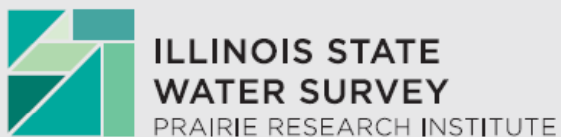


Update on Regional Water Supply Planning

ICCG Meeting

February 23, 2012



Contract Report 2011-08

Meeting East-Central Illinois Water Needs to 2050: **Potential Impacts on the Mahomet Aquifer and Surface Reservoirs**

George S. Roadcap, H. Vernon Knapp, H. Allen Wehrmann, David R. Larson

An aerial photograph showing a large, winding reservoir with blue water, surrounded by lush green trees and some residential or industrial buildings. The landscape is a mix of natural and developed areas.

<http://www.isws.illinois.edu/pubdoc/CR/ISWSCR2011-08.pdf>

Study Area

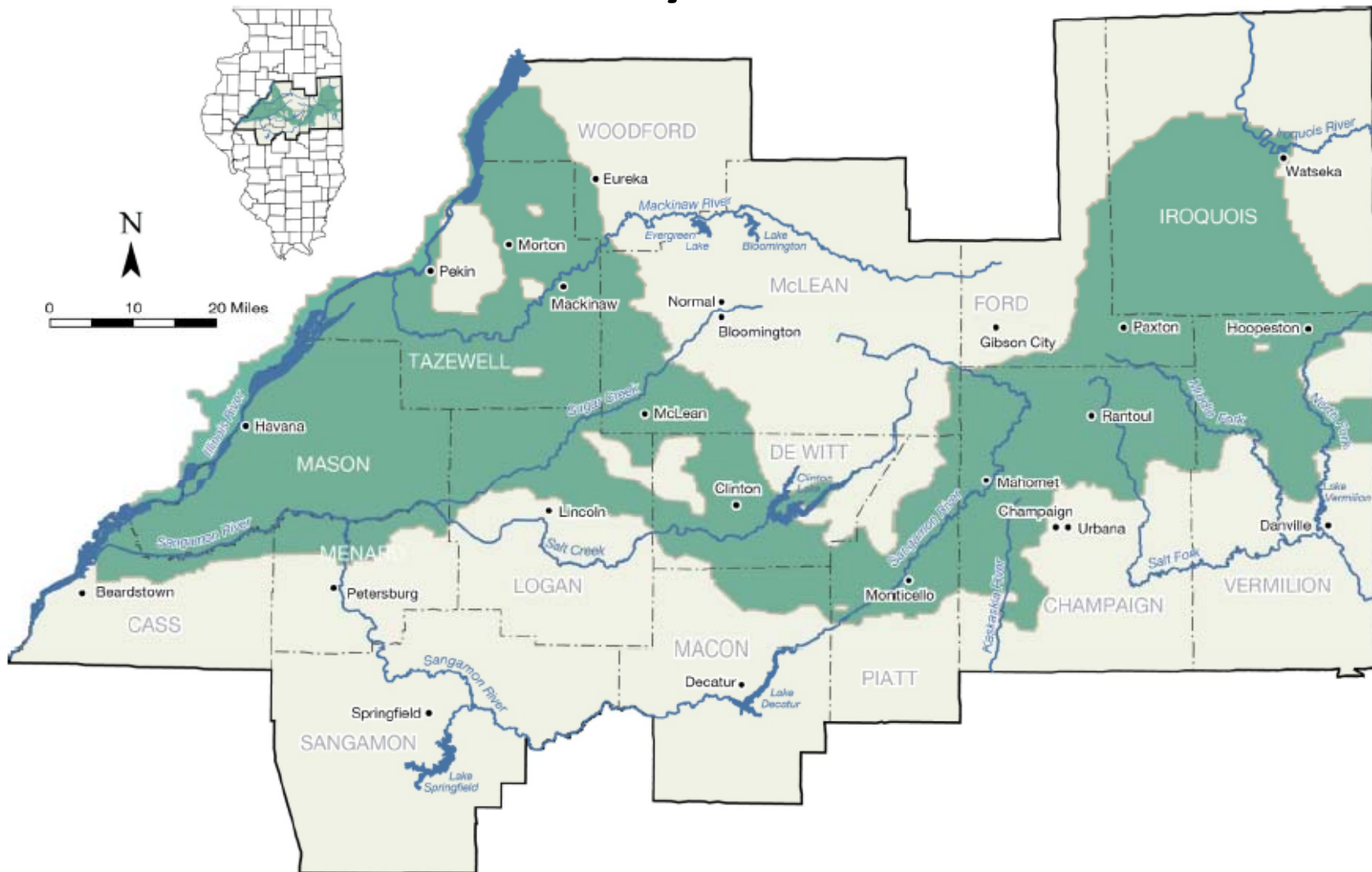


Figure 1. East-central Illinois regional water supply planning area

Scenarios

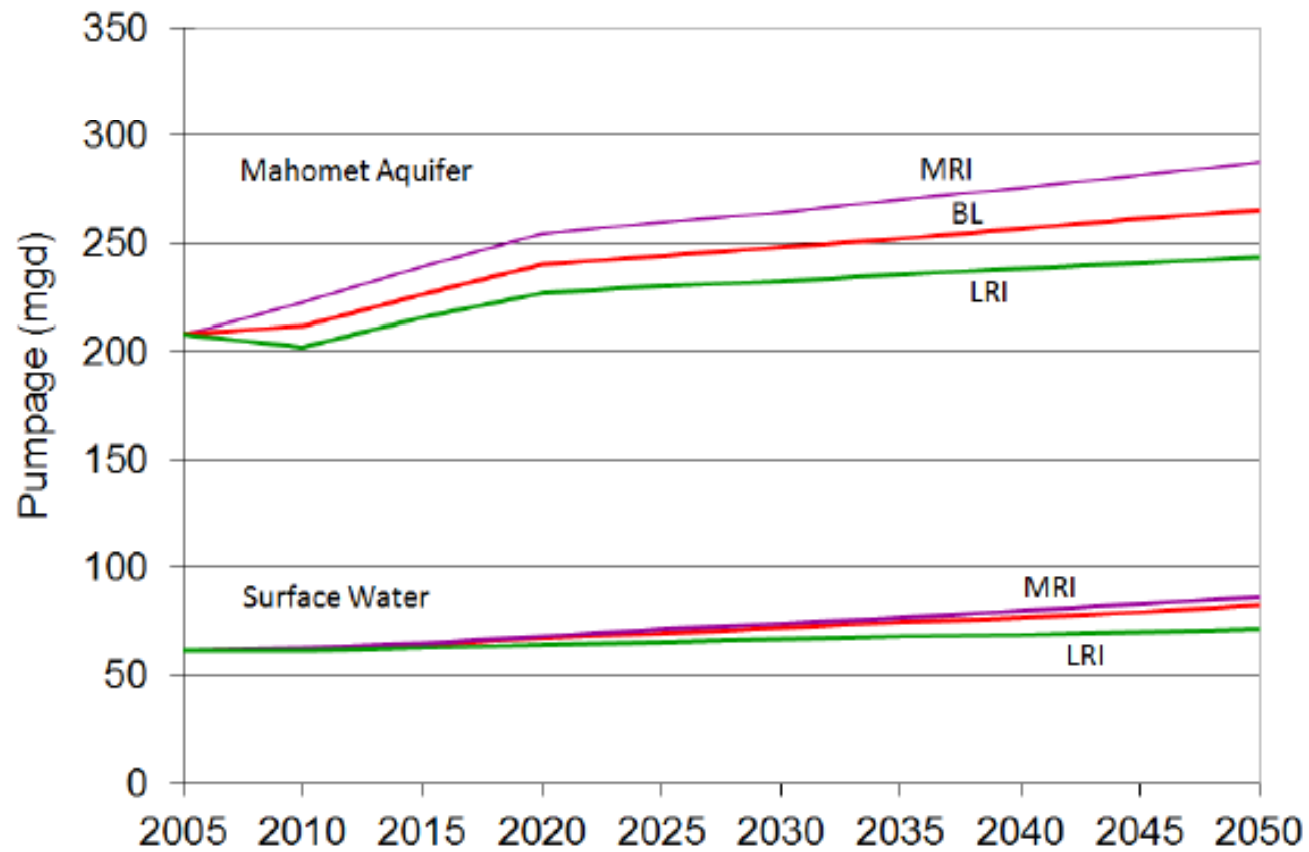


Figure 5. Simulated water demand projections out to 2050 for the Mahomet Aquifer and the surface water supplies of Springfield, Decatur, Bloomington, and Danville (modified from WHPA, 2008)

