

POTENTIOMETRIC SURFACE MAP OF THE UNCONSOLIDATED AQUIFERS OF KNOX COUNTY, INDIANA

Knox County is located in southwestern Indiana and is bounded by the counties of Sullivan, Greene, Daviess, Pike and Gibson to the north, northeast, east, southeast and south. The state of Illinois borders the county to the west.

The potentiometric surface is a measure of the pressure on groundwater in a water bearing formation. Wells are completed in aquifers at various depths, and typically, under confined conditions (bounded by impermeable layers above and below the water bearing formation). However, some wells are completed under unconfined (not bounded by impermeable layers) settings. Water in a confined aquifer, which is under hydrostatic pressure, will rise in a well above the top of the water bearing formation. In contrast, groundwater in an unconfined aquifer, which is at atmospheric pressure, will not rise in a well above the top of the water bearing formation.

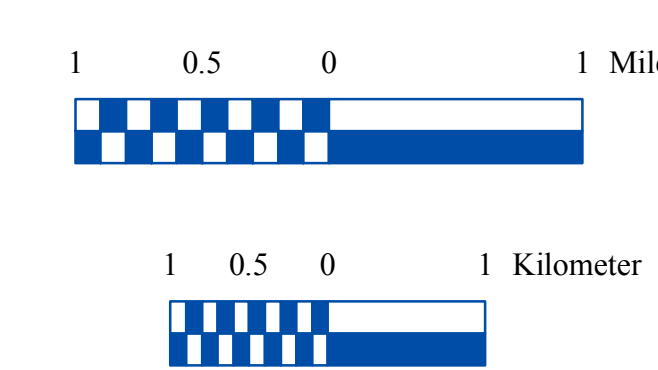
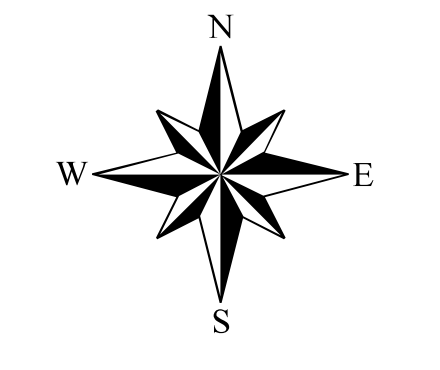
Static water-level measurements obtained from individual wells used to construct county Potentiometric Surface Maps (PSM) are indicative of the water level at the time of well completion. The groundwater level within an aquifer constantly fluctuates in response to rainfall, evapotranspiration, groundwater movement and pumping. Therefore, measured static water-levels in an area may differ due to local or seasonal variations. Because fluctuations in groundwater are typically small, static water-levels can be used to construct a generalized PSM. As a general rule, but certainly not always, groundwater flow approximates the overlying topography and intersects the land surface at major streams.

The potentiometric surface map of the unconsolidated aquifers was mapped by contouring the elevations of 263 static water-levels reported on well records received primarily over a 50 year period. Universal Transverse Mercator (UTM) coordinates, used in locating the water wells, were either physically obtained in the field, determined through address geocoding, or reported on water well records. The location of the majority of the water well records used to make the PSM were field verified. Elevation data were obtained from a digital elevation model. Quality control/quality assurance procedures were utilized to refine or remove data where errors were readily apparent.

Generally, the mapped potentiometric surface contours are for the upper 100 feet of the unconsolidated materials and utilize wells constructed within these depths. If the shallow data is sparse or unavailable, wells greater than 100 feet in depth are used to complement the mapping.

