LAKE MICHIGAN PILOT STUDY – GROUND WATER

Norman G. Grannemann
U.S. Geological Survey
6520 Mercantile Way, Suite 5
Lansing, MI 48911

ABSTRACT

The amount of direct ground-water discharge to Lake Michigan has been estimated to be about 3,000 cubic feet per second based on generalized hydraulic properties compiled from publications on ground water in the Lake Michigan drainage basin. Ground water is discharged to the Lake at the highest rates along its northeastern shore where thick deposits of sand and gravel are located proximal to the shoreline. Most of the estimates of direct ground-water discharge do not include a regional component of ground-water flow which means that 3,000 cubic feet per second is an underestimate. The Lake Michigan Pilot Study will develop a plan to improve the estimate of direct discharge to the Lake by 1) using output from ground-water-flow models that are under development, 2) incorporating improved information on hydraulic properties of aquifers and confining units from new maps of glacial deposits, and 3) using new information from the ongoing Great Lakes Water Availability and Use Project. Water from relatively few wells and springs in the nearshore area of the Lake has been analyzed for water-quality constituents. An inventory of these data will be developed, and, based on this anticipated small sampling, a generalized estimate of nutrient loads from the ground-water system to Lake Michigan will be calculated. A monitoring plan will be developed to improve load estimates from the ground-water system to Lake Michigan.

KEYWORDS
Lake Michigan, Direct Ground-Water Discharge, Ground-Water Monitoring

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