

Water Supply Planning

March 6, 2013

Committee of the Whole

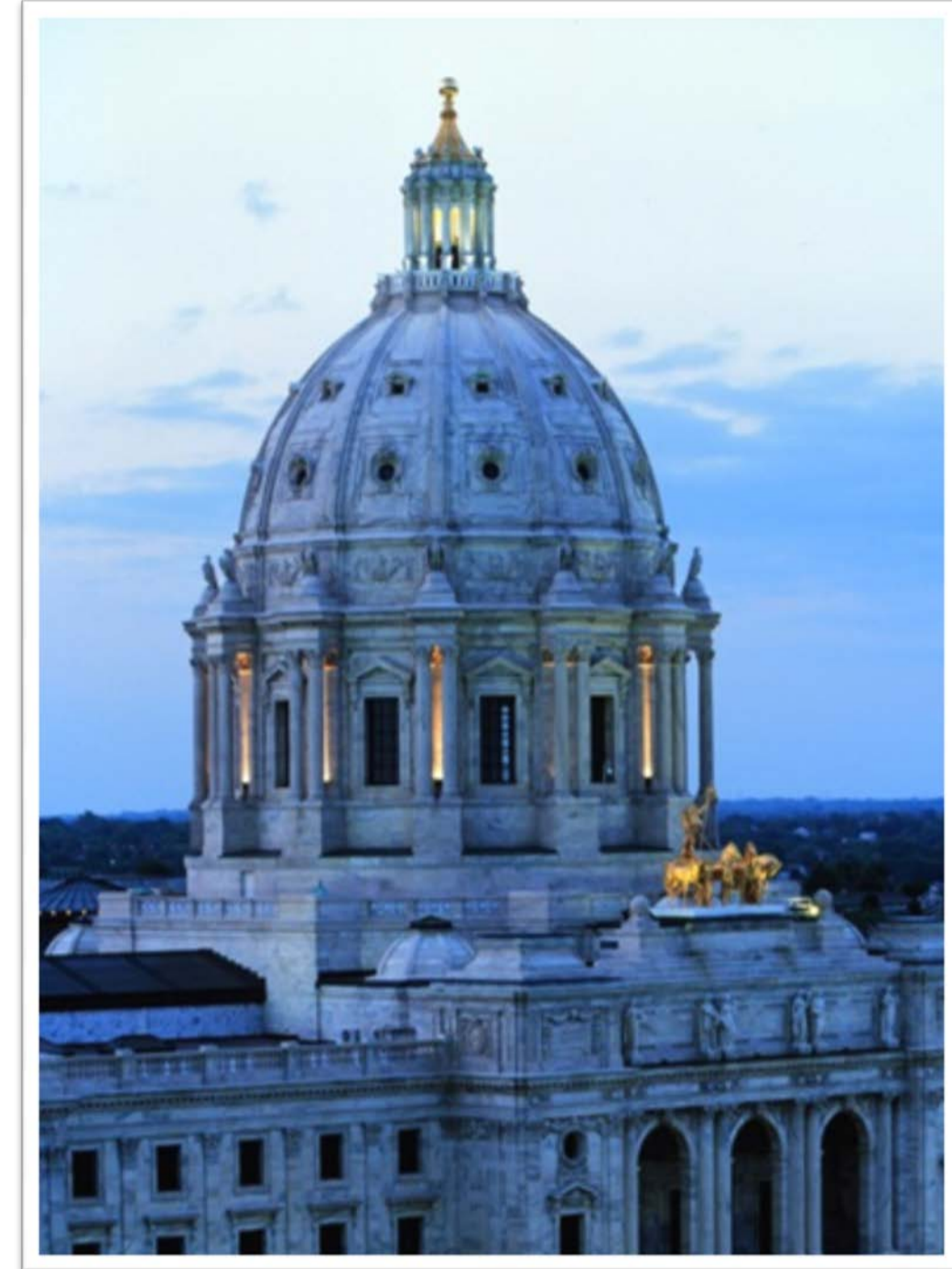


Council Role in Water



Council Role in Water Supply Planning

- *2005 legislation - “Carry out planning activities addressing the water supply needs of the metropolitan area” (MN Statutes, Sec. 473.1565)*
- *Twin Cities Metropolitan Area Master Water Supply Plan – 2010*
 - Ensure a sustainable water supply for current and future generations
- *2005 legislation - Advisory Committee (MAWSAC)*
 - State agencies, Counties, Municipalities/utilities



Water Supply Planning Unit- Capabilities

- **Staff:**

- Ali Elhassan, Manager
- Lanya Ross, Principal
- Brian Davis, Senior

- **Tools**

- Metro Model 2
- Conservation Toolbox
- Stormwater Reuse Guide
- Groundwater Recharge Map

- **Collaboration**

- State: Natural resources, Health
- MAWSAC
- U of M, US Geological Survey, MN Geological Survey
- Municipalities and Utilities
- Consultants