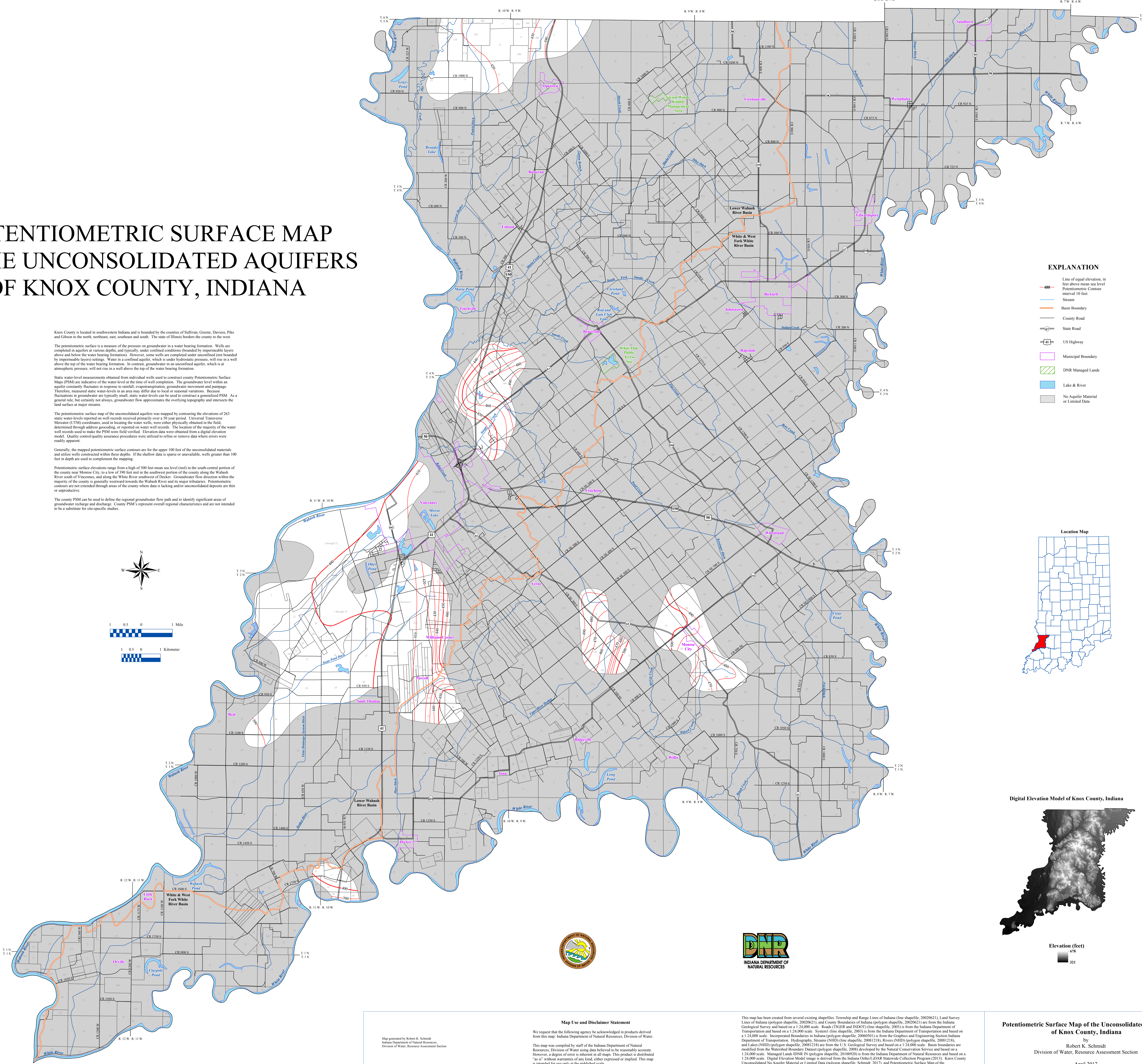
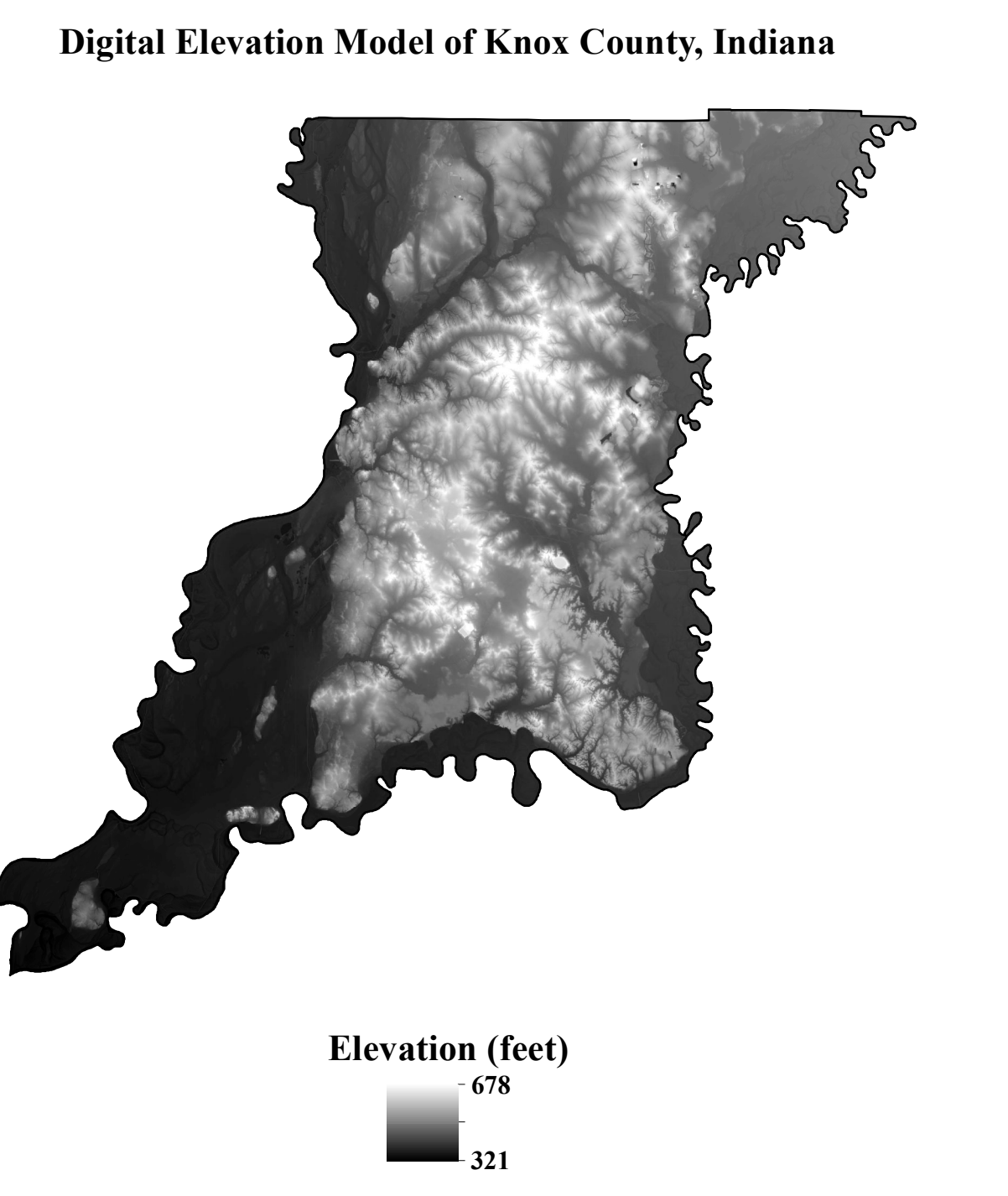
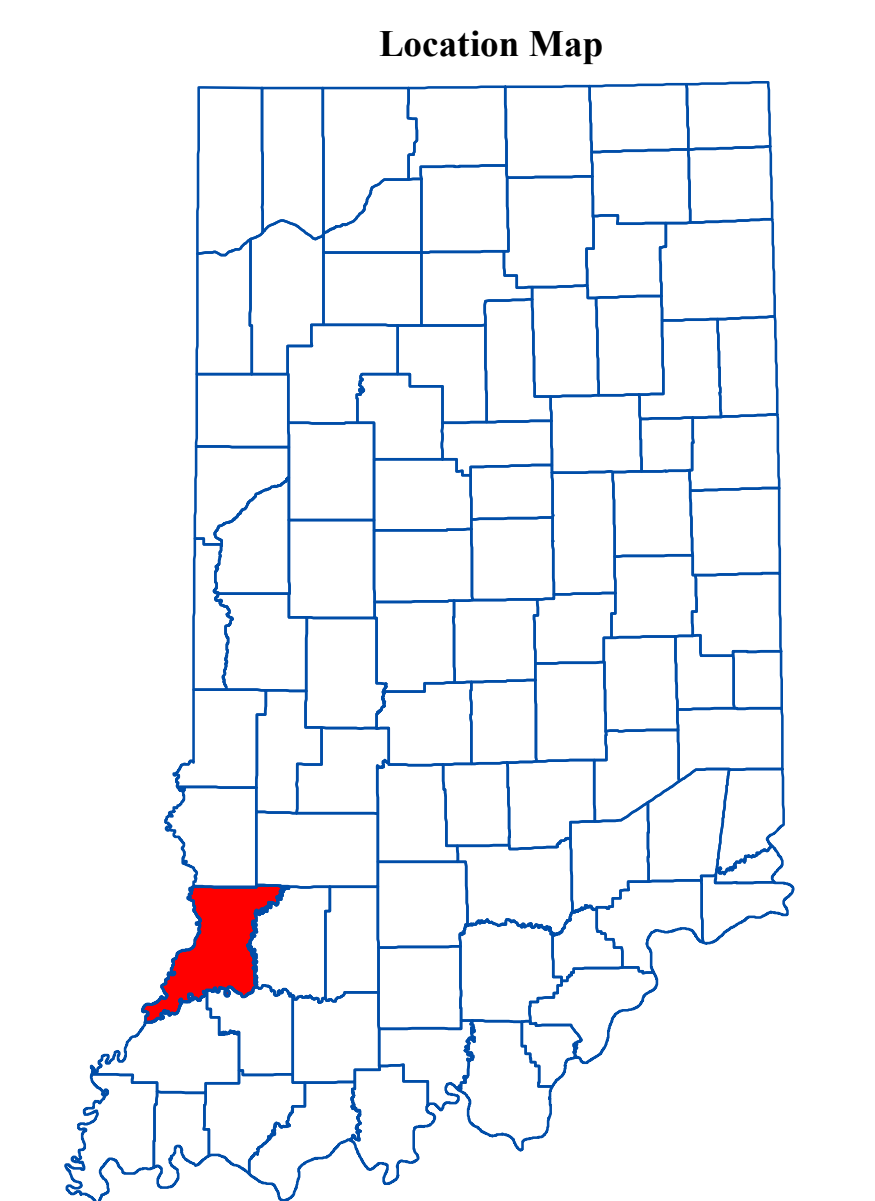
Potentiometric surface elevations range from a high of 500 feet mean sea level (msl) in the south-central portion of the county near Monroeville, to a low of 390 feet msl in the southwest portion of the county along the Wabash River south of Vincennes, and along the White River southwest of Decker. Groundwater flow direction within the majority of the county is generally westward towards the Wabash River and its major tributaries. Potentiometric contours are not extended through areas of the county where data is lacking or unconsolidated deposits are thin or unproductive.

