Unit 1: Where's the Groundwater?

The question is: Where's the groundwater? First, you have to find the water table.

TO MAKE A WATER TABLE:

Saturated zone

If you fill a clear plastic cup with some small gravel then pour in a couple ounces of water, you'll see the water drip down through the gravel until most of it ends up in the bottom of the cup. The gravel flooded with water is called the SATURATED ZONE because the gravel is saturated with water -- all the spaces between the stones are filled.

Unsaturated zone

In the upper layer, water "sticks" to the surface of the gravel, but the spaces between are filled with air rather than water. The top layer is called the UNSATURATED ZONE. Sometimes it is called the zone of aeration; *aer* is pronounced just like *air*: that tells you what fills the spaces between the pieces of gravel in the unsaturated zone.

Water table

The WATER TABLE is the top surface of the saturated zone. The water table separates the saturated zone from the unsaturated zone. And the saturated zone is where the groundwater is.

Water moves in to fill any open spaces below the water table. If a pump pulls out some of the well's water, nearby groundwater will move in to fill the spaces.

But how did groundwater get into the well in the first place? Here's an example of how it occurs:

When you put a soda straw into a cup of cola and ice, the cola will fill the straw below the "water table." The soda straw is like an open space in the cola's "saturated zone." If you suck some of the cola out of the straw, the cola outside the straw flows through the ice chips into the straw, to replace the cola you drank. If you wait between sips, you can watch the soda fill the straw (below the water table) again.

A well works in the same way.

A well, like a soda straw, leaves an open space for liquid to flow into. In the ground, a well acts like an open space in the saturated zone. Water from the surrounding rocks will keep on flowing into that "open space" as long as the water table is higher than the well's intake area.

You can demonstrate this by putting a spray pump into a cup of gravel below the "water table." Each time you pump water out of the well, you leave space for the surrounding water to flow into.