NWPA: Risk Maps to Complement Sustainable Assessments

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What's on tap today?

- Sustainability vs Risk vs Remaining Life
- Reminder of the Sustainability Application
- Main Topic: Risk Map Priorties

So Many Terms…

- Sustainable Supply
- Risk to Water Supply
- Remaining Lifespan of Aquifer

All are important for specific purposes

Sustainable Supply

- The amount of water that can be removed sustainably from an aquifer. **Presented as a number or range of numbers.**
- Obvious problem: The definition of sustainable is incredibly nebulous and thus easily debated. In most cases, sustainable supply identifies the rate of withdrawals at which current or future water supply issues may manifest

Exceeding sustainable supply may not indicate that a water supply will be at-risk within a defined planning horizon.

Risk to Water Supply

- Identify the location that water supply issues may manifest. **Presented as a map or series of maps.**
- Risk maps provide context:
  - Counties with pumping that exceeds sustainable supply may not be at-risk under the time-frames considered
  - Counties with pumping less than sustainable supply may have locally at-risk pockets that appear on maps

Wells within areas at-risk may not have immediate supply problems. Local factors not considered in maps must also be evaluated.

Remaining Lifespan of an Aquifer

- Local scale modeling evaluating details such as pumping levels, specific capacity, monthly pumping conditions, and local geology. **Presented as a series of hydrographs and/or tables.**
- Requires focused, local scale investigations.

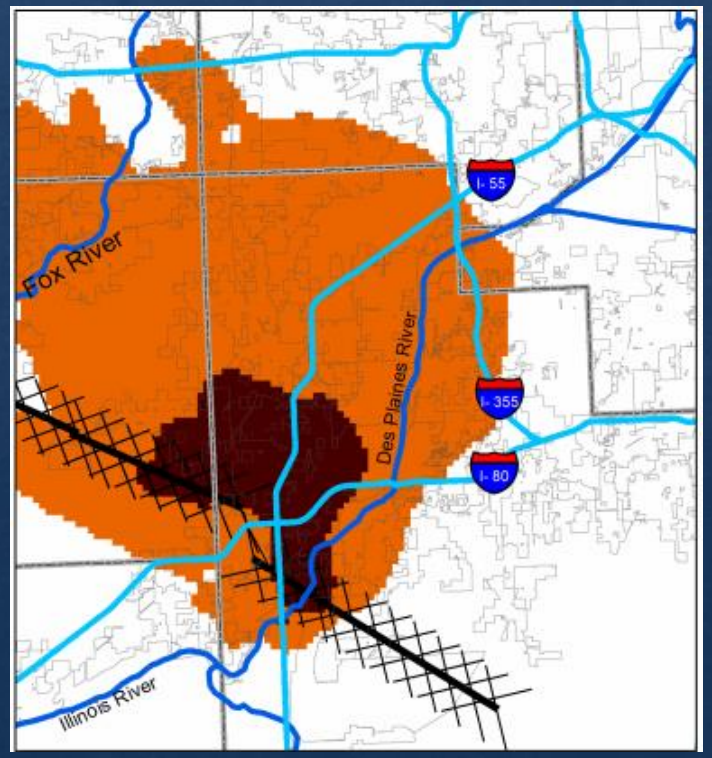
Due to uncertainty in future demands, it is strongly advised not to use a single scenario of future conditions for planning.

Will County Example

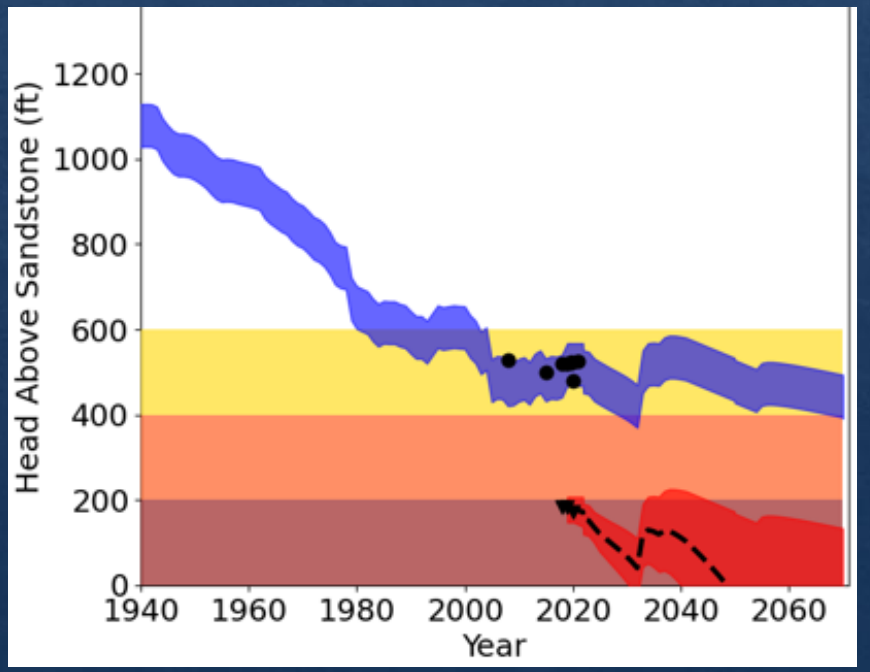
Sustainable Supply

2.5 MGD

Sandstone Risk



Remaining Lifespan



Uncertainty with Sustainable Supply

- Economically Sustainable
- Which water sources are unsustainable?

One number will never encapsulate all stakeholder or scientific concerns, and the assumptions can get complicated to communicate

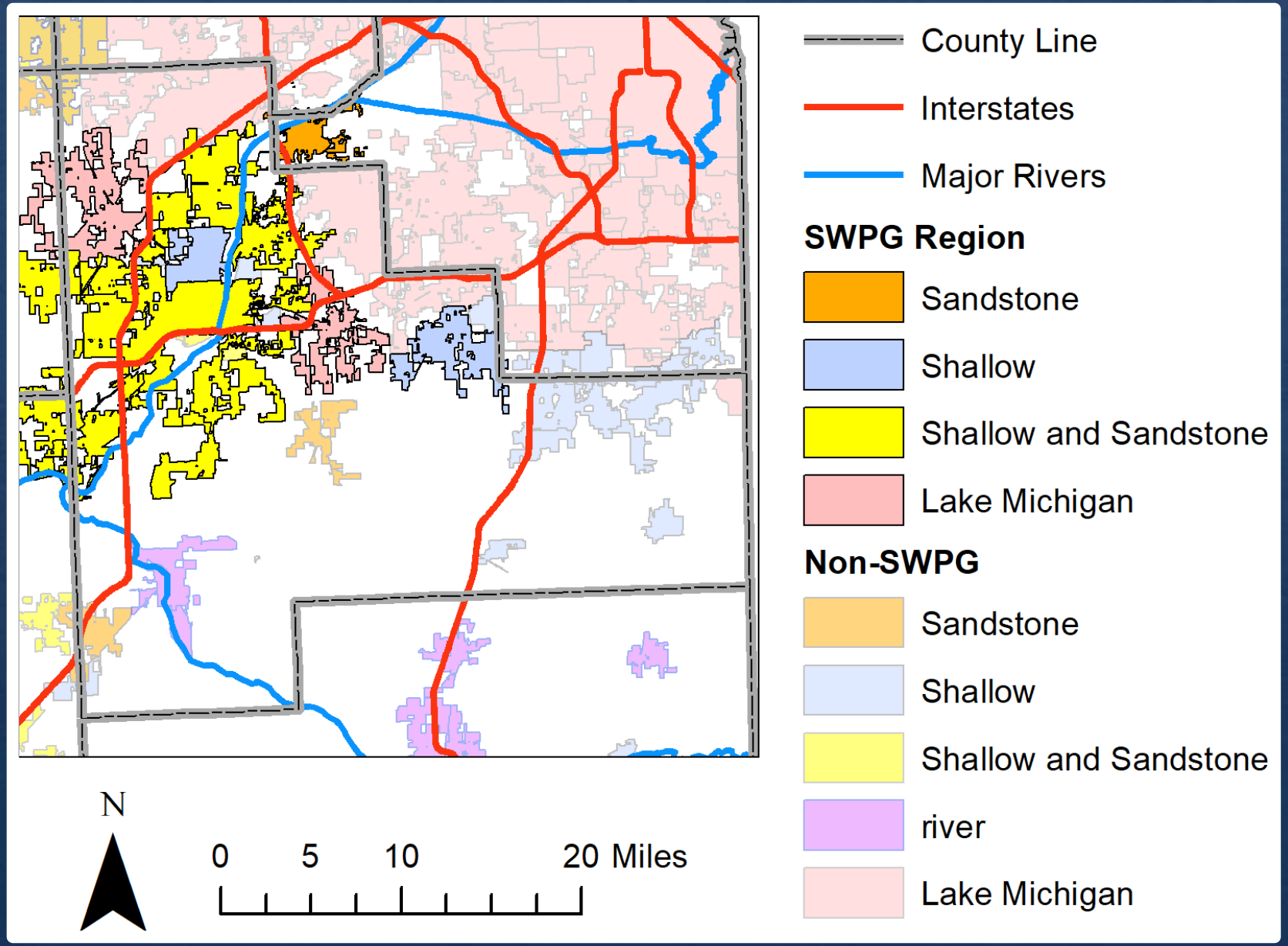
A number can still be useful, but additional details are critical for planning purposes

