

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

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Gibson County, Indiana is located in the southwest part of the state and is within portions of four river basins. These include: the White and West Fork White River Basin along the northern edge of the county, the Patoka River Basin in the north-central third of the county, the Ohio River Basin to the southeast, and the Lower Wabash River Basin to the southwest.

The mapped potentiometric surface contours represent lines of equal elevation relative to the measured groundwater levels in wells. In general, wells completed in a confined aquifer system are bound by impermeable layers and will have static water levels under hydrostatic pressure causing the water level to rise above the elevation of the aquifer resource. In contrast, an unconfined aquifer system is not bound by impermeable layers; therefore, the water level will not be under hydrostatic pressure and will not rise above the aquifer resource.

Static water level measurements in individual wells used to construct the potentiometric surface map are indicative of the water level at the time of well completion. Therefore, current site specific conditions may differ due to local or seasonal variations in measured static water levels.

Coordinate locations of water well records were physically obtained in the field, determined through address geocoding, or reported on water well records. Elevation data were obtained from a digital elevation model. Elevation and location quality control/quality assurance procedures were utilized to refine or remove data where errors were readily apparent.

Wells producing from bedrock deposits are limited with parts of the county lacking in data. This is primarily due to bedrock as a limited aquifer resource, and/or available overlying unconsolidated materials. Therefore, potentiometric surface elevation contours have not been extended throughout areas of the county.

Bedrock throughout most of the county includes sandstone, with interbedded shale in places, of the Pennsylvanian McLeansboro Group and shale and sandstone with some coal and limestone of the Pennsylvanian Carbondale Group exclusive to bedrock valleys along the eastern edge of the county.

There are 299 located wells that are completed in bedrock and are utilized towards the mapping of the bedrock potentiometric surface. Total well depths range from 26 to 475 feet with depth to the bedrock surface from 3 to 160 feet below surface. Due to the extreme difference in reported

static water levels of deeper wells that likely transcend into a different aquifer system, reported depths of 200 feet or less were considered a priority in the mapping of the contours where such differences are present.

Potentiometric surface elevations range from a high of 500 feet mean sea level (msl) in the central area of the county, to a low of 380 feet msl along the northern edge near the White River.

Generalized groundwater flow direction for the county is towards major drainage relevant to the basin. Therefore, along the northern edge of Gibson County groundwater flow is towards the White River. In the north-central third of the county groundwater flow is towards the Patoka River. In the Ohio River Basin to the southeast, drainage is towards Pigeon Creek and in the southwest part of the county, towards the Wabash River and associated tributaries.