



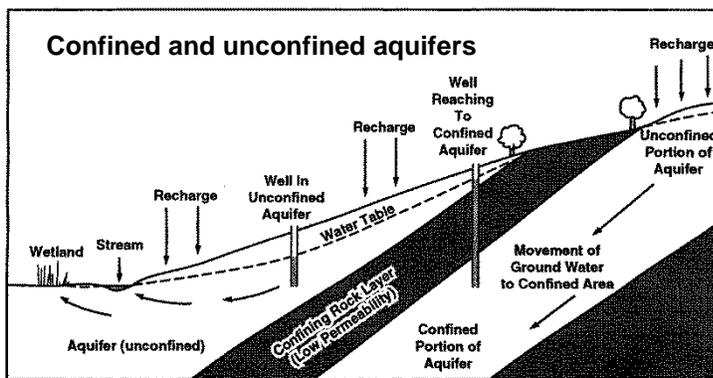
www.nhwaterwell.com

Information: New Hampshire Water Well Association

Information in this document is provided in good faith to inform the public about groundwater and water wells. Well owners should ensure that their well contractor has obtained permits (if required) and has referred to local codes, rules, regulations and laws for site selection, construction, maintenance and operation of water wells and water system equipment.

WHAT IS AN AQUIFER?

There are many variations of geology and hydrology that may make an aquifer. Some aquifers extend over long distances and to great depths. Many aquifers are small and localized. The word aquifer comes from the Latin words, "Aqua" (water), and "fer" (to carry). An aquifer is often described as a sub-surface geologic formation(s) (solid rock and/or unconsolidated sediments) that contains groundwater in sufficient quantities to be used, or have the potential to be used, for drinking water supply or for commercial, industrial or agricultural purposes. Groundwater is nearly always found when a well is drilled, although in some places there may be a very low rate of flow to the well. How large does a well's yield have to be to qualify a saturated rock as an aquifer? Half a gallon a minute will provide 700 gallons a day, but many people would not describe such low yielding rock formations as aquifers.

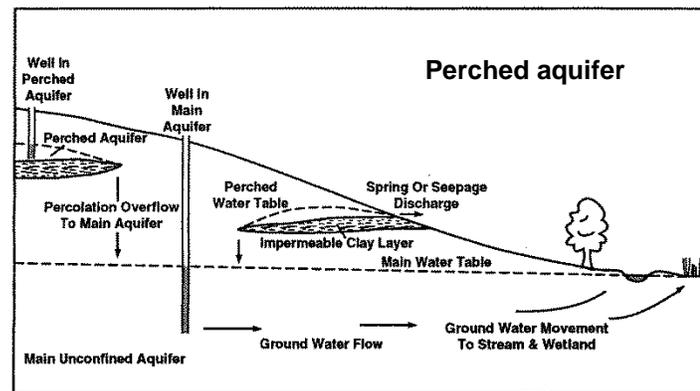


In general, there are three main categories of aquifers: unconfined, confined and perched. **Unconfined aquifers** occur in permeable geologic formations (either fractured rock or unconsolidated sediments) and the upper surface where the rock formations are fully saturated is called the water table. These aquifers are also known as water table aquifers. They receive recharge directly from the infiltration of snowmelt, rainfall or from surface water.

Confined aquifers are those that are covered (confined) by an impermeable or semi-permeable layer of rock. Confined aquifers need to be connected to an unconfined area through which recharge can occur. Artesian aquifer is the name sometimes used for confined aquifers. The term artesian well is often used incorrectly to describe any well drilled into solid rock. Water levels in most aquifers vary with the season and during droughts.

In confined and unconfined aquifers there may be considerable amounts of groundwater that are stored in impermeable/semi-permeable sediments such as clays. Water from these sediments can reach a well if they are in contact with permeable layers that are intersected by the well. So although clays are not usually thought of as aquifers they may be a key part of the storage in an aquifer system.

Perched aquifers occur where groundwater is perched above unsaturated rock formations because of the existence of a discontinuous impermeable layer. Perched aquifers are fairly common where there are clay layers in glacial sediments and they can often be the reason why two wells close together on the surface, one in a perched aquifer and one in a deeper aquifer may have different yields and quality.



If you are looking to drill a well, a New Hampshire water well contractor will have a good idea about local aquifers and will be able to advise about typical well yields in your area.

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