- Future Technology
- Which modeling approach to use

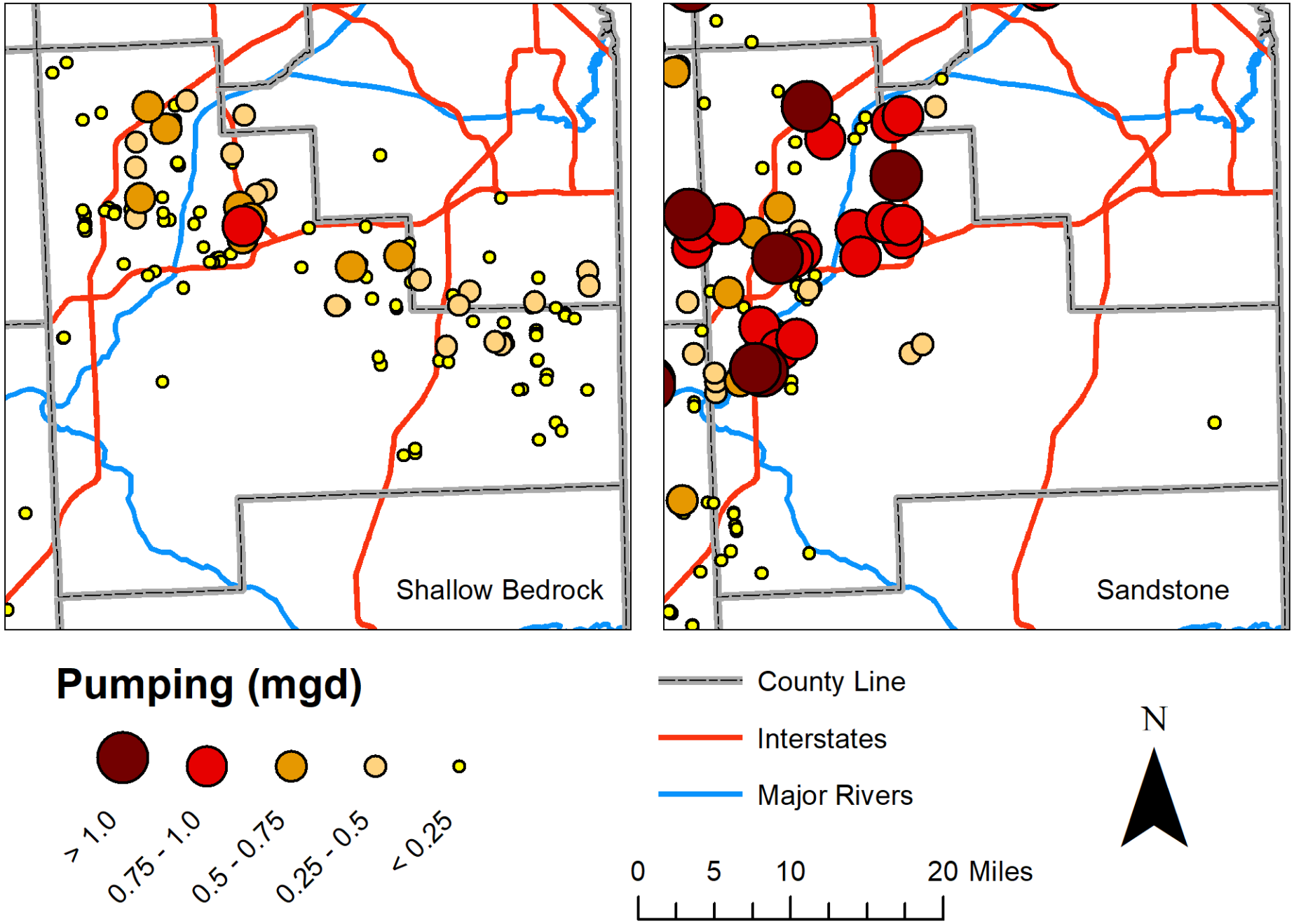
Maps to Supplement the Sustainable Supply and Demand Application

- What information is needed to inform/interpret supply and demand applications?
- I am going to present 10 maps, and you are going to be forced to rank them from 10 (most important) to 1 (least important)
- This survey will, in part, be used to determine priorities in the next round of water supply planning

