
Water Supply Planning in Illinois

A Progress Report from the State Surveys

Executive Order #1-2006

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Illinois State Water Survey



Illinois Water 2008
Champaign Hilton Garden Inn
October 8, 2008

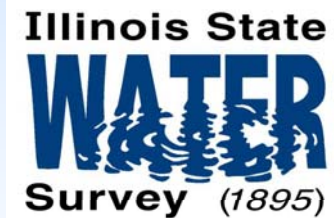


Special thanks to:

Don Keefer, Dave Larson, Bill Dey,
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and others
Illinois State Geological Survey



Scott Meyer, Yu-Feng Lin, Ed Glatfelter
George Roadcap, Derek Winstanley,
Vern Knapp and others
Illinois State Water Survey



Executive Order 2006-01

- Three-year planning initiative
- \$5 million over 3 years to ISWS & ISGS
- \$1.5 million for local planning grants



OFFICE OF THE GOVERNOR
ROD R. BLAGOJEVICH - GOVERNOR

NEWS

FOR IMMEDIATE RELEASE
January 9, 2006

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Governor Blagojevich orders statewide water supply study

Governor issues executive order to study state's water needs to protect against shortages and develop regional plans

SPRINGFIELD – Following last summer's long and costly drought, Governor Rod R. Blagojevich today issued an Executive Order to develop a comprehensive, statewide water supply planning and management strategy. The Department of Natural Resources Office of Water Resources will oversee the process in conjunction with the State Water Survey (SWS).

"It is critical for Illinois to get ahead of the curve when it comes to water supply planning," said Gov. Blagojevich. "Last summer's drought demonstrated to us that careful management of our water must be a priority so we always have enough supply for people to drink and use, for our industries like agriculture, and for our fish and wildlife habitats."

While Illinois is on the shores of Lake Michigan, one of the largest freshwater sources in the world, and has significant sources of both groundwater and surface water, portions of the state face legal and physical restraints to increasing water supplies. Shortages like last year's drought, and the restrictions it triggered, have so far been rare, but the growing population of the state and increasing demand for water will strain current sources.

Previously, the SWS, the Illinois Interagency Coordinating Committee on Groundwater, and the Illinois State Water Plan Task Force have identified the Priority Water Quantity Planning Areas that are most at risk for water shortages and conflicts. By December 31, 2006, at least two of those areas will have Regional Water Quantity Plans in process.

Executive Order 2006-01

GOVERNOR'S EXECUTIVE ORDER Jan 2006.

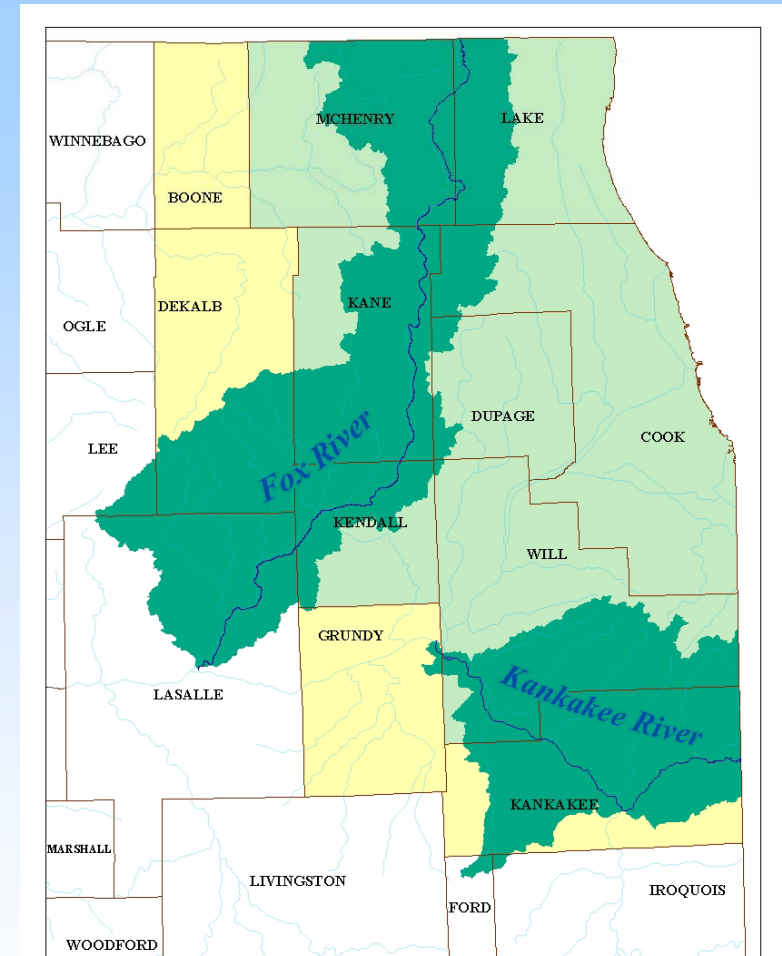
Calls on DNR OWR, in conjunction with Surveys, to:

- 1) A comprehensive program for state and regional water supply planning & implementation***
- 2) Public review of a strategic plan for a water supply planning and management program***
- 3) Establishing a scientific basis & an administrative framework for implementation of state and regional water supply planning and management***
- 4) Encourages creation of locally-based regional water supply planning committees***
- 5) By December 31, 2006 have regional water Quantity plans in progress in 2 priority planning areas***

Regional Planning

- Chicago Metropolitan Agency for Planning (CMAP) is Coordinator for northeastern Illinois
- A 35-person planning group was established to represent local stakeholders
- CMAP contracted consultant to estimate future water demands

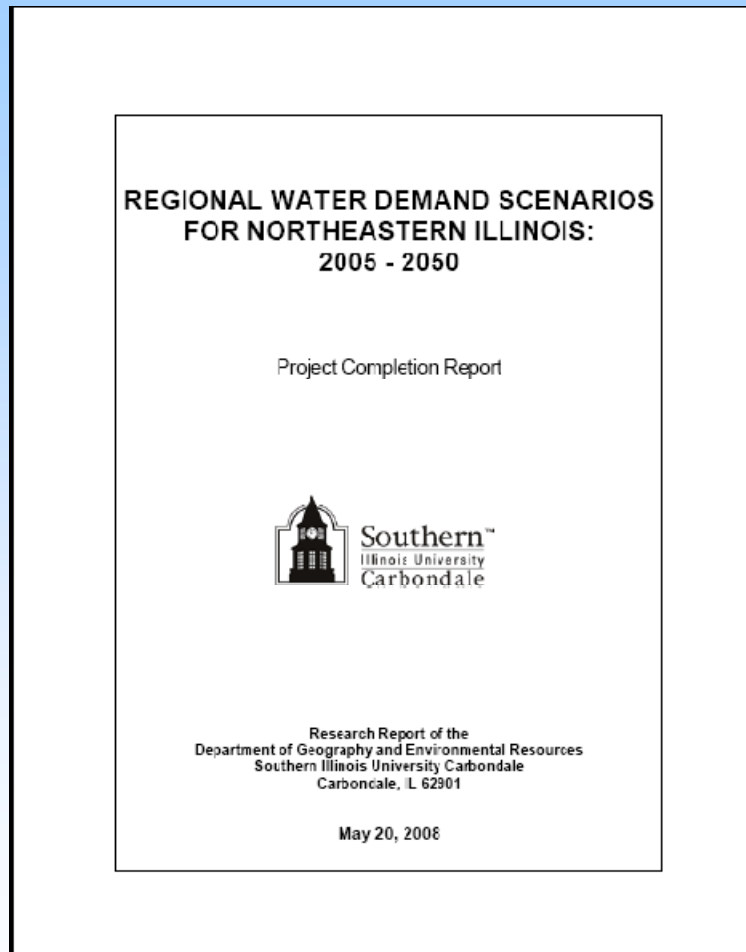
<http://chicagoareaplanning.org/watersupply/>



Water Supply Demands to 2050

- MAC RWSPC Consultant – Wittman Hydro Planning, Bloomington, IN
 - Includes estimates of water use by major sectors in 5-year increments for the period 2010-2050
 - Major water use sectors:
 - Public supply (municipal & industrial)
 - Self-supplied commercial and industrial
 - Power generation
 - Self-supplied domestic
 - Irrigation and agricultural
 - 3 withdrawal scenarios: Baseline trend, Less Resource Intensive, and More Resource Intensive
 - Allocates future water use to major withdrawal points within the region for modeling
-

