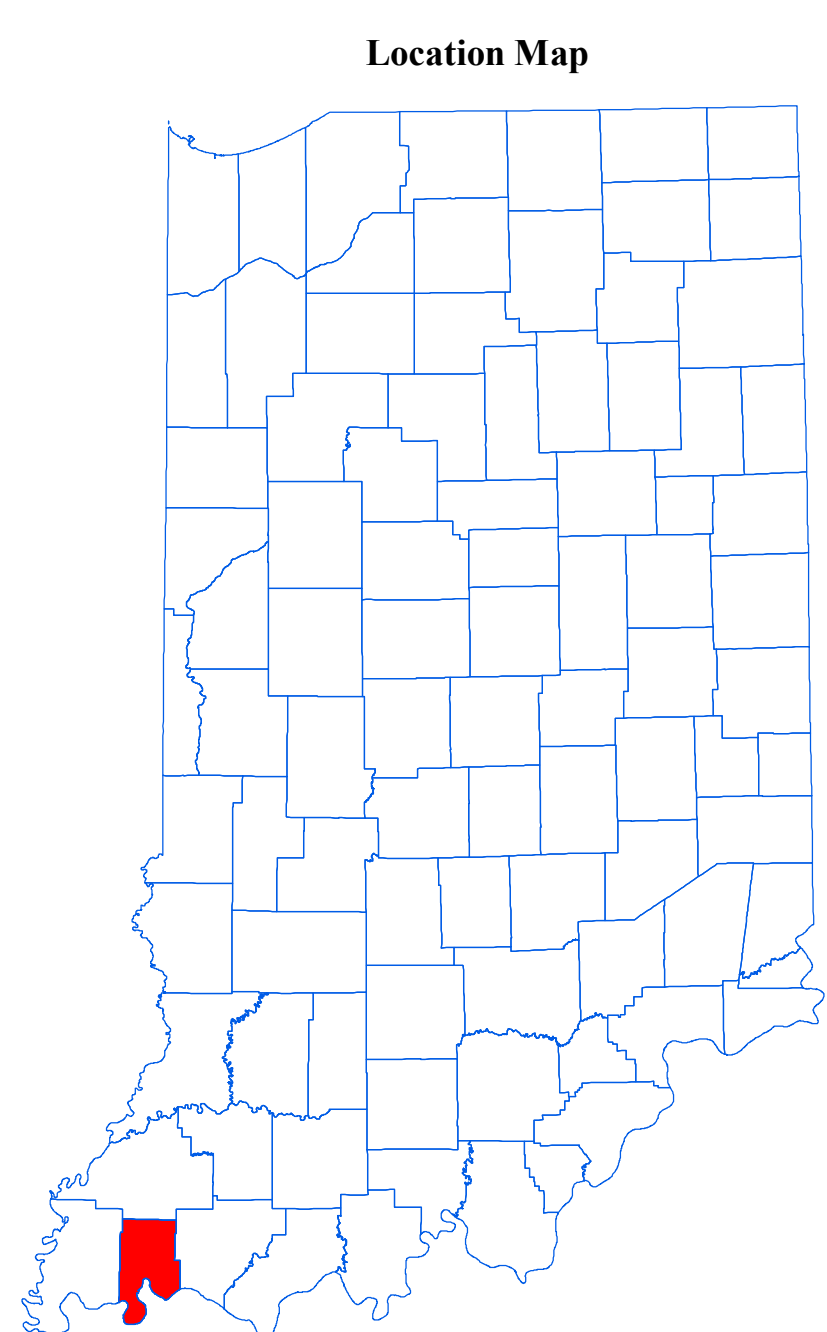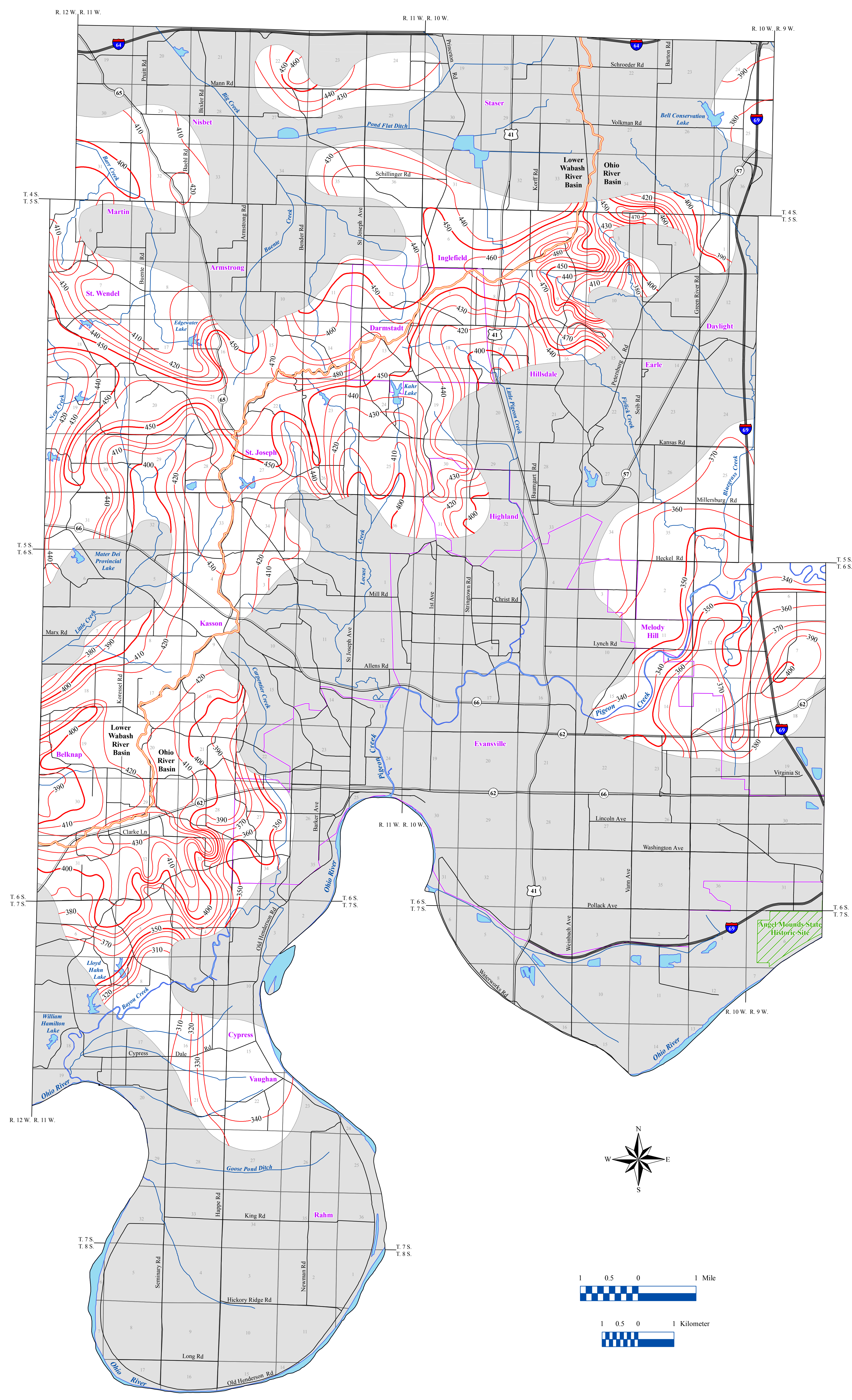# POTENTIOMETRIC SURFACE MAP OF THE BEDROCK AQUIFERS OF VANDERBURGH COUNTY, INDIANA

Vanderburgh County is located in southwest Indiana, and is bounded by the counties of Posey, Gibson and Warrick to the west, north and east, respectively. The state of Kentucky borders the county to the south. The majority of the county lies within the Ohio River Basin, while the north-central, northwest and west-central portions of the county are situated within the Lower Wabash River Basin.

The Potentiometric Surface Map (PSM) of the bedrock aquifers of Vanderburgh County was mapped by contouring the elevations of 630 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 490 feet mean sea level (msl) in the northeastern portion of the county, to a low of 310 feet msl in the southwest part of the county. Regional groundwater flow direction is generally towards the west in the northern and western portions of the county, with localized flow towards Big Creek and its tributaries such as Barr Creek, Neu Creek and Little Creek. The regional flow in the eastern and southern portions of the county is generally towards the Ohio River with localized flow towards tributaries such as Pigeon Creek and Bayou Creek.

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 bedrock.

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.

Location Map

EXPLANATION

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

Digital Elevation Map of Vanderburgh County, Indiana

Elevation (feet)
609
345

1 0.5 0 1 Mile

1 0.5 0 1 Kilometer

Map Use and Disclaimer Statement

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

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INDIANA DEPARTMENT OF NATURAL RESOURCES