

Water-table elevation

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What is a water table?

Groundwater is water contained underground in pore spaces and fractures in sediment and rock. The water table is the undulating surface of the saturated zone; pore spaces and fractures are completely filled with water below this surface. The water table is an important feature of the groundwater system because its slope determines the direction of groundwater flow and where groundwater contributes to the flow in springs, streams, and rivers.

What the map shows

The water-table map shows the approximate elevation of the water table in Iowa County. Each contour line connects points of equal water-table elevation. The distance between each line represents a 50-foot change in elevation. The water table is relatively steep where the contour lines are close together, generally between small valleys and upland ridges. The water table is relatively flat where contour lines are farther apart, such as in the broad valley of the Wisconsin River.

A **surface-water divide** is a line of separation, commonly along a ridge or tract of high ground, which divides surface waters that flow naturally into one basin from those that flow naturally into another basin. In Iowa County, a surface-water divide lies along the Military Ridge (figure 1). Streams and rivers north of this divide flow within the basins of Mill Creek, Otter Creek, and several other streams, and ultimately reach the Wisconsin River. South of the Military Ridge, surface waters discharge to tributaries of the Pecatonica River system.

A **groundwater divide** is similar to a surface-water divide, in that it is a ridge along the highest elevations of the water table. Groundwater flows through the subsurface in response to gravity, from areas of higher water-table elevation to areas of lower water-table elevation. In Iowa County, the groundwater divides closely follow the surface-water divides. The groundwater divides are shown as wide areas on the map because their locations are approximate and may change as the water table rises and falls during wet and dry times of the year.

The arrows on this map illustrate the approximate directions of shallow groundwater flow, away from divides and towards low-lying streams, rivers, and lakes. The arrows and groundwater divides on the map can be used to identify the areas in which shallow groundwater flows toward particular stream systems. For example, in northern Iowa County, groundwater flows toward the Mill Creek, Otter Creek, and Blue River basins, discharging to these tributaries of, or directly into, the Wisconsin River.

Using the map

The water-table map illustrates the complex shape of the water table and the various directions of groundwater flow within Iowa County. Knowledge of flow direction and pathways is useful in siting and designing water supply wells, waste-disposal facilities, and other developments with the potential to affect groundwater. For example, water supply wells should be sited up-gradient (that is, higher up on a groundwater pathway) of landfills, gas stations, or manure storage facilities to protect well-water quality. Similarly, the quantity of groundwater discharge to a stream or spring may be preserved by limiting pumping from up-gradient wells.

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 Iowa County are available from the Wisconsin Geological and Natural History Survey.



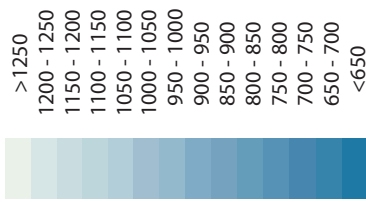
Figure 1.
Locations of
surface-water
divides (dotted
lines) in Iowa
County.

Generalized water-table elevation map of Iowa County, Wisconsin



Water-table elevation
contour interval=50 ft;
datum is sea level

-100



General direction of
shallow groundwater flow



Groundwater divide,
approximately located

