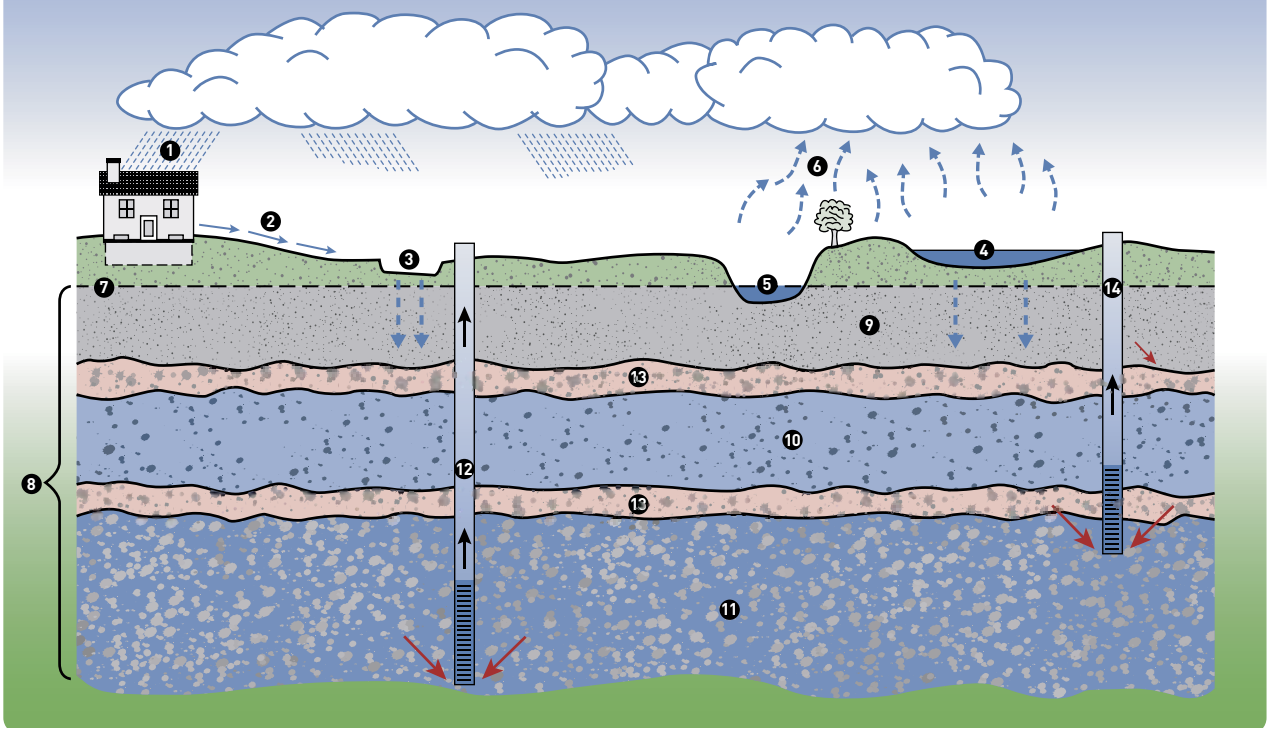
WADSWORTH'S NATURAL WATER CYCLE



The endless movement of water between the seas, the atmosphere and the land is called the hydrologic cycle. The land-based portion of this cycle is the subject of this diagram, and can be thought of as having two dimensions – activity above ground and activity underground.

The cycle begins as precipitation (rain or snowmelt) and ends as evaporation. Precipitation ❶ is delivered on top of the land and runs off ❷ to open basins such as ditches ❸, ponds ❹ and rivers or streams ❺. It also infiltrates the soil just beneath the surface. Eventually precipitation evaporates ❻ from open basins, the soil and plants and so the cycle continues.

The water table ❼ is that portion of the subsurface region beneath which the soil and/or rock is saturated with water (groundwater) and fed by rivers and streams.

Groundwater ❽ is divided into various aquifers, or formations of permeable rock, gravel or sand which conduct or contain the water. Sandstone, granite or limestone are typical components.

There could be several layers of aquifer: a water table aquifer ❾, an artesian aquifer ❿ which naturally supplies fresh water without the use of a pump, and a deep aquifer ⓫ which requires a pumping well ⓬ and generally is the source of municipal water supplies. Aquifers are separated by confining zones ⓭ which are usually composed of clay-like substances.

Groundwater can emerge through seeps or springs or when extracted by wells and used for drinking. Municipalities may install monitoring wells ⓮ in the deep aquifer to measure the pumping well's impacts on the aquifer.