

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

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November 2013

Howard County, Indiana is located in the north-central section of the state and lies within the Upper Wabash River Basin.

The Potentiometric Surface Map (PSM) of the bedrock aquifers of Howard County was mapped by contouring the elevations of 1286 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 860 feet mean sea level (msl) in the southwestern portion of the county, to a low of 710 feet msl in the west-central section. The potentiometric contour line crossing through Kokomo Waterworks Reservoir No. 2 represents the potentiometric surface of the groundwater in the immediate area, not the water level of the reservoir, which is a man-made feature. Groundwater flow direction in the central and southern portions of the county is generally towards Wildcat Creek and westward. In the northwestern part of the county, groundwater flow direction is generally to the west-northwest toward Little Deer Creek, and in the north-central portion, groundwater flow is northward toward South Fork Deer Creek. Bedrock potentiometric surface elevation contours have not been extended through the southwestern portion of the county. This area is 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.