

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

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Franklin County, Indiana is located in the southeast central part of the state and is within the boundaries of three river basins. Nearly the entire county is located within the Whitewater River Basin. However, part of the south-central area of the county and the southwest corner is located in the Ohio River Basin and the northeastern area of the county is located in the Lower Great Miami River Basin.

The potentiometric surface mapped (PSM) contour elevations 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 (DEM). Elevation and location quality control/quality assurance procedures were utilized to refine or remove data where errors were readily apparent.

In Franklin County, wells producing from bedrock deposits are extremely limited with much 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 the majority of the county and are limited to the central and northwest areas.

Bedrock for the majority of the county includes shale with interbedded limestone associated with the Ordovician Maquoketa Group Aquifer System. In the west-northwestern area of the county, carbonate deposits of the Silurian and Devonian Carbonates Aquifer System are present. There are 75 located wells that are completed in bedrock and are utilized towards the mapping of the bedrock potentiometric surface. Total well depths generally range from 14 to 130 feet with depths to the bedrock surface at 3 to 100 feet.

Potentiometric surface elevations range from a high of 1040 feet mean sea level (msl) along the Rush-Franklin county line in the northwest part of the county, to a low of 580 feet msl in the central part of the county along a portion of the Whitewater River. Generalized groundwater flow direction for the county is towards major drainage relevant to the basin. However, due to extremely limited data, potentiometric surface contours are limited to isolated portions of the Whitewater River Basin with groundwater flow generally towards the Whitewater River and its tributaries.