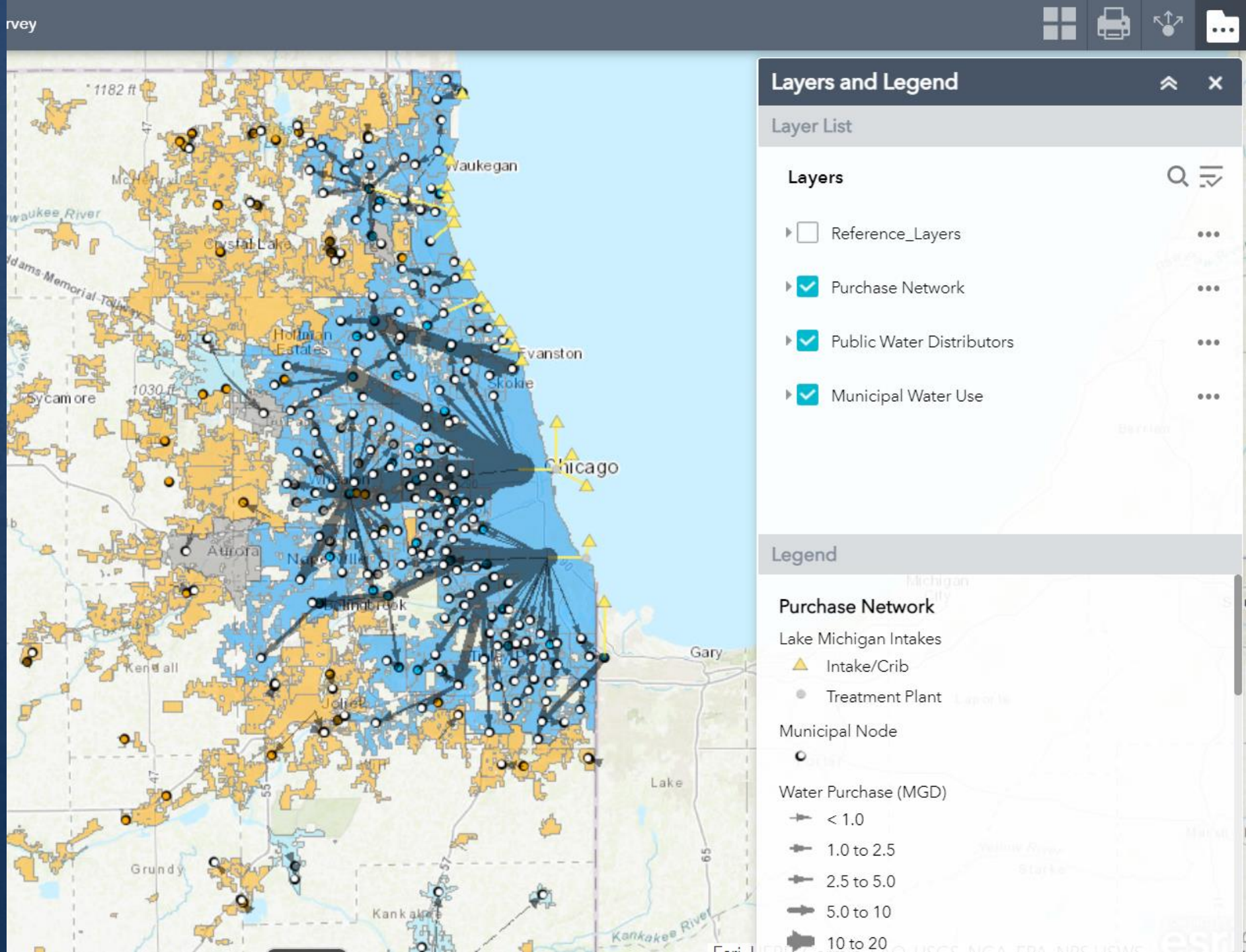
Map 1: Water Source Maps



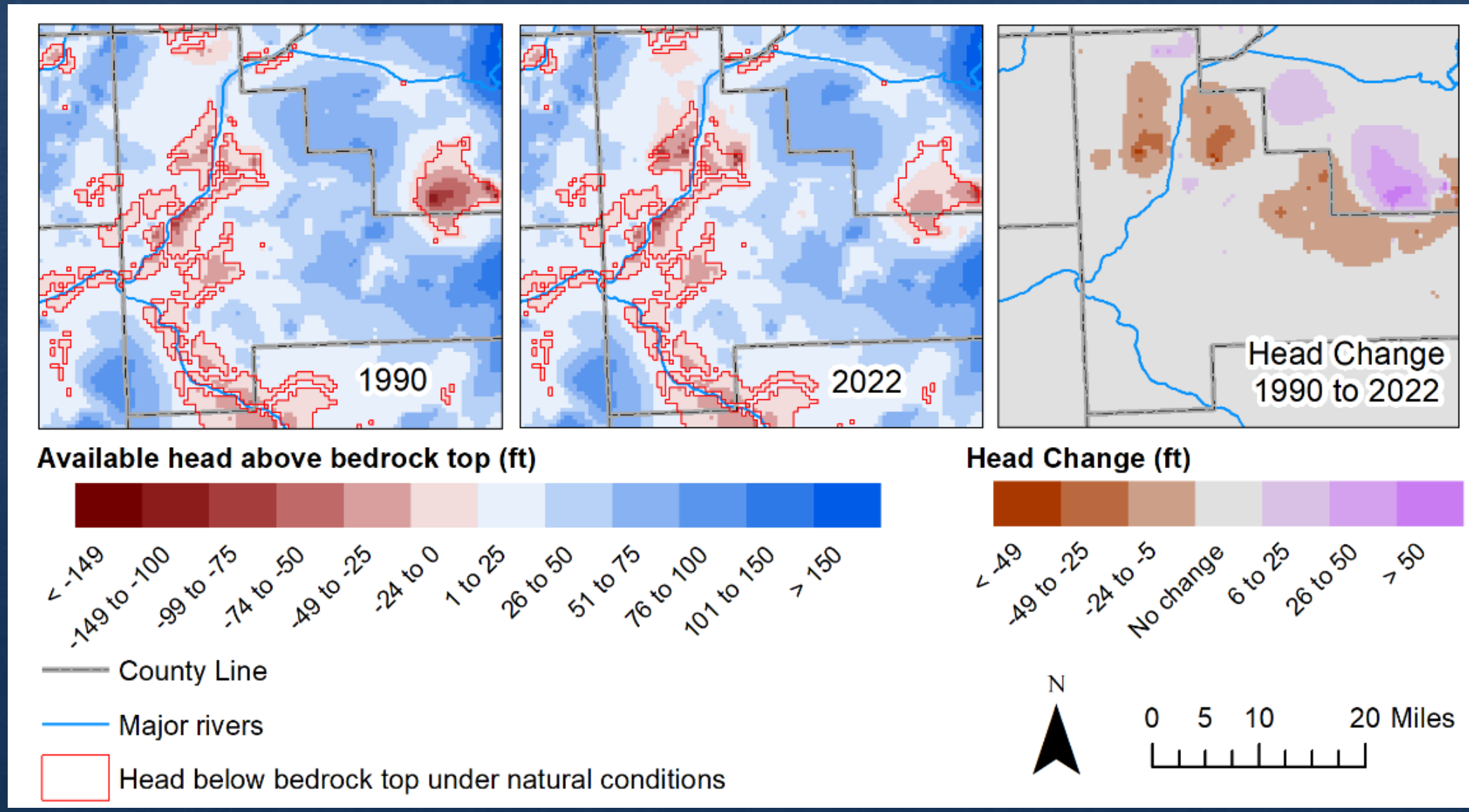
Map 2: Point Withdrawal Maps



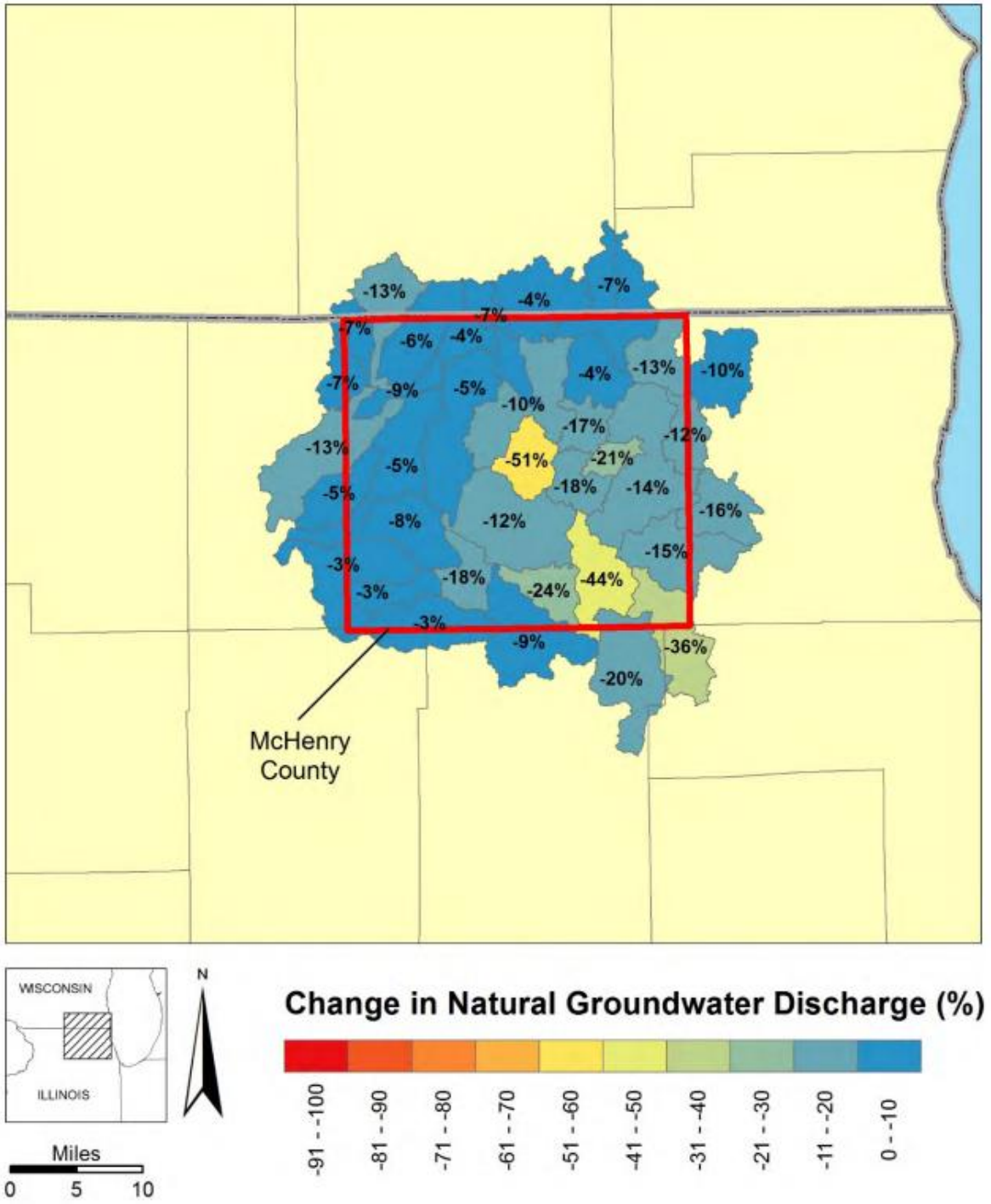
Map 3: Distribution Maps



