

Unconsolidated Aquifer Systems of Brown County, Indiana

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The unconsolidated aquifer systems mapped for Brown County include the Alluvial, Lacustrine, and Backwater Deposits and the Dissected Till and Residuum / Unglaciaded Southern Hills and Lowlands. Boundaries between the systems are relatively well defined. Both systems have extremely limited potential for development of successful water wells. Drillers prefer completion of wells in the underlying bedrock aquifer system (Mississippian Borden Group). That too is quite limited, and many county residents prefer to tap into a public water supply system serving parts of the county.

Alluvial, Lacustrine, and Backwater Deposits Aquifer System

The Alluvial, Lacustrine and Backwater Deposits Aquifer System in Brown County is made up of heterogeneous bodies of alluvial, colluvial, and lacustrine materials within valley bottoms and along terraces of Beanblossom Creek and Salt Creek. This aquifer system is an extremely limited resource in the county and the Division has no records for wells actually producing from these deposits. The potential for completion of a well in the unconsolidated deposits, however, does exist. Unconsolidated materials within the Alluvial, Lacustrine, and Backwater Deposits Aquifer System range from less than 5 feet to 50 feet thick.

Unconsolidated materials within the system include thin alluvial and colluvial deposits of Wisconsin and Holocene (Recent) age. Small remnants of pre-Wisconsin outwash are noted as terraces in the main valleys of Beanblossom Creek and Salt Creek. Additionally, lacustrine deposits of Wisconsin and pre-Wisconsin age are noted only in the valley of Beanblossom Creek. Discontinuous sand and gravel lenses, where present in this aquifer system, are expected to be less than 5 feet thick and may be confined within the fine-grained glaciolacustrine deposits, or may directly overlie bedrock.

The lacustrine deposits were formed in bodies of relatively stagnant lake water. The formation of these deposits can be attributed to larger river valleys, like the East Fork and West Fork White River, being choked with sand and gravel outwash materials carried by glacial meltwater that poured from the waning ice sheets. Thick deposits of this outwash dammed tributary streams, like Beanblossom Creek and Salt Creek, thus creating lakes in which fine-grained glaciolacustrine deposits accumulated. Today, within the Beanblossom valley bottoms and along some higher terraces, these deposits of silt and clay, sometimes called "slack water clay," mark the locations of former glacial lakes. The lacustrine deposits are often indicated on Quaternary geology maps and soil maps.

Dissected Till and Residuum / Unglaciaded Southern Hills and Lowlands Aquifer System

The Dissected Till and Residuum / Unglaciaded Southern Hills and Lowlands Aquifer System covers most of the county. It is an extremely limited aquifer resource, typified by very thin unconsolidated deposits overlying bedrock. Only in isolated portions of northern and eastern Brown County does the system include pre-Wisconsin glacial deposits typically limited to ridge tops. The rest of the aquifer system in the county includes unglaciaded areas comprised of weathered bedrock residuum. The later Wisconsin glacial ice sheets stopped just north of the county line, thus depriving Brown County of potential aquifer materials common to counties farther north.

In Brown County no known wells produce from The Dissected Till and Residuum / Unglaciaded Southern Hills and Lowlands Aquifer System. All domestic wells, for which the Division has records, produce from the underlying bedrock. Where only bedrock residuum is present, the chances of obtaining a successful drilled well in the unconsolidated deposits is quite limited. However, it is possible that the bedrock aquifer system could be enhanced by the presence of sporadic sand and gravel materials in limited areas of glacial drift on the ridge tops. A few old dug wells may still be used, but yields would be very small.

South of Beanblossom Creek the thickness of unconsolidated materials ranges from 2 to 20 feet, however, north of Beanblossom Creek the unconsolidated deposits are somewhat thicker. In limited areas pre-Wisconsin drift occurs up to 50 feet thick on ridge tops. One well near the Morgan County line reportedly penetrated 85 feet of clay, mud, and gumbo before being completed in bedrock. Although the potential for completion of an unconsolidated well is somewhat better in those small areas of glacial drift, the overall chances for successful wells in this aquifer system is still quite limited.

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