or supplement an old well that's gone dry or had an increased demand put on it. Wells are drilled to feed sprinkler systems to produce lush lawns that require little attention. Again the high cost of city water makes the well pay off in short order.

And finally, we know of many well drillers who have used our equipment and drilled just for the fun of it. They've gotten untold satisfaction by drilling badly needed water wells for friends, relatives and neighbors. Imagine the thrill of turning your abilities into such a wonderful task. Think how grateful someone would be if you were able to provide water for his needs!

So now you know why drilling a well is so worthwhile. Read on and we'll tell you how it's done.

Where Will You Find Water?

All underground water originates on the surface of the earth. It is evaporated by the heat of the sun; it forms clouds and falls as rain or snow; it accumulates in streams, ponds, oceans, etc.; it seeps into the ground. Just how much water is there underground? Geologists have determined that there is 30 times as much water as there is in all the streams, lakes and rivers in the world!



In the ground, water is found in 3 general types of formations:

- Layers of sand**
- Layers of gravel**
- Porous rock or a crack in rock**

What Is The Best Source Of Water?

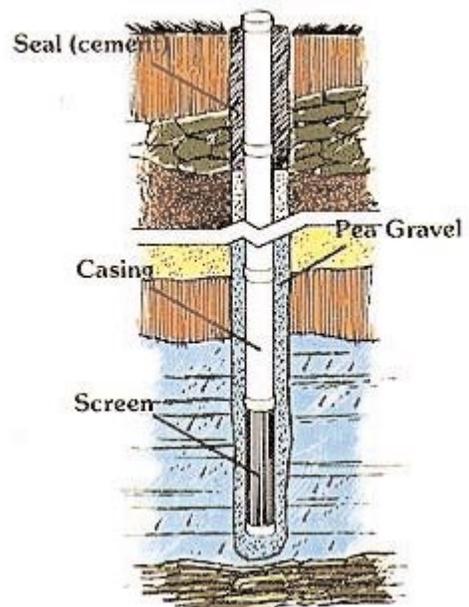
There is no single "best" source. Some folks have the idea that the only "good" water comes from rock, but this is not true. In fact, some rocks have minerals that dissolve in water, and these minerals give the water an odd taste and sometimes an odor.

As a general rule, the finest quality water comes from layers of sand which filter the water naturally. You will frequently hit layers of sand and gravel before you hit solid rock. In other words, the deepest water is not necessarily the most and the best.

What Is A Water Well?

Basically, a water well is a hole or shaft down to a water-bearing layer of sand or gravel or a crack in the rock.

Fortunately for the well driller, most of the fresh water beneath the surface of the ground occurs within 200 feet. Unless your area is famous for deep, dry holes, the chances are that by a little exploratory drilling you can find a good water-bearing strata at a modest depth. In fact, the average depth of all domestic water wells is slightly less than 50 feet! If you have as much as a city lot to search on, the odds of finding a good supply of water are in your favor.



Grandpa Dug His Own

If your grandfather lived on a farm, chances are he dug his own well and took the chore more or less for granted. With only a pick and shovel, you can dig a well in many areas, but it is hard work and more than a little dangerous. There is always the risk of cave-in or asphyxiation. Still, a lot of folks around the world continue to dig water wells with simple tools and manage to get enough water to sustain life.



Goodbye Pick And Shovel!

The most modern well drilling method is the rotary method. It is fast and efficient but until recently it was available only in big, heavy, truck-mounted models. It became available in a one-man portable model for do it yourself well drilling when the Hydra-Drill was developed by DeepRock Manufacturing Company.

The rotary drill consists of an earth or rock cutting bit attached to a length of hollow drill stem. The drill stem and bit are rotated and water is pumped through the drill stem. The bit cuts into the earth and the water washes the cuttings out of the drill hole to the top of the ground. Additional sections of drill stem are screwed on as the bit goes deeper.

