

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

By  
Randal D. Maier  
Division of Water, Resource Assessment Section  
August 2013

Jay County, Indiana is located in the east-central portion of the state with all of the areal extent of the county situated within the Upper Wabash 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 Jay County depth to bedrock is generally from 50-120 feet with wells completed in carbonate deposits of the Silurian and Devonian Carbonates Aquifer System. There are approximately 962 located wells that are completed in bedrock and utilized towards the mapping of the bedrock potentiometric surface. However, the northwest and west-central portions of the county are lacking in data and/or are covered by more prolific unconsolidated deposits that limit the necessity to complete wells in bedrock. To the northwest, in particular, a deep buried bedrock valley, the Lafayette (Teays) Bedrock Valley System, is present where up to 400 feet of glacial deposits have filled the valley (Schrader, 2007). Therefore, potentiometric surface elevation contours have not been extended through these areas.

Potentiometric surface elevations range from a high of 1000 feet mean sea level (msl) in the southeast region of the county, to a low of 830 feet msl in the north-central part of the county. Generalized groundwater flow direction for Jay County is towards major drainage relevant to the basin. Therefore, groundwater flow is northwest towards the Salamonie River for much of the county south of the Salamonie River, and north towards the Wabash River, Loblolly Creek and Limberlost Creek for the northern third of Jay County.

Schrader, 2007; Unconsolidated and Bedrock Aquifer Systems of Blackford County, Indiana, Indiana Department of Natural Resources, Division of Water, Aquifer System Maps 36-A and 36-B.