

POTENTIOMETRIC SURFACE MAP OF THE BEDROCK AQUIFERS OF LAKE COUNTY, INDIANA

Lake County, Indiana is located in the northwestern corner of the state and is bounded by the state of Illinois along its western border, Lake Michigan to the north, and Porter, Jasper and Newton counties to the east and south. The county is situated within two major drainage basins of which the northern portion is located within the Lake Michigan Region, with the southern section of the county within the Kankakee River Basin.

The Potentiometric Surface Map (PSM) of the Bedrock Aquifers of Lake County was mapped by contouring the elevations of 522 static water-levels reported on well records received over a 50 year period. These wells are completed in bedrock aquifers at various depths, and typically, under confined conditions (bounded by impermeable layers above and below the water bearing formation). However, some wells were completed under unconfined (not bounded by impermeable layers) settings. The potentiometric surface is a measure of the pressure on water in a water bearing formation. Water in an unconfined aquifer is at atmospheric pressure and will not rise in a well above the top of the water bearing formation, in contrast to water in a confined aquifer which is under hydrostatic pressure and will rise in a well above the top of the water bearing formation.

Static water-level measurements in individual wells used to construct county PSM's are indicative of the water-level at the time of well completion. The groundwater level within an aquifer constantly fluctuates in response to rainfall, evapotranspiration, groundwater movement, and groundwater pumping. Therefore, current site specific conditions may differ due to local or seasonal variations in measured static water-levels. Because fluctuations in groundwater are typically small, static water-levels can be used to construct a generalized PSM. Groundwater flow is naturally from areas of recharge toward areas of discharge. As a general rule, but certainly not always, groundwater flow approximates the overlying topography and intersects the land surface at major streams.

Universal Transverse Mercator (UTM) coordinates for the water wells were either physically obtained in the field, determined through address geocoding, or reported on water well records; however, the location of the majority of the water well records used to make the PSM were not field verified. Elevation data were either obtained from topographic maps or a digital elevation model. Quality control/quality assurance procedures were utilized to refine or remove data where errors were readily apparent.

Bedrock potentiometric surface elevations in Lake County range from a high of approximately 710 feet mean sea level (msl) in the east-central section of the county, to a low of about 560 feet msl in the northern portion. Generalized groundwater flow direction appears to emanate from the central portion of the county towards Lake Michigan to the north, and to the Kankakee River to the south.

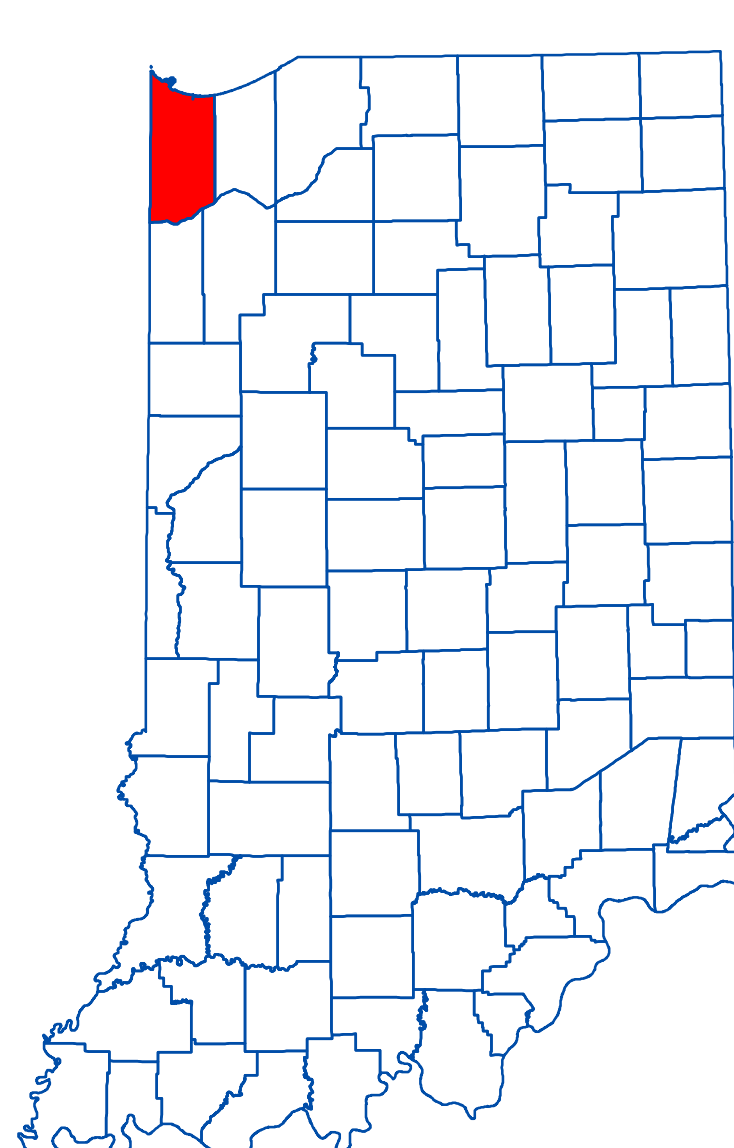
The county PSM can be used to define the regional groundwater flow path and to identify significant areas of groundwater recharge and discharge. County PSM's represent overall regional characteristics and are not intended to be a substitute for site-specific studies.



