

Unconsolidated Aquifer Systems of Clinton County, Indiana

by

Robert A. Scott

Division of Water, Resource Assessment Section

October 2008

Four unconsolidated aquifer systems have been mapped in Clinton County: the Tipton Till; the Tipton Till Subsystem; the Tipton Complex; and the Wabash River and Tributaries Outwash Subsystem. Boundaries of all aquifer systems described are commonly gradational and individual aquifers may extend across aquifer system boundaries.

The thickness of unconsolidated deposits in Clinton County is quite variable because glacial material has been deposited over an uneven bedrock surface. The thickness of unconsolidated deposits ranges from about 100 feet in the southwestern corner to over 400 feet in the southeastern portion of the county.

Regional estimates of aquifer susceptibility to contamination from the surface can differ considerably from local reality. Variations within geologic environments can cause variation in susceptibility to surface contamination. 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.

Tipton Till Aquifer System

In Clinton County, the unconsolidated thickness of this aquifer system ranges from about 100 feet in the southwestern corner of the county to over 400 feet in the southeastern portion of the county. Wells completed in the Tipton Till Aquifer System are capable of meeting the needs of most domestic users in Clinton County. However, approximately 7 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 10 feet thick and are generally overlain by 55 to 175 feet of till. Wells producing from the Tipton Till Aquifer System are typically 60 to 180 feet deep. Domestic well capacities are commonly 15 to 50 gallons per minute (gpm). Static water levels generally range from 15 to 30 feet below the surface. There are no registered significant ground-water withdrawal facilities in this system in Clinton County.

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 where surficial clay deposits are thin.

Tipton Till Aquifer Subsystem

The subsystem is mapped similar to that of the Tipton Till Aquifer System. However, potential aquifer materials are typically thinner and potential yield is generally less in the subsystem than in the Tipton Till Aquifer System. The unconsolidated material in this subsystem ranges from about 200 to 400 feet thick. Potential aquifer materials include thin intratill sand and gravel deposits. Where present, aquifer materials are typically capped by till that is commonly 50 to 105 feet thick.

Approximately 43 percent of wells started in the Tipton Till Aquifer Subsystem are completed in the underlying bedrock aquifer system in Clinton County. 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 55 to 110 feet. Intratill sand and gravel aquifer materials are typically 2 to 5 feet thick. Reported well yields generally range from 5 to 10 gpm and static water levels are commonly 10 to 20 feet below the surface. There are no registered significant ground-water withdrawal facilities in this system in Clinton County.

This subsystem is generally not very susceptible to surface contamination because intratill 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 intratill sands and gravels. The aquifers are highly variable in depth and lateral extent and are typically confined by thick clay layers. The total unconsolidated thickness of the Tipton Complex Aquifer System generally ranges from about 200 feet to over 400 feet in Clinton County.

This system is capable of meeting the needs of domestic and most high-capacity users in the county. Aquifer layers utilized in the Tipton Complex Aquifer System are generally 5 to 10 feet thick sands and/or gravels. These sands and gravels are overlain by a till cap which is commonly 65 to 190 feet thick with thin intratill sand and gravel layers. Wells in this system are typically completed at depths ranging from 68 to 195 feet. Domestic well yields are commonly 15 to 65 gpm and static water levels are generally 15 to 35 feet below the surface. There are 8 registered significant ground-water withdrawal facilities (29 wells) in this system in Clinton County. High-capacity well yields up to 1200 gpm are reported.

The Tipton Complex Aquifer System is generally not susceptible to contamination because it is typically overlain by thick clay deposits. However, in places surficial clay thickness is thin or not present. These areas are at moderate to high risk to surface contamination.

Wabash River and Tributaries Outwash Aquifer Subsystem

The Wabash River and Tributaries Outwash Aquifer Subsystem is mapped along portions of Middle Fork Wildcat Creek, South Fork Wildcat Creek, Kilmore Creek, and Sugar Creek in

Clinton County. The system is made up of thick, glacially derived outwash deposits (sand and gravel).

This subsystem is capable of meeting the needs of domestic and some high-capacity users in the county. The few wells producing from the Wabash River and Tributaries Outwash Aquifer Subsystem are generally completed at depths ranging from 60 to 165 feet below surface with up to 18 feet of continuous sand and gravel. In places, aquifer materials are capped by silt or sandy clay ranging from 4 to 95 feet thick. Domestic wells typically yield 15 to 25 gpm with static water levels commonly 5 to 35 feet below surface. There are no registered significant ground-water withdrawal facilities in this system in Clinton County.

Where overlying clay or silt deposits are present the system is moderately susceptible to surface contamination. However, the few areas that lack overlying clay or silt deposits are highly susceptible to contamination.

Map Use and Disclaimer Statement

We request that the following agency be acknowledged in products derived from this map:
Indiana Department of Natural Resources, Division of Water.

This map was compiled by staff of the Indiana Department of Natural Resources, Division of Water using data believed to be reasonably accurate. However, a degree of error is inherent in all maps. This product is distributed “as is” without warranties of any kind, either expressed or implied. This map is intended for use only at the published scale.