Conceptual Model: Recharge and Flow

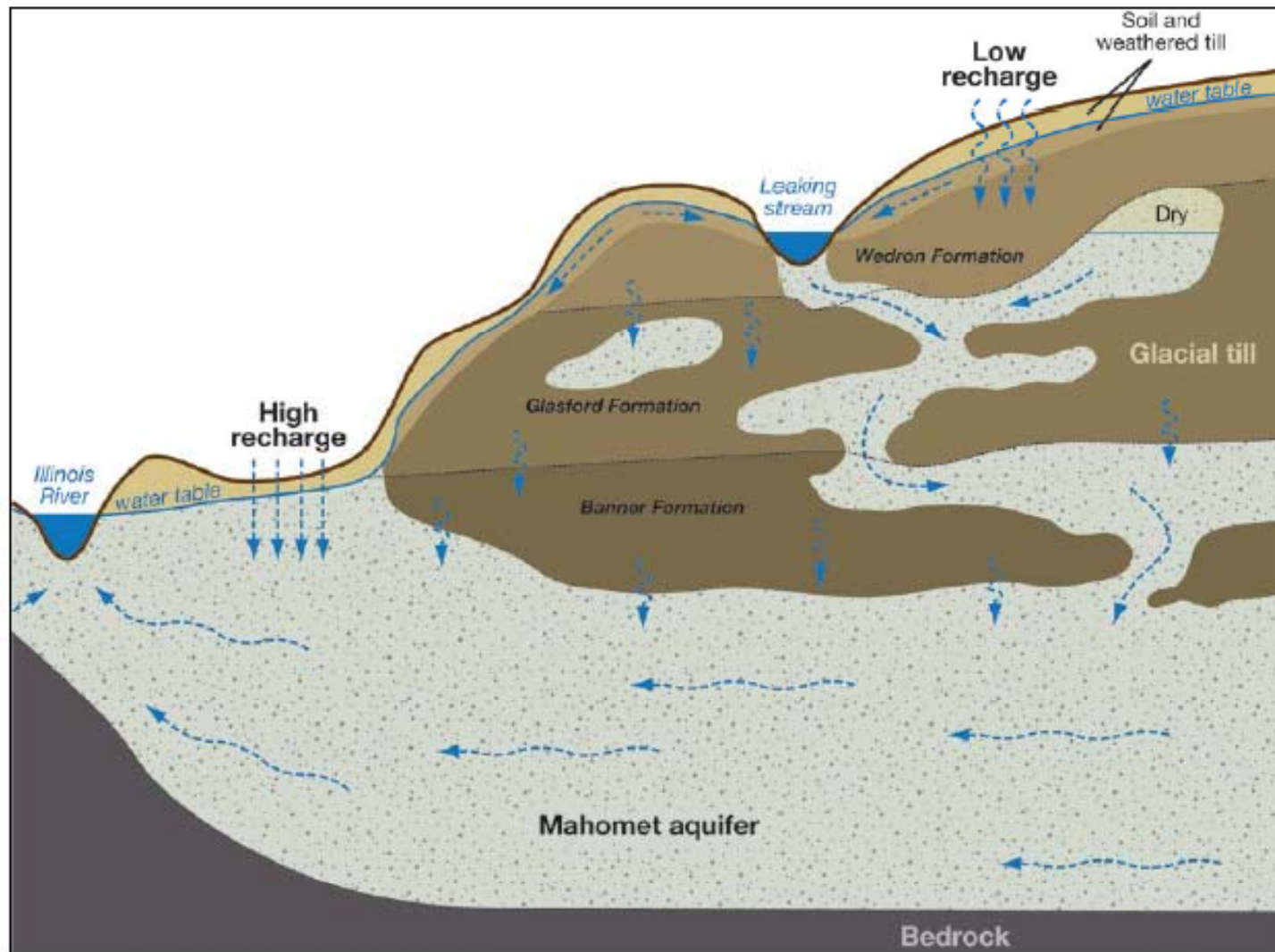


Figure 10. Conceptual model of flow in the Mahomet Aquifer (not to scale)

Observation Wells

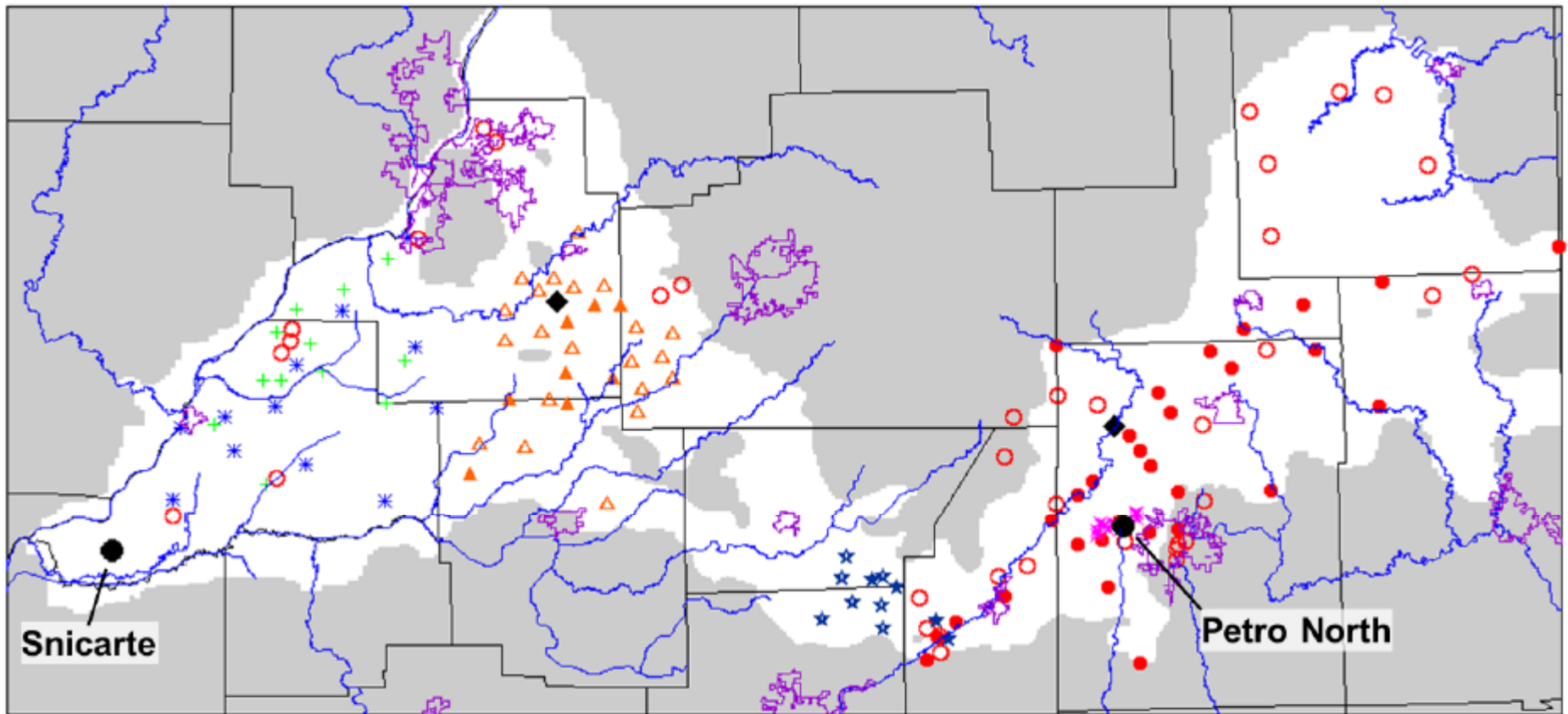


Figure 12. Location of observation wells in the Mahomet Aquifer (see text for explanation of map symbols)