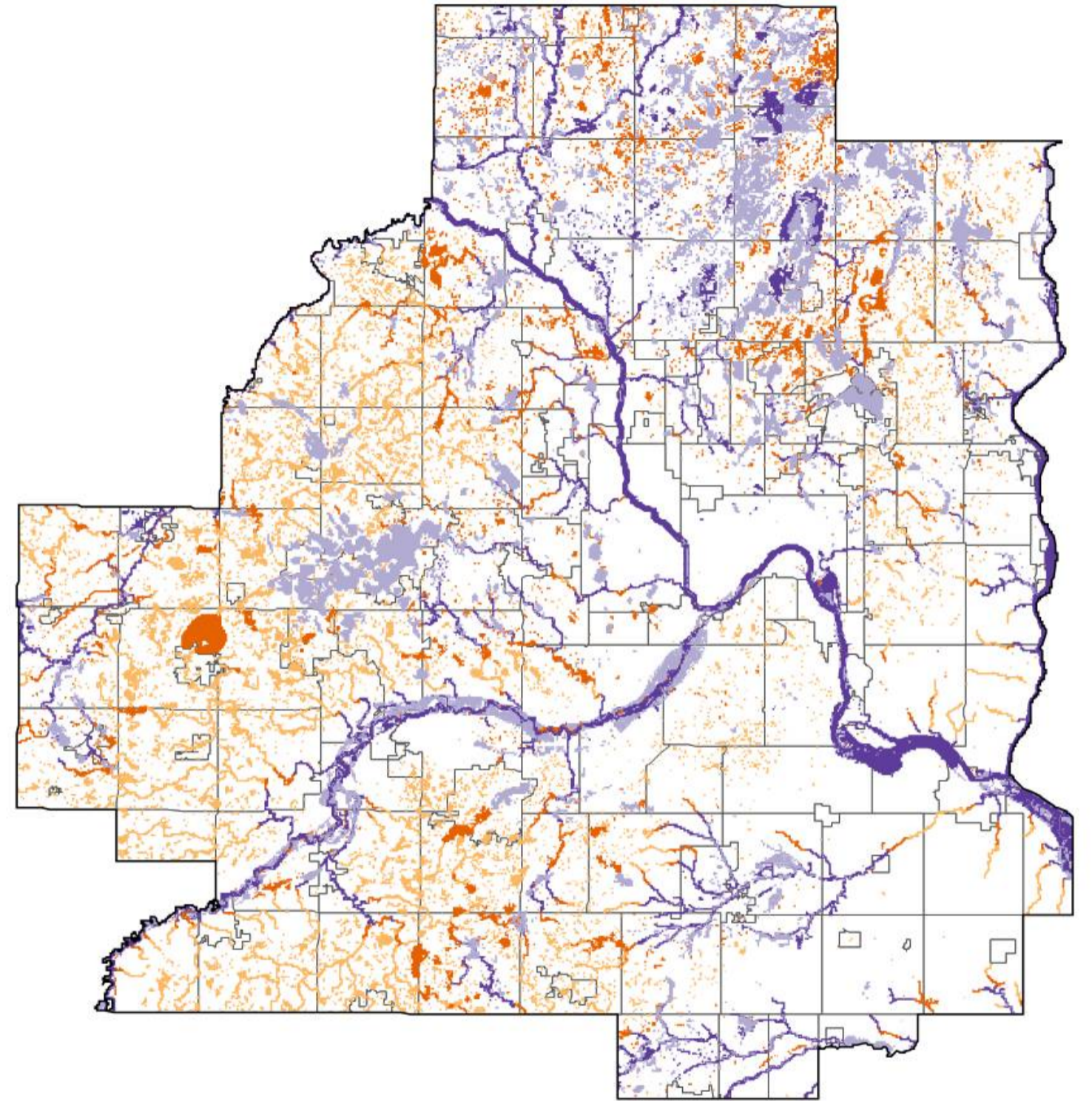
Evaluation of Groundwater & Surface Water Interaction

- **Objective:**

Analyzed the relationship between groundwater and surface waters in metropolitan area

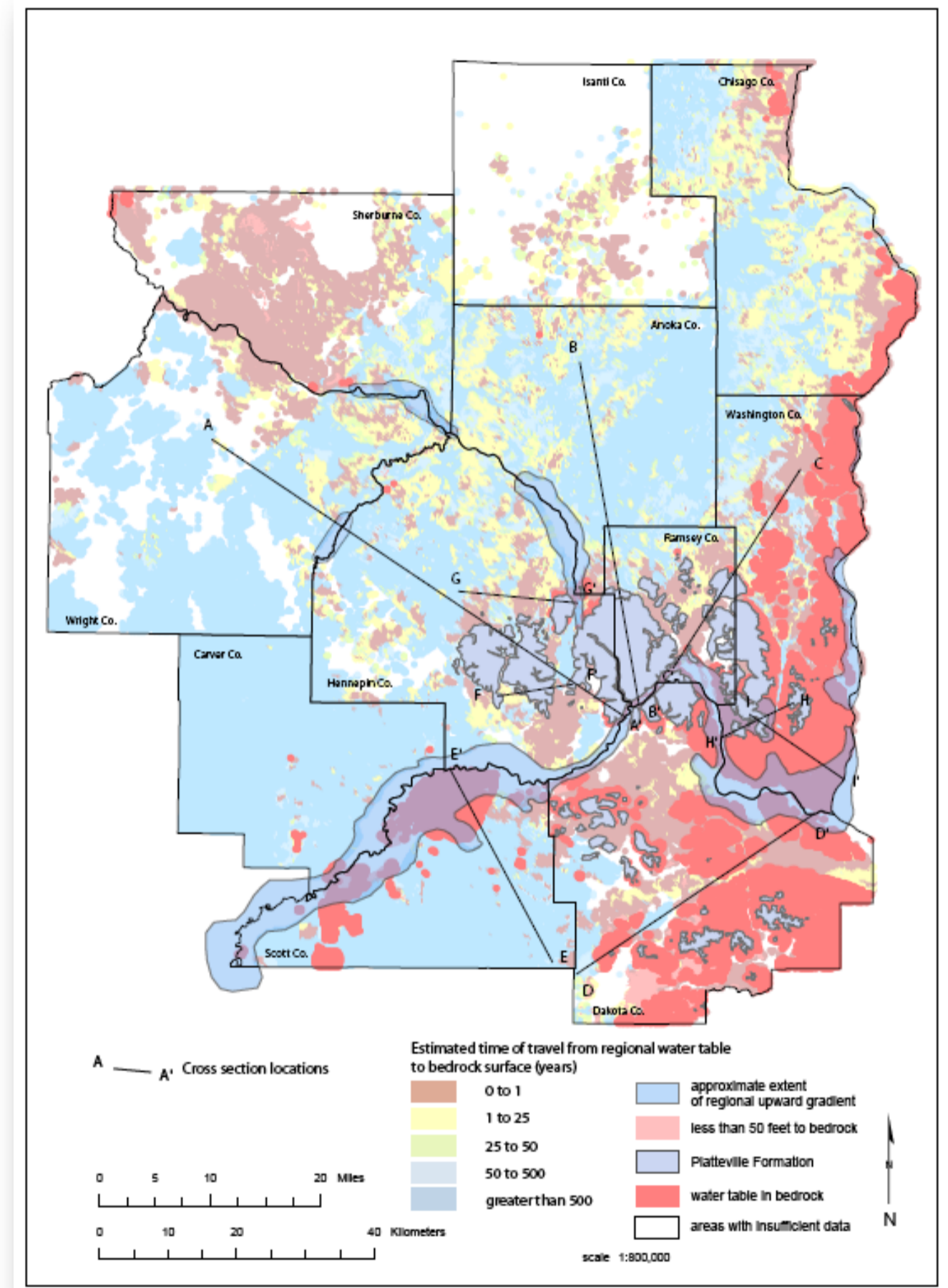
- **Benefits:**

Better monitoring and management to protect vulnerable lakes, wetlands, and streams.



