

UNCONSOLIDATED AQUIFER SYSTEMS OF JEFFERSON COUNTY, INDIANA

Four unconsolidated aquifer systems have been mapped in Jefferson County: the Dissected Till and Residuum; the Alluvial, Lacustrine, and Backwater Deposits; the Muscatatuck Plateau Till Subsystem; and the Ohio River Outwash.

Outside of the main valley of the Ohio River, nearly the entire county has less than 25 feet of unconsolidated materials overlying the bedrock.

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.

Dissected Till and Residuum Aquifer System

The Dissected Till and Residuum Aquifer System, which covers about 97 percent of Jefferson County, has the most limited groundwater resources of all the unconsolidated aquifer systems in the county.

Unconsolidated materials above the bedrock are so thin in most places that the aquifer elevations roughly approximate the elevations of the bedrock surface.

Due to the thinness of the aquifer system, dry holes are common. A few dug wells are likely still used, but their yields would typically be quite low.

Because of the low permeability of the surface materials, this system is not very susceptible to surface contamination.

Alluvial, Lacustrine, and Backwater Aquifer System

The Alluvial, Lacustrine, and Backwater Deposits Aquifer System is composed of unconsolidated deposits in a few larger valleys tributary to the Ohio River.

There are areas in this aquifer system where the thickness of unconsolidated materials approaches 100 feet. This is true for the downstream portions of the Ohio River.

This aquifer system is generally marked by thick surface deposits of soft silt and clay that have low susceptibility to surface contamination.

Muscatatuck Plateau Till Aquifer Subsystem

The Muscatatuck Plateau Till Aquifer Subsystem occurs in the northwestern part of Jefferson County. The system is discontinuous, occurring as individual areas within a larger area in southern Indiana.

The Muscatatuck Plateau Till Aquifer Subsystem is composed primarily of glacial tills that contain intertilt sand and gravel aquifers of limited thickness and extent.

Well yields in the Muscatatuck Plateau Till Aquifer Subsystem would be expected to be quite variable, but generally adequate for domestic use.

The Muscatatuck Plateau Till Aquifer Subsystem has a low susceptibility to surface contamination because intertilt sand and gravel units are generally overlain by several feet of low-permeability glacial till.

Ohio River Outwash Aquifer System

The Ohio River Outwash Aquifer System occupies the main valley of the Ohio River. This valley carried great quantities of outwash from the melting glaciers during Wisconsin and pre-Wisconsin glacial periods.

