

# POTENTIOMETRIC SURFACE MAP OF THE BEDROCK AQUIFERS OF JASPER COUNTY, INDIANA

Jasper County, Indiana is located in the northwest portion of the state bounded by Newton, Lake, Porter, Starke, Pulaski, White, and Benton Counties to the west, northwest, north, northeast, east, southeast, and south, respectively. The majority of the county is situated within the Kankakee River Basin, while portions along the eastern edge and southeast corners of the county are within the Upper Wabash River Basin.

The Bedrock Potentiometric Surface Map (PSM) of Jasper County is mapped by contouring the elevations of 779 static water levels reported 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 are completed in unconfined settings with water bearing formations not bounded by impermeable layers. The potentiometric surface is a measure of the pressure on water in a water bearing formation, or aquifer. The groundwater level in an unconfined aquifer system is at atmospheric pressure and will not rise in a well above the top of the aquifer formation. The potentiometric surface in most wells completed in bedrock within Jasper County rises above the top of the bedrock aquifer due to the confining nature of the system.

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 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. The contours were determined based on the amount of data and the degree of change in water levels between wells. Bedrock potentiometric surface elevation contours have not been extended across several portions of Jasper County including all of the northern edge. Some of these areas are lacking in data and/or covered by more prolific unconsolidated deposits that limit the necessity to complete wells in bedrock.

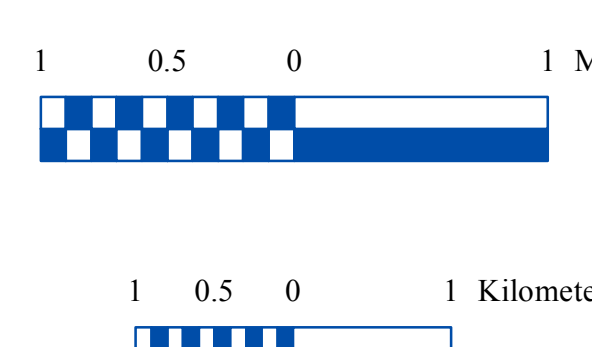
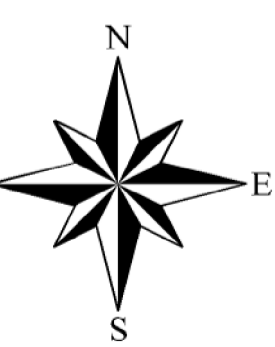
Data collected to generate the PSM were standardized and validated for accuracy. Universal Transverse Mercator (UTM) coordinates for the water wells were either physically obtained in the field or determined based on water well records. The location of the majority of the water well records used to make the PSM were field verified. Elevation data were derived from a digital elevation model based on LIDAR. Quality control/quality assurance procedures were utilized to refine or remove data where errors were readily apparent.

Potentiometric surface contours are developed based on the static water levels from the bedrock aquifer systems and displayed here with 10-foot contours and 50-foot index contours. Bedrock potentiometric surface contours in Jasper County range from a high of 750 feet mean sea level (msl) in the southwest on the Benton County border, to a low of 680 feet msl in the west-central portion of the county along the Iniquos River. Bedrock groundwater flow is influenced by the major drainage in the county discharging to the Kankakee River in the north and Iniquos River and its tributaries in central and southern Jasper County. Groundwater flow direction within the bedrock aquifer system is generally toward the Iniquos River in the southern two-thirds of the county and north toward the Kankakee River in the northern third. Steep gradients can be seen in the groundwater flowing north from the very southern portion of the county where water is drawn primarily from the lower producing shale wells. The majority of wells transition to the deeper, more productive, carbonate system represented by a shallow gradient to the north.