Mapping the Vulnerability of Glacial Aquifers

- **Objective:**
Estimate average vertical travel time from land surface to the uppermost bedrock aquifer
- **Benefits:**
Improved long-term planning for
 - Well locations
 - Recharge sites and
 - Source water protection



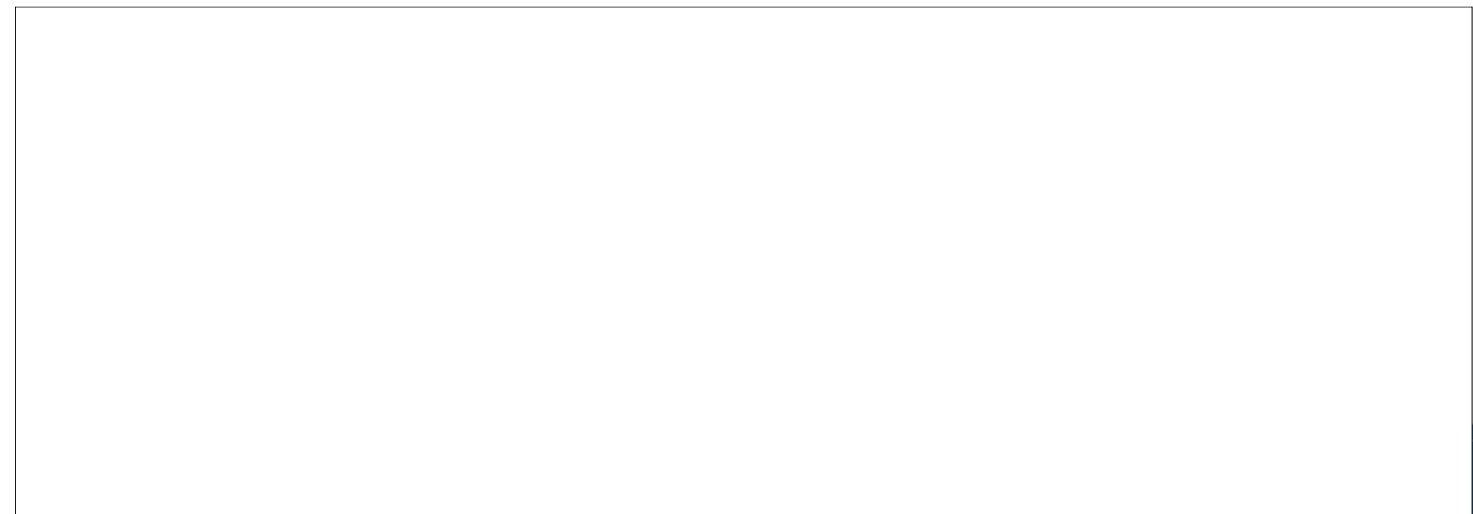
Recharge Potential

- **Objective**

Identify areas where high recharge volumes quickly reach the uppermost aquifer.

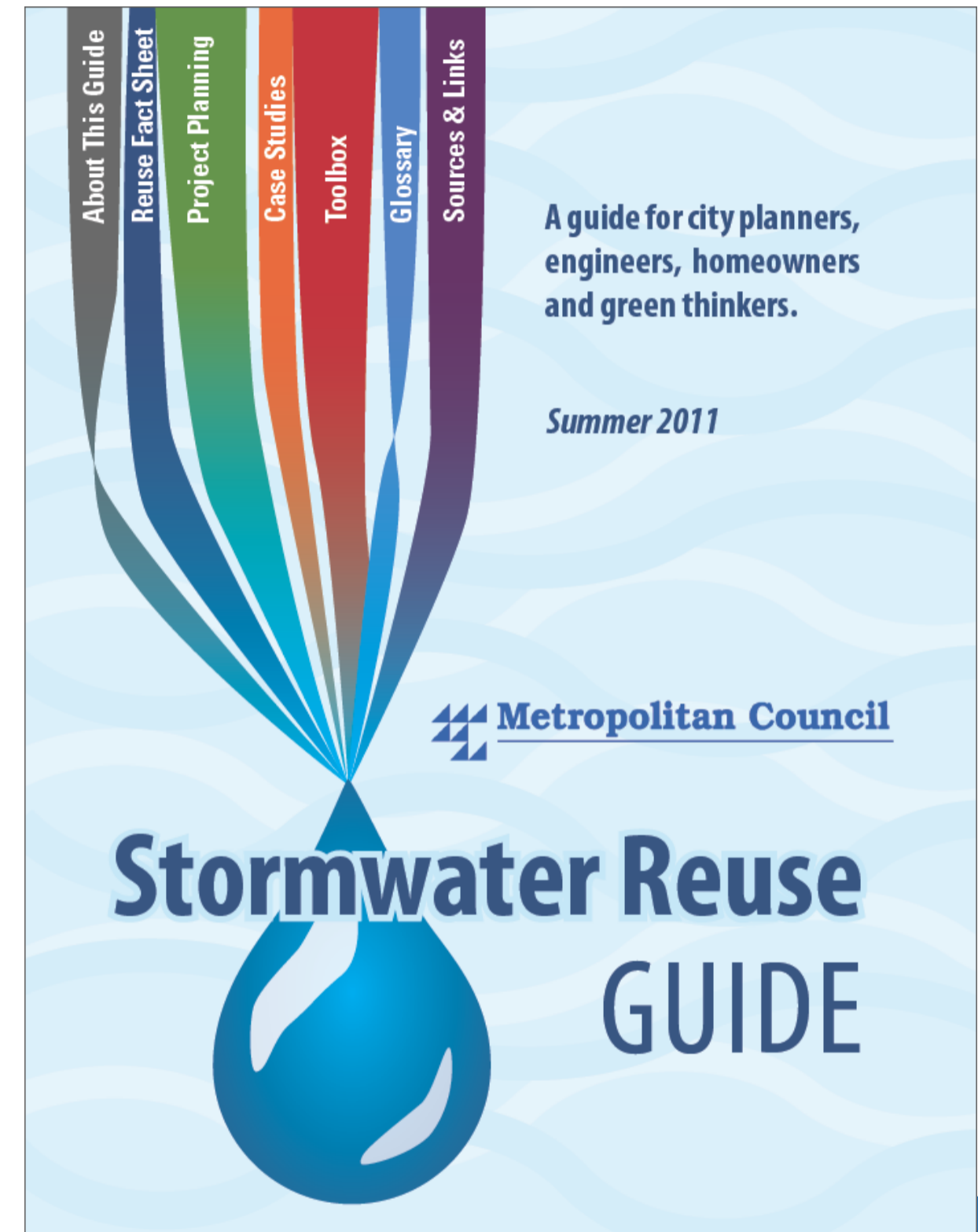
- **Benefits:**

- Inform planning and zoning decisions
- Inform source water protection plan implementation