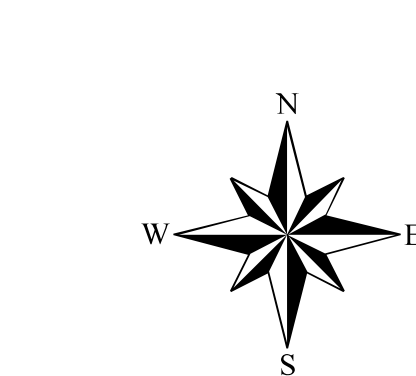
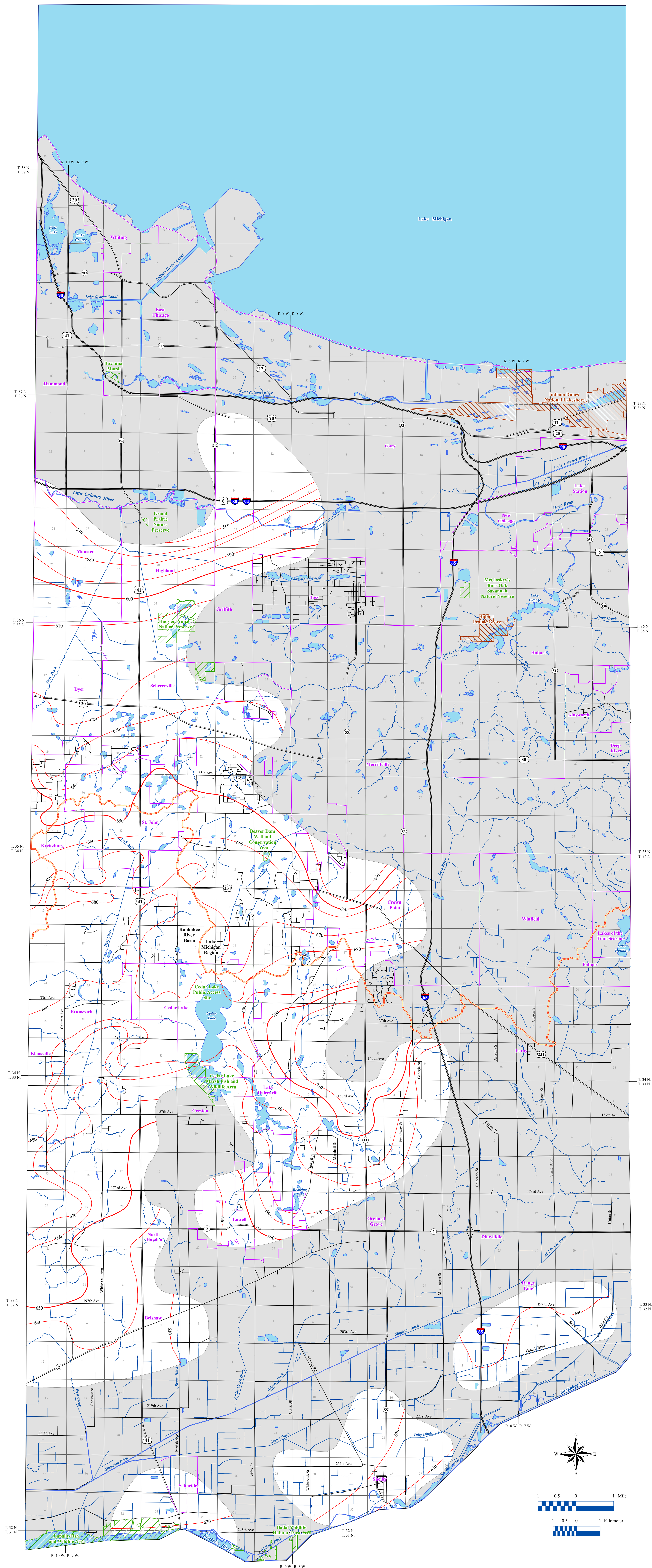
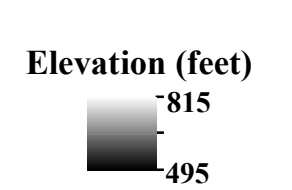
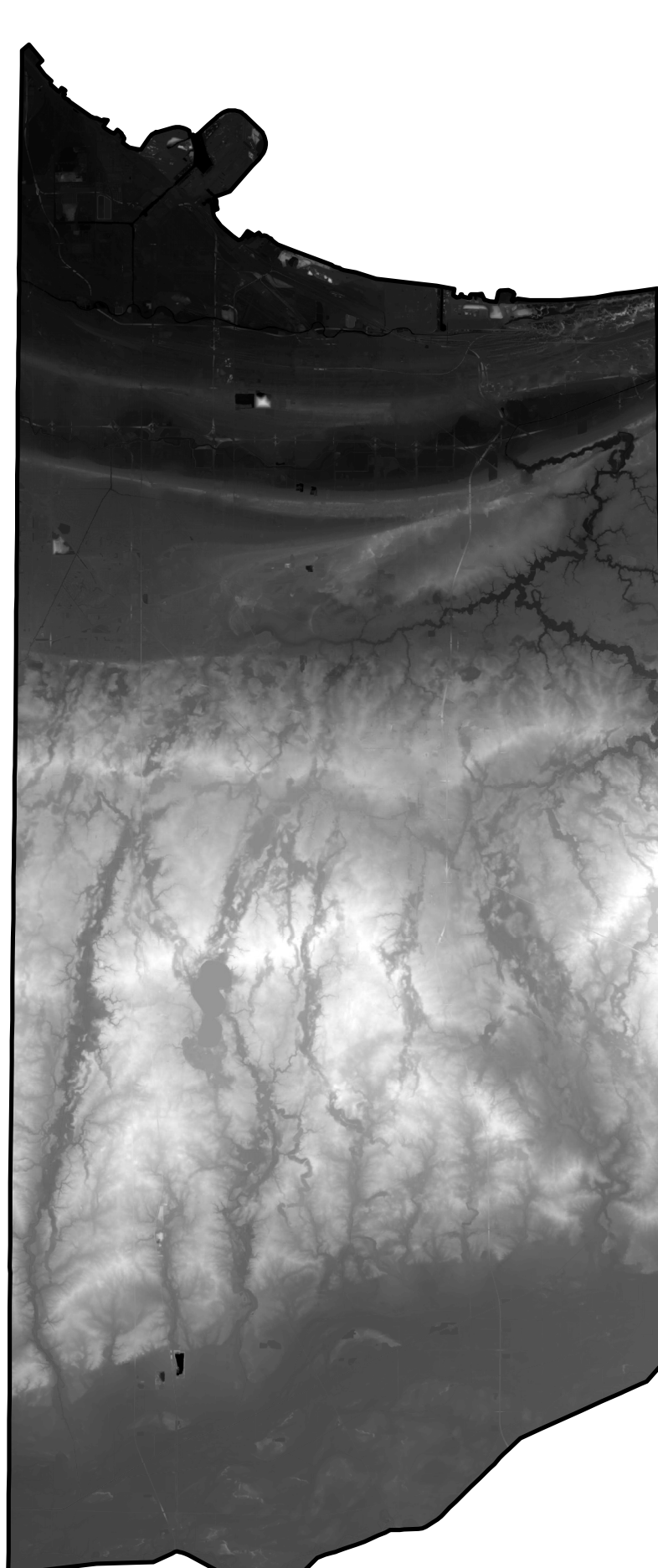
EXPLANATION

