# Potentiometric Surface Map of the Bedrock Aquifers
# of Rush County, Indiana

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Rush County, Indiana is located in the east-central portion of the state bounded by Shelby, Hancock, Henry, Fayette, Franklin, and Decatur Counties to the west, northwest, north, east, southeast, and south, respectively.  The majority of the county is situated within the East Fork White River Basin, while a small portion of the county in the southeast is within the Whitewater River Basin.

The Bedrock Potentiometric Surface Map (PSM) of Rush County is mapped by contouring the elevations of 543 static water levels reported on well records received primarily over a 50-year period.  These wells are completed in bedrock aquifers at various depths and typically under confined conditions (bounded by impermeable layers above and below the water bearing formation).  However, some wells are completed in unconfined settings with water bearing formations not bounded by impermeable layers.  The potentiometric surface is a measure of the pressure on water in a water bearing formation, or aquifer.  The groundwater level in an unconfined aquifer system is at atmospheric pressure and will not rise in a well above the top of the aquifer formation.  The potentiometric surface in most wells completed in bedrock within Rush County rises above the top of the bedrock aquifer due to the confining nature of the system.

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, current site-specific conditions may differ due to local or seasonal variations in measured static water levels.  Because fluctuations in groundwater are typically small, static water levels can be used to construct a generalized PSM.  Groundwater flow is naturally from areas of recharge toward areas of discharge.  The contours were determined based on the amount of data and the degree of change in water levels between wells.  Bedrock potentiometric surface elevation contours have not been extended across many portions of Rush County including much of the northeast.  Some of these areas are lacking in data and/or covered by more prolific unconsolidated deposits that limit the necessity to complete wells in bedrock.

Data collected to generate the PSM were standardized and validated for accuracy.  Universal Transverse Mercator (UTM) coordinates for the water wells were either physically obtained in the field or determined based 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 derived from a

digital elevation model based on LiDAR. Quality control/quality assurance procedures were utilized to refine or remove data where errors were readily apparent.

Potentiometric surface contours are developed based on the static water levels from the bedrock aquifer systems and displayed here with 10-foot contours and 50-foot index contours. Bedrock potentiometric surface contours in Rush County range from a high of 1050 feet mean sea level (msl) in the east, to a low of 840 feet msl in the west-central and southwest portion of the county. Groundwater flow direction within the bedrock aquifer system is generally towards the southwest. Bedrock groundwater flow is influenced by the major drainage in the county discharging to the Big Blue River in the north and Flatrock River and its tributaries in central and southern Rush County. In the far southeast corner within the Whitewater River Basin, groundwater flow is southeast towards South Fork Little Salt Creek.

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.