Map 4: Head Above Aquifer

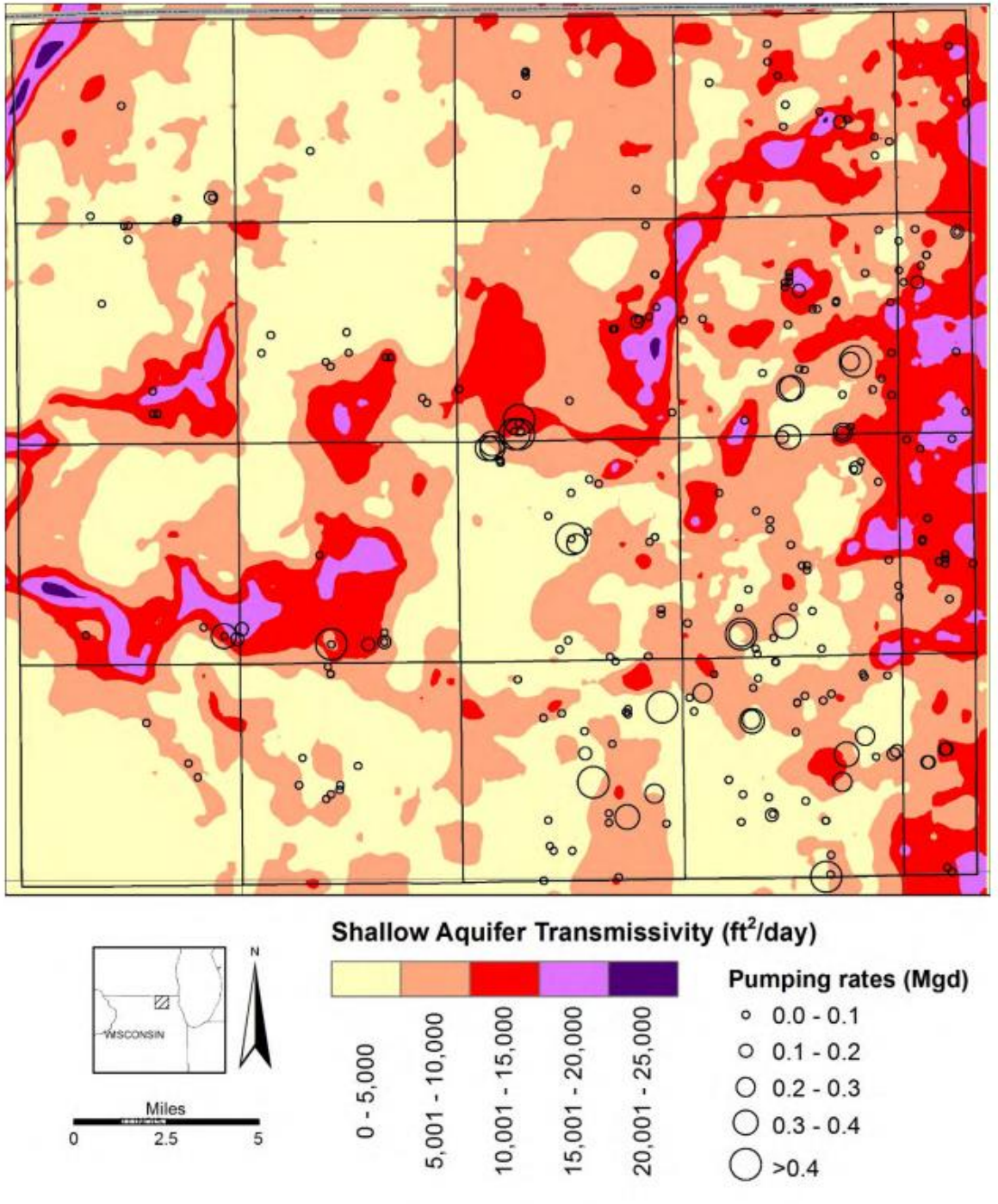


Map 5: Reductions in Groundwater Discharging to Streams



Map 6: Transmissivity Maps

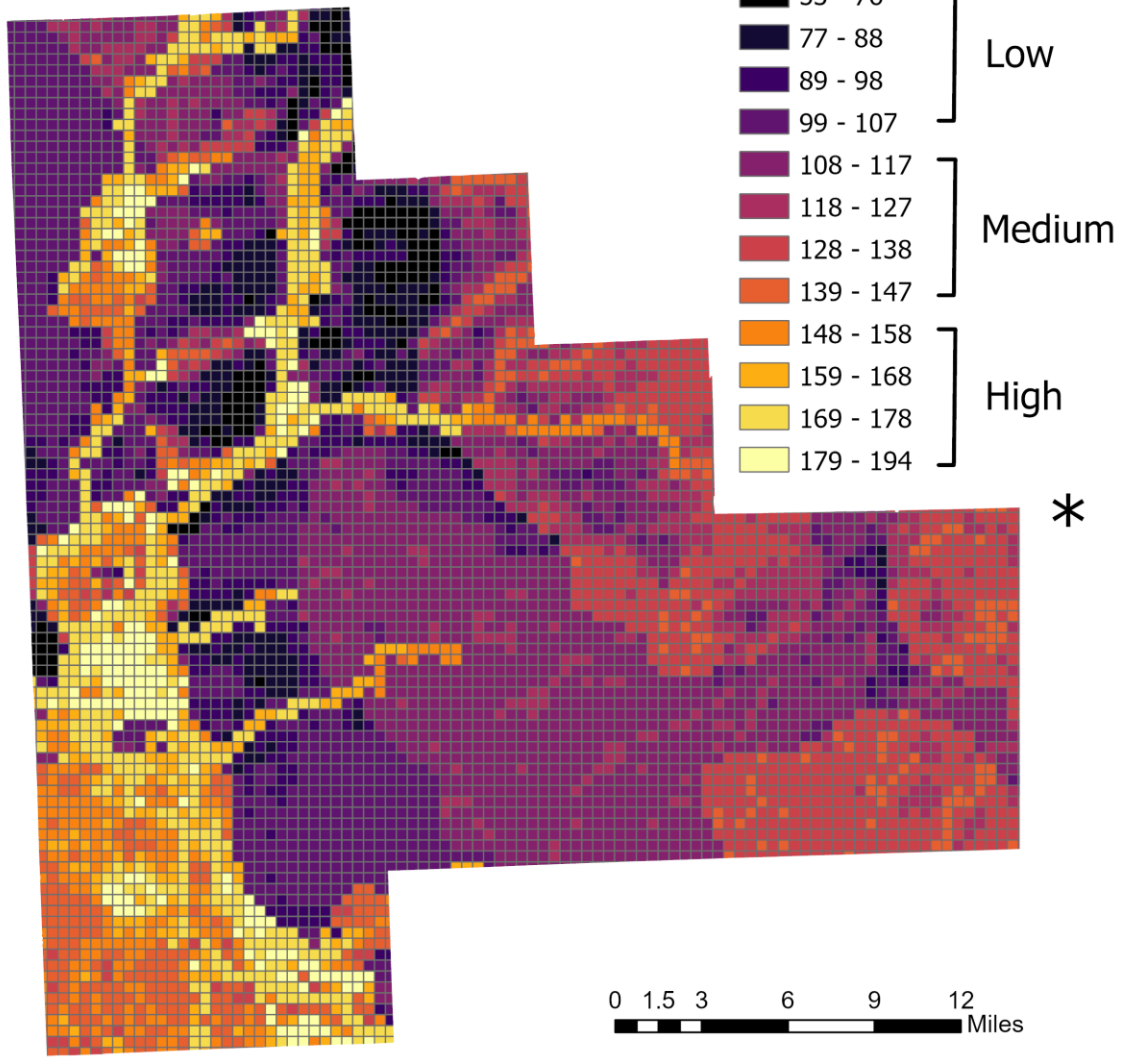
(from McHenry County)



