



■ **Figure 10.2** The zone of saturation is where groundwater completely fills all the pores of a material below Earth's surface.

**Describe** what is above the zone of saturation.

## The Zone of Saturation

The region below Earth's surface in which groundwater completely fills all the pores of a material is called the **zone of saturation**. The upper boundary of the zone of saturation is the **water table**, shown in **Figure 10.2**. Strictly speaking, only the water in the zone of saturation is called groundwater. In the **zone of aeration**, which is above the water table, materials are moist, but because they are not saturated with water, air occupies much of the pores.

**Water movement** Water in the zone of saturation and zone of aeration can be classified as either gravitational water or capillary water. Gravitational water is water that trickles downward as a result of gravity. Capillary water is water that is drawn upward through capillary action above the water table and is held in the pore spaces of rocks and sediment because of surface tension. Capillary action can be seen when the tip of a paper towel is dipped into water and the water seems to climb up through the fibers of the paper towel.

**The water table** The depth of the water table often varies depending on local conditions. For example, in stream valleys, groundwater is relatively close to Earth's surface, and thus the water table can be only a few meters deep. In swampy areas, the water table is at Earth's surface, whereas on hilltops or in arid regions, the water table can be tens to hundreds of meters or more beneath the surface. As shown in **Figure 10.2**, the topography of the water table generally follows the topography of the land above it. For example, the slope of the water table corresponds to the shape of valleys and hills on the surface above.

Because of its dependence on precipitation, the water table fluctuates with seasonal and other weather conditions. It rises during wet seasons, usually in spring, and drops during dry seasons, often in late summer.