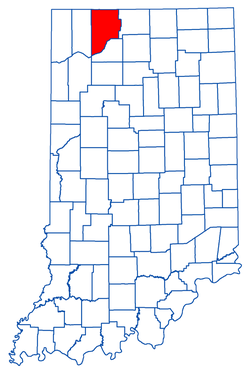
UNCONSOLIDATED AQUIFER SYSTEMS OF LAPORTE COUNTY, INDIANA

INDIANA DEPARTMENT OF NATURAL RESOURCES

DIVISION OF WATER

Location Map



N
W E
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1 0.5 0 1 Mile

1 0.5 0 1 Kilometer

EXPLANATION

- Registered Significant Ground-Water Withdrawal Facility
- Stream
- County Road
- State Road & US Highway
- Interstate
- Basin Boundary
- Municipal Boundary
- State Managed Property
- Federal Managed Property
- Lake & River

The following is a summary of the availability of groundwater in LaPorte County and was derived from the Indiana Department of Natural Resources 1990 publication Water Resource Availability in the Kankakee River Basin, Indiana and the Indiana Department of Natural Resources 1994 publication Water Resource Availability in the Lake Michigan Region, Indiana. Each report describes the availability, distribution, quality, and use of groundwater and surface water in the Kankakee River Basin and the Lake Michigan Region. The full reports can be viewed and downloaded at http://www.in.gov/dnr/water.

Unconsolidated deposits of glacial sands and gravels are the principle source of groundwater in LaPorte County. Five unconsolidated aquifer systems have been mapped and defined on the basis of geologic environments and aquifer characteristics. They are: the Calumet Aquifer System, the Lacustrine Plain Aquifer System, the Valparaiso Moraine Aquifer System, the Valparaiso Outwash Apron Aquifer System, and the Kankakee Aquifer System. Due to the availability of prolific unconsolidated aquifer systems and the extreme limitations of shale materials, the underlying bedrock is generally not used as an aquifer resource.

Calumet Aquifer System

The Calumet Aquifer System occurs in the northwest corner of LaPorte County and consists of fine to medium grained sand with dispersed lenses of gravel. Beds of interlaminated silt and clay, and deposits of peat and muck confine the aquifer in small areas across the region.

Static water levels in the Calumet Aquifer System vary according to surface elevation resulting in static water levels of 100 feet below the crests of high dunes in northern LaPorte County. Saturated thickness of the system ranged from less than 5 feet to about 40 feet. The Calumet Aquifer has not been developed significantly because of its proximity to Lake Michigan, an abundant surface water source.

There are no registered significant groundwater withdrawal facilities utilizing this system in LaPorte County. However, reported domestic well yields range from 5 to 20 gallons per minute (gpm). The aquifer is highly susceptible to surface contamination because there is no clay rich cap across most of the aquifer and there is a lack of clay separator beds.

Lacustrine Plain Aquifer System

The Lacustrine Plain Aquifer System consists of a series of confined aquifers present beneath the Calumet Lacustrine Plain. The individual aquifers consist of fine to medium grained glaciolacustrine and coastal sands capped by either lacustrine clays or till. Thickness of individual aquifers averages 24 feet, but frequently ranges from 7 feet to as much as 90 feet in areas where sediment accumulations were localized in bedrock valleys.

Depths to static water levels are highly variable in the many aquifers of the Lacustrine Plain Aquifer System, but in some parts of LaPorte County flowing artesian wells are present. Wells completed in the Lacustrine Plain Aquifer System can typically produce about 5 to 20 gpm. In areas where wells penetrate coarse sand and gravel, yields of 40 to 50 gpm have been reported. However, because of variations in thickness, lateral extent, and localized hydraulic connections of the individual aquifers within the system, sustained yields vary.

There are 5 registered significant groundwater withdrawal facilities (11 wells) with yields from 30 to 500 gpm. This aquifer system's susceptibility to contamination ranges from low to high, depending on the thickness of the surficial lacustrine clays and till.