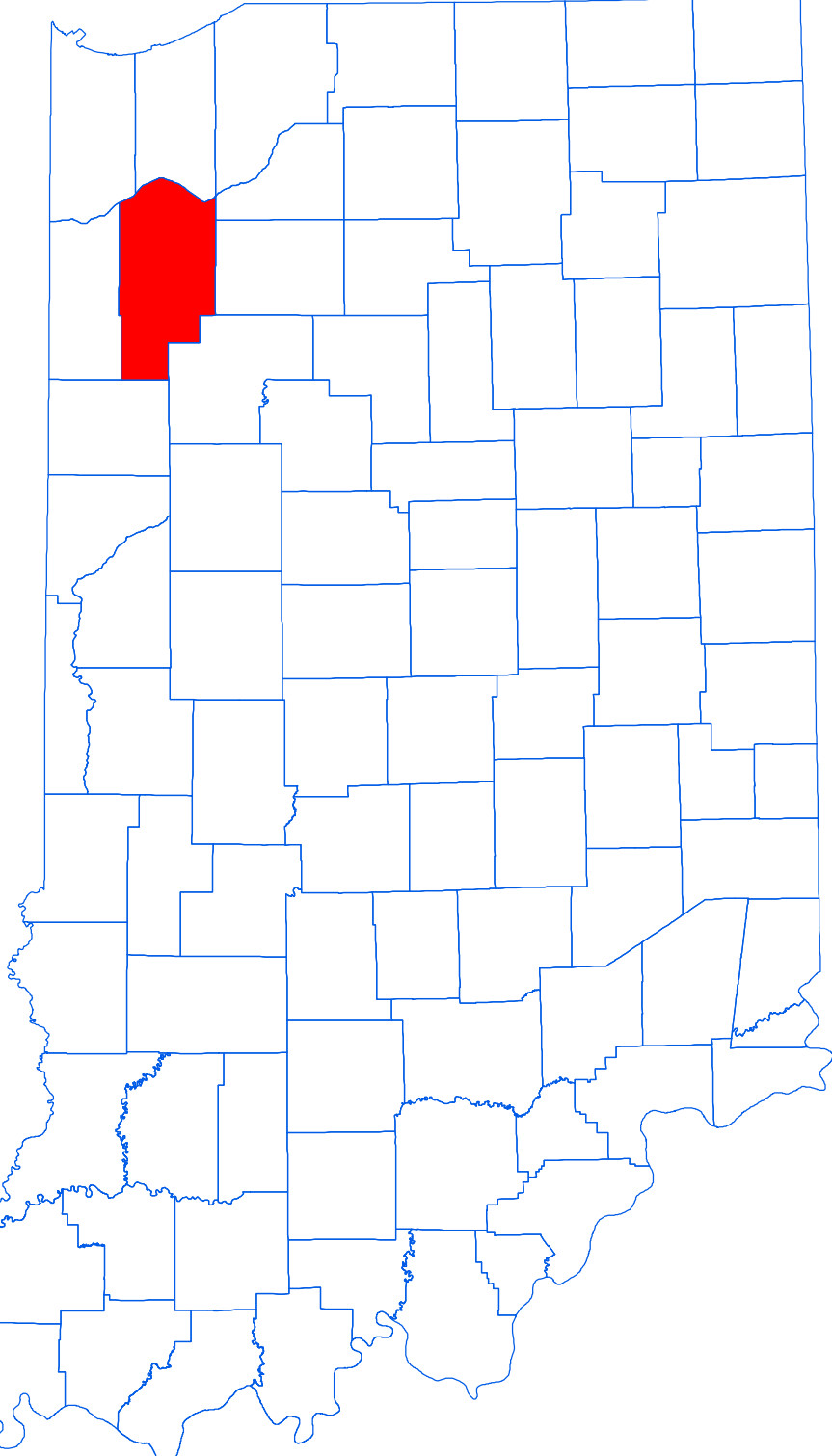
The county PSM can be used to define the regional groundwater flow path and to identify significant areas of groundwater recharge and discharge. County PSM's represent overall regional characteristics and are not intended to be a substitute for site-specific studies.

