WELL WATER CONNECTION, INC.
Water Well Design & Project Management

Recovery Rate in Artesian Wells

Recovery rate is a measurement in gallons per minute (gpm) of how quickly the well re-fills itself after being pumped down from its "normal" (static) level. A way to see it is to place one end of a clear straw into a glass of water while holding a fingertip firmly onto the other end so that no air can escape. Now push the straw deeper into the glass. As you do this you may feel a slight increase in pressure on your fingertip. As you continue to push the straw deeper to the bottom of the glass, as long as you keep your fingertip firmly on the other end, the pressure against your fingertip will increase as water tries to rush up the straw, but is held down by the air being compressed inside the straw. As soon as you take your fingertip off the end and the air pressure is released, you will see the water flow up the straw.

Intuitively, we know that it will stop when it reaches the same level (static level) as the water on the outside of the straw. However, if you watched carefully, you will notice that the level of the water in the straw does not rise at the same rate.

You can see the water rush up the straw quickly as you first remove your finger, then slow down as the water rises inside the straw and approaches the level of the water inside the glass. *The flow rate visibly decreases as the straw fills up with water.* This is due to the increasing weight of the water *inside* the straw as it rises. As more water flows in, the weight of the water inside the straw increases and is pushing down on the water that's flowing *into* the straw. This is why the rate of flow slows down as the straw fills up with water. When the water level in the straw reaches the same level as the water outside the straw (state of equilibrium) the water stops flowing. This type of water flow, to a lever higher than its original source is called *artesian*. Since the flow of water from most bedrock wells behaves in precisely this same manner, the term *artesian well* has become synonymous with bedrock wells.

PO Box 158 * Tewksbury, MA 01876 * Tel: 978-640-6900 * Fax: 978-640-6901 * www.WellWaterConnection.com