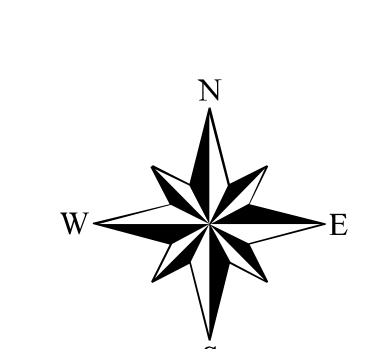
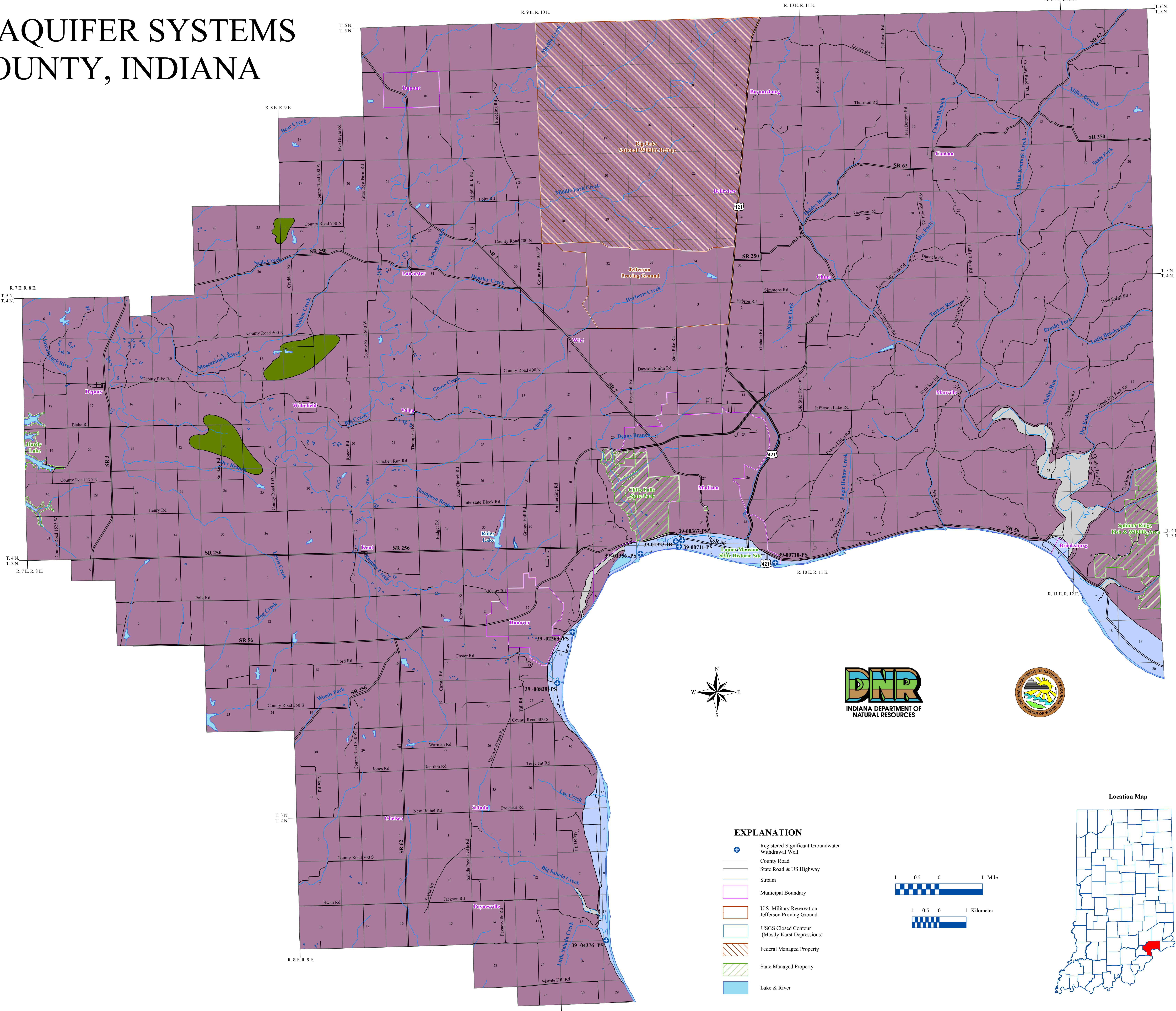
This aquifer system contains large volumes of sand and gravel that fill the main river valley. As the glaciers melted, the sediment contained within them was delivered to the Ohio River in quantities too large for the stream to transport.

Unconsolidated deposits of the Ohio River Outwash Aquifer System range from about 40 feet to 150 feet in thickness. This aquifer system, with its thick sand and gravel, contrasts sharply with the adjacent Dissected Till and Residuum Aquifer System.

The elevations of high terraces in the Ohio River valley range from approximately 480 feet m.s.l. upstream where the river enters southeastern Jefferson County and approximately 470 feet m.s.l. downstream where it leaves the county.