So now we are ready to take on the big question: here, on your property, be it city lot or quarter-acre or 100 acres...

Where To Drill?

Your first choice should be wherever you would like the well to be.

The only things to consider are the natural slope of the ground (you don't want your well site flooded by rain water), and of course you want to stay at least 50 feet away from septic fields or cesspools. Other than that, one site is just about as good as any other for your first try.

In prospecting for water, don't be too quick to go by what your neighbors tell you about their wells. For example, even in areas generally thought to be underlain with solid rock, certain spots have often weathered or deteriorated into soft rock or sand where drilling is relatively easy, and water is plentiful. On the other hand, if you pick a site where drilling proves to be very difficult, take advantage of the portability and low operating cost of the Hydra-Drill. Just pick a new site 50 feet away, 100 feet away, whatever is practical. And remember, help from a professional Hydra-Drill consultant is just a phone call away.

How To Know When You've Hit Water

In a rotary drilling system such as the Hydra-Drill, a rotating bit cuts away material at the bottom of the hole. Water is constantly pumped down the hole to flush out the cuttings. This rotary system of drilling provides indicators which will let you know when you may have hit water.

The most important indicator to watch for is the type of cuttings being flushed from the hole as you drill. When you see coarse, gravel-size sand particles coming up, you may be drilling into a water-bearing strata.

Another good indicator can occur when you shut off your drilling pump to change a drill stem: if the water in the hole recedes quickly down the hole, you may have reached a water-bearing strata.

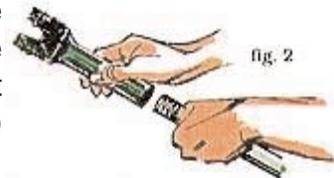
A third indicator reported by many Hydra-Drillers is a sudden change in the temperature of the drilling fluid when they hit water. This is because the ground water can be 20-30 degrees warmer or cooler than the drilling fluid and outside air.

How To Assemble The Hydra-Drill



Assembly of the Power Mast takes only a few minutes and is completed by placing the engine into the cradle (fig.1).

Make sure all of your hose connections are tight. Attach the Pilot Hole Bit to your first section of drill stem (fig.2)



Then attach the drill stem to the Powerhead (fig. 3).
Now start the engine and turn the water on.

There, you're drilling! (fig.4)



Drilling With The Hydra-Drill

When you have drilled down five feet, shut off the water and add the next section of drill stem. Using the Power Mast makes the job easy.

Safety features are incorporated in the design of the Hydra-Drill, and users are cautioned against modifying the equipment. As with any powered equipment, normal safety practices are required. Do not fuel a hot engine. Keep long hair and loose clothing away from the moving parts. Do not drill near underground tanks or pipelines. Beware of overhead obstacles and electric lines.