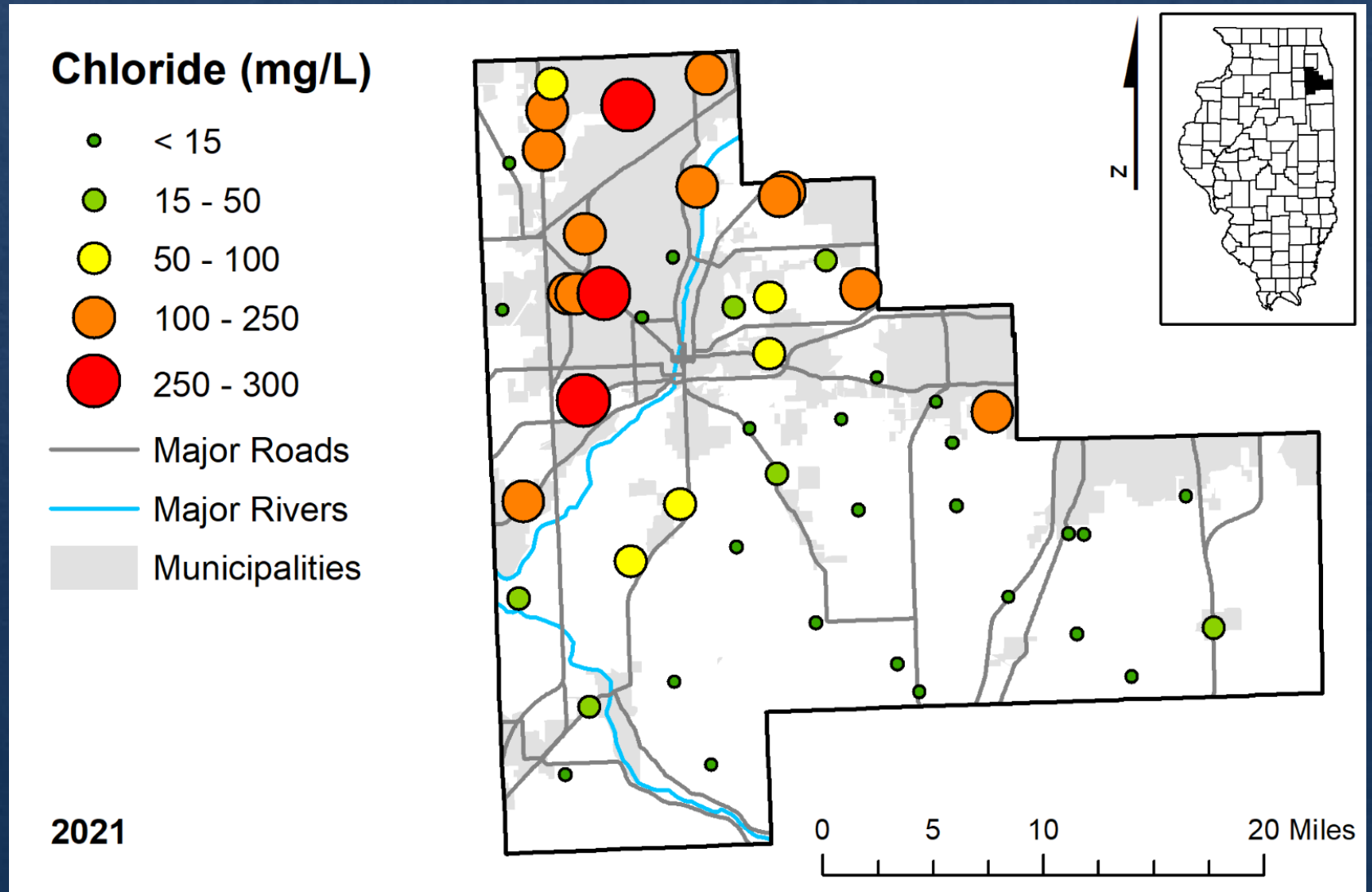
Map 7: Aquifer Vulnerability

DRASTIC Aquifer Vulnerability Map For Will County

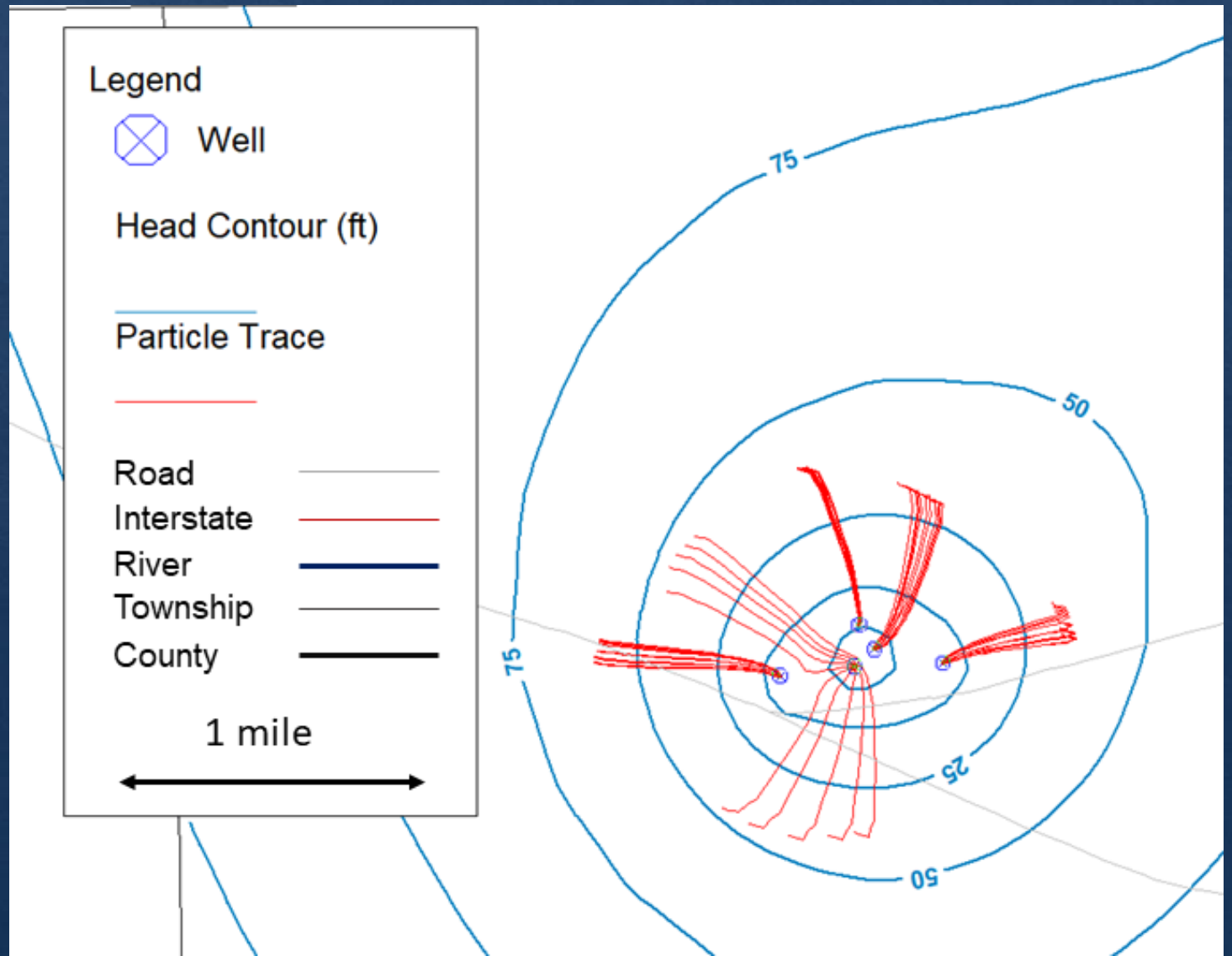
* Yellow denotes areas of highest aquifer vulnerability to contamination, while black denotes areas of lowest aquifer vulnerability.



Map 8: Water Quality Maps (Observed)