Available Head

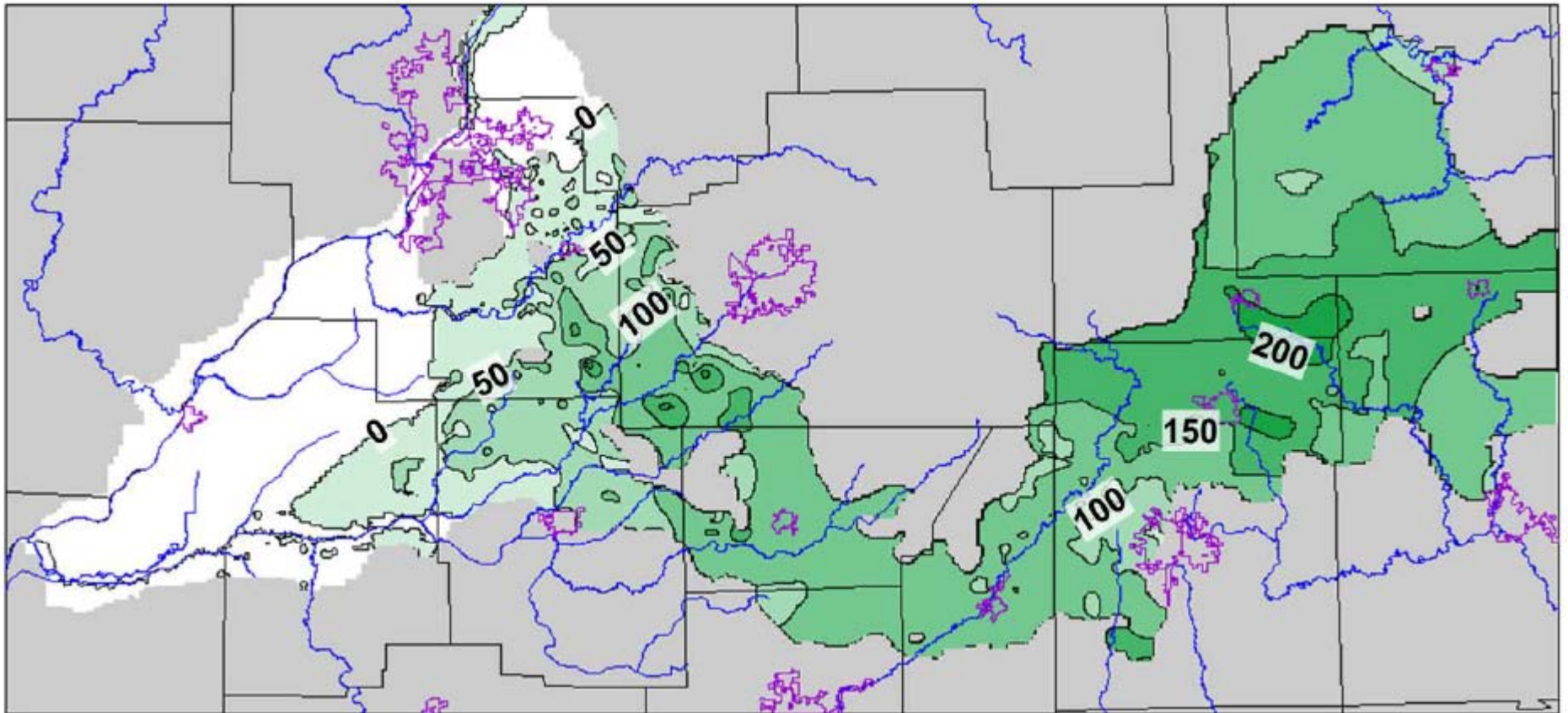


Figure 19. Height of the potentiometric surface of the Mahomet Aquifer above the top of the Mahomet sands. Unconfined areas are not shaded.