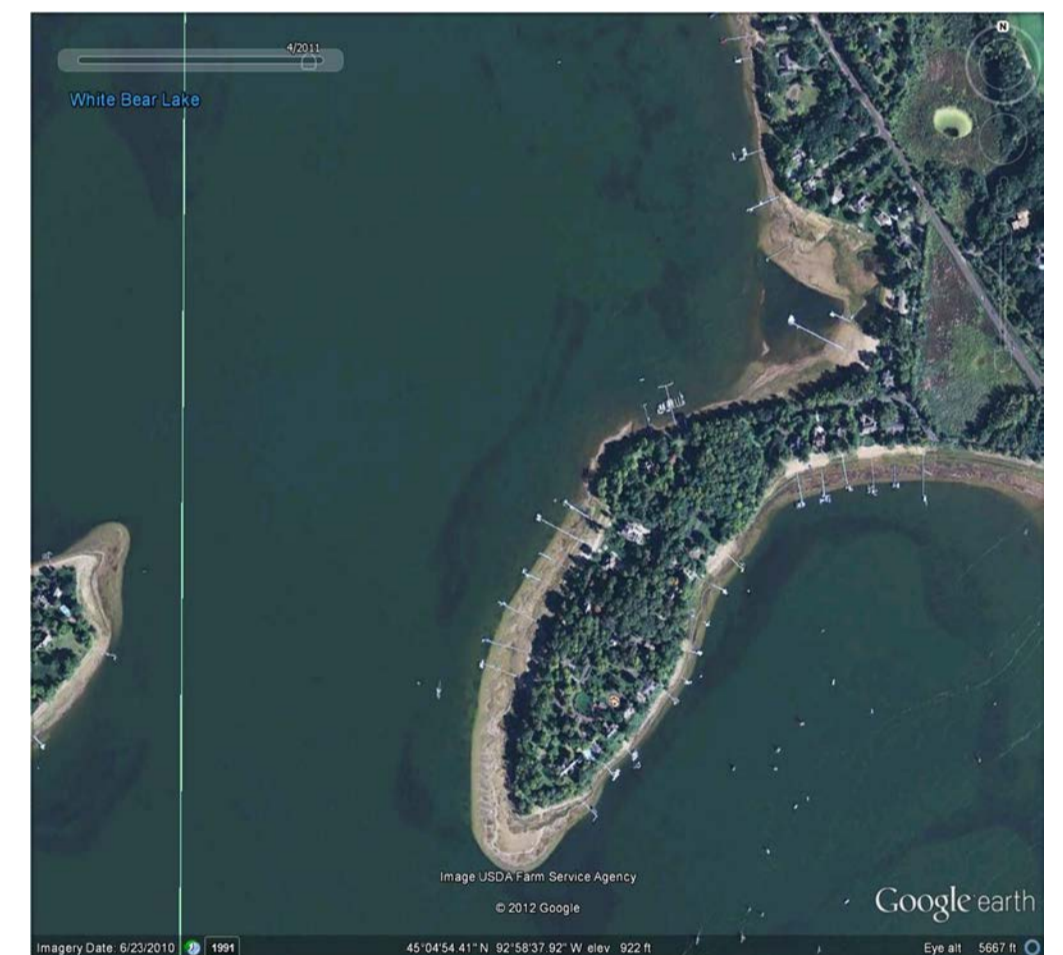
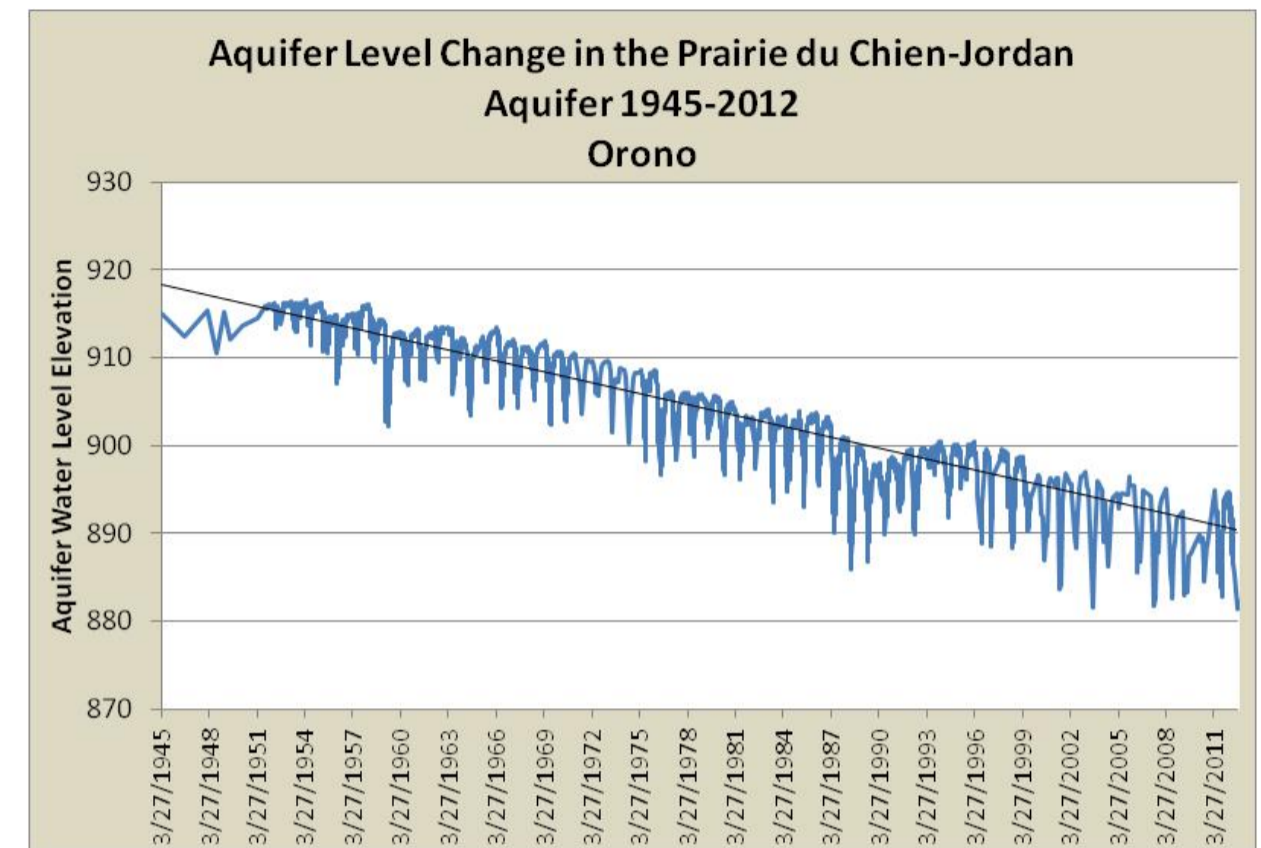
Stormwater Reuse Guide