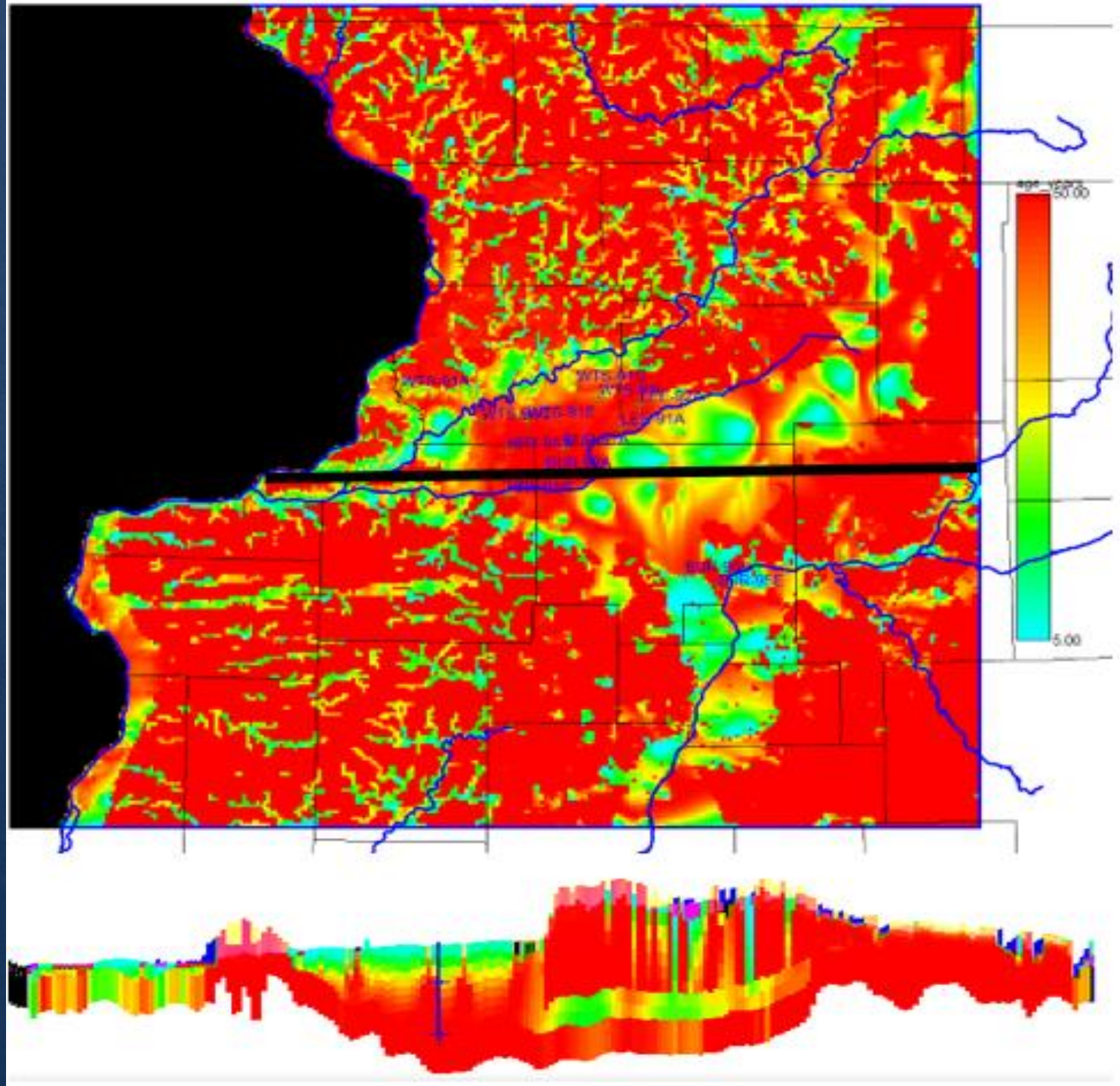
Map 9: Capture Zones



Map 10: Groundwater Ages

Young Water: Vulnerable to Contamination

Old Water: Vulnerable to Drawdown

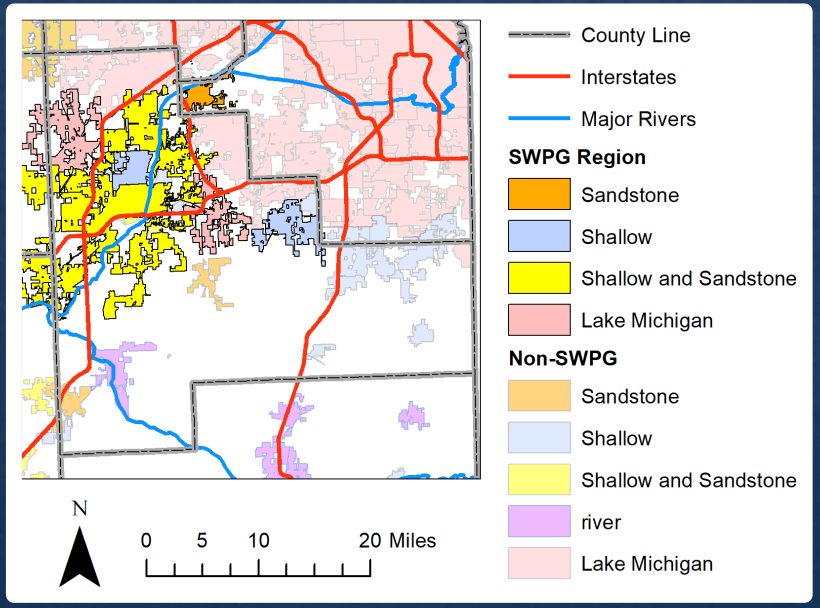


Review of Possible Maps

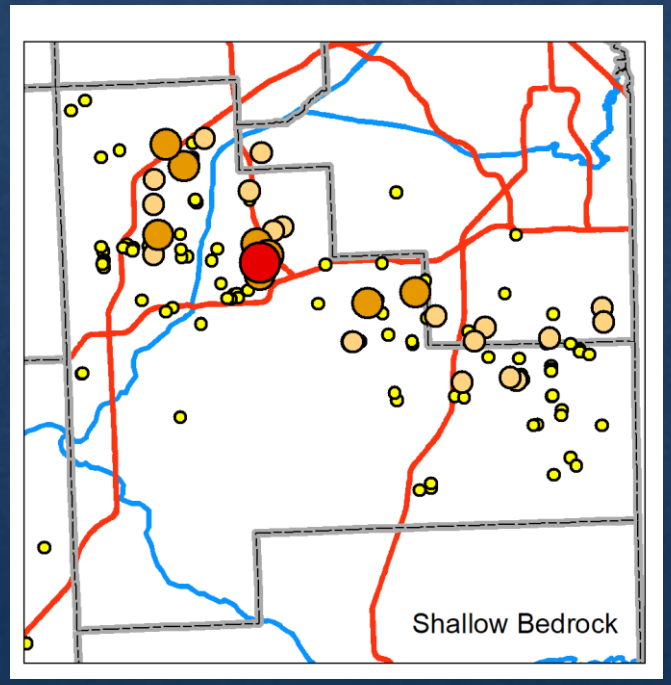
- Classified as:
  - Water Demands (3 maps)
  - Quantity of Water (3 maps)
  - Quality of Water (3 maps)
  - Age of Groundwater (1 map)

