

Unconsolidated Aquifer Systems of Whitley County, Indiana

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Five unconsolidated aquifer systems have been mapped in Whitley County: the Bluffton/Auburn Till; the Bluffton/Auburn Complex; and the Wabash River and Tributaries Outwash System. Boundaries of these aquifer systems are commonly gradational, and individual aquifers may extend across aquifer system boundaries.

Pre-Wisconsin and Wisconsin glacial sediments completely cover Whitley County. However, the thickness of unconsolidated sediments is quite variable. Thickness of unconsolidated sediments that overlie bedrock ranges from approximately 70 feet in the southern half of the county to as much as 385 feet to the north.

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.

Bluffton/Auburn Till Aquifer System

In Whitley County, the Bluffton/Auburn Till Aquifer System is mapped throughout portions of the southern half of the county and, to a lesser extent, the northern half. The system typically consists of thick clay with intermittent sands and gravels that in places are up to 385 feet in total thickness. Well depths generally range from 80 to 170 feet below surface. Potential aquifer materials include sands and/or gravels that typically range from 4 to 12 feet thick. Aquifer materials are generally overlain by 70 to 170 feet of clay that include intermittent sand and gravel deposits that are commonly 3 to 9 feet thick.

The Bluffton/Auburn Till Aquifer System is capable of meeting the needs of domestic and some high-capacity users. Domestic well capacities are generally 10 to 20 gallons per minute (gpm). Static water levels are commonly 30 to 75 feet below surface with a few flowing wells reported. There is one registered significant ground-water withdrawal facility (2 wells) with reported yields of 75 gpm. This aquifer system is generally not very susceptible to surface contamination because intratill sand and gravel units are overlain by thick till deposits.

Bluffton/Auburn Complex Aquifer System

The Bluffton/Auburn Complex Aquifer System is mapped throughout most of Whitley County. This system includes unconsolidated deposits that are quite variable in materials and thickness. Multiple sand and gravel aquifer deposits vary from thin to massive and are typically overlain by a thick till. Also, in places the system exhibits multiple sand and gravel deposits above the primary aquifer resource that are also a potential source of ground-water.

Well depths range from 30 to 315 feet but are commonly 70 to 155 feet. Typical aquifer thicknesses are 10 to 35 feet. However, aquifer materials up to 160 feet thick have been reported. The deeper, more productive aquifer deposits are commonly overlain by till with multiple discontinuous sands and gravels that range from 10 to 240 feet thick but are generally 55 to 130 feet thick. The multiple discontinuous sands and gravels range from 2 to 120 feet thick but are typically 5 to 20 feet thick.

The Bluffton/Auburn Complex Aquifer System is capable of meeting the needs of domestic and high-capacity users. Typical domestic yields range from 10 to 30 gpm. Static water levels commonly range from 25 to 65 feet below surface. There are 12 registered significant ground-water withdrawal facilities (19 wells) with reported yields that range from 80 to 2600 gpm. This aquifer system is not very susceptible to contamination because thick clay deposits overlie aquifer materials.

Wabash River and Tributaries Outwash Aquifer System

The Wabash River and Tributaries Outwash Aquifer System is mapped in the west-central portion of Whitley County along a section of the Eel River. There are very few wells completed in this system. However, production wells for the Town of South Whitley indicate adequate potential for domestic and some high-capacity users.

Well depths generally range from 30 to 250 feet below surface with up to 160 feet of continuous sand and gravel. Aquifer materials are generally capped by silt, sandy clay, or clay ranging from 10 to 15 feet thick. Also, in places aquifer sand and gravel deposits include discontinuous clay or gravelly clay deposits 10 to 30 feet thick. There is one registered significant ground-water withdrawal facility (2 wells) in the outwash system in Whitley County. Reported test yields for each well are up to 1000 gpm and static water levels range from 3 to 20 feet below surface.

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

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