

# **Potentiometric Surface Map of the Bedrock Aquifers of Dubois County, Indiana**

by  
Robert K. Schmidt  
Division of Water, Resource Assessment Section  
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Dubois County is located in southern Indiana and is bounded by the counties of Pike, Daviess, Martin, Orange, Crawford, Perry, Spencer, and Warrick to the west, northwest, north, northeast, east, southeast, south, and southwest respectively. Much of the northern sections of the county are located in the East Fork White River Basin, the central and south-central portions are located within the Patoka River Basin, and the southwest and southeast portions of the county are in the Ohio River Basin.

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 potentiometric surface maps 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 potentiometric surface map. 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 bedrock aquifers was mapped by contouring the elevations of 366 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 this map 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 700 feet mean sea level (msl) in the southeast portion of the county near the towns of Mentor and Birdseye, to a low of 420 feet msl along the northern border adjacent to the East Fork White River, and in the west-central section of the county. Groundwater flow direction within the East Fork White River Basin, in the majority of the northern portions of the county, is northward towards the East Fork White River and its major tributaries. Groundwater flow direction in the Patoka River Basin, located in the central and south-central sections of the county, is toward the Patoka River and its tributaries, and in the southeastern and southwestern portions of the county within the Ohio River Basin, groundwater flow is southward towards the Ohio River and its tributaries. Potentiometric contours have not been extended through portions of the county that are lacking in data.

The county potentiometric surface map can be used to define the regional groundwater flow path and to identify significant areas of groundwater recharge and discharge. These maps represent overall regional characteristics and are not intended to be a substitute for site-specific studies.