Sensitive Aquifer Recharge Areas Map Descriptor: McHenry County, Illinois

DATA SOURCES: This map has been derived from data files and maps from Illinois State Geological Survey,(ISGS) Circular 559,1997, and US Department of Agriculture Natural Resources Conservation Service Soil Surveys, 2001, 2008 (Table 6). In September 2008, the Illinois State Water Survey, Illinois State Geological Survey and Illinois Environmental Protection Agency reviewed the Sensitive Aquifer Recharge Areas (SARA) map.

BACKGROUND: In response to rapid growth and development and the corresponding potential for increased groundwater withdrawals and contamination, the Illinois State Geological Survey (ISGS) began **a** geological mapping project, focused on the groundwater resources of McHenry County, in 1991. This study noted that McHenry County covers 611 square miles (603 sq. miles land, 8 sq. miles water), of which aquifers lie within 100 feet of the land surface in 70% of the County. It was further noted that three fourths of the counties water comes from within 100 feet of land surface, and this resource is vulnerable to contamination.

MAP APPLICATIONS: Development of a recharge map bridges the gap between water resource planning and land use planning. The interpretation and use of this map will guide land use planners in the planning stages of development to site developments and facilities in optimum locations that protect groundwater resources.

PURPOSE: The primary purpose of this map is to:

1) Spatially identify areas throughout McHenry County with respect to their potential for aquifer contamination and recharge.
2) Identify the most sensitive areas within McHenry County that can effectively preserve and protect the recharge of our groundwater shallow aquifers to ensure sustainable yields for current and future generations.

The composite map classifies these areas based on previously identified near surface materials and previously taken soil and well borings.

MAP OBJECTIVES: As McHenry County develops, it will increasingly rely on its shallow aquifers. It is of the utmost importance to protect and preserve the quality and quantity of groundwater from our shallow aquifers, and a critical step is the protection of Sensitive Aquifer Recharge Areas through land use planning.

1. To provide information about sensitive recharge areas throughout McHenry County.
2. To provide a basis for a zoning overlay map for local and regional planning efforts.
3. To stimulate the discussion and planning toward development of a countywide Wellhead Protection program.[1]
4. To work toward the development of a Countywide Groundwater Protection Ordinance.[1]
5. To encourage the adoption of Stormwater Best Management Practices (BMPs), including water quality BMPs, and to view Stormwater as a resource county-wide.
6. To encourage watershed planning.
7. To encourage intergovernmental cooperation in order to protect groundwater recharge and a sustainable water supply for an expanding population.

MAP CHARACTERISTICS: The map depicts the relative potential of aquifers within 100 feet of land surface to become contaminated from pollution sources at or near the ground surface. *Routes to* *contamination of a groundwater sources are the same as the routes to recharging a shallow aquifer*. Map areas designated in GREEN represent areas critical for aquifer recharge. *

Map Unit A: **High Potential for Aquifer Recharge/ Contamination:** Sand and gravel deposits are more than 20 feet thick (commonly 50 feet thick) and lies within 20 feet of the surface. About 37% of the County falls in Unit A.

Map Unit B: Moderately High Potential for Aquifer Recharge/Contamination: Sand and gravel deposits less than 20 feet thick and generally lie within 20 feet of surface and are either at land surface or overlain by the Haeger diamicton or fine-grain deposits. 20% of County classified as Unit B.

Undefined map areas are considered less *at risk* for shallow aquifer contamination and have less potential as significant recharge areas. ALL lands, regardless of sensitivity, provide routes to surface water and shallow aquifers for both recharge and contamination and should therefore require a site specific evaluation to confirm site soil/geology to maintain recharge and protect against contamination**.

DEFINITIONS:

GROUNDWATER RECHARGE: Recharge is the process by which precipitation reaches and re-supplies the groundwater. Areas that have conditions that favor rapid recharge are the main areas where the groundwater is replenished. Groundwater can be extracted from anywhere, but can only be re-supplied (naturally or artificially) through recharge areas. Therefore, recharge areas provide a fast conduit to re-supply groundwater and counter the effects of human consumptions. On the other hand, the characteristics that encourage rapid refreshment of the groundwater are the same characteristics that favor the travel of contaminants from the surface to the groundwater and which can degrade the groundwater supply. Activities that use materials that might generate contaminants when released to the ground have the potential to cause these contaminants to migrate rapidly to groundwater.

AQUIFER: means saturated (with groundwater) soils and geologic materials, which are sufficiently permeable to readily yield economically useful quantities of water to wells, springs, or streams under ordinary hydraulic gradients. [35 IL Adm. Code 620.110]

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* This map has been modified from the 1997 map to exclude: groundwater discharge Hydric soils, steep slopes (4% or greater), soils with restricted permeability (NRCS Soil Survey 2008).

**The SARA map cannot substitute for evaluation of individual sites. All sites and regions where proposed or present land use activities could adversely affect groundwater quality should be separately investigated because of the variations in earth materials and the uneven distribution of data used to develop the geologic maps (ISGS 559, p 48).

[1]. Baxter and Woodman, *McHenry County Groundwater Resource Management Plan*, *Part 3, Groundwater Quantity and Quality Protection Plan* 2005

NOTE: This map will continuously be updated, as a GIS layer, using well boring data and on-going research data from ISGS.