

Groundwater

The mass of water stored beneath the Earth's surface.

How does groundwater form?

Raindrops infiltrate soil and other unconsolidated surface materials, sinking into cracks and crevices of bedrock.

The Hydrologic Cycle

The main cycle of water that travels from the ocean to the atmosphere to the surface and back to the oceans.

Mainly, the rain that falls from the sky either will soak into the ground by infiltration or it will flow over the surface as runoff. However, the rain may also get soaked up in plants and returned to the atmosphere via transpiration. The rainwater may also evaporate directly back into the atmosphere.

Water at or beneath the Earth's surface moves or "cycles" among the main reservoirs: the oceans, the atmosphere, and the land.

How do humans interfere with the natural operations of the hydrologic cycle?

Evaporation is increased by the use of irrigation waters in dry areas.

Runoff patterns are altered when water is diverted from one region to another.

Paving that covers Earth's surface with highways, parking lots, and buildings decreases infiltration.

Human contributions to global and local warming can lead to melting of glacial ice and changes in the balance of water in other reservoirs.

Removal of natural vegetation and forest decreases infiltration and changes in vegetation can affect transpiration.

Porosity

The amount of pore space in rock, soil or sediment.

It depends on the size and shape of the grains and how they are packed together. The smaller the particles and the more they vary in shape, the more tightly they will fit together.

<p><b>Permeability</b></p>	<p>The ability of a solid to allow fluids through.</p> <p>It depends on the sizes of the pores, how well they are connected, and how tortuous the path water must travel to pass through the material.</p>
<p><b>Recharge</b></p>	<p>Recharge is the infiltration of water into a surface.</p>
<p><b>Discharge</b></p>	<p>The opposite of recharge. The exit of groundwater from a surface.</p>
<p><b>Aquifers</b></p>	<p>Beds that store and transmit groundwater in sufficient quantity to supply wells.</p>
<p><b>Aquiclude</b></p>	<p>Impermeable beds of geologic material that hinder or prevent groundwater movement.</p>

<p>Unconfined Aquifer</p>	<p>Aquifers that have a direct connection to the surface.</p>
<p>Confined Aquifer</p>	<p>A groundwater storage area trapped between two impermeable layers of rock.</p>
<p>Artesian Flow</p>	<p>The water in a confined aquifer. It is under pressure equivalent to the weight of all of the water in the aquifer above that point.</p>
<p>Artesian Well</p>	<p>A well that is drilled into a confined aquifer at a point where the elevation of the ground is lower than that of the water table at the recharge area is an artesian well. It is free flowing, requiring no pumping to get the water to the surface.</p>
<p>Unsaturated Zone</p>	<p>The level at shallower depths where the rock and soil is unsaturated; that is, the pores contain some air and are not completely filled with water.</p>