

# Well Construction

## Private Wells and Public Water Systems

A well should be designed to meet the needs of the home that it will serve. However, it is the geology of the earth that will dictate the best design and construction method for the well.

What follows is information that you should know before you purchase a well to serve your home or business.

### Drilling Methods

Some small residential and irrigation users might be served adequately by a drive point driven into a shallow aquifer. Some parts of the country have very thin gravel aquifers, requiring a large diameter bored well. These can be 4 to 10 feet in diameter and lined with cement or tile rings.

Some mountainous areas require high pressure air rotary and downhole hammer drilling. These drills often have to go several thousand feet to reach water in fractures and fissures deep in the earth.

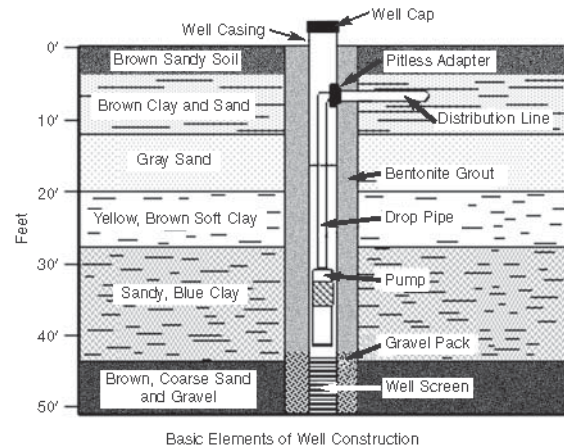
Another rotary drilling method, mud rotary drilling, uses a mud fluid to bring the drilled, loose material to the surface and hold the borehole open until casing—tubular structures that prevent contaminants from entering the hole—is installed. Some rotary drilling rigs have equipment to advance the casing during drilling to keep the borehole from collapsing.

The cable tool drilling method raises and drops a string of tools supported by a wire cable to break the rock or formations to make a hole. On some occasions, the casing is driven down the hole as the drilling progresses in order to keep the hole from collapsing.

### Big Drilling Projects

Large irrigation and some municipal wells are drilled using reverse circulation rotary drilling. This process uses water flowing down the borehole to bring the loose material up through the drilling pipe.

Some wells can also be jetted or “washed down” using water under high pressure to remove the formation material. This doesn’t work well in formations where rock and boulders are prevalent.



Basic Elements of Well Construction

### Example of well construction

### Finishing Touches

All drilling methods leave particles that clog up the pore spaces and prevent water from flowing freely into the well. Cleaning out this byproduct is called well development work and is done to make the well clean and as productive as possible. This is done before or after the casing is placed in the well, depending on the formation encountered.

### Well Maintenance

A properly designed and constructed water well should last the owner for the life of the home or building it serves. But like all mechanical devices, water wells and pumps need maintenance and service at various times. Well rehabilitation is the work or processes used to clean scale or encrustation from a well or repair damage to the screen, formation, or casing.

### Where can I get more information?

For more information on your private water well, contact your local contractor. Also, visit the Web site of the National Ground Water Association, [www.ngwa.org](http://www.ngwa.org), and its site just for well owners, [www.wellowner.org](http://www.wellowner.org).