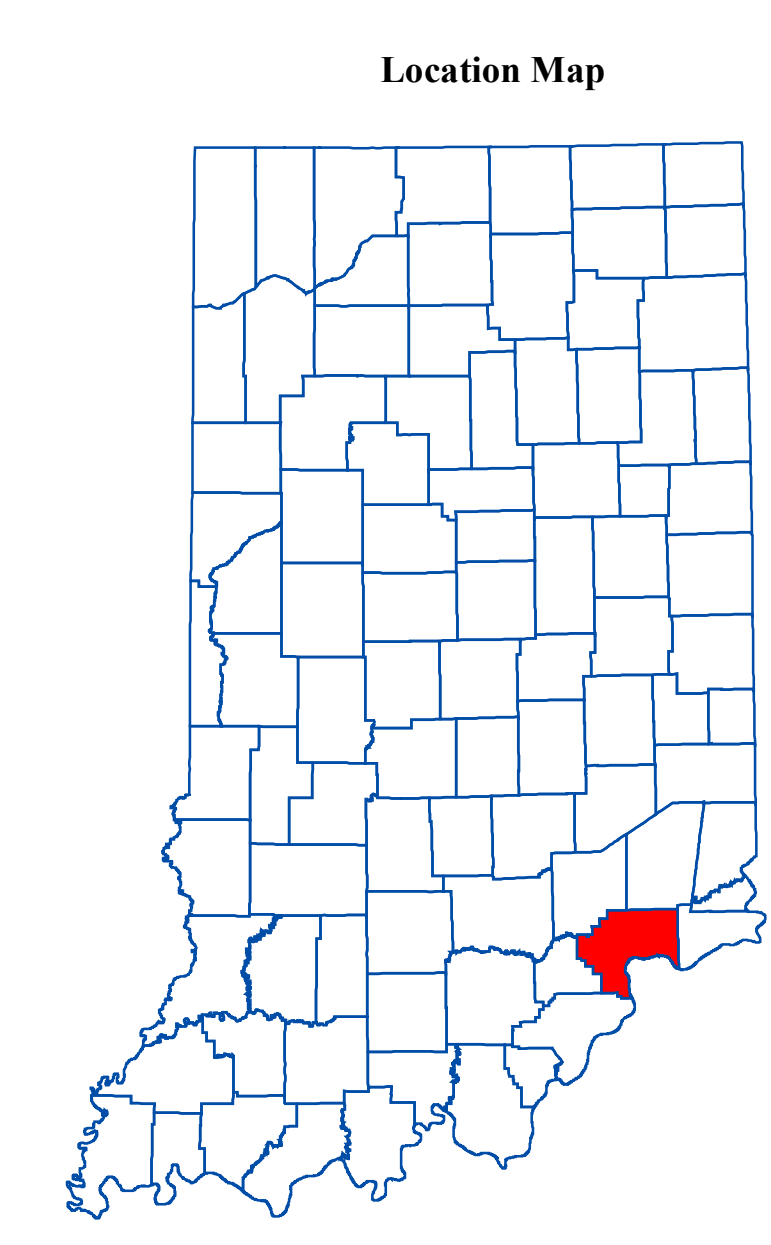
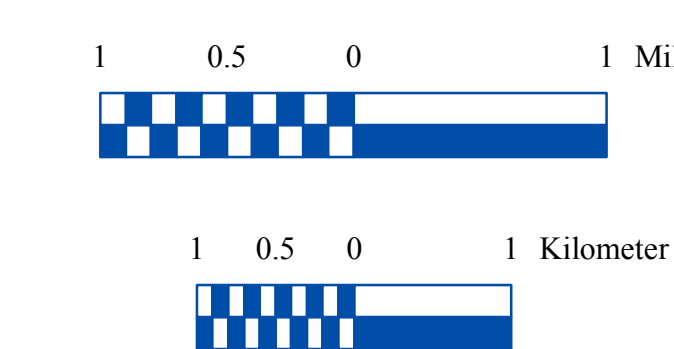
The Ohio River Outwash Aquifer System is by far the most productive aquifer system in the county and has the potential to consistently meet the needs of high-capacity water users.

This aquifer system is highly susceptible to contamination from surface sources in areas that lack overlying clay layers. The system is only moderately susceptible where it is overlain by thick clay or silt deposits.



EXPLANATION

- Registered Significant Groundwater Withdrawal Well
County Road
State Road & US Highway
Stream
Municipal Boundary
U.S. Military Reservation
Jefferson Proving Ground
USGS Closed Contour (Mostly Karst Depressions)
Federal Managed Property
State Managed Property
Lake & River



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.
Map generated by Jennifer Mc Millan
DNR, Division of Water, Resource Assessment Section
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This map was created from several existing shapefiles: Township and Range Lines of Indiana (line shapefile, 20020621), Land Survey Lines of Indiana (polygon shapefile, 20020621), and County Boundaries of Indiana (polygon shapefile, 20020621).

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