Water Demands

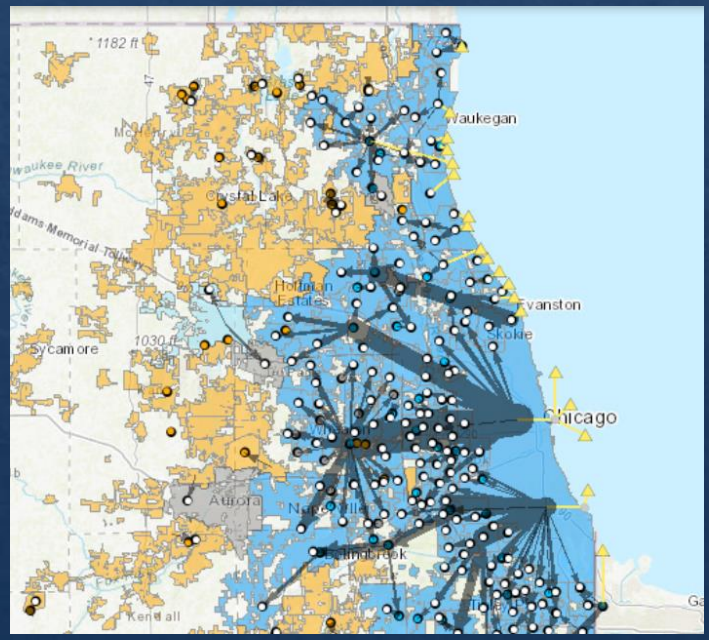
Source Maps



Point Demands

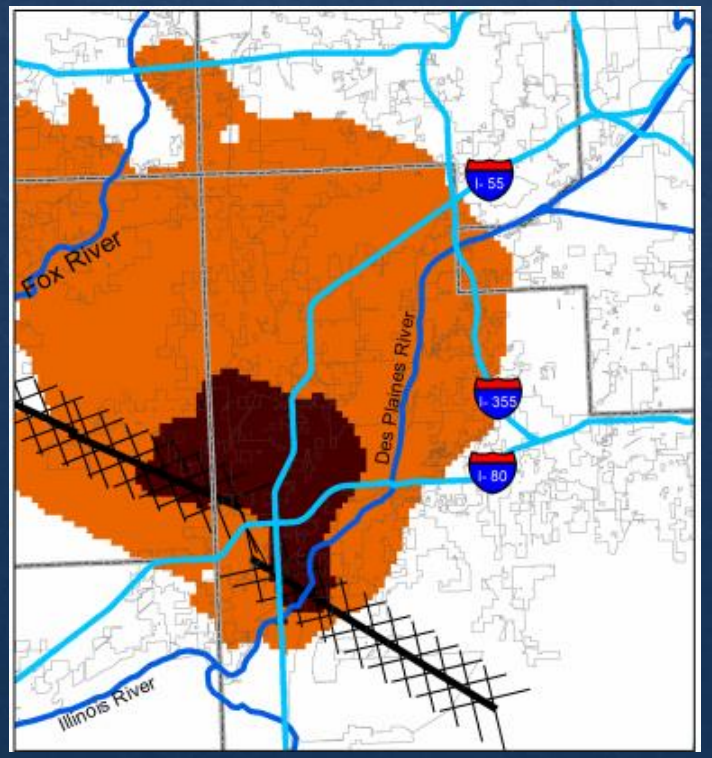


Distribution

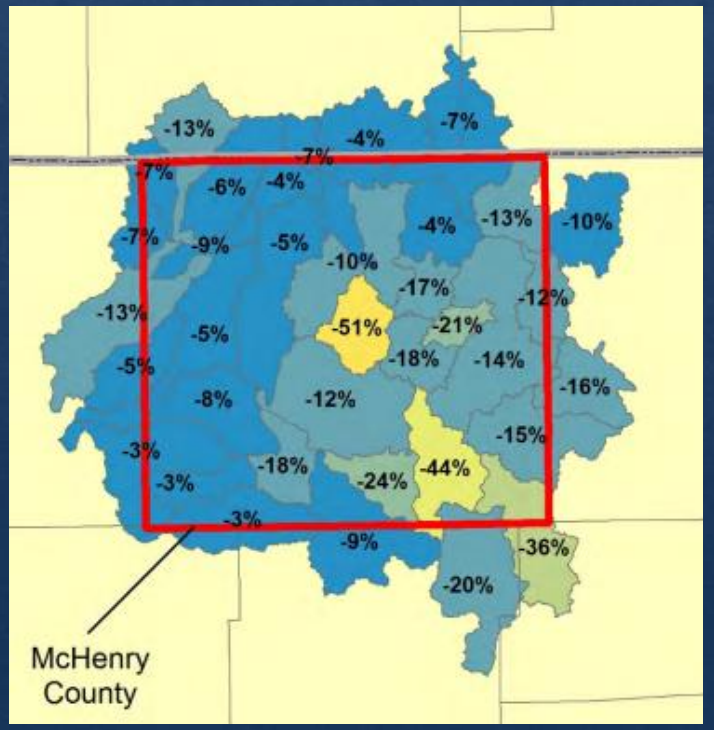


Water Quantity

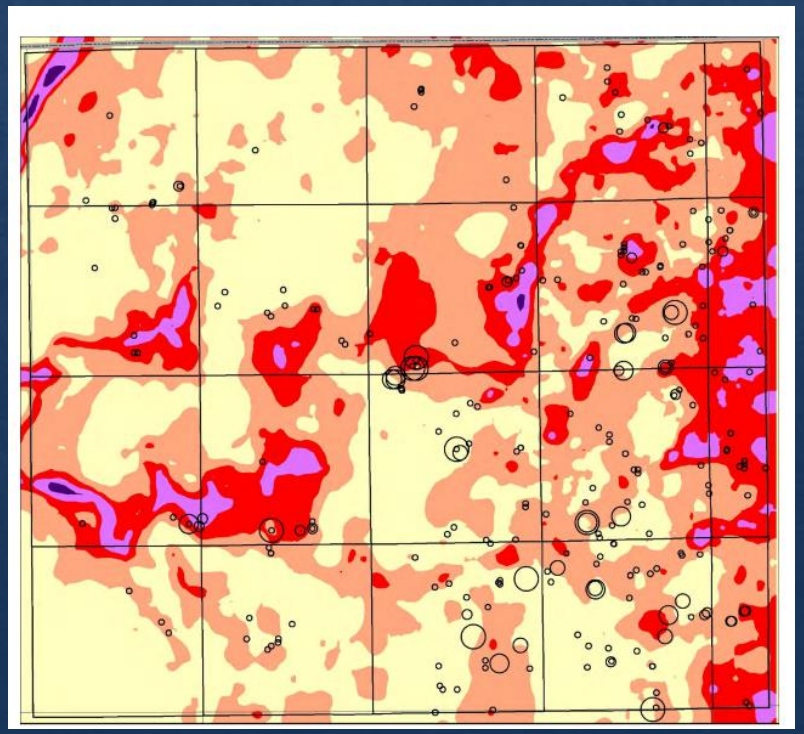
Head Above



Streamflow Impacts

