

Ripple Effect # 65

GROUNDWATER: AN IMPORTANT RESOURCE

Water beneath the land surface is called underground water. Water moves under the ground in the interconnected spaces between soil or rock particles. Scientists call these “pore spaces.”

Although all ground water is underground water, not all water under the ground is ground water! Ground water is found in the spaces between soil particles, or in the pores, cracks, and fractures in rock material in the saturated zone (a place where all of the pore spaces or cracks and fractures are filled with water). In the unsaturated zones, the pore spaces are filled with water and air; the water is underground but it is not ground water. The top of the saturated zone is the water table.

Ground water is stored in an aquifer. An aquifer is an underground layer of saturated soil or rock that yields significant quantities of water that may be pumped to the surface for use by people, livestock, or watering crops. Aquifers come in all shapes and sizes—some cover hundreds of square miles and are hundreds of feet thick, while others may only cover a few square miles and are a few feet thick.

Some aquifers are confined; others are unconfined. In an unconfined aquifer, the top of the aquifer is the water table. Water freely moves into the unconfined aquifer. A confined aquifer is bounded above and below by layers that allow little or no water to pass through them.

Many cities and factories, as well as almost everyone who lives in rural areas, use ground water for drinking and other household uses. The largest use of ground water is to irrigate crops.

We can run out of ground water if more water is discharged than recharged. For example, during periods of dry weather, recharge to the aquifers decreases. If too much ground water is pumped during these times, the water table can fall and wells may go dry.

Ground water can become unusable if it becomes polluted and is no longer safe to drink. In areas where the material above the aquifer is permeable, pollutants can seep into ground water. Ground water can be polluted by seepage through landfills, from septic tanks or leaky underground fuel tanks, and sometimes from fertilizers or pesticides.

Water managers and water users work hard to protect and conserve ground water. One job is making sure that no more water is taken out than can be naturally returned. Because ground water can be affected by human activities, many communities protect all or part of the lands surrounding their wells. This is called well head protection. Many cities are doing even more – they protect a very large area called a watershed from which they obtain their surface and ground water.

With careful use and by reducing sources of pollution, ground water can continue to be an important natural resource in the future.

Information taken from “Discover Ground Water & Springs” by The Watercourse, www.montana.edu/wwwwater and United States Geological Survey (USGS) www.usgs.gov.