- **Objective:**
Assist communities to conceptualize and design reuse projects
- **Benefits:**
Increased local capability for stormwater reuse



Findings

- Current approach to water supply management and development is unsustainable
- Aquifers levels declined – depleted
- Lakes, Stream and wetlands damaged

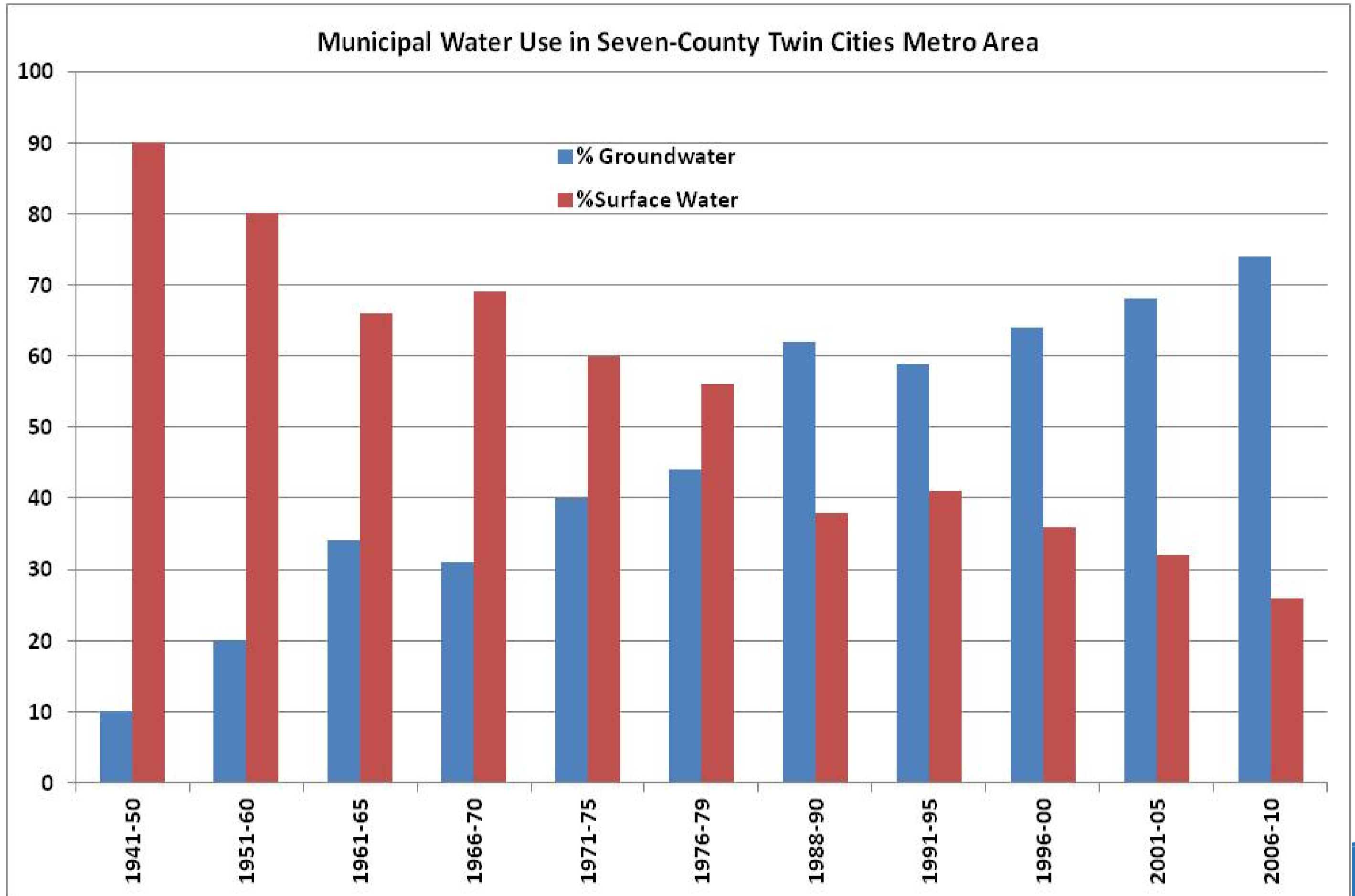


Metropolitan Area Water Supplies

- ❑ Over 50% of Minnesota's population in Metro Area
- ❑ **Surface Water:** 30 % of total supply
 - St Paul and Minneapolis
 - Intakes from Mississippi River
- ❑ **Groundwater:** 70 % of total supply
 - Municipal wells
 - Private wells

