Wells

Most city dwellers turn on the faucet and water flows. Country dwellers know the process is not always that easy. The Living Lab used to be outside of the city before Fargo grew around this site. The Jenson's, who lived here starting over 50 years ago, had a well dug for a water source. When the property was annexed to the city, the well was retained and it continues to provide water for the site. This well is 318 feet deep and the pump that brings the water into the house is located at 157 feet. It runs by electricity. The well is connected to the house with a pipe that is buried deep enough so that it doesn't freeze in the winter.

Surface water, such as the Red River, needs to be treated before it is safe to drink. Sometimes ground water from a well, such as from this one, can be safely drunk without treatment. Cities, such as Fargo and Moorhead, obtain water for its citizens from the Red River or from wells. The water is treated before it is distributed through pipes to homes and businesses.

There is about a hundred times more water in the ground than is in all of the world's rivers and lakes. Most of this water is in aquifers. An aquifer is made up of rocks with spaces or voids in or around them. These spaces are filled with water.

Some aquifers are large and others small. Pumping too much water, too fast can cause water shortages in other wells drilled in to the same aquifer. Precipitation (rain or melting snow) adds water (recharge) to the spaces in the rocks.

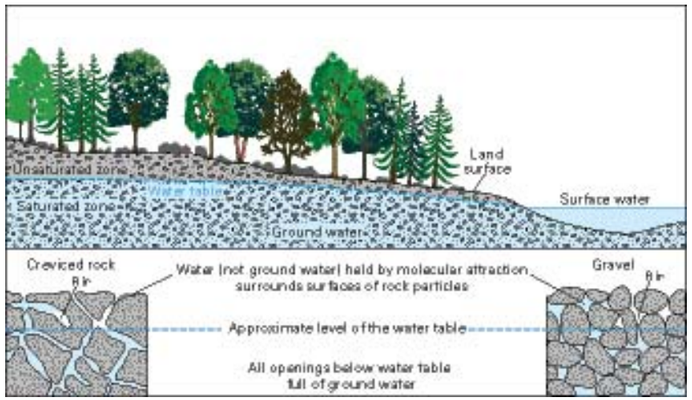
Minnesota Historical Society

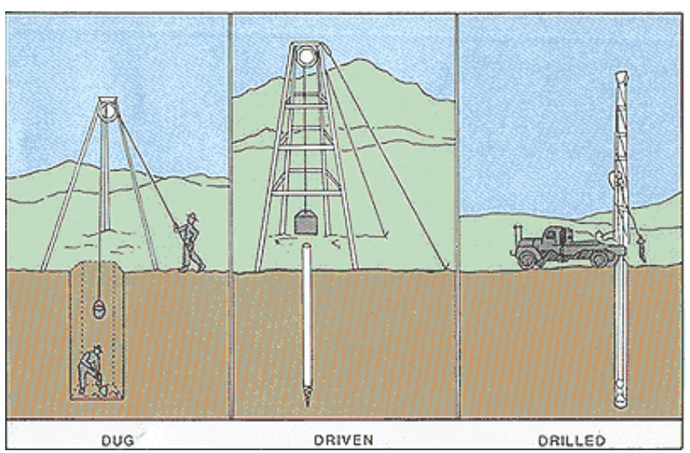
Milton Rylander at water pump, near Chisago City credit to Lawrence Rylander

Ground water occurs only close to the Earth's surface. The weight of the rocks above condenses the rocks below and squeeze out the open spaces deeper in the Earth. That is why ground water can only be found within a few miles of the Earth's surface.

Ground water is an important part of the water cycle. Ground water is that part of precipitation that seeps down through the soil until it reaches the spaces in rocks. Ground water slowly moves underground, generally at a downward angle (because of gravity), and may eventually seep into rivers, lakes, and oceans.

In the diagram below, you can see how the ground below the water table (the blue area) is saturated with water. The "unsaturated zone" above the water table (the greenish area) still contains water (after all, plants' roots live in this area), but it is not totally saturated with water. You can see this in the two drawings at the bottom of the diagram, which show a close-up of how water is stored in between underground rock particles.





Digging in the ground with a pick and shovel is one way to dig a well. If the ground is soft and the water table is shallow, then dug wells can work. They are often lined with stones to prevent them from collapsing. They can't be dug much deeper than the water table — just as you cannot dig a hole very deep when you are at the beach... it keeps filling up with water!

Driven wells are built by driving a small-diameter pipe into soft earth, such as sand or gravel. A screen is usually attached to the bottom of the pipe to filter out sand and other particles. They can only tap shallow water, and because the source of the water is so close to the surface, contamination from surface pollutants can occur.

Most modern wells are drilled, usually with a drill mounted on big trucks. Wells can be drilled more than 1,000 feet deep. An electrically driven pump is placed in the well to push water up to the surface such as here at the Lab.

Before we had electricity we used hand driven pumps, to get water from wells.

Since ground water is such an important source of water for many people, including us here at the Living Lab, it's important that we keep pollutants from entering the ground and contaminating our drinking water.

RIVER KEEPERS