### EXPLANATION

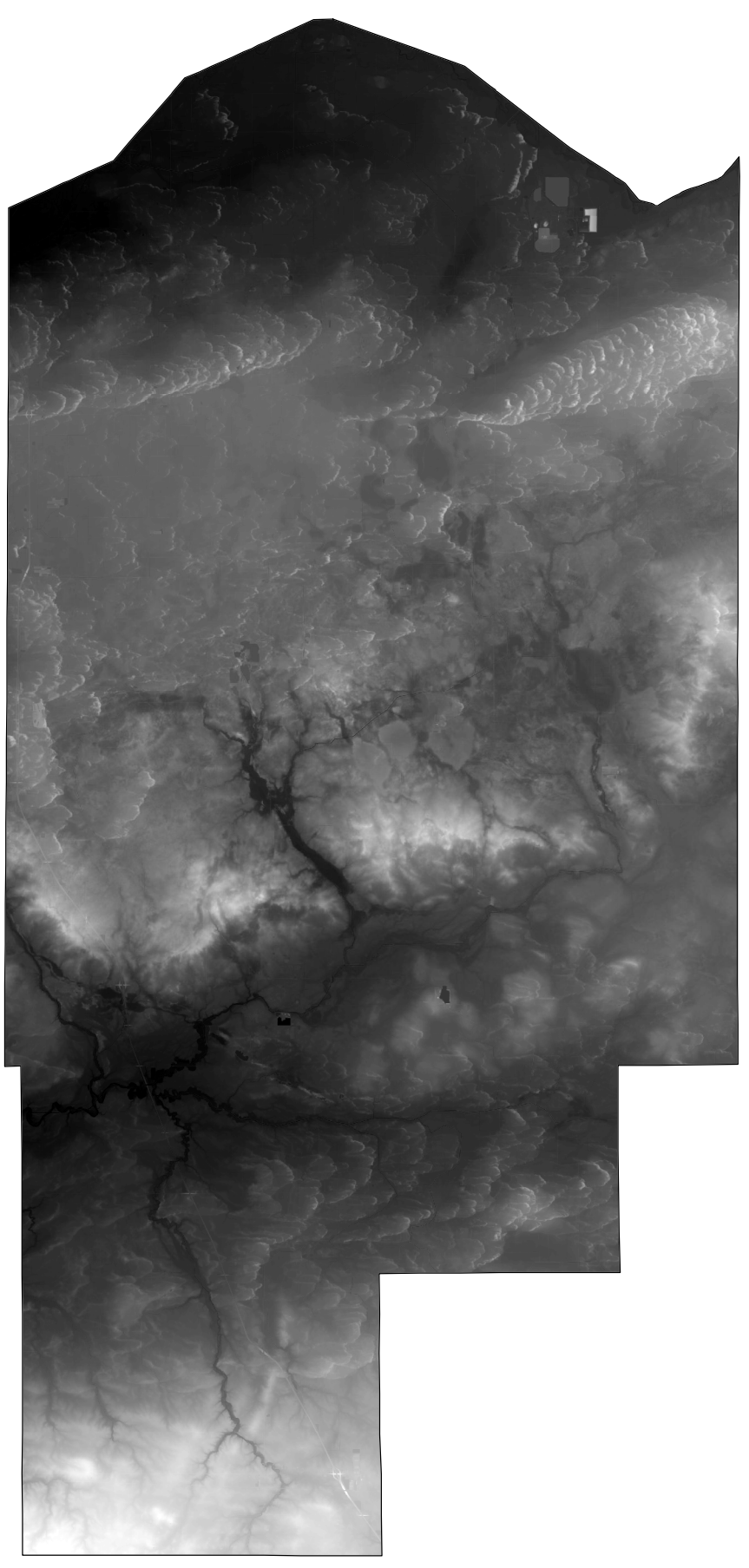
- Line of equal elevation, in feet above mean sea level
- Potentiometric Contour interval: 10 feet
- Stream
- County Road
- State Road
- US Highway
- Interstate
- Basin Boundary
- Municipal Boundary
- State Managed Property
- Lake & River
- No Aquifer Material or Limited Data



