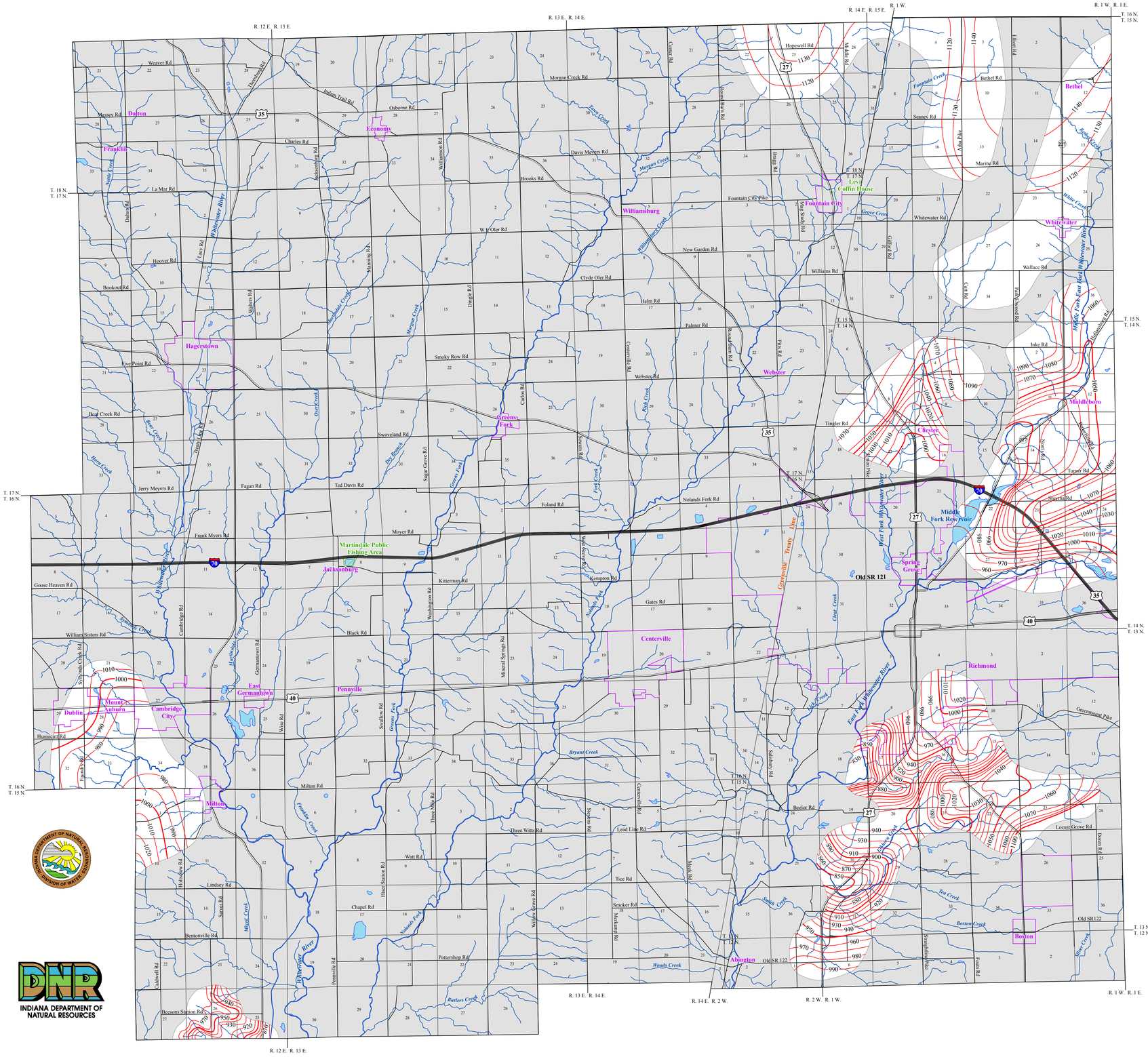
POTENTIOMETRIC SURFACE MAP OF THE BEDROCK AQUIFERS OF WAYNE COUNTY, INDIANA



Wayne County is located in the east-central section of Indiana, adjacent to the state of Ohio, and is bounded by the counties of Randolph, Henry, Fayette and Union.

The Potentiometric Surface Map (PSM) of the bedrock aquifers of Wayne County was mapped by contouring the elevations of 150 static water-levels reported on well records received primarily over a 50 year period. These 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 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 aquifer, in contrast to groundwater 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 pumpage. 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.

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. 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.

Potentiometric surface elevations range from a high of 1140 feet mean sea level (msl) in the northeastern corner of the county, to a low of 830 feet msl in the southeastern portion. Groundwater flow direction is generally to the south-southwest towards major drainage in the county. Bedrock potentiometric surface elevation contours have not been extended through portions of the county. These areas are lacking in data and/or covered by more prolific unconsolidated deposits that limit the necessity to complete wells in the bedrock. The potentiometric contour lines crossing through Middle Fork Reservoir represents the potentiometric surface of the groundwater in the immediate area, not the water level of the reservoir, which is a man-made feature.

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.

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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 1:24,000 scale. Roads (TIGER and INDOT) (line shapefile, 2005) is from the Indiana Department of Transportation and based on a 1:100,000 scale. System1 (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 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 based on a 1:24,000 scale. Managed Lands IDNR IN (polygon shapefile, 20100920) is from the Indiana Department of Natural Resources and based on a 1:24,000 scale. Digital Elevation Model/Hillshade image is derived from the Indiana Ortho/LiDAR Statewide Collection Program (2012). Wayne County Bedrock No Aquifer Material or Limited Data (polygon shapefile, Schmidt, 2014) and Potentiometric Surface Contours of the Bedrock Aquifers of Wayne County, Indiana (line shapefile, Schmidt, 2014) are based on a 1:24,000 scale.

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

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