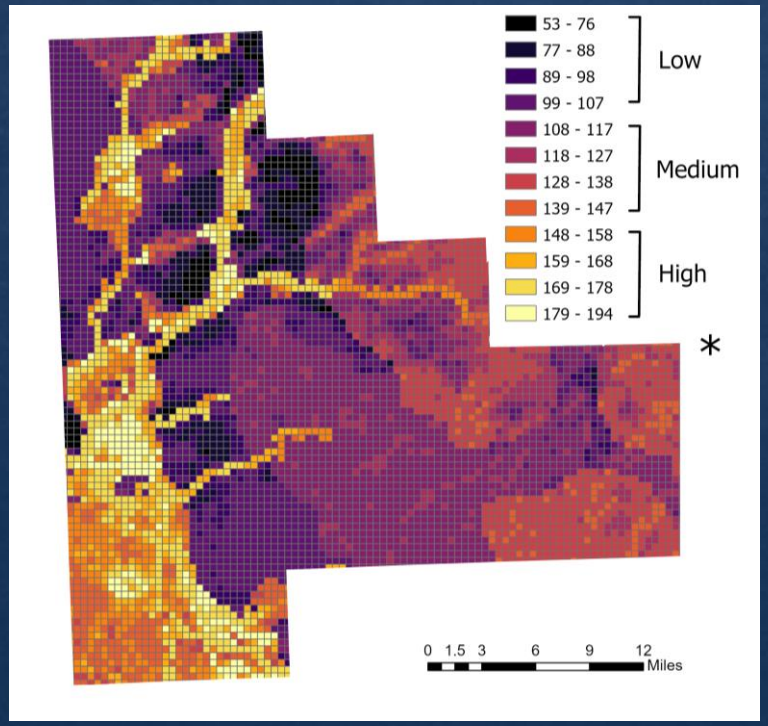


Transmissivity Maps

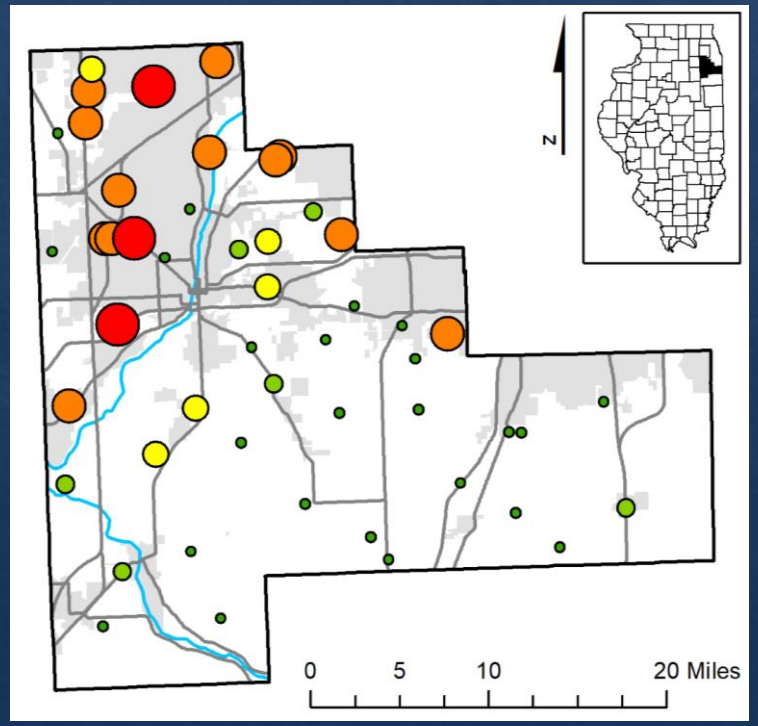


Water Quality

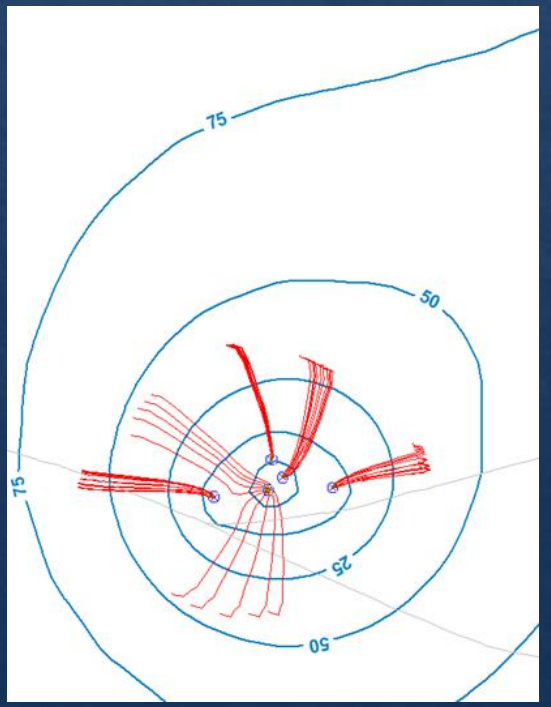
Vulnerability



Observed Data



Capture Zones



Groundwater Age: Informs quantity and quality