Valparaiso Moraine Aquifer System

The Valparaiso Moraine Aquifer System occurs in the northern portion of LaPorte County and is a till capped deposit cored with fine to medium grained sand having some gravel lenses. The average thickness of the till cap is 20 feet, but in places the till cap is absent.

The Valparaiso Moraine Aquifer system consists of a heterogeneous layer of outwash sand and gravel with intermixed clay and silt lenses. The aquifer thickness ranges from about 10 to more than 130 feet, and lies about 10 to 100 feet beneath the surface of the Valparaiso Moraine; however, this aquifer system is unconfined in small isolated areas in the county where surficial tills are absent. Static water levels are generally relatively deep, ranging from 25 to 80 feet below the surface.

Production from wells completed in the main aquifer body are commonly more than adequate for domestic use. Yields typically range from 10 to 20 gpm, although yields vary up to 60 gpm. There are 17 registered significant groundwater withdrawal facilities (32 wells) with yields from 27 to 1200 gpm. The aquifer system's susceptibility to surface contamination ranges from moderate to high, depending on the thickness of the till cap.

Valparaiso Outwash Apron Aquifer System

This aquifer system, which forms the southern slope of the Valparaiso Moraine, is a deposit of fine to medium grained sand interbedded with gravel rich zones and clay lenses. Shale rich gravel lenses are scattered throughout the apron. The outwash apron occurs across the central portion of LaPorte County.

Most wells are completed in the upper aquifer unit and have depths ranging from 30 feet to more than 100 feet. The wells completed in the lower aquifer unit typically exceed 50 feet deep and may be more than 150 feet deep. The depth to the static water level typically is less than 20 feet deep, but at higher surface elevations, depths may exceed 40 feet. Yields in the upper and lower aquifer units are similar, ranging from 15 to 60 gpm for domestic wells.

There are 118 registered significant groundwater withdrawal facilities (159 wells) with yields from 10 to 1500 gpm. Because there is no clay rich cap, the aquifer system is highly susceptible to surface contamination.

Kankakee Aquifer System

The Kankakee Aquifer System is an unconfined deposit of well-sorted fine to medium grained sand, which is interbedded with gravel lenses in the tributary valleys. In places the aquifer system thickness is less than 20 feet where the unit overlies bedrock highs. The aquifer system thickness ranges up to 150 feet in the tributary valleys which dissect the southern slope of the Valparaiso Moraine in LaPorte County.

Static water levels are shallow in the Kankakee River floodplain, and are usually less than 20 feet deep. Wells typically are shallow, and few exceed depths of 50 feet. In the tributary valleys, however, the depth to the water table may exceed 50 feet and well depths may exceed 150 feet. Domestic wells usually produce from 15 to 50 gpm.

There are 71 registered significant groundwater withdrawal facilities (141 wells) with yields from 50 to 1600 gpm. Due to the absence of clay deposits, the aquifer system is highly susceptible to surface contamination.

Map generated by Scott H. Dean, January 2010
IDNR, 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), were all from the Indiana Geological Survey and based on a 1:24,000 scale. Draft road shapefiles, System1 and System2 (line shapefiles, 2003), were from the Indiana Department of Transportation and based on a 1:24,000 scale. Populated Areas in Indiana 2000 (polygon shapefile, 20021000) was from the U.S. Census Bureau and based on a 1:100,000 scale. Streams27 (line shapefile, 20000420) was from the Center for Advanced Applications in GIS at Purdue University. Managed Areas 96 (polygon shape file, various dates) was from IDNR. Unconsolidated Aquifer Systems coverage was from IDNR (Water Resource Availability in the Kankakee River Basin, Indiana, 1990, and Water Resource Availability in the Lake Michigan Region, Indiana, 1994) and based on a 1:48,000 scale.

Unconsolidated Aquifer Systems of LaPorte County, Indiana

by

Division of Water

1990, 1994