

Water-table elevation

Stephen M. Sellwood, Wisconsin Geological and Natural History Survey

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Understanding groundwater and the water table

Groundwater is water under the earth's surface and is the source of drinking water for three-quarters of Wisconsin's residents.

Groundwater is part of the water cycle. It starts out as snow or rain and soaks into the soil or rock until it reaches the zone where all the empty spaces and cracks are filled with water—the saturated zone. The top of this zone is called the water table (fig. 1).

Despite its name, the water table is not a flat surface. Instead, it is generally shaped like a smoothed version of the land surface above it. Where the land surface rises, so does the water table, although not as steeply.

The slope of the water table determines the direction of groundwater flow. Groundwater is always moving, generally very slowly, through the saturated zone. Like water on the land surface, groundwater moves from areas of higher elevation to areas of lower elevation, eventually discharging in lakes and streams.

What the map shows

The map shows the approximate elevation of the water table in Columbia County. Each contour line traces an area that shares the same elevation. The darkest colors on the map represent areas with the highest water-table elevations.

The map also shows groundwater divides. A groundwater divide is a ridge along the highest elevations of the water table. Groundwater flows away from divides, toward groundwater discharge areas such as lakes and rivers. The major groundwater divides in Columbia County are illustrated on this map by thick gray lines. They are shown as wide areas because the location of the divide may change as the water table rises and falls in response to periods of rainfall and drought. Pumping groundwater from wells drilled near divides might also cause a shift in the divide.

Using the map

The water-table elevation map can be put to a variety of uses. For example, a map of the depth to water table can be made by subtracting the elevation of the water-table contours from the elevation of the land surface. This secondary map, available from the Wisconsin Geological and Natural History Survey, is an important component for estimating groundwater susceptibility. Knowing depth to water table can also be helpful when planning excavations, foundations, and highways.

Another important use of the water-table elevation map is to guide siting decisions for water supply wells, waste-disposal facilities, and other developments that could affect groundwater. Water supply wells, for example, should be sited up-gradient (that is, at a higher water-table elevation) of landfills, gas stations, and manure storage facilities to protect well-water quality.

The water-table elevation map has been generalized from a larger, more-detailed version. Copies of the full-sized map and additional information about the groundwater resources of Columbia County are available from the Wisconsin Geological and Natural History Survey.

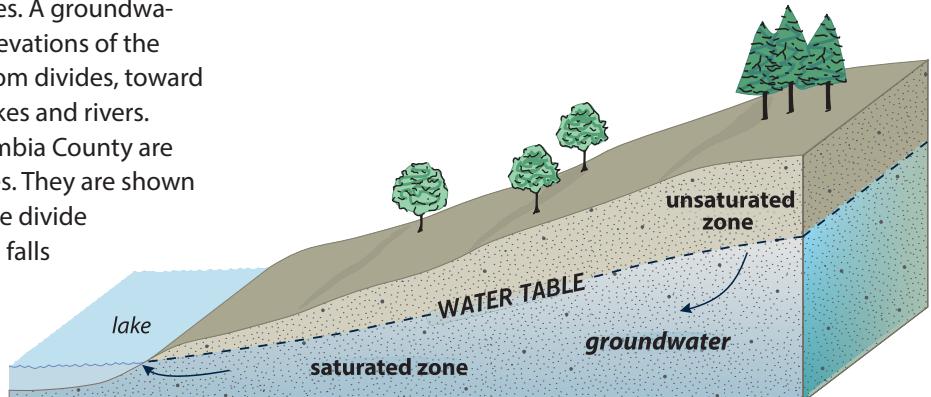


Figure 1. Groundwater and the water table.

Generalized water-table elevation in Columbia County, Wisconsin

