

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

By
Randal D. Maier
Division of Water, Resource Assessment Section
September 2016

Owen County, Indiana is located in the west-central part of the state and is entirely within the White and West Fork White 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.

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 for the county includes sandstone and shale of the Pennsylvanian Raccoon Creek Group along the western third of the county; shale, sandstone, limestone of the Mississippian Buffalo Wallow, Stephenson and West Baden Groups in the central third of the county; limestone of the Mississippian Blue River and Sanders Groups to the north and eastern third of the county; and siltstone, shale, and sandstone of the Mississippian Borden Group along a small portion of the northeastern edge of the county.

There are 1088 located wells that are completed in bedrock and are utilized towards the mapping of the bedrock potentiometric surface. Total well depths range from 25 to 445 feet with depth to the bedrock surface from 1 to 182 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 PSM contours where such differences are present.

Potentiometric surface elevations range from a high of 800 feet mean sea level (msl) in the north-central area of the county, to a low of 500 feet msl in the southwest near the Eel River.

Generalized groundwater flow direction for the county is towards major drainage relevant to the basin. Therefore, in the central and southeastern areas of Owen County groundwater flow is towards the White River. However, to the north groundwater flow is towards Mill Creek; in northern west-central Owen County towards the Eel River in Clay County; and in the southwest, generally southward towards the Eel River.