Regional Water Demand Scenarios for NE Illinois

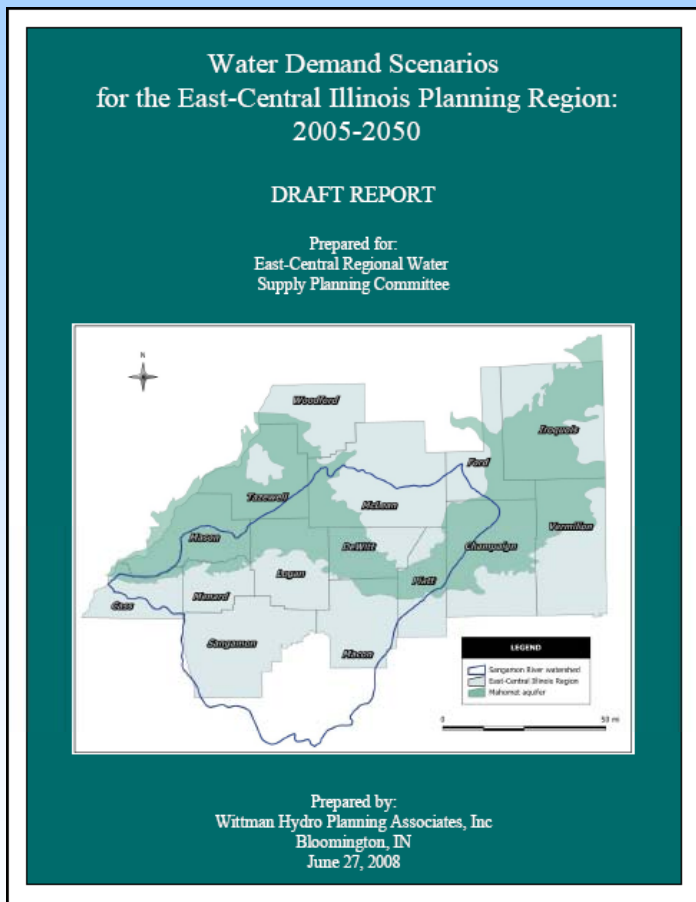


CMAP

<http://www.cmap.illinois.gov/WorkArea/showcontent.aspx?id=9040>

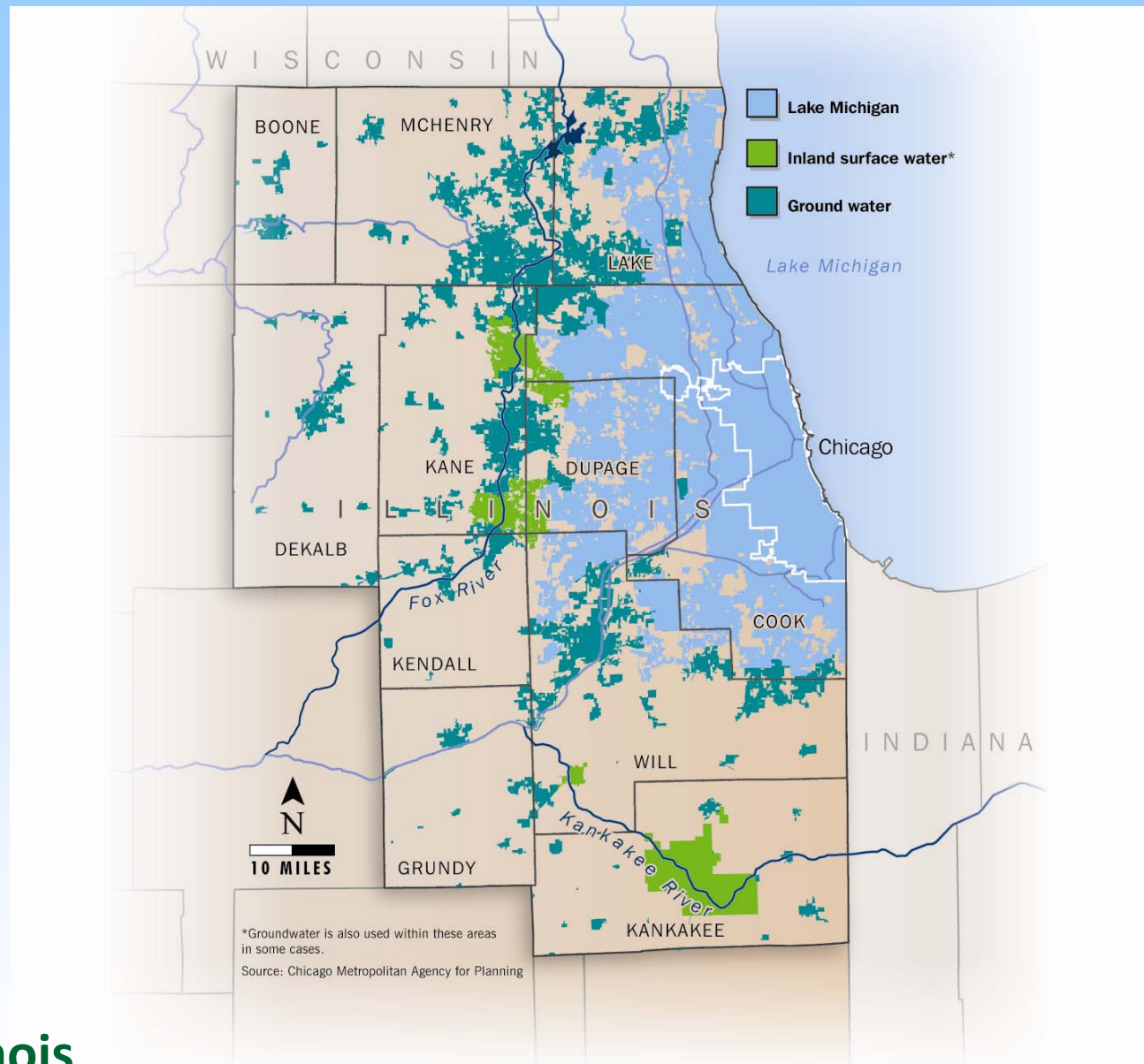
approved May 27th

Regional Water Demand Scenarios for EC Illinois



<http://www.rwspc.org/documents/EC-IL-Water-Demand-Report-Draft-6-27-08.pdf>

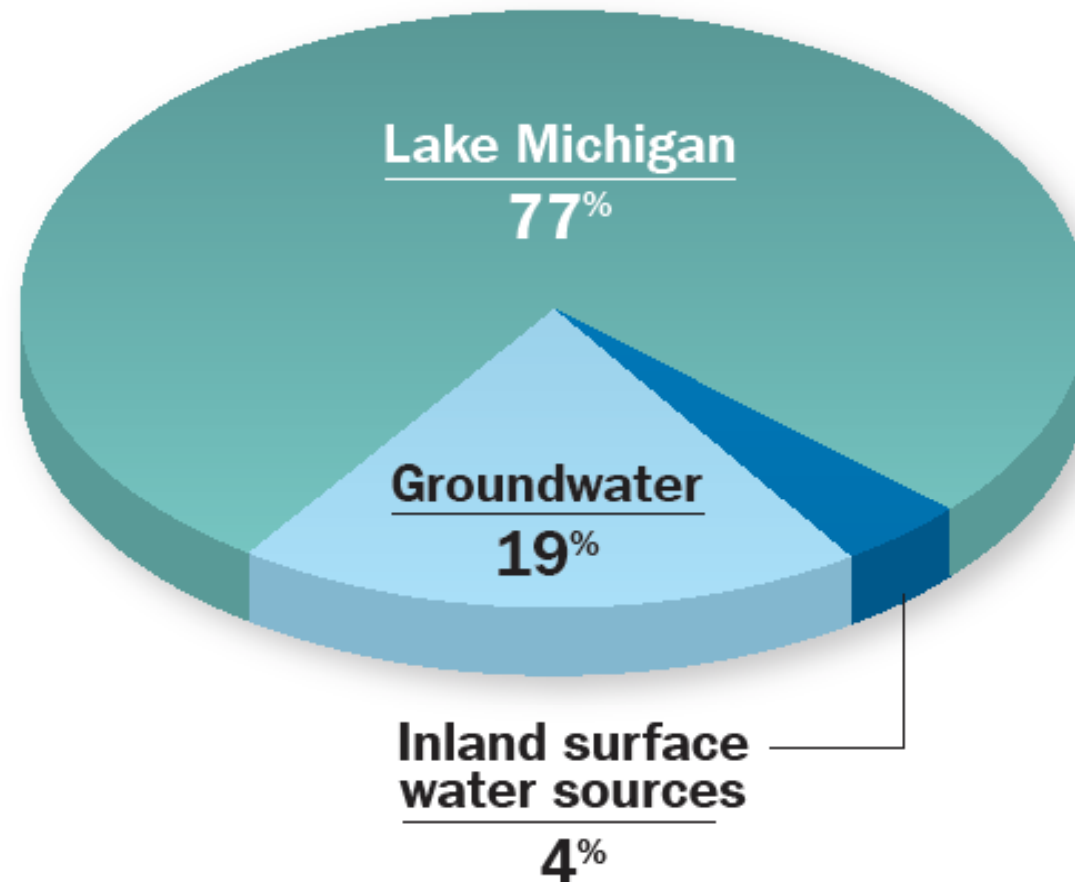
Northeast Illinois Water Sources



Graphic credit: CMAP

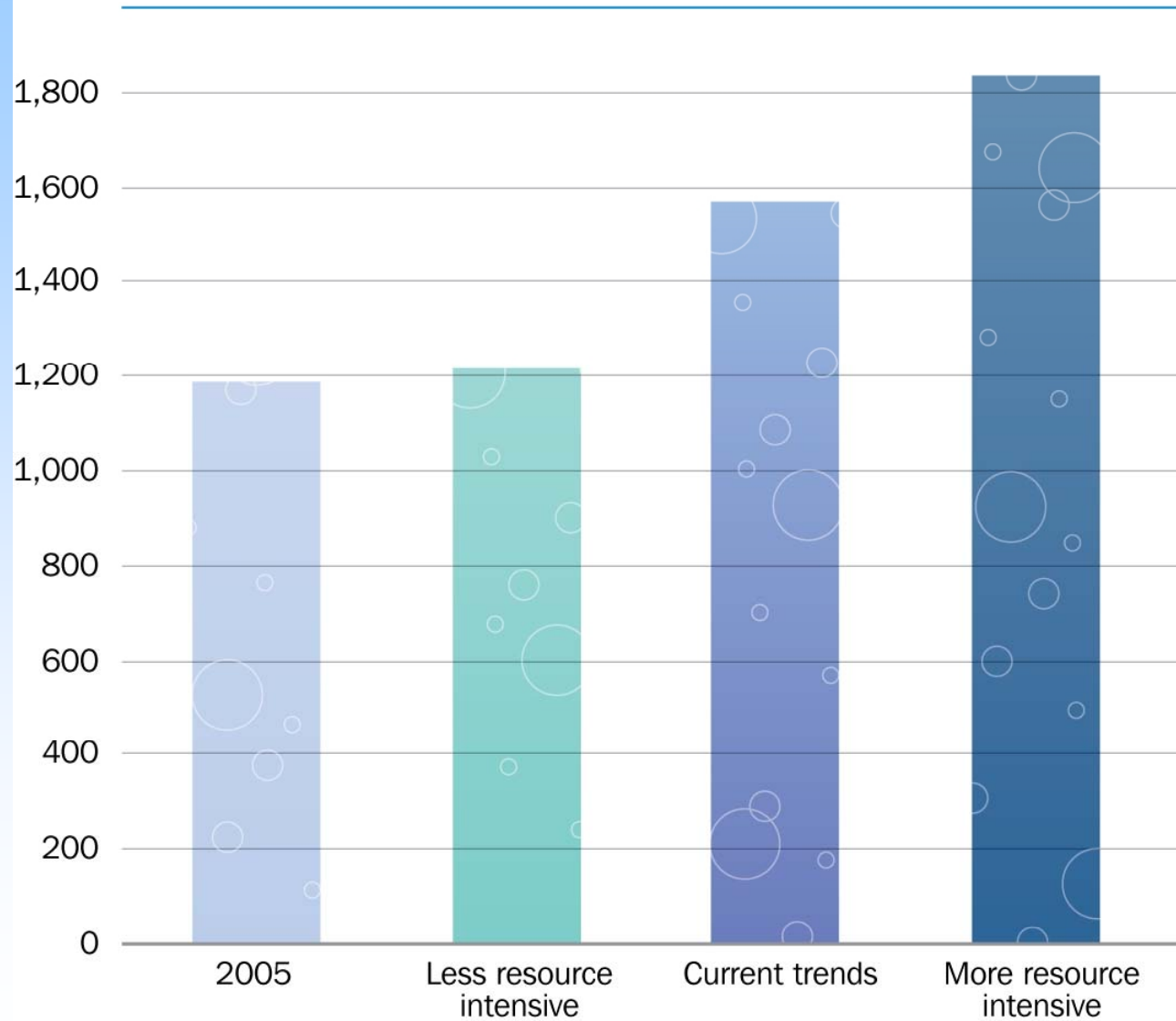
Sources of Drinking Water for Northeastern Illinois