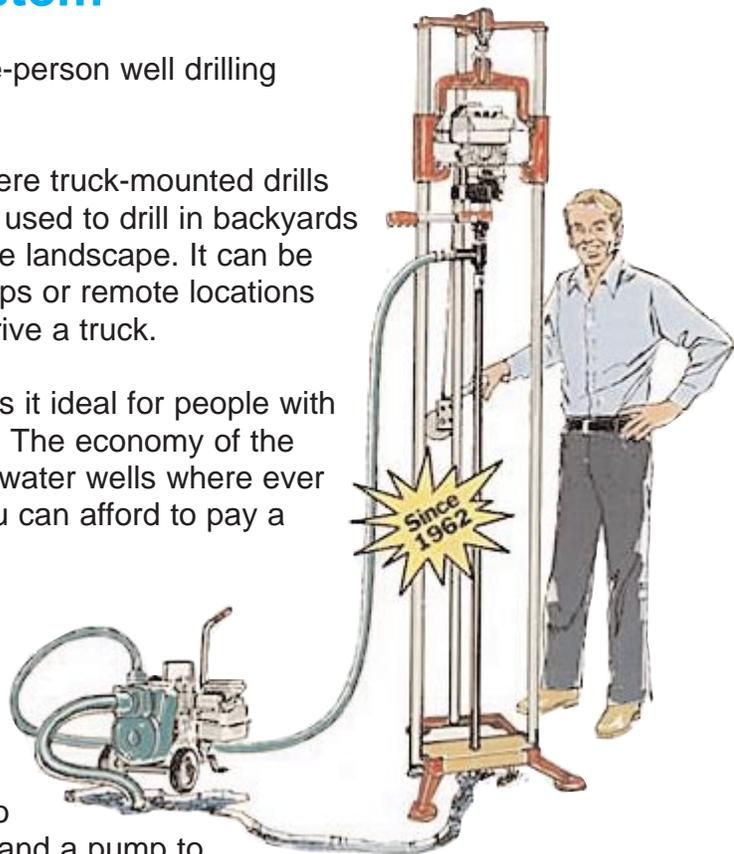
The Hydra-Drill System

The Hydra-Drill is a complete, one-person well drilling system.

It can be carried into locations where truck-mounted drills cannot go. For example, it can be used to drill in backyards where large drills would tear up the landscape. It can be carried into wooded areas or hilltops or remote locations where it would be impossible to drive a truck.

The simplicity of the system makes it ideal for people with no prior experience in well drilling. The economy of the system makes it possible to have water wells where ever you need them, not just where you can afford to pay a drilling contractor to drill.

With one Hydra-Drill, you can drill many wells. If you are drilling near an existing water system, you can frequently use water from the garden hose to drill. Otherwise, you will need access to 50 to 150 gallons of drilling water and a pump to recirculate the water.



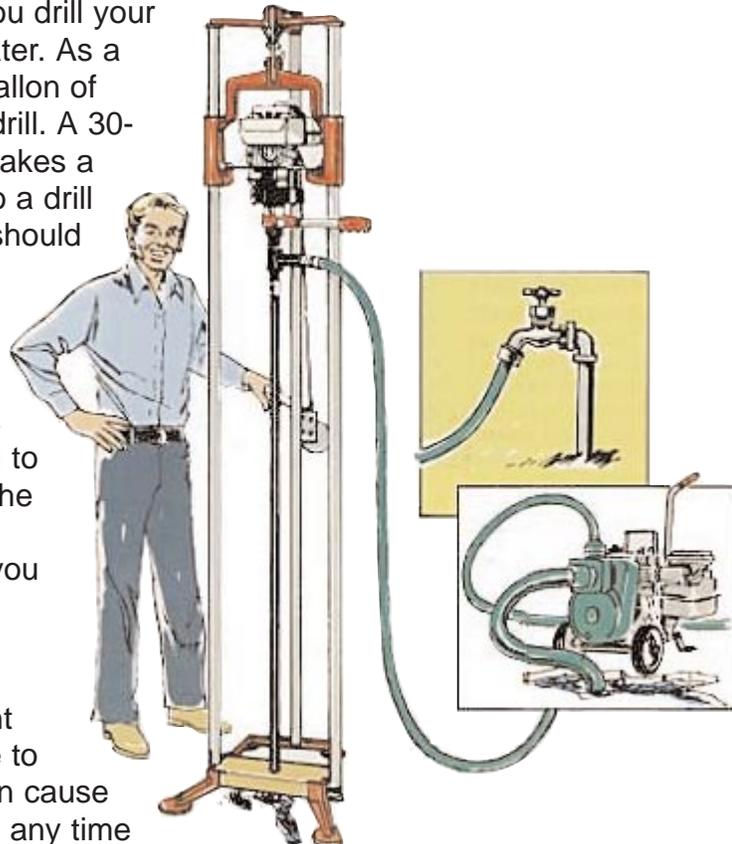
Water Pressure

You'll need 10 to 20 gallons per minute at 20 to 40 psi. The DeepRock well drilling pump is designed for the job. It will handle abrasive sandy water, and will allow the use of additives to prevent cave-ins when drilling in sand or gravel strata (more on that later).

