Water 2050: Status of groundwater supply in northeastern Illinois

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SOURCE OF MUNICIPAL WATER IN 2012

- County Boundary

**Source of Municipal Water**
- Shallow GW (>80%)
- Mixed Shallow and Deep GW
- Deep GW (>80%)
- Mixed Lake Michigan and GW
- Lake Michigan
- Kankakee River
- Fox River
- Mixed Fox River and GW

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Source of deep groundwater

- Blue areas receive large amounts of recharge to the sandstone aquifer
- Dark gray areas receive virtually no recharge from vertical infiltration through the aquitards
- Water must migrate from the St. Peter outcrops to northeastern Illinois, which can take hundreds (thousands?) of years
- Sandwich fault impedes the horizontal flow of water
Geologic cross-section
Mass measurement - 2014
Head difference map- 1980 to 2014

• At risk communities:
  • Those reliant on the deep sandstone aquifer
    • Joliet and surrounding industries
    • Kendall County communities
  • Heads are decreasing at a slower rate in:
    • Southwestern Kane County
    • McHenry County
    • Rockford
    • Dekalb
Implications of desaturation

- Other implications
  - Desaturation of the Ironton-Galesville locally at high-capacity wells (a concern in Joliet and surrounding industries, a potential concern in Kendall County)
  - Increased costs of pumping
    - Must lift the water over a greater distance
    - Decreasing transmissivity

Per 1246 domestic/industrial wells with depths extending into the St. Peter in Will and Kendall Counties that were reported in our database with depth information.
Model simulations
2014

St. Peter Sandstone

Ironton-Galesville Sandstone

Red- Partially desaturated sandstone
Cyan- Sandstone within 200 ft of desaturation
Black- sandstone is completely desaturated
Contours- Head above the top of the sandstone unit
Model simulations
2050

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