- 690 Line of equal elevation, in feet above mean sea level
- Stream
- County Road
- State Road
- US Highway
- Interstate
- Basin Boundary
- Municipal Boundary
- State Managed Property
- National Park Service Managed Property
- Lake & River
- No Aquifer Material or Limited Data

Location Map



Digital Elevation Model of Lake County, Indiana



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 as the published scale.

This map has been 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) are from the Indiana Geological Survey and based on a 1:24,000 scale. Roads (TIGER and INDOT) (line shapefile, 2005) is from the Indiana Department of Transportation and based on a 1:24,000 scale. System (line shapefile, 2003) is from the Indiana Department of Transportation and based on a 1:24,000 scale. Incorporated Boundaries in Indiana (polygon shapefile, 20060509) is from the Graphics and Engineering Section Indiana Department of Transportation. Hydrography (Streams (NHD) (line shapefile, 20081218), Rivers (NHD) (polygon shapefile, 20081218), and Lakes (NHD) (polygon shapefile, 20081218) are from the U.S. Geological Survey and the U.S. Environmental Protection Agency, and based on a 1:24,000 scale. Basin boundaries are modified from the Watershed Boundary Dataset (polygon shapefile, 2008) from the Natural Resource Conservation Service. Managed Lands (DNR, IN (polygon shapefile, 20100920) is from the Indiana Outdoor DNR Statewide Collection Program (2013). Lake County Bedrock No Aquifer Material or Limited Data (polygon shapefile, Schmidt, 2015), and Potentiometric Surface Map of the Bedrock Aquifers of Lake County, Indiana (line shapefile, Schmidt, 2015) is based on a 1:24,000 scale.

Potentiometric Surface Map of the Bedrock Aquifers of Lake County, Indiana

by
Robert K. Schmidt
Division of Water, Resource Assessment Section

May 2015