Historic Drawdown in Champaign Region

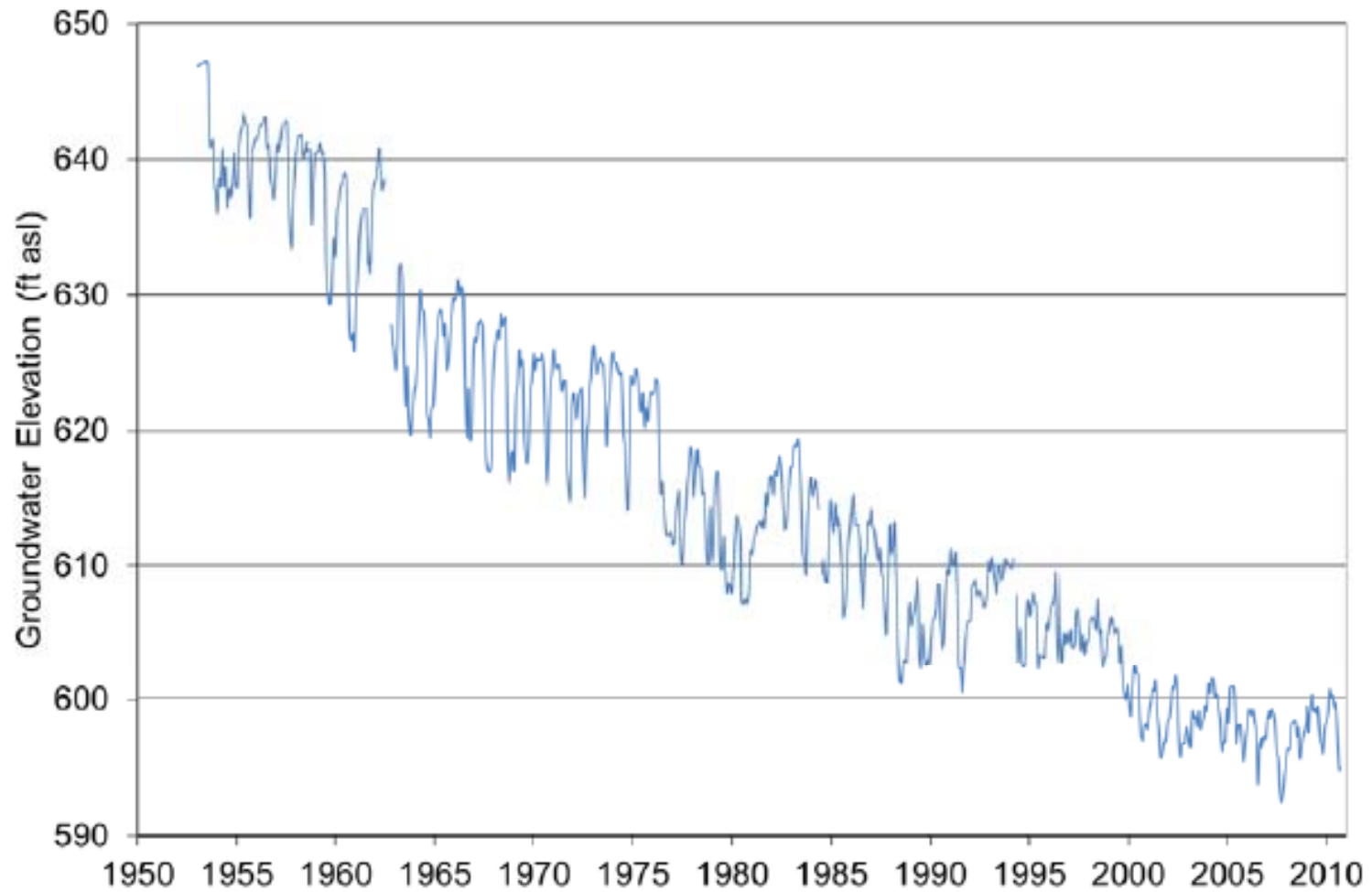


Figure 26. Hydrograph of the ISWS Petro North observation well, 1953–2010

Historic Drawdown in Champaign Region

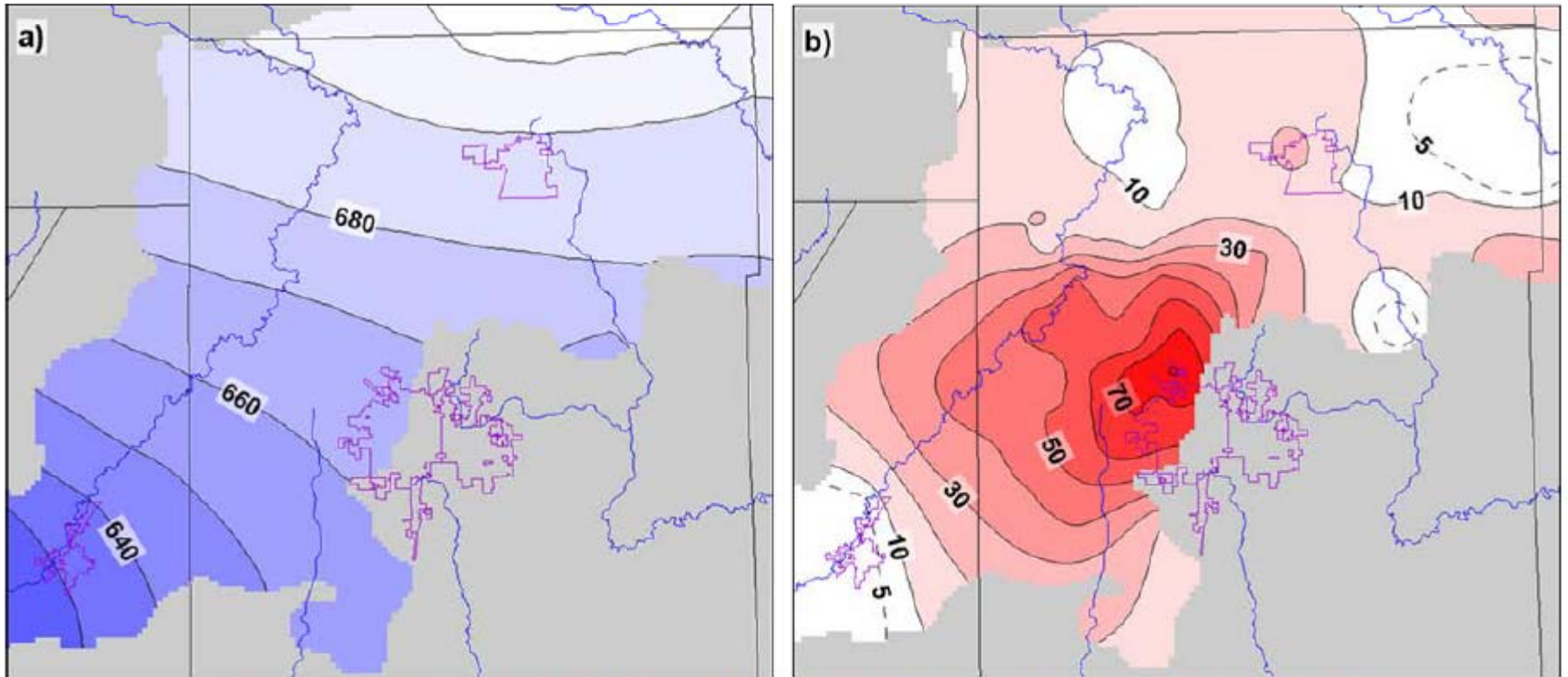


Figure 28. (a) Historic potentiometric surface map and (b) drawdown map of the cone or depression in feet