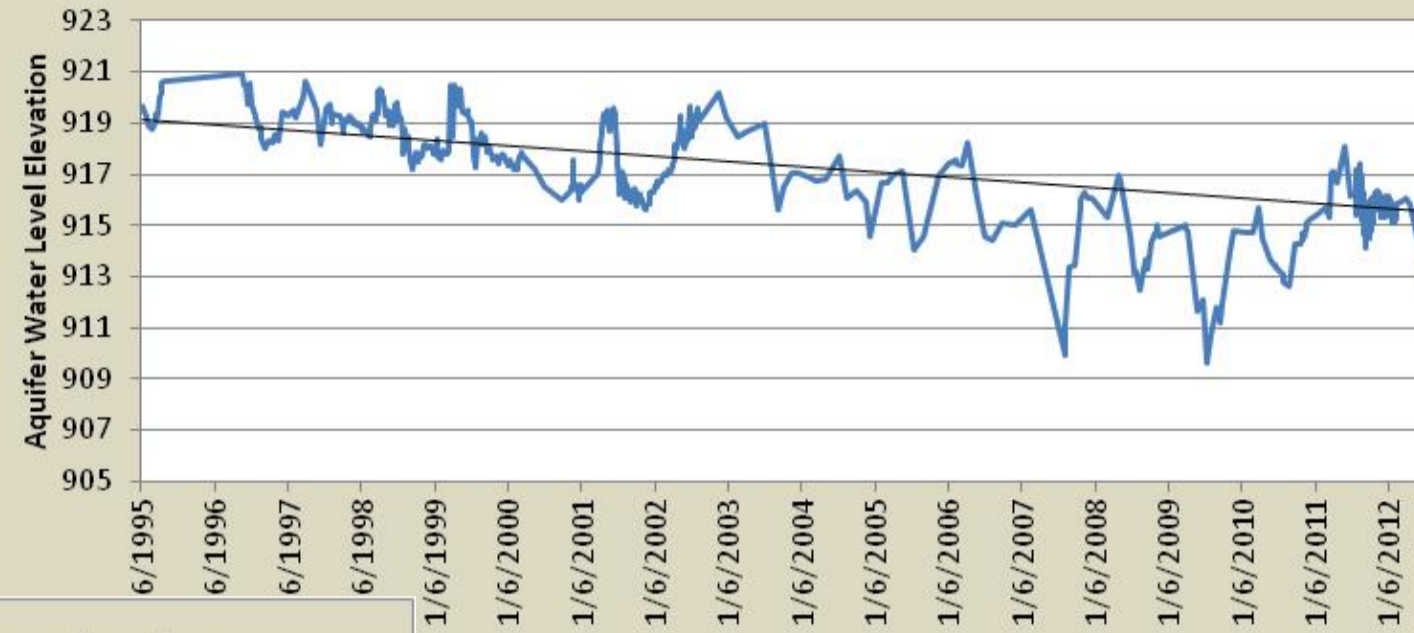


Water Supply Trends

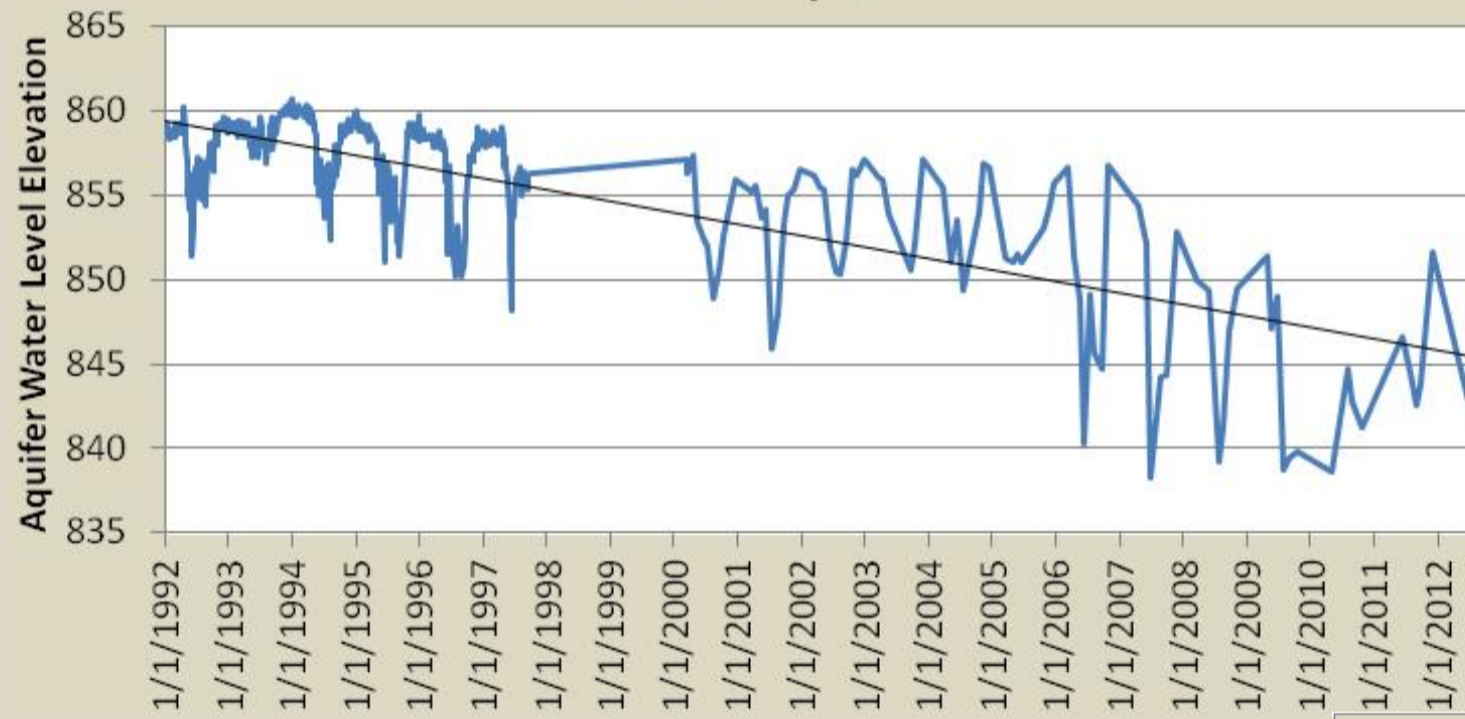


Aquifers are Impacted

Aquifer Level Change in the Prairie du Chien-
Jordan Aquifer 1995-2012
Hugo



Aquifer Level Change in the Prairie du Chien-Jordan
Aquifer 1995-2012
New Hope



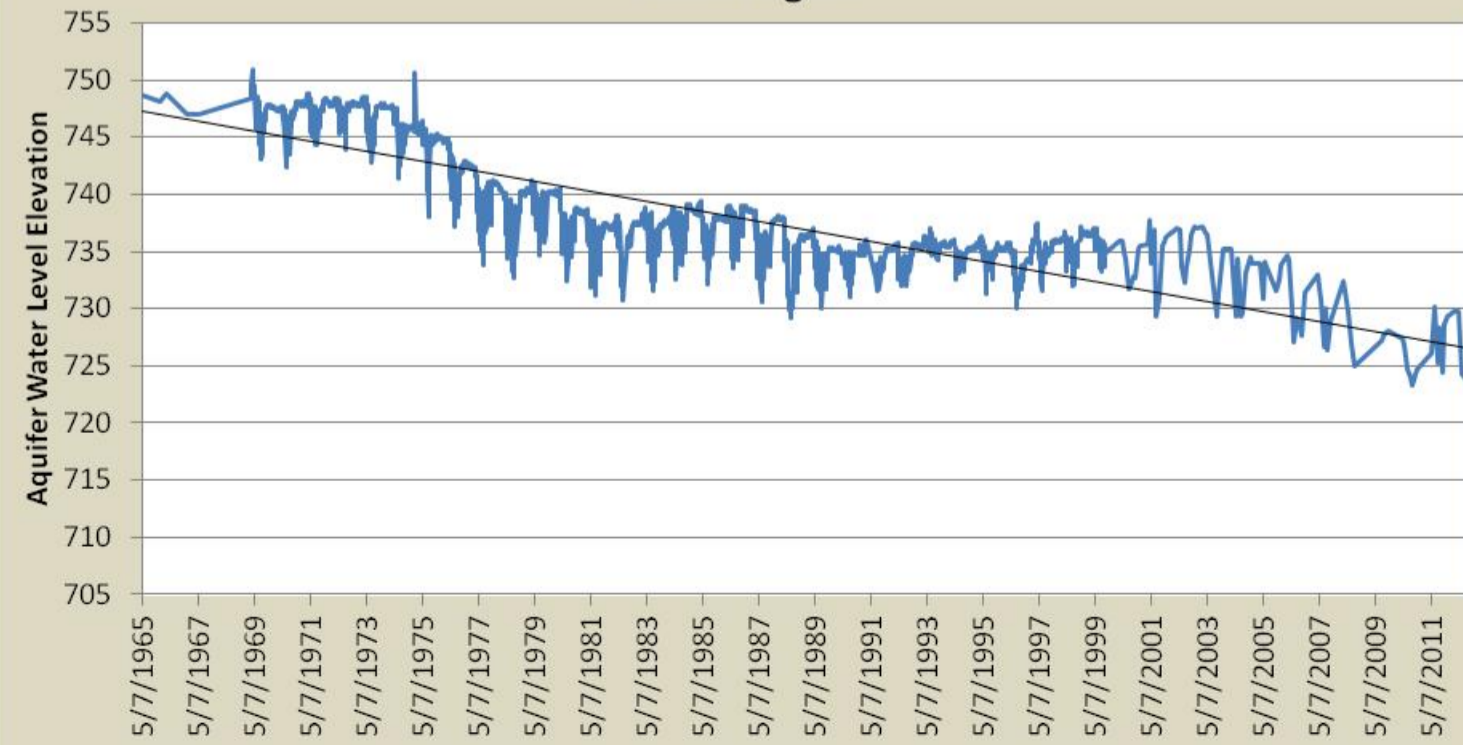
New Hope

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Bloomington

Eagan

Aquifer Level Change in the Prairie du Chien-Jordan
Aquifer 1965-2012
Bloomington



