

Unconsolidated Aquifer Systems of Tipton County, Indiana

by

Robert A. Scott

Division of Water, Resource Assessment Section

October 2009

Four unconsolidated aquifer systems have been mapped in Tipton County: the Till Veneer; the Tipton Till; the Tipton Till Subsystem; and the Tipton Complex. Boundaries of all aquifer systems described are commonly gradational, and individual aquifers may extend across aquifer system boundaries. The thickness of unconsolidated deposits in Tipton County is quite variable because glacial material has been deposited over an uneven bedrock surface. Unconsolidated materials range from less than 50 feet thick in the northeastern portion of the county to more than 250 feet in the southwest portion of Tipton County.

Regional estimates of potential contamination to aquifer systems from the surface can differ considerably by location. Variations within geologic environments can result in a wide range of susceptibility to these systems. In addition, man-made structures such as poorly constructed water wells, unplugged or improperly abandoned wells, and open excavations can provide contaminant pathways that bypass the naturally protective clays.

Till Veneer Aquifer System

In Tipton County, the Till Veneer Aquifer System includes areas where the unconsolidated material is predominantly thin till overlying an eroded bedrock surface. This system is mapped in the northeastern corner of Tipton County and is the most limited groundwater resource of the unconsolidated aquifer systems in the county. Total thickness of the Till Veneer Aquifer System generally ranges from about 25 to 50 feet.

There is little potential for groundwater production in the Till Veneer Aquifer System in Tipton County. Few wells have been completed in this system because most wells have been completed in the underlying bedrock. Potential aquifer deposits would include thin, isolated sands and/or gravels with yields less than 5 gallons per minute (gpm). There are no registered significant groundwater withdrawal facilities using this system. The Till Veneer Aquifer System is not very susceptible to contamination from surface sources because the near-surface materials generally have low permeability.

Tipton Till Aquifer System

In Tipton County, this aquifer system ranges in thickness from about 50 feet in the eastern and northeastern portion of the county to over 250 feet in the southwestern portion of the county. Wells completed in the Tipton Till Aquifer System are capable of meeting the needs of most domestic and some high-capacity users in Tipton County. However, approximately 30 percent of wells started in this system utilize the underlying bedrock aquifer. Saturated aquifer materials

include sand and/or gravel deposits that are commonly 5 to 15 feet thick and are generally overlain by 65 to 135 feet of till. Wells producing from the Tipton Till Aquifer System are typically 70 to 140 feet deep. Domestic well capacities are commonly 15 to 50 gpm. Static water levels generally range from 10 to 22 feet below the surface, however, two flowing wells have been reported in Tipton County. There is 1 registered significant groundwater withdrawal facility (1 well) with a reported yield of 150 gpm.

The Tipton Till Aquifer System typically has a low susceptibility to surface contamination because intratill sand and gravel units are commonly overlain by thick glacial till. Shallow wells completed in this system are moderately susceptible to contamination.

Tipton Till Aquifer Subsystem

Areas where unconsolidated materials are generally greater than 50 feet in thickness, yet have limited aquifer potential, are mapped as the Tipton Till Aquifer Subsystem in the county. Total thickness of unconsolidated materials in this subsystem ranges from about 50 to 200 feet thick in Tipton County. Potential aquifer materials include intertill sand and gravel deposits. Where present these aquifer materials are typically capped by till that is commonly 40 to 75 feet thick.

More than 80 percent of wells started in the Tipton Till Aquifer Subsystem in this county are completed in the underlying bedrock aquifer system. However, this subsystem is capable of meeting the needs of some domestic users in the county. The few wells producing from the Tipton Till Aquifer Subsystem are generally completed at depths of 45 to 100 feet. Intertill sand and gravel aquifer materials are typically 2 to 10 feet thick. Reported well yields generally range from 10 to 25 gpm and static water levels are commonly 8 to 18 feet below the surface. There are no registered significant groundwater withdrawal facilities using this system.

This subsystem is generally not very susceptible to surface contamination because intertill sand and gravel units are overlain by thick till deposits. However, in some areas where aquifers are shallow and overlying clay deposits are thin, the system is at moderate risk.

Tipton Complex Aquifer System

The Tipton Complex Aquifer System is characterized by unconsolidated deposits that are quite variable in materials and thickness. Aquifers within the system range from thin to thick and include single or multiple intertill sands and gravels. The aquifers are highly variable in depth and lateral extent and are typically confined by thick clay layers. Total thickness of the Tipton Complex Aquifer System generally ranges from about 100 to over 250 feet in Tipton County.

This system is capable of meeting the needs of domestic and some high-capacity users in Tipton County. However, approximately 14 percent of wells started in this system utilize the underlying bedrock aquifer. The most utilized aquifer layers in the Tipton Complex Aquifer System are generally 5 to 20 feet thick sands and/or gravels overlain by a till cap which is commonly 70 to 135 feet thick. Wells in this system are typically completed at depths ranging from 85 to 155 feet. Domestic well yields are commonly 15 to 50 gpm and static water levels are generally 8 to

20 feet below the surface. There are 2 registered significant groundwater withdrawal facilities (total of 9 wells) with reported yields of up to 745 gpm.

The Tipton Complex Aquifer System is not very susceptible to contamination where overlain by thick clay deposits. However, in some areas where surficial clay deposits are thin, the shallow aquifer, if present, is at moderate to high risk.

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