11-county region population, 2000



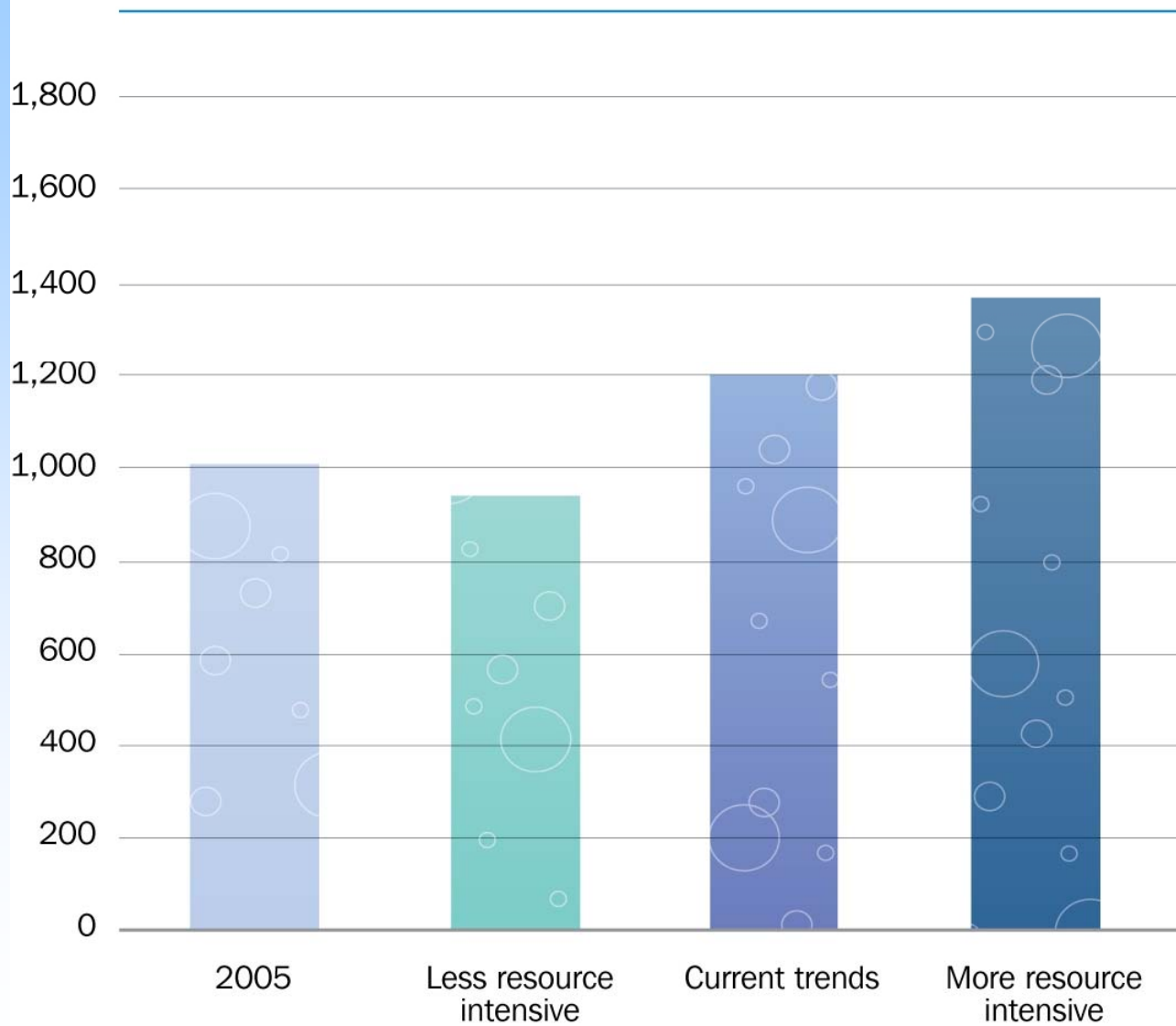
Source: TBD

Public Supply, Total Withdrawals: 2005 vs. 2050 Scenarios, in millions of gallons per day



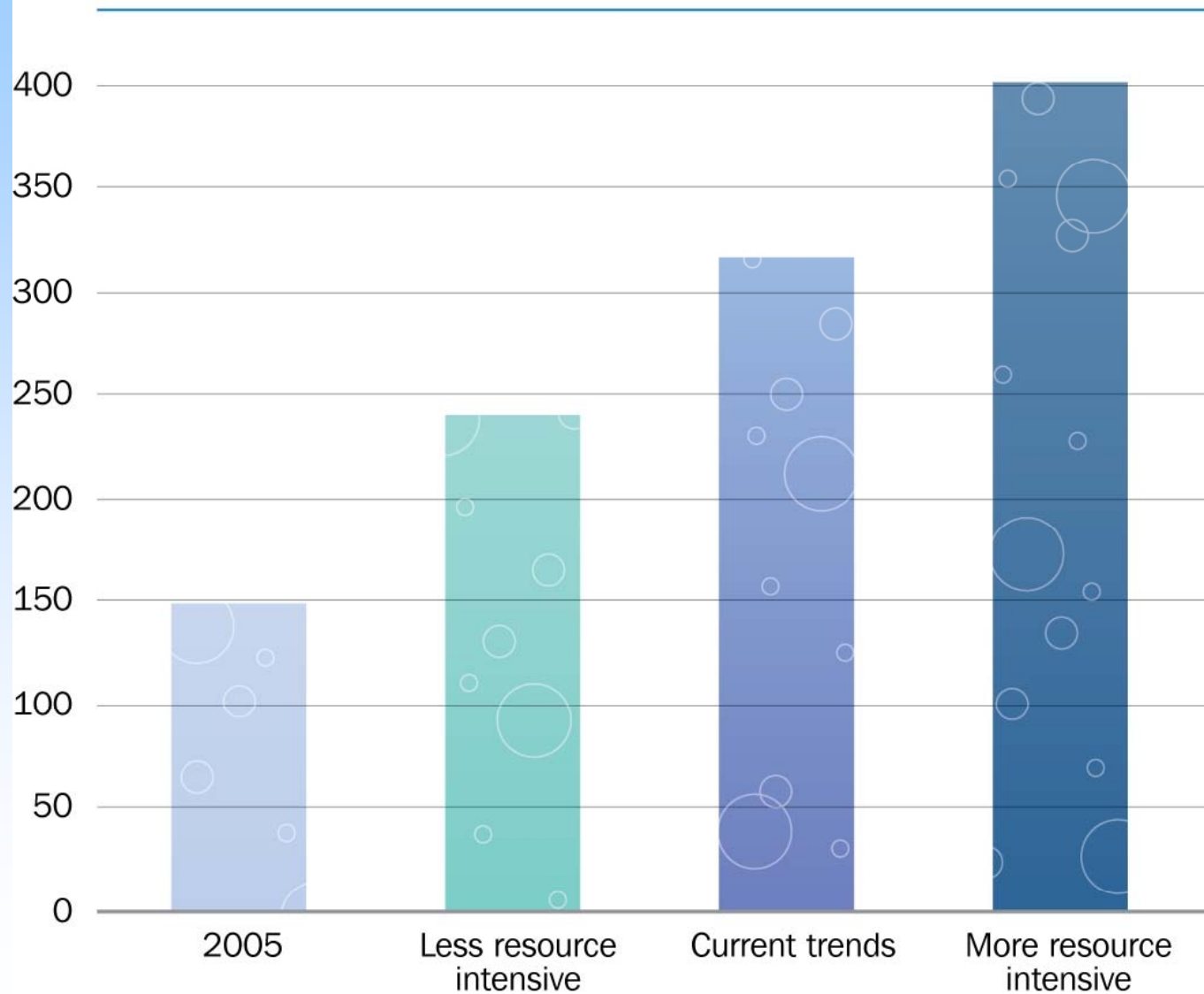
Source: Dziegielewski and Chowdhury, 2008

Public Supply, Lake Michigan Withdrawals: 2005 vs. 2050 Scenarios, in millions of gallons per day



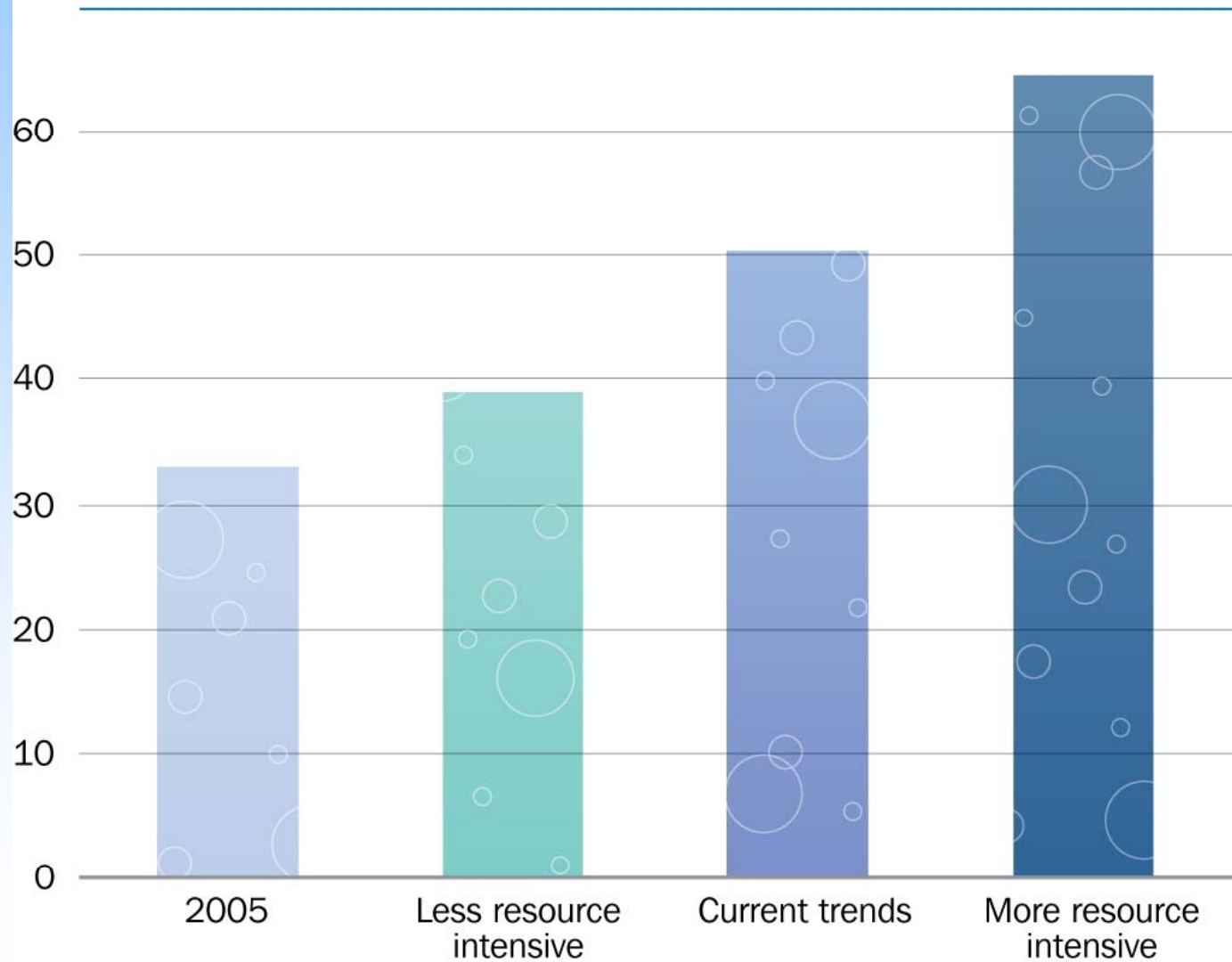
Source: Dziegielewski and Chowdhury, 2008

Public Supply, Groundwater Withdrawals: 2005 vs. 2050 Scenarios, in millions of gallons per day