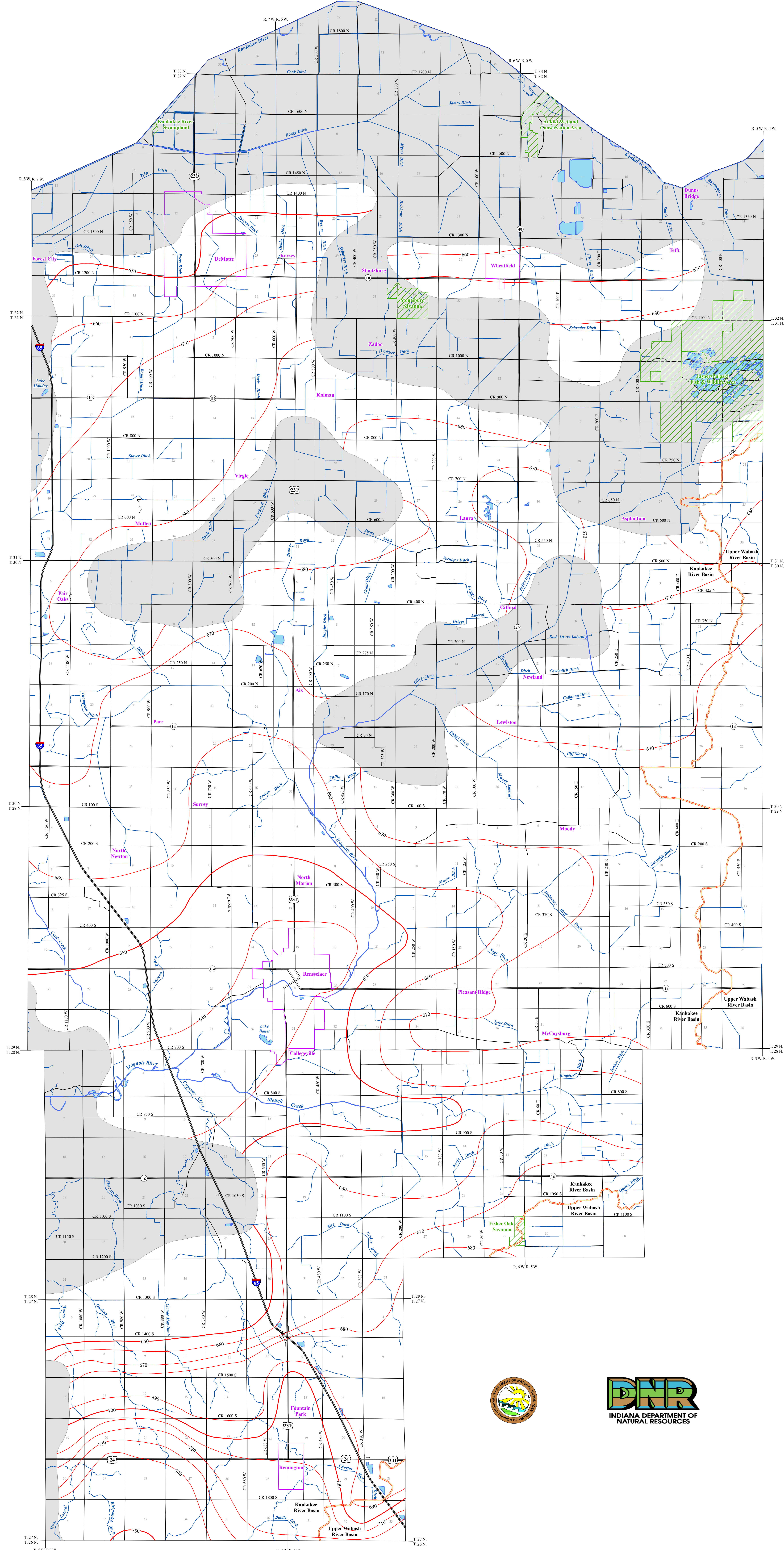
### Location Map



### Digital Elevation Model of Jasper County, Indiana



Elevation (feet)  
791  
361



### 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 is 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 1:25,000 scale. Roads (TRIGR and IND071) (line shapefile, 2005) is from the Indiana Department of Transportation and based on a 1:100,000 scale. Incorporated Boundaries in Indiana (polygon shapefile, 20060501) is from the Graphics and Engineering Section, Indiana Department of Transportation. Hydrography, Streams (NHID) (line shapefile, 20081218), Rivers (NHID) (polygon shapefile, 20081218), and Lakes (NHID) (polygon shapefile, 20081218) are from the U.S. Geological Survey and based on a 1:25,000 scale. Basin boundaries are modified from the Watershed Boundary Dataset (polygon shapefile, 2008) developed by the Natural Resource Conservation Service based on a 1:24,000 scale. Managed Lands (DNR LV) (polygon shapefile, 20100202) 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 OrthoLIDAR Stateside Collection Program (2013). Jasper County Bedrock No Aquifer Material or Limited Data (polygon shapefile, Kornek, 2015) and Potentiometric Surface Contours of the Bedrock Aquifers of Jasper County, Indiana (line shapefile, Kornek, 2015) are based on a 1:24,000 scale.

### Potentiometric Surface Map of the Bedrock Aquifers of Jasper County, Indiana

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