Aquifer Sensitivity of the Basal Sand and Gravel of the Middle Illinois River Valley

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Introduction

Aquifer sensitivity is a measure of the likelihood that a certain land use or activity can impact an aquifer. It is the degree to which an aquifer is sensitive to a contaminant, based on permeability, porosity, and available geologic information. The higher the sensitivity, the more likely that a contaminant will be transported by groundwater. The Illinois State Geological Survey (ISGS) determined the aquifer sensitivity of the basal sand and gravel in the Middle Illinois River Valley.

Methodology

The ISGS used geological, hydrogeological, and geophysical methods to determine aquifer sensitivity. The geological interpretations were based on the results of exploratory borings, some field-described outcrops, and the availability of previously published data. The hydrogeological interpretations were based on available hydrogeological and hydraulic conductivity maps of the region.

Results

The aquifer sensitivity of the basal sand and gravel in the Middle Illinois River Valley ranges from low to high. The highest sensitivity is found in areas where the sand and gravel is thin and overlain by thick diamicton. The lowest sensitivity is found in areas where the sand and gravel is thick and overlain by thin diamicton.

Discussion

The results of the ISGS study indicate that the basal sand and gravel in the Middle Illinois River Valley is generally sensitive to contamination. The highest sensitivity is found in areas where the sand and gravel is thin and overlain by thick diamicton. The lowest sensitivity is found in areas where the sand and gravel is thick and overlain by thin diamicton. The results of the study can be used to inform land-use decisions and inform the development of groundwater protection plans.