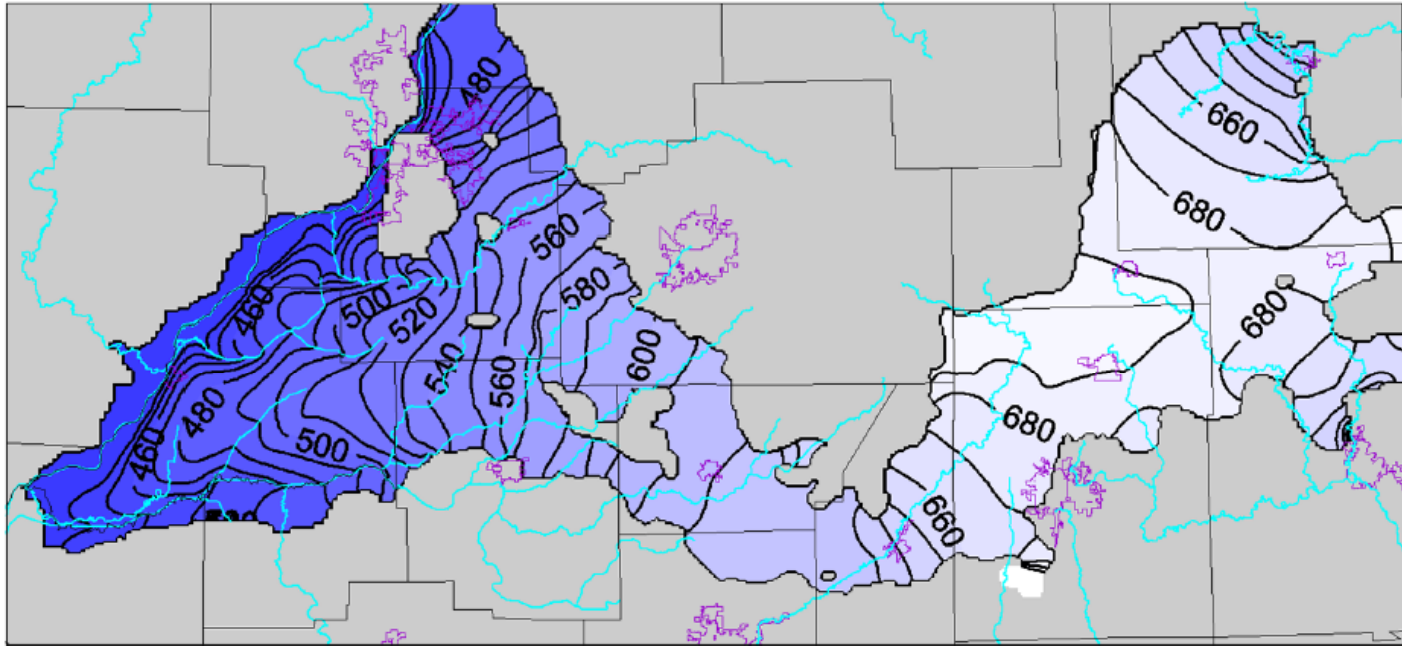


Figure 58. Predicted potentiometric surface for predevelopment conditions

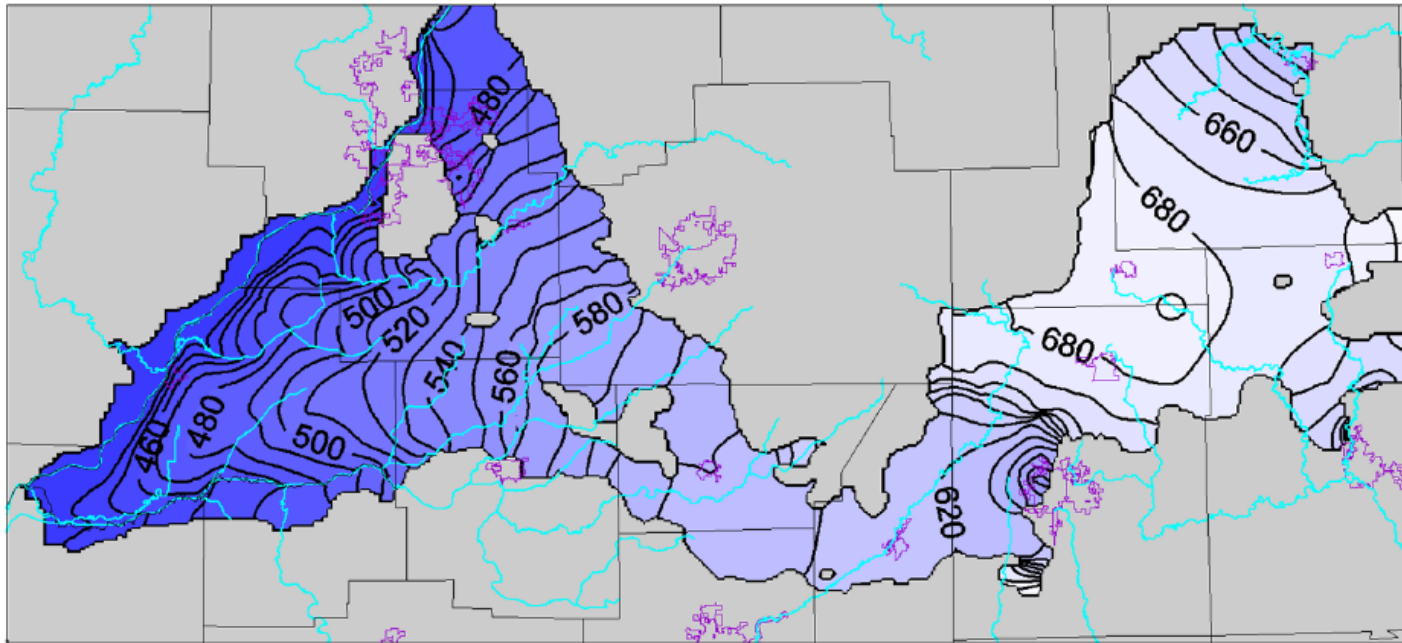


Figure 57. Predicted potentiometric surface for 2005 conditions

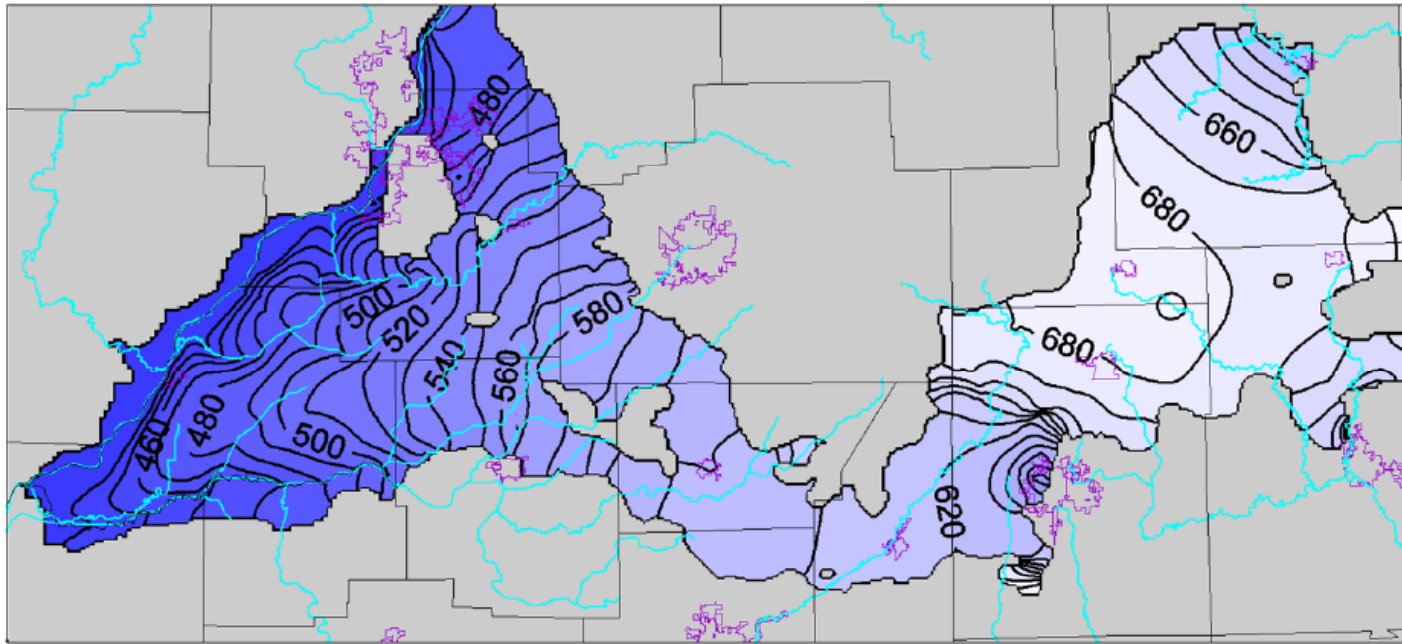


Figure 57. Predicted potentiometric surface for 2005 conditions

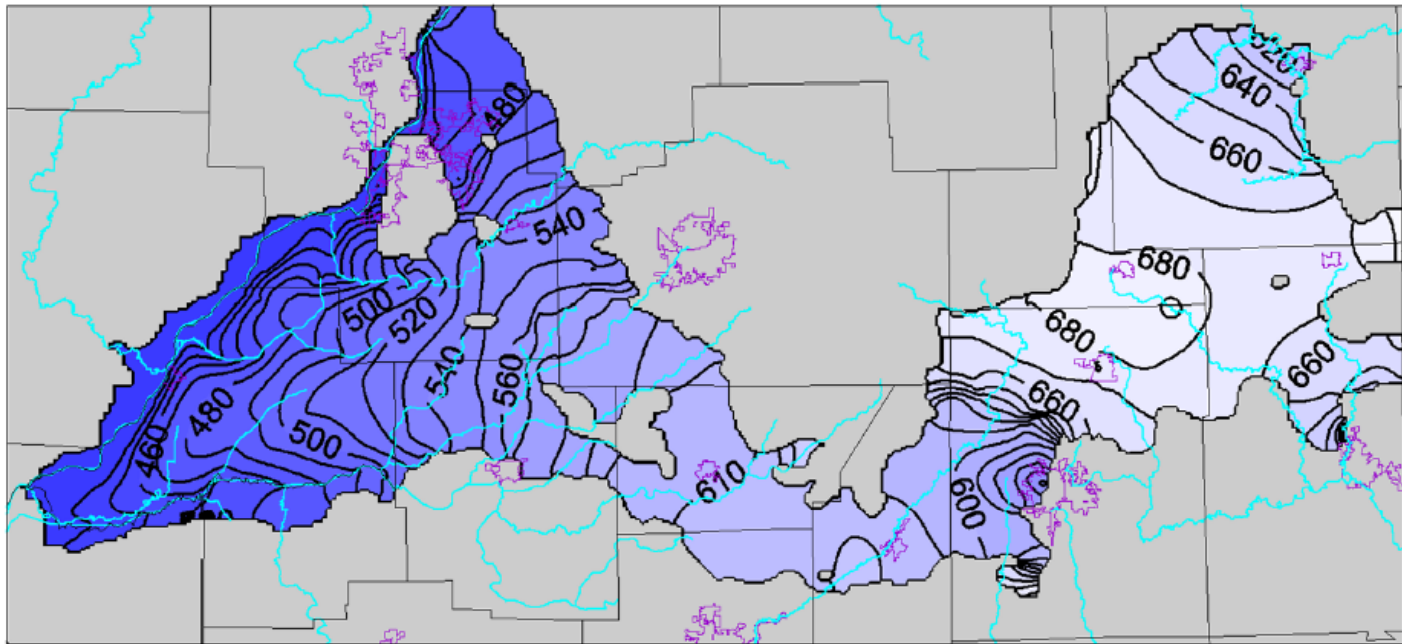


