

Potentiometric Surface Map of the Unconsolidated Aquifers of LaGrange County, Indiana

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LaGrange County, Indiana is located in the northeastern portion of the state and is situated entirely within the St. Joseph River Basin. Major drainage systems include the Pigeon River, Fawn River and the Little Elkhart River along with several tributaries.

The Potentiometric Surface Map (PSM) of the Unconsolidated Aquifers of LaGrange County was mapped by contouring the elevations of approximately 4400 static water-levels reported on well records received over a 50 year period. These wells are completed in aquifers at various depths, and typically, under confined conditions (bounded by impermeable layers above and below the water bearing formation). However, some wells were completed under unconfined (not bounded by impermeable layers) settings. The potentiometric surface is a measure of the pressure on water in a water bearing formation. Water in an unconfined aquifer is at atmospheric pressure and will not rise in a well above the top of the water bearing formation, in contrast to water in a confined aquifer which is under hydrostatic pressure and will rise in a well above the top of the water bearing formation.

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 groundwater 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. As a general rule, but certainly not always, groundwater flow approximates the overlying topography and intersects the land surface at major streams.

The objective in creating county PSM's is to map static water-levels in the upper 100 feet of unconsolidated materials. If a section of a county has few located wells within the 100 feet interval, then the static water-levels in wells completed between 100 to 200 feet, if available, are used to complement the area.

Locational Universal Transverse Mercator (UTM) coordinates were either physically obtained in the field, determined through address geocoding, or reported on water well records; however, the well location for the majority of the water well records used to make the PSM were field verified. Elevation data were either obtained from topographic maps or a digital elevation model. Quality control/quality assurance procedures were utilized to refine or remove data where errors were readily apparent.

Potentiometric surface contour elevations in LaGrange County range from a high of approximately 970 feet mean sea level (msl) in the southeast portion of the county, to a low of

about 810 feet msl in the northwestern corner. Generalized groundwater flow direction appears to be to the west-northwest in the western and northeastern portions of the county, and to the northeast and southwest off of a groundwater high in the southeastern part of the county.

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 are intended to represent overall regional characteristics and not intended to be a substitute for site-specific studies.