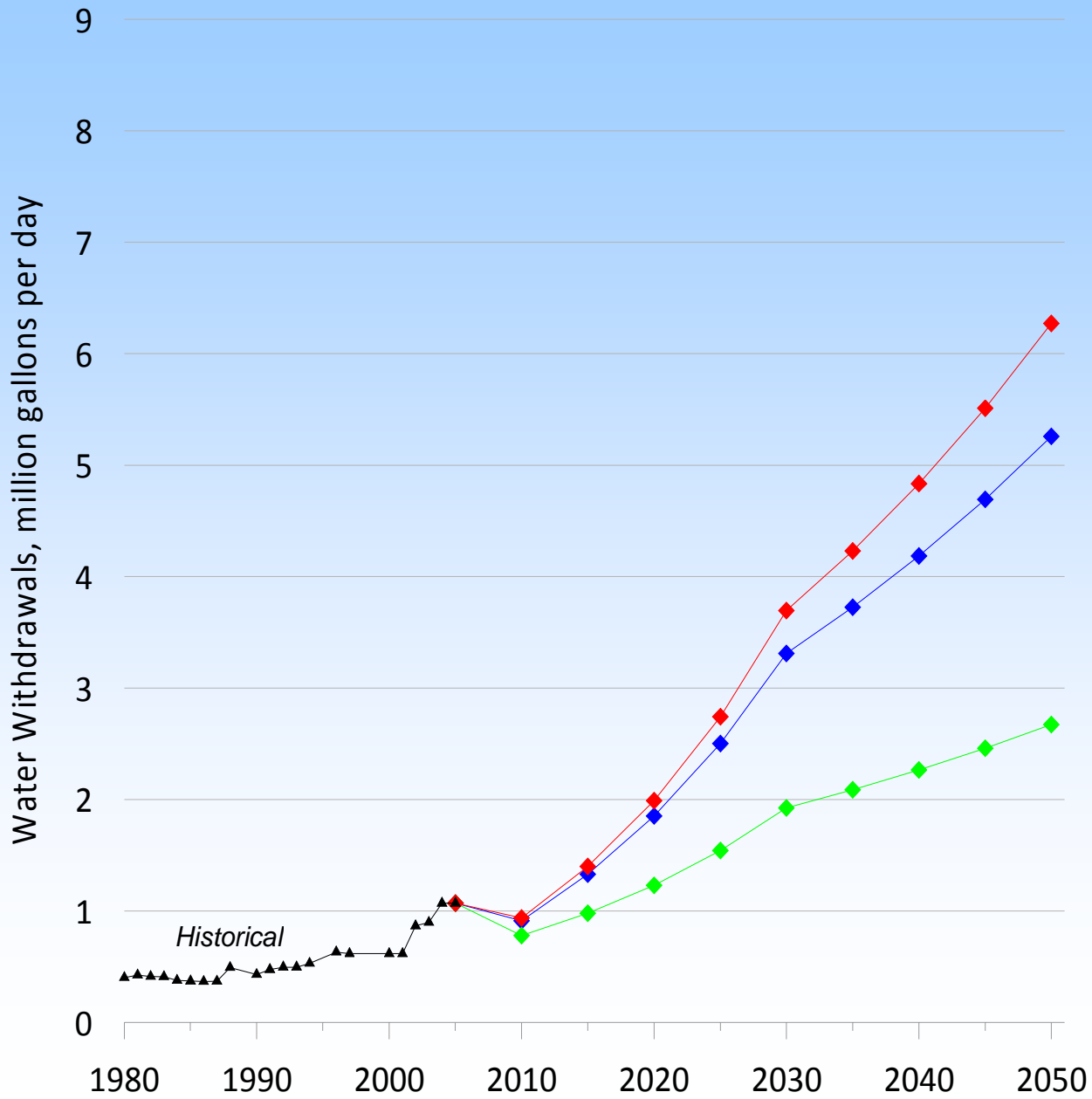
Source: Dziegielewski and Chowdhury, 2008

Public Supply, Fox and Kankakee Rivers Withdrawals: 2005 vs. 2050 Scenarios, in millions of gallons per day