Figure 60. Predicted potentiometric surface for 2050 conditions with baseline demand projections

Summary

“None of the current groundwater users in the Mahomet Aquifer could be considered ‘at risk’ for a future water shortage under the three demand scenarios.”

“The model budget indicates that the available 2050 water supply for the aquifer as a whole is 2.3 times greater than the projected baseline demand.”

Caveat: location is important

Potential Impacts of New High Capacity Wellfields

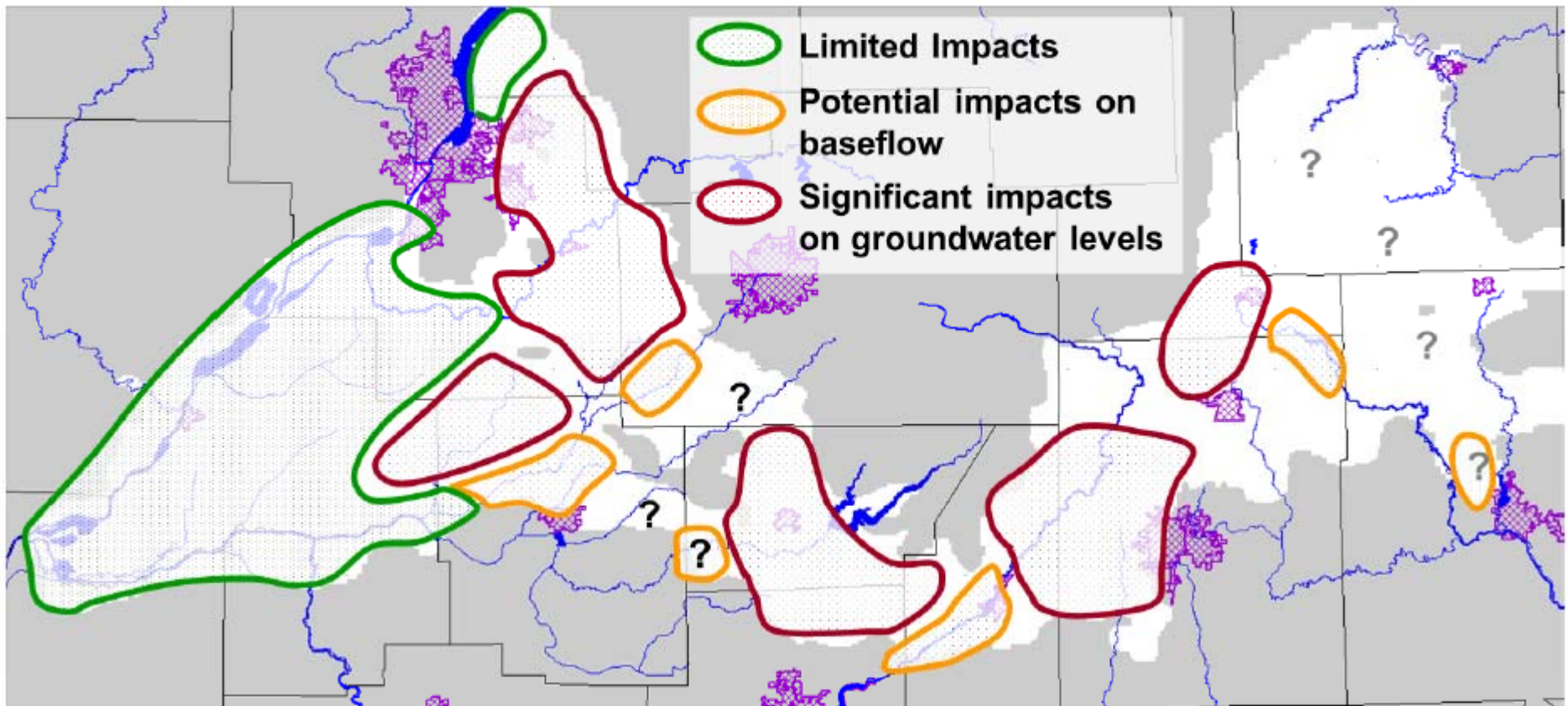


Figure 76. Prospective locations for a new high capacity wellfield and the type of expected impacts

Northeastern Illinois

- Final report is with the ISWS Editor; expect publication in March (pdf)
- Covers:
 - Surface water: Lake Michigan and Fox River
 - Deep bedrock aquifers in 11-county region
 - Shallow groundwater in the Fox River Basin