To use the well drilling pump, dig a small pit next to the drill hole and fill it with water. Use the pump to draw the water out of the pit and into the drill stem and bit. As the water flushes back up the hole, channel it into the pit to be re-circulated. This way, you drill your well using a minimal amount of water. As a starter, have on hand about one gallon of water for each foot you expect to drill. A 30-gallon plastic bag in a trash can makes a good container for hauling water to a drill site. Two or three 30-gallon bags should provide enough drilling water for most locations.

The circulation of water keeps the hole clean by washing the cuttings to the surface; this also allows you to examine the cuttings and identify the material from each level of drilling. These cuttings can tell you when you have found water.

Maintaining good water circulation while you drill is the most important factor in successful drilling. Failure to maintain good water circulation can cause bit failure and other problems. If at any time you lose circulation, stop drilling and pull up at least one drill stem section until circulation is restored.



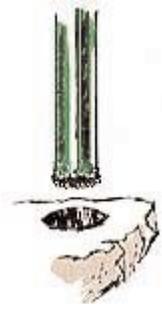
Bits

Next to diamond, tungsten carbide is the hardest substance in the world. In industry, tungsten carbide is used to cut hard, tough materials such as glass and steel. Hydra-Drill bits are constructed of tungsten carbide brazed on steel stock.

There are three basic bits to perform three basic functions:

PILOT HOLE: The Heavy Duty Earth Probe Bit is used in drilling earth, sand, clay, gravel and some softer rock formations. Unless you run into a layer of hard, solid rock, you should drill to the total depth of the well with your pilot hole bit.





CORING: The core bit is used in solid rock. (Do not use a core bit in earth, sand, clay, gravel, or broken rock). The tungsten carbide rock core bit is used in most sandstone, limestone, coral, granite and some lava rock formations that have favorable cutting characteristics.

REAMING: After the pilot hole is drilled to the total depth, the reamer bit is used to enlarge the hole for installing the screen and casing.



Drilling Hints

Occasionally, you may encounter a stratum of sand that tends to cave in on the drill stem. Or you may drill into an extremely porous stratum that causes a loss of circulation. In this event, you will need to pre-mix a thickening additive with your re-circulation system.

There are two types of thickening agents. One is bentonite clay called "drillers mud." The other type of thickening agent is a gel that forms a viscous fluid the consistency of buttermilk. These products are most effective when mixed together in your flush water. There're both included in the Drilling Additive Kit from DeepRock.

Please keep in mind that drilling fluid additives require the use of the well drilling pump.

Additional instructions are contained in the Owner's Manual which is included with every Hydra-Drill.

Removing The Drill Stem

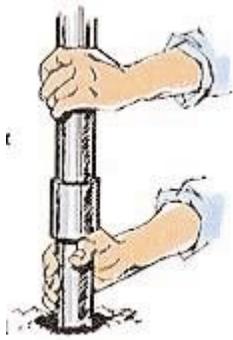
As long as proper circulation is maintained the drill bit and drill stems can easily be lifted from the hole. Each bit is designed to cut a hole that is larger than the bit itself.

A word of caution when removing the drill stems:

ALWAYS WATCH OUT FOR OVERHEAD POWER LINES AND OTHER OVERHEAD OBSTACLES!