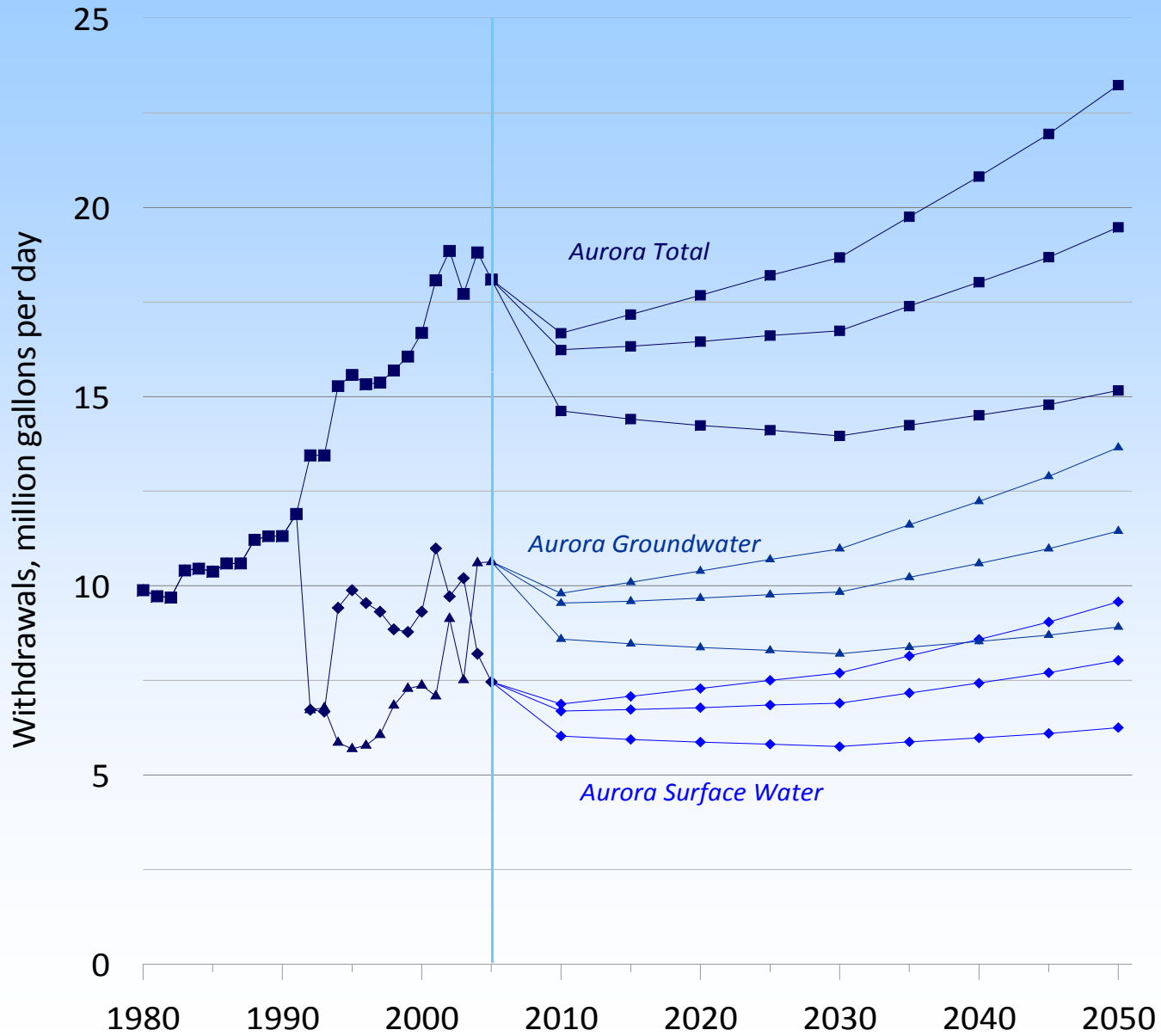


Source: Dziegielewski and Chowdhury, 2008

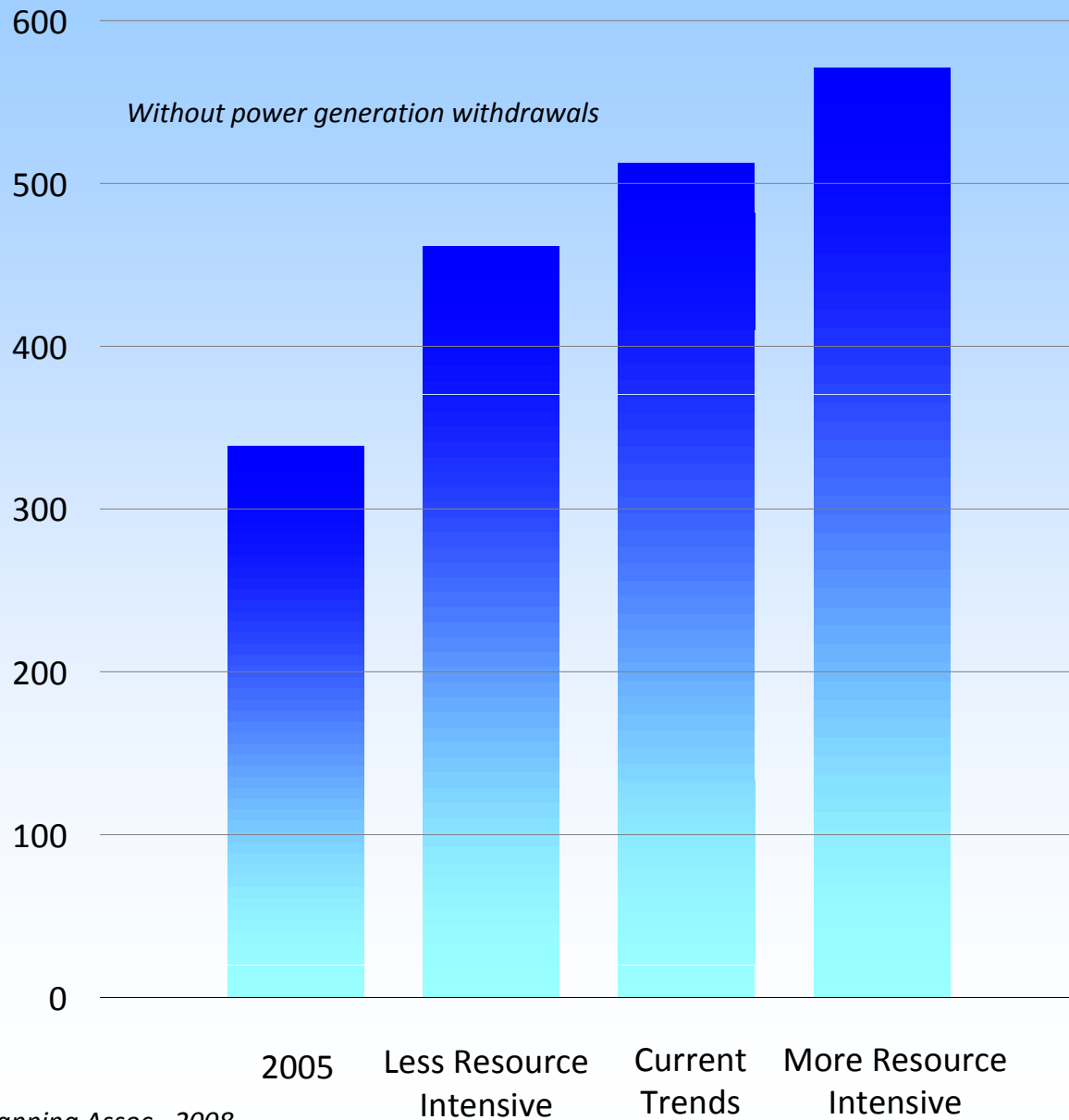
Yorkville Community Water Supply



Public Water Supply Withdrawals for Aurora

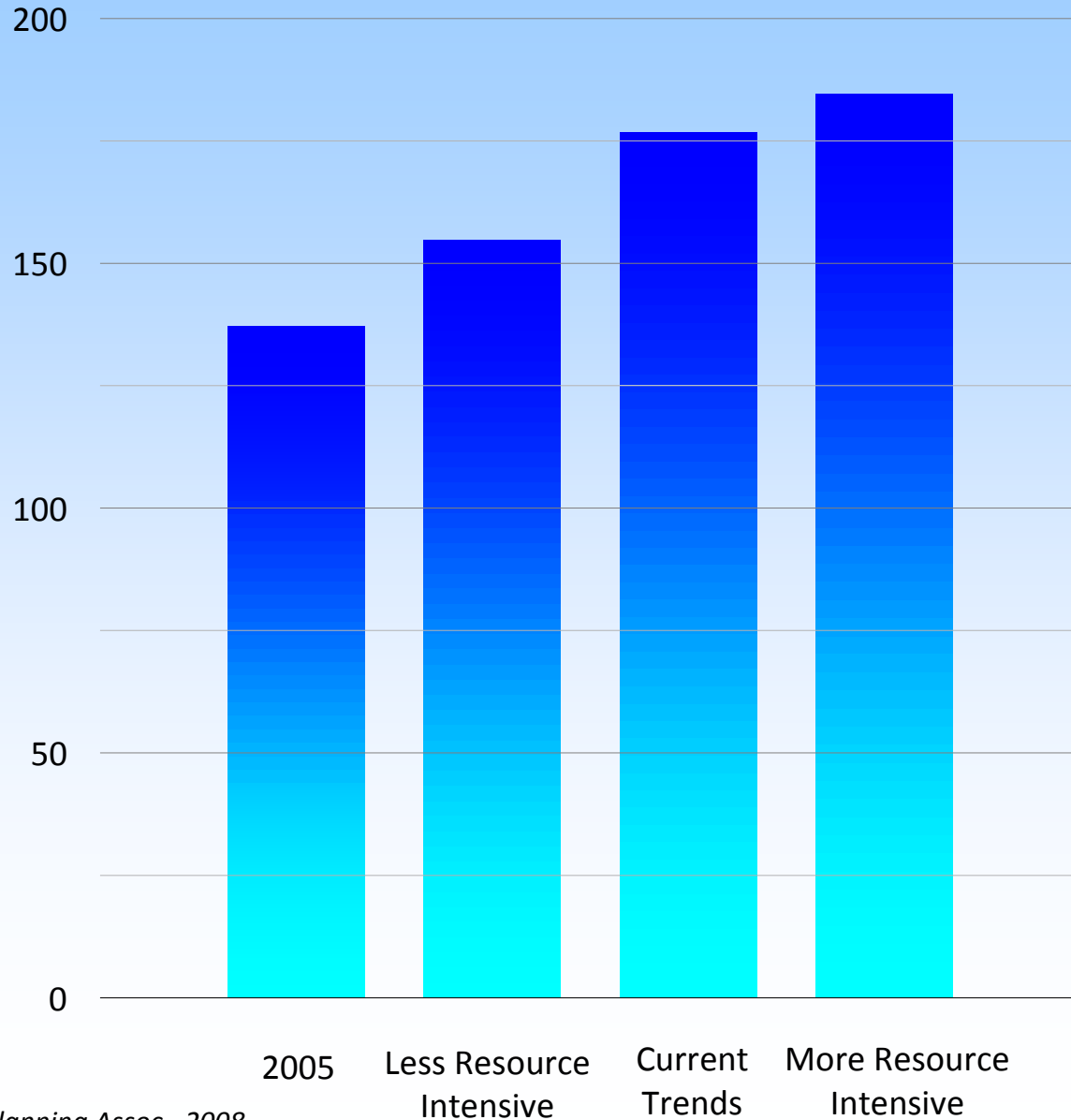


15-County East-Central IL Withdrawals: 2005 vs 2050 Scenarios, in millions of gallons per day



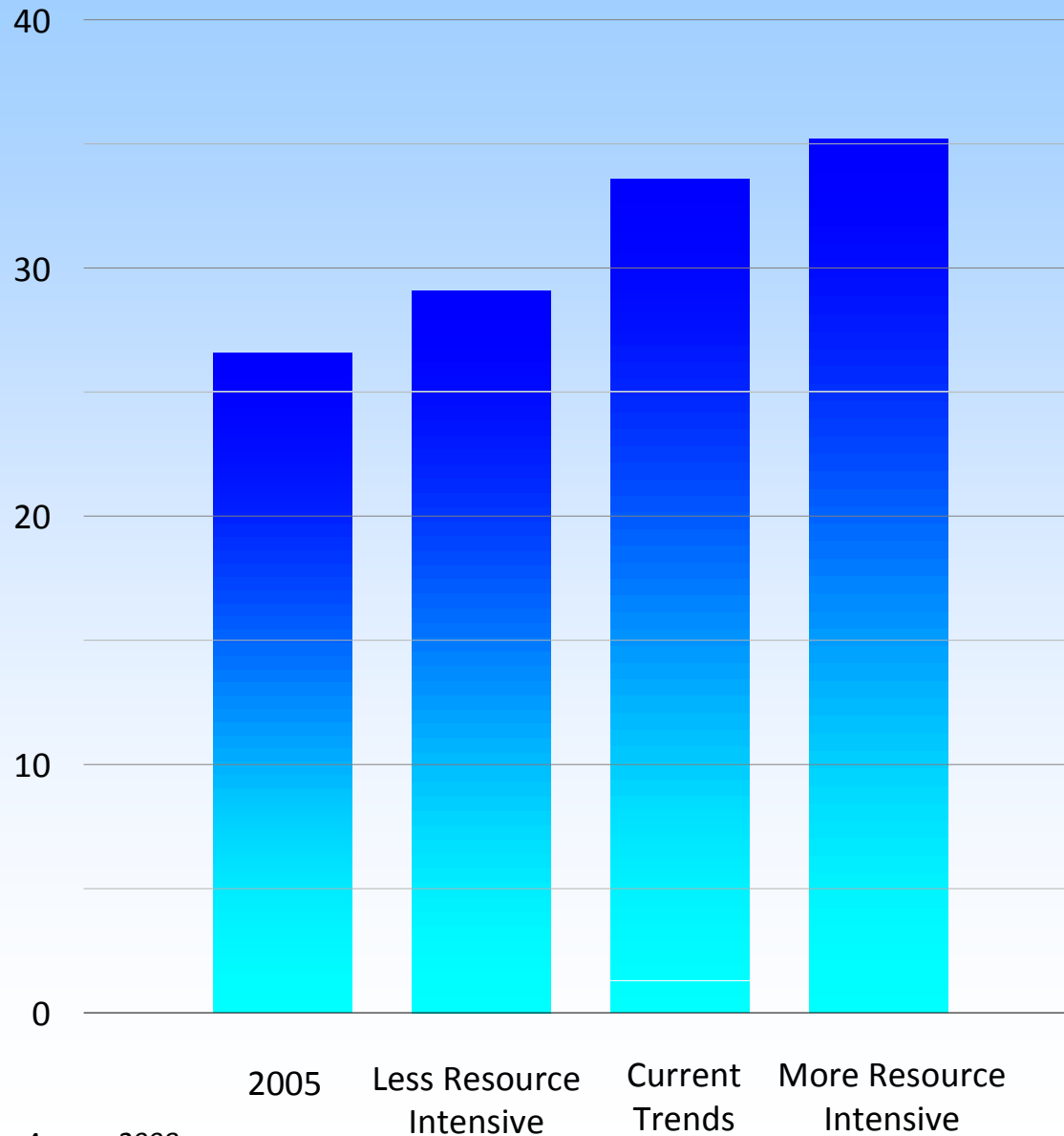
Source: Wittman Hydro Planning Assoc., 2008

15-County East-Central IL PWS Withdrawals: 2005 vs 2050 Scenarios, in millions of gallons per day



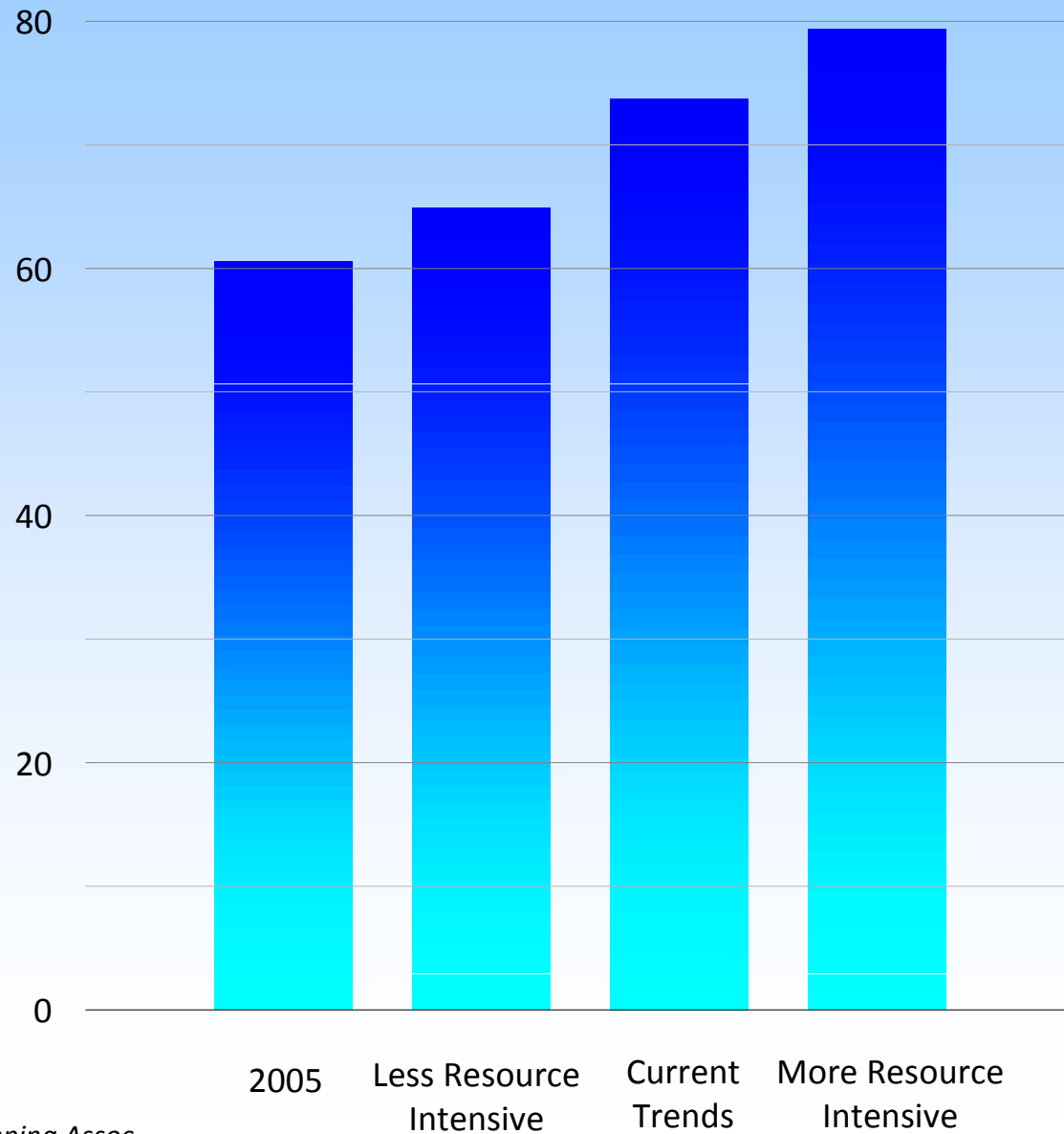
Source: Wittman Hydro Planning Assoc., 2008

Champaign County PWS Withdrawals: 2005 vs 2050 Scenarios, in millions of gallons per day



Source: Wittman Hydro Planning Assoc., 2008

Mahomet Aquifer PWS Withdrawals: 2005 vs 2050 Scenarios, in millions of gallons per day