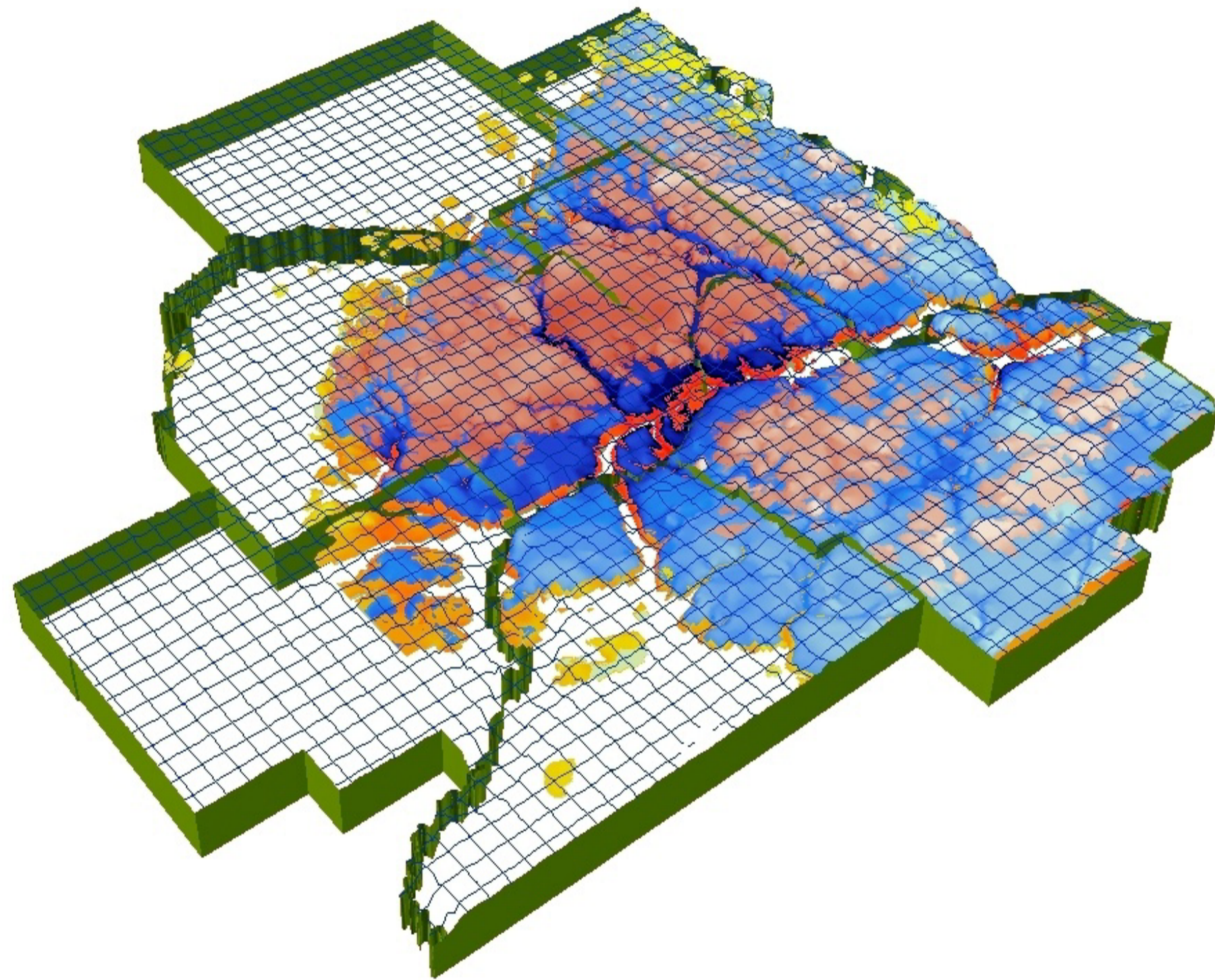
Surface Waters are Impacted

Example - White Bear Lake

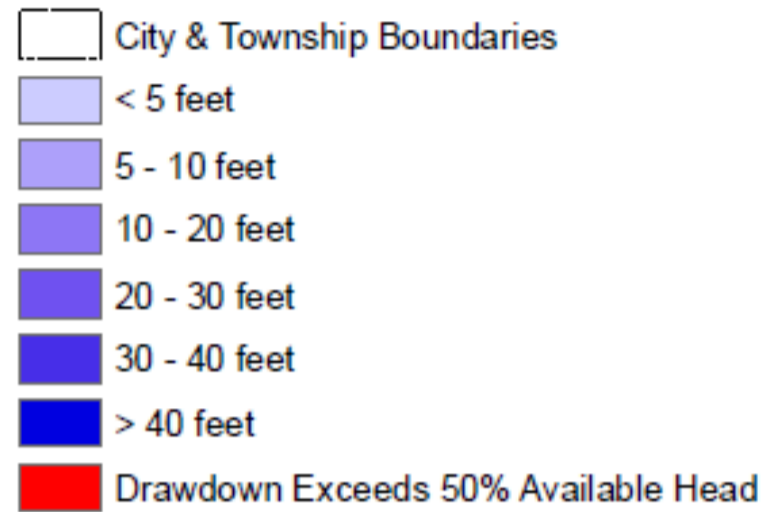


Metro Model 2

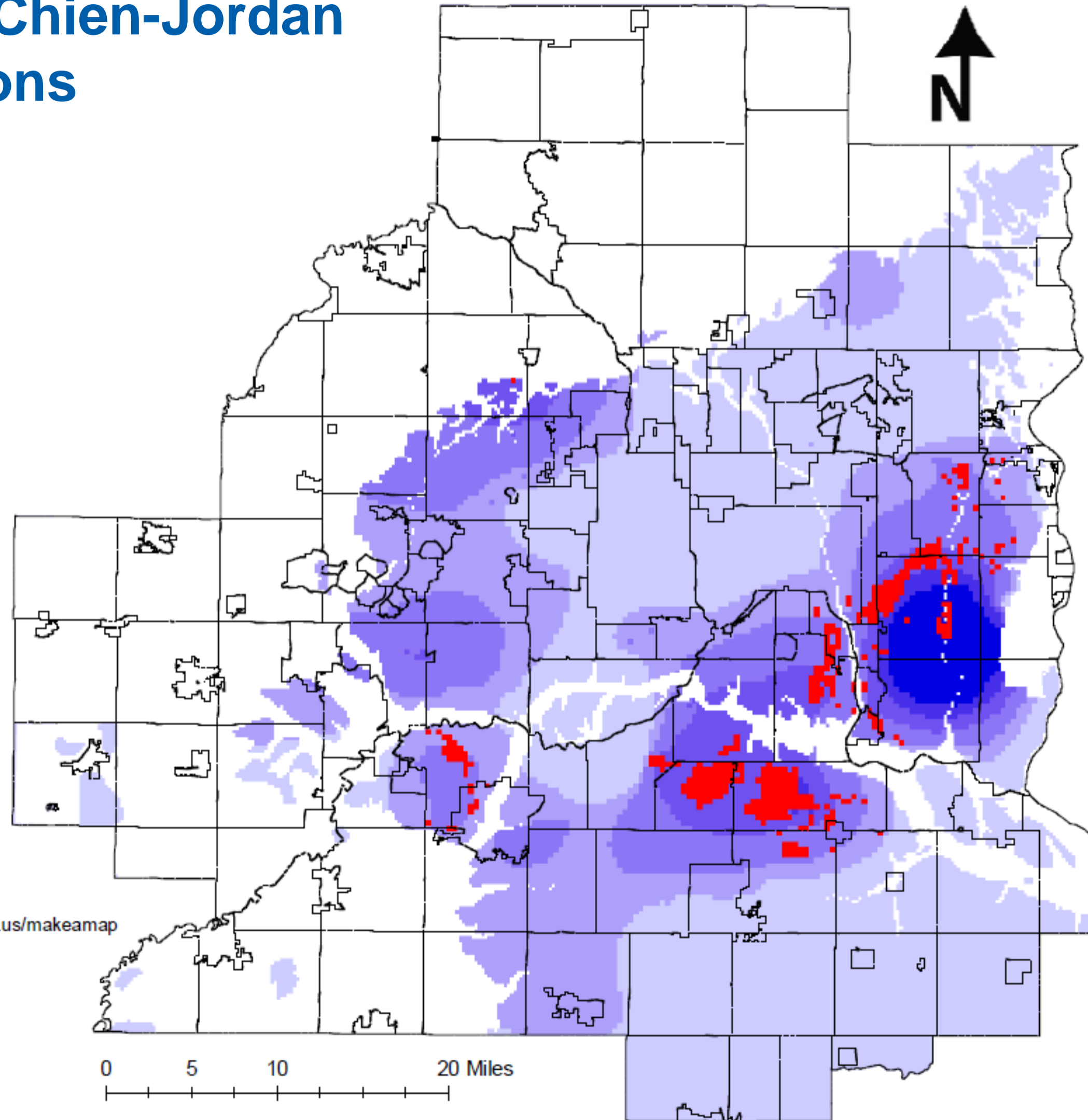
- U.S. Geological Survey Code
- 9 geology layers
- 33 streams