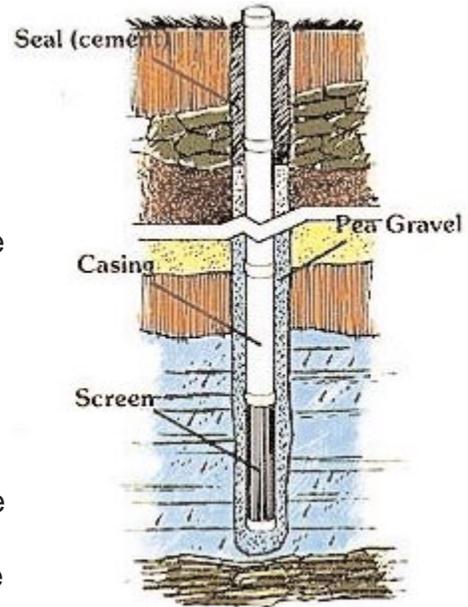
It is never advisable to remove more than 2 sections (10 feet) of drill stem at a time.

Completing The Well



Let's say you have drilled down and found a promising formation. Now you "case" the well, which simply means inserting a casing (plastic or metal pipe) to keep the well from collapsing at some future time. At the bottom of your well, you will use a "well screen" or strainer to keep the sand and gravel out of your well.

The illustration on the right shows a typical completed well in a water-bearing stratum to increase the full potential of this well. Solid casing is joined to the well screen and continued all the way to the top. Some small pea gravel is poured on the outside of the pipe to within 20 feet of ground level. The pea gravel helps filter the sand out of the water before it enters the screen and casing. It also serves as a conduit or passageway for water from a stratum above the screened area to work its way down to the screen filtering through the gravel pack all the way. If you drill through a water-bearing stratum along the way and don't notice it, you haven't cut off the supply from the stratum. This is why we recommend only one section of screen and a good gravel pack. The top 15'-20' of your well must be sealed around the outside of your casing to prevent water contamination.



Cleaning The Well

Before you install the permanent pump on the well, it is necessary to clean out any cuttings remaining inside the casing. Much of the material can be flushed out by dropping a water hose to the bottom of the well and pumping clean water through it. If you have an air compressor, the well can be flushed with air. This will not only clean out the well, but will give you a good idea of the water production of the well.

An alternate method is to pump the well with DeepRock's well drilling pump. Because this is a shallow depth pump, it may be necessary to add clean water to the well as you pump to maintain an artificial shallow pumping depth.

Just about every new well will improve in both quality and quantity of water after a few hours (or even a few days in some cases) of pumping. Pumping gets rid of the last traces of mud left over from drilling, and it gives the water vein a chance to open up and flow more freely.

What DeepRock Customers Are Saying

"The machine works wonders for the do-it-yourself projects. My city water bill was very expensive. The money saved by drilling my own well paid off very quickly."

Shelby F., Louisiana

"We can't pump our well dry! We have a pool, small garden and lots of plants. Our water bill went from \$85 per month to \$20! Thank you for our new world of free water!"

James C., Georgia

"I never imagined your unit would perform as well as it has. My wife and I agree, the unit paid for itself just by drilling our first well!"

Ted G., Colorado

"Thank you for being so extremely helpful and for your ongoing extraordinary customer service. We deeply appreciate what you have done for us."

Melissa L., Michigan

"I have had the Hydra-Drill for nine years and have drilled six wells. I think the Hydra-Drill is the best investment I have ever made!"

Gerald M., Canada

"My well was out of service for less than 24 hours thanks to the resourceful effort and fast service. You set an uncommon example of customer service."

Jim W., Maryland

"My congratulations for DeepRock's many years of good service and the considerate employees who do so much to make it all possible. This type of personal business relationship is not easy to find in this busy world of bottom-line priority."

Harry F., California

More Information

Much has been written about water well drilling. It all boils down to this: find an underground vein or strata of water and dig or drill an opening to it. When you see fresh, cool water pouring out on the ground, you will realize that whatever effort you made to get it was worthwhile. The thrill of discovering water is an experience hard to equal!

You may be surprised how much fun drilling your own water well can be!

FREE CONSULTANT SERVICE

Call Toll-Free 1-800-333-7762

Outside U.S. Territories and Canada, Call Collect (334) 749-3377

All others please use our Toll-Free number.