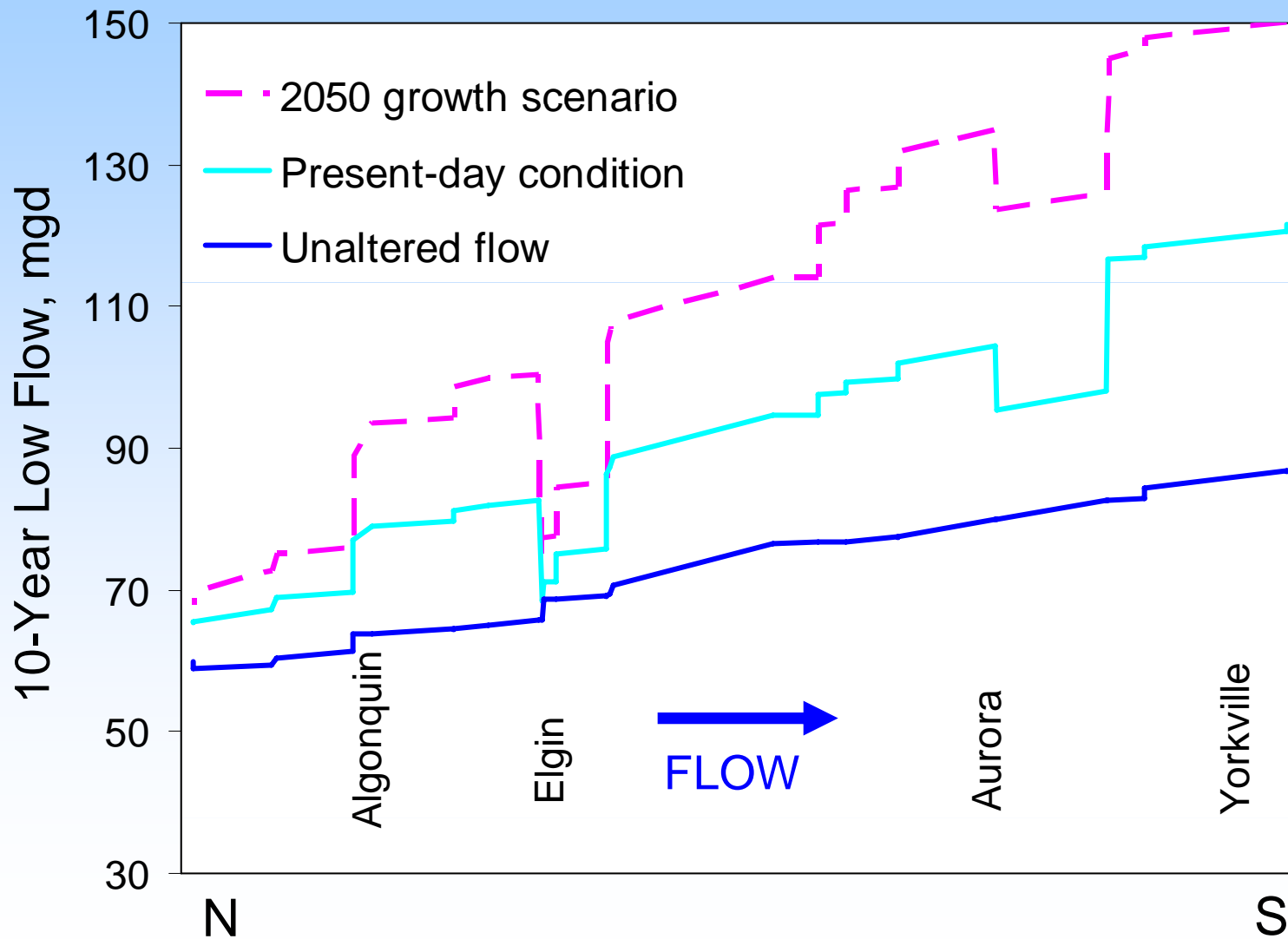
Source: Wittman Hydro Planning Assoc.

Timelines – What's Left?

- Water demand reports were completed in **August 2008**
 - Preliminary findings of the Surveys comparing demands to available resources are planned for late **October 2008**
 - Mahomet Aquifer GW Flow Model – EC Illinois**
 - Sangamon Watershed Model – EC Illinois**
 - Fox River Accounting Tool – NE Illinois**
 - Regional Groundwater Flow Model – NE Illinois**
 - Regional groups to use results for their plans, **due June 30, 2009**
 - State Surveys to produce final report by **June 30, 2009**
-

Fox River Surface Water Accounting Tool

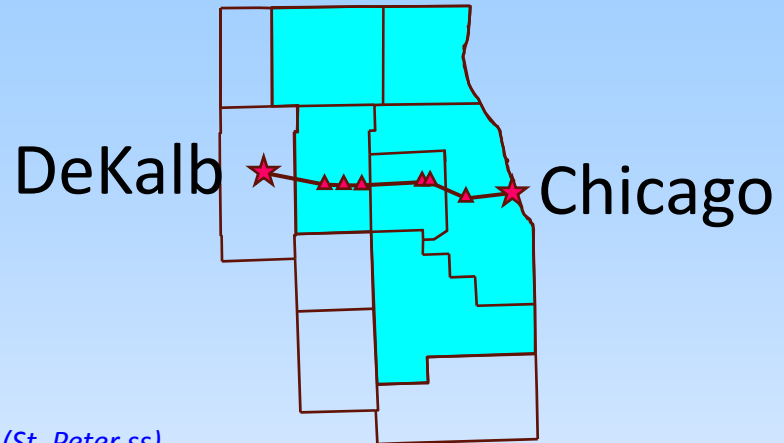
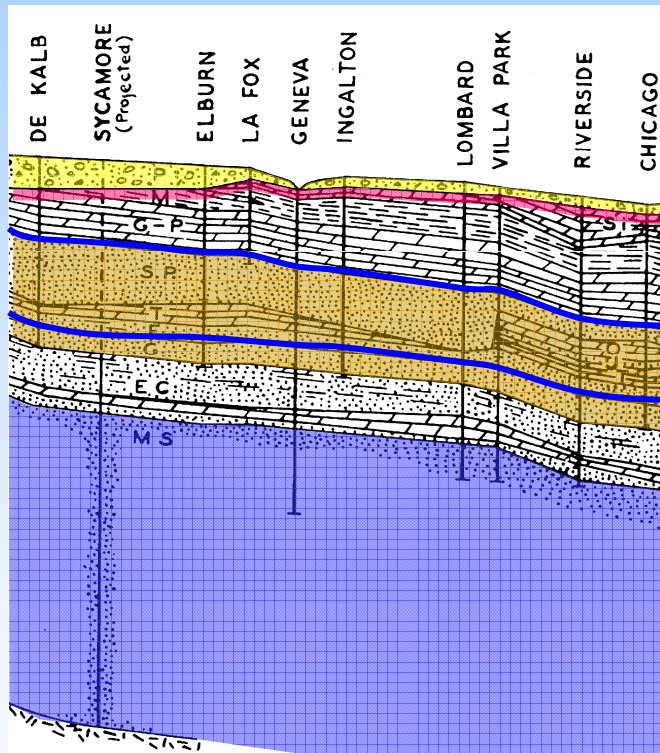
2050 Baseline Scenario



Aquifers of Northeastern Illinois

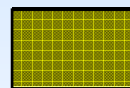
West

East

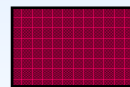


Top of Ancell (St. Peter ss)

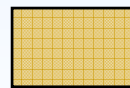
Top of Ironton-Galesville



Unconsolidated Aquifer System



Shallow Bedrock Aquifer



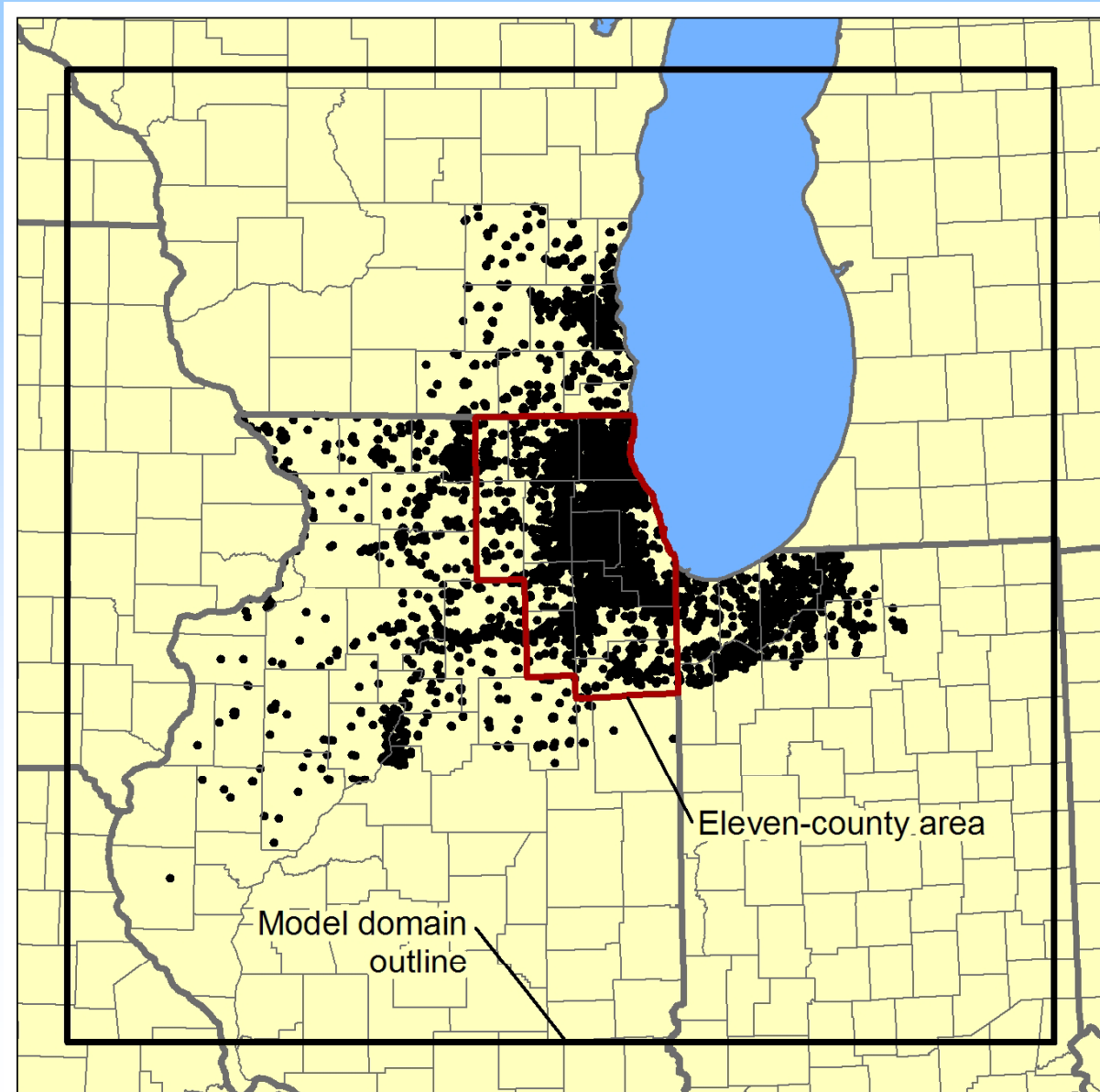
Deep Bedrock Aquifer System
(Ancell and Ironton-Galesville sandstones)



Elmhurst-Mt. Simon Aq. (saline?)

