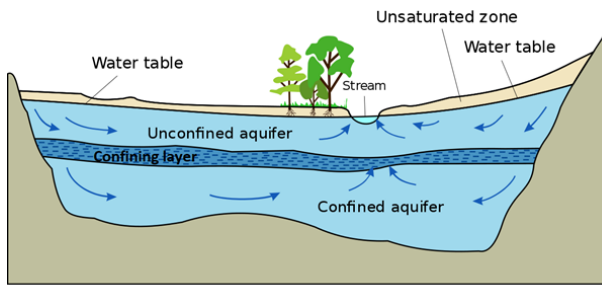
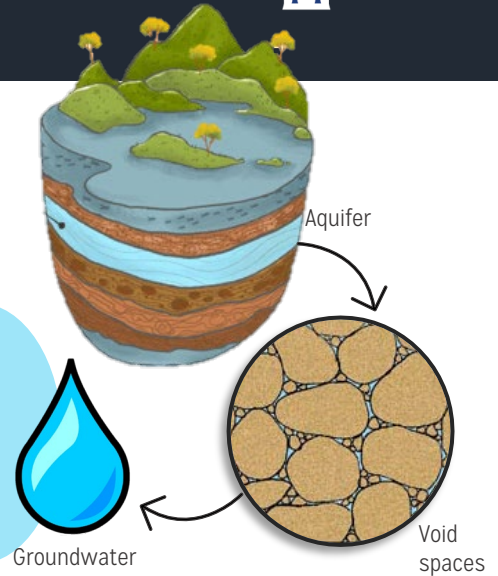


WHAT IS AN AQUIFER?

An **aquifer** is a geologic formation beneath our feet formed by permeable material, such as sand or gravel, capable of storing and giving water. Water occupies the void spaces in between sand grains, gravel or rock fractures.

The water contained within these formations is called **groundwater**, which is an extremely valuable source of drinking water. This water is only usable when it emerges above ground, and this can happen either naturally, through **springs**, or artificially, by using **pumping wells**.



Aquifers are delimited at the bottom by a layer of **less permeable material**, such as rock or clay, called a confining layer, and in some cases, they are bounded above by a similar less permeable layer.

- When there is a less permeable layer at above and below the aquifer, the formation is called a **confined aquifer**. These two layers cause the water to be “squeezed-in” increasing its pressure. At the same time, the top layer protects the aquifer from contaminants originating from the surface.
- In an **unconfined aquifer** there is not an upper less-permeable layer, so the groundwater is open and subject to atmospheric pressure. Usually, this type of aquifer is actively interacting with surface water bodies, such as rivers and lakes, and is more vulnerable to contamination.



■ Memphis aquifer
■ Mississippi Embayment



Aquifers of different types of material and size can be found everywhere in the world, supplying water from large cities to small villages.

In the U.S., there are 24 aquifer systems that together cover much of the Country. In the southeast U.S., the major aquifer system is the **Mississippi embayment**. This system comprises many individual aquifers and confining layers. Spatially, it underlies portions of 8 states: Missouri, Illinois, Kentucky, Tennessee, Arkansas, Louisiana, Mississippi, and Alabama. Some of its aquifers are known to provide the best quality water in the world.