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

- Line of equal elevation, in feet above mean sea level
Potentiometric Contour interval 10 feet
- Stream
- Basin Boundary
- County Road
- State Road
- US Highway
- Municipal Boundary
- DNR Managed Lands
- Lake & River
- No Aquifer Material or Limited Data



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 at 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 NHD01) (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, 20060501) is from the Indiana Department of Transportation. Hydrography, Stream (DHD) (line shapefile, 20081218), Rivers (NHD) (polygon shapefile, 20081218), and Lakes (NHD) (polygon shapefile, 20081218) are from the U.S. Geological Survey and based on a 1:24,000 scale. Basin boundaries are modified from the Watershed Boundary Dataset (polygon shapefile, 2008) developed by the National Conservation Service and based on a 1:24,000 scale. Managed Lands (DNR) (polygon shapefile, 20100920) is from the Indiana Department of Natural Resources and based on a 1:24,000 scale. Digital Elevation Model (image) is derived from the Indiana (with DNR) Statewide Collection Program (2013). Knox County Unconsolidated No Aquifer Material or Limited Data (polygon shapefile, Schmidt, 2017), and Potentiometric Surface Map of the Unconsolidated Aquifers of Knox County, Indiana (line shapefile, Schmidt, 2017) are based on a 1:24,000 scale.

Potentiometric Surface Map of the Unconsolidated Aquifers of Knox County, Indiana
by
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