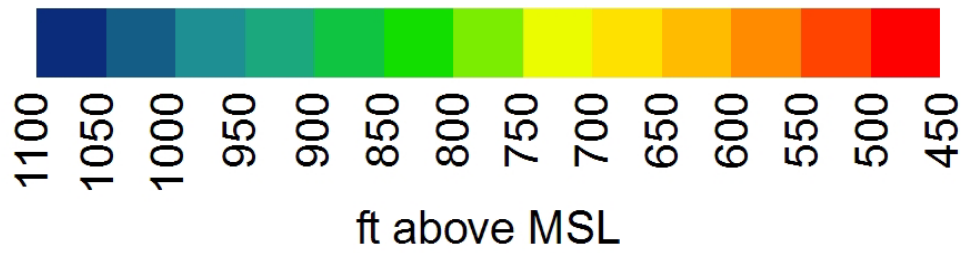
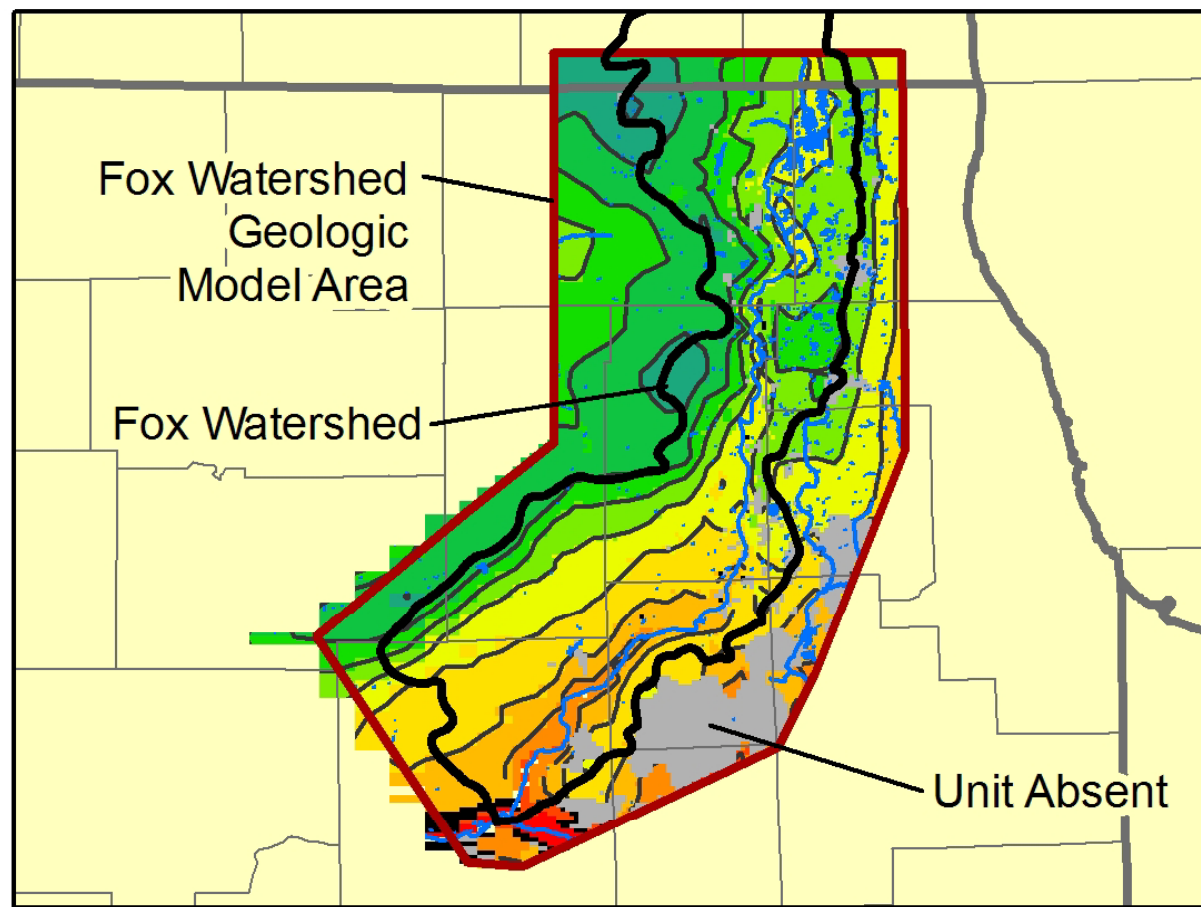
Cross-Section Modified from Bretz (1939)

Regional Model Domain for NE Illinois and Modeled Wells



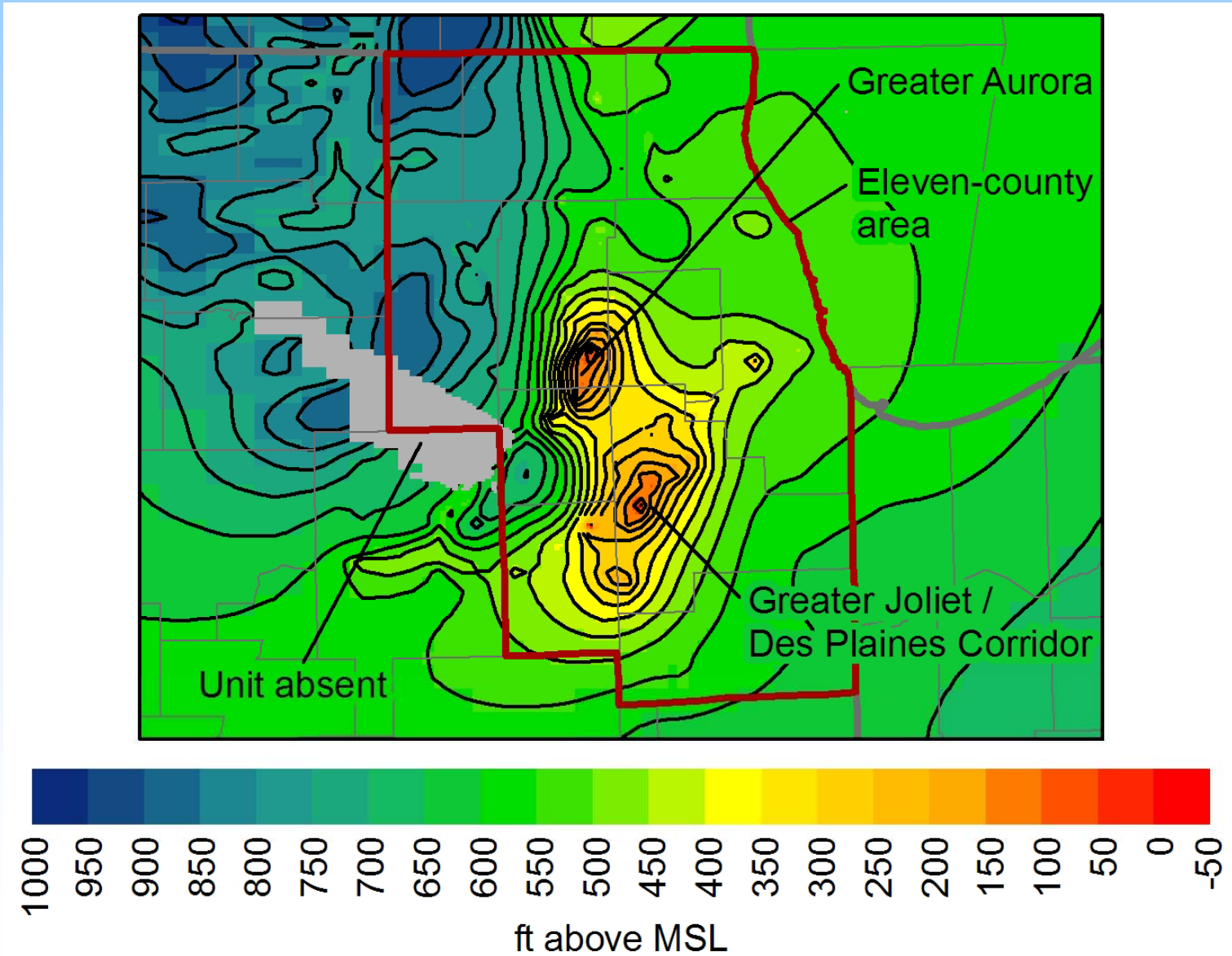
Simulated Head Surface: Lower Quaternary Unit at End of 2050

Baseline Scenario



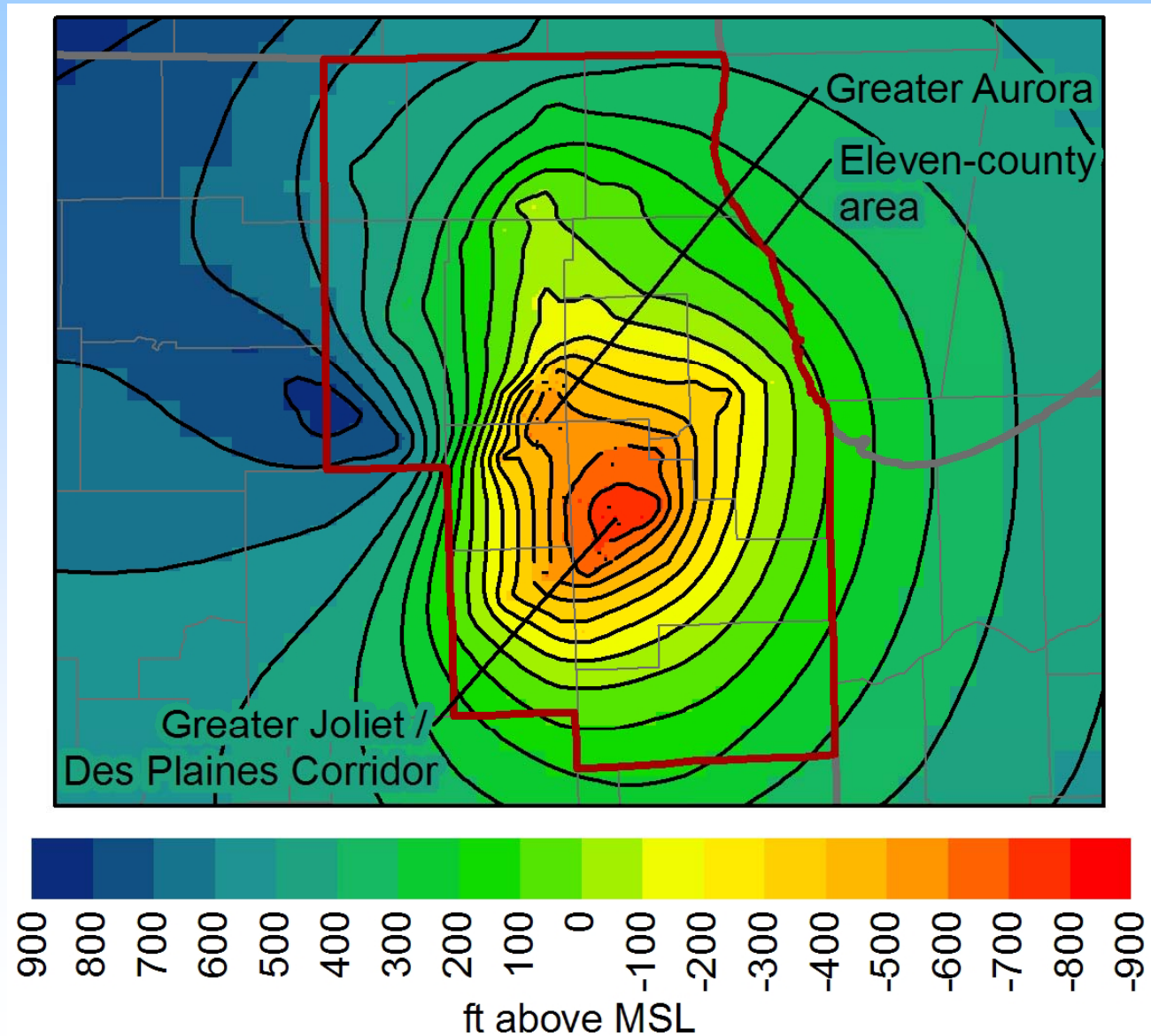
Simulated Head Surface: Ancell Unit (St. Peter) at end of 2050

Baseline Scenario

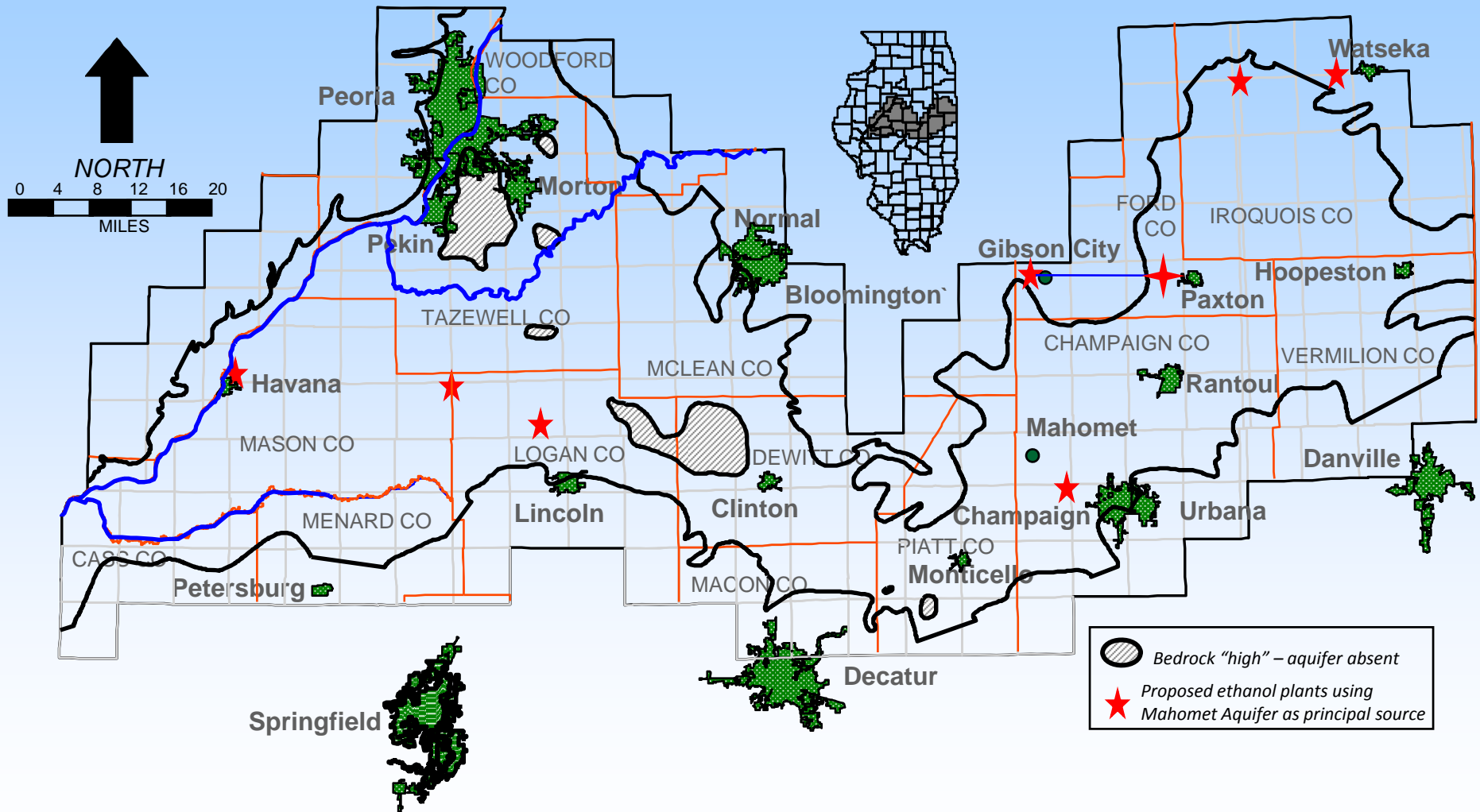


Simulated Head Surface: Ironton-Galesville Unit at End of 2050

Baseline Scenario

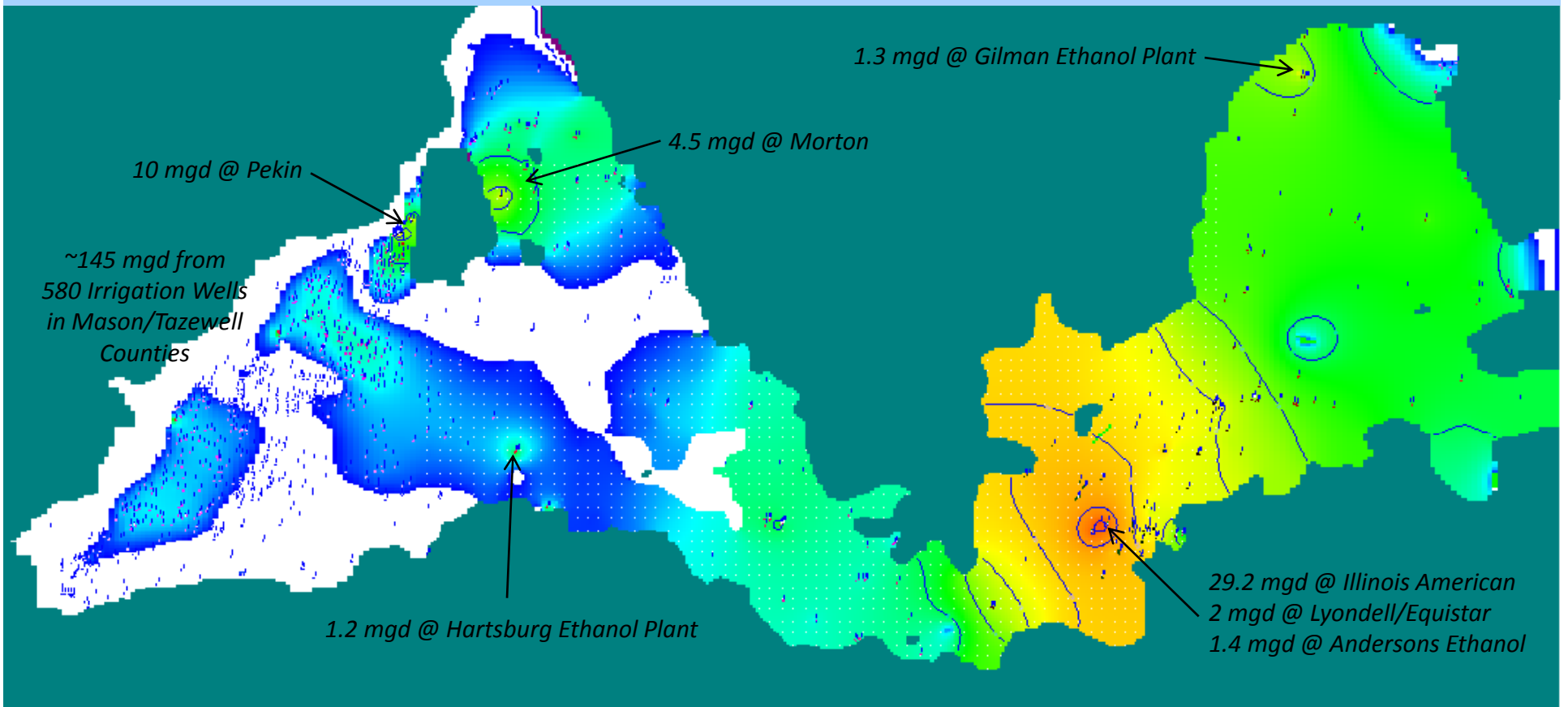


The Mahomet Aquifer Region



Potential Future Impact of Pumpage on the Mahomet Aquifer

Preliminary Results: 2050 Drawdowns using the Baseline Scenario

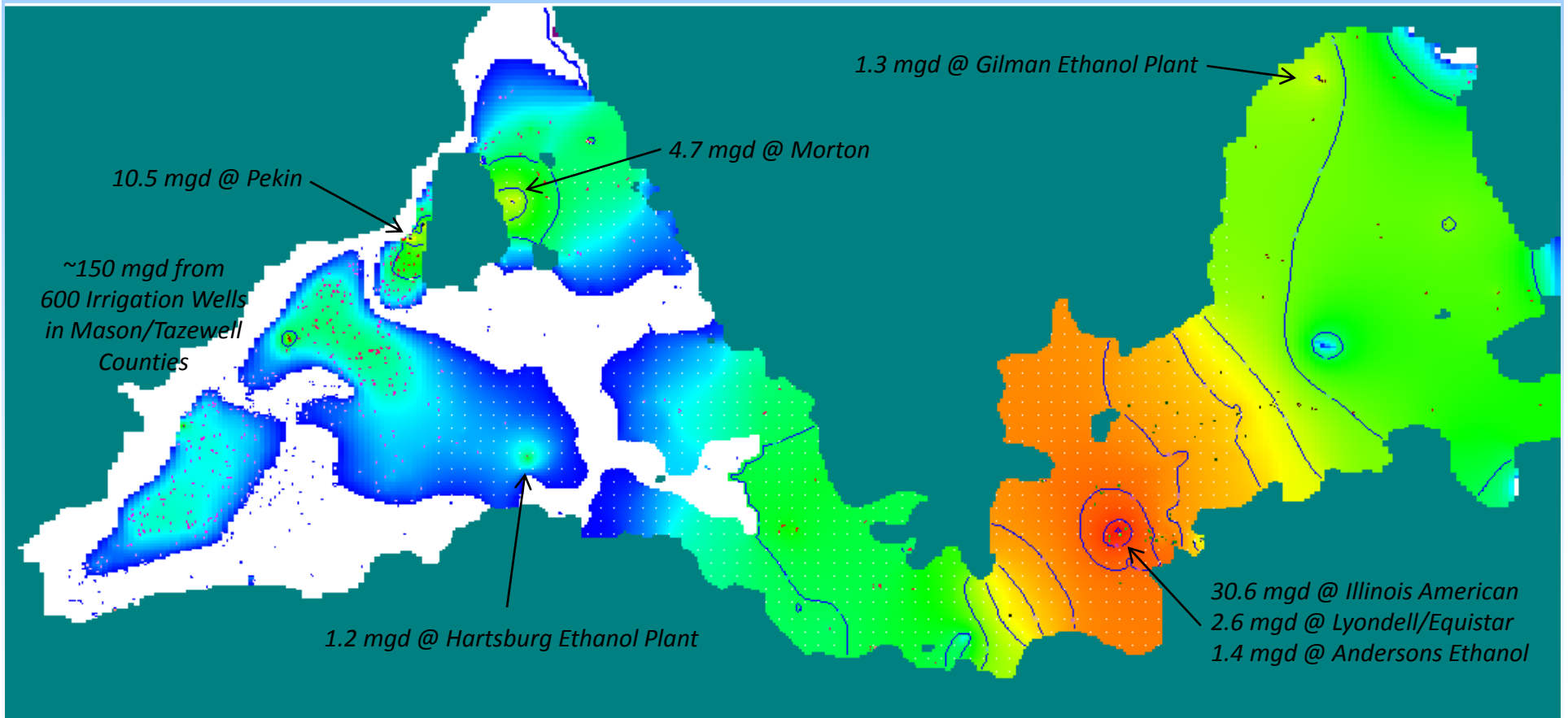


Contour interval = 5'

Range = 1-34'

Potential Future Impact of Pumpage on the Mahomet Aquifer

Preliminary Results: 2050 Drawdowns using the More Resource Intensive Scenario



Contour interval = 5'

Range = 1-42'

THANKS FOR LISTENING!

Visit our Water Supply Planning Web-site:

<http://www.sws.uiuc.edu/wsp/>



ISGS Drilling near Ludlow on Rt. 45