- 962 lakes & wetlands
- DNR pumping data



2030 Prairie du Chien-Jordan Aquifer Conditions



**“Business
As
Usual”**

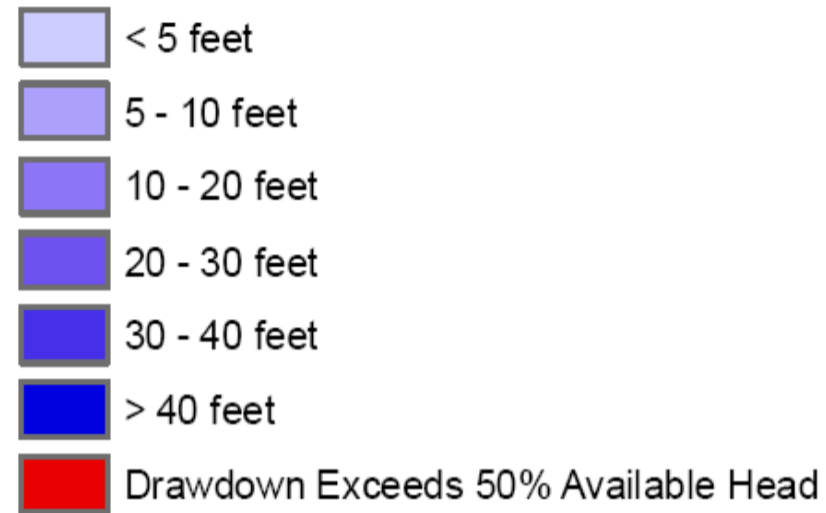


Metropolitan Council, 8/26/2009
View datasets online at <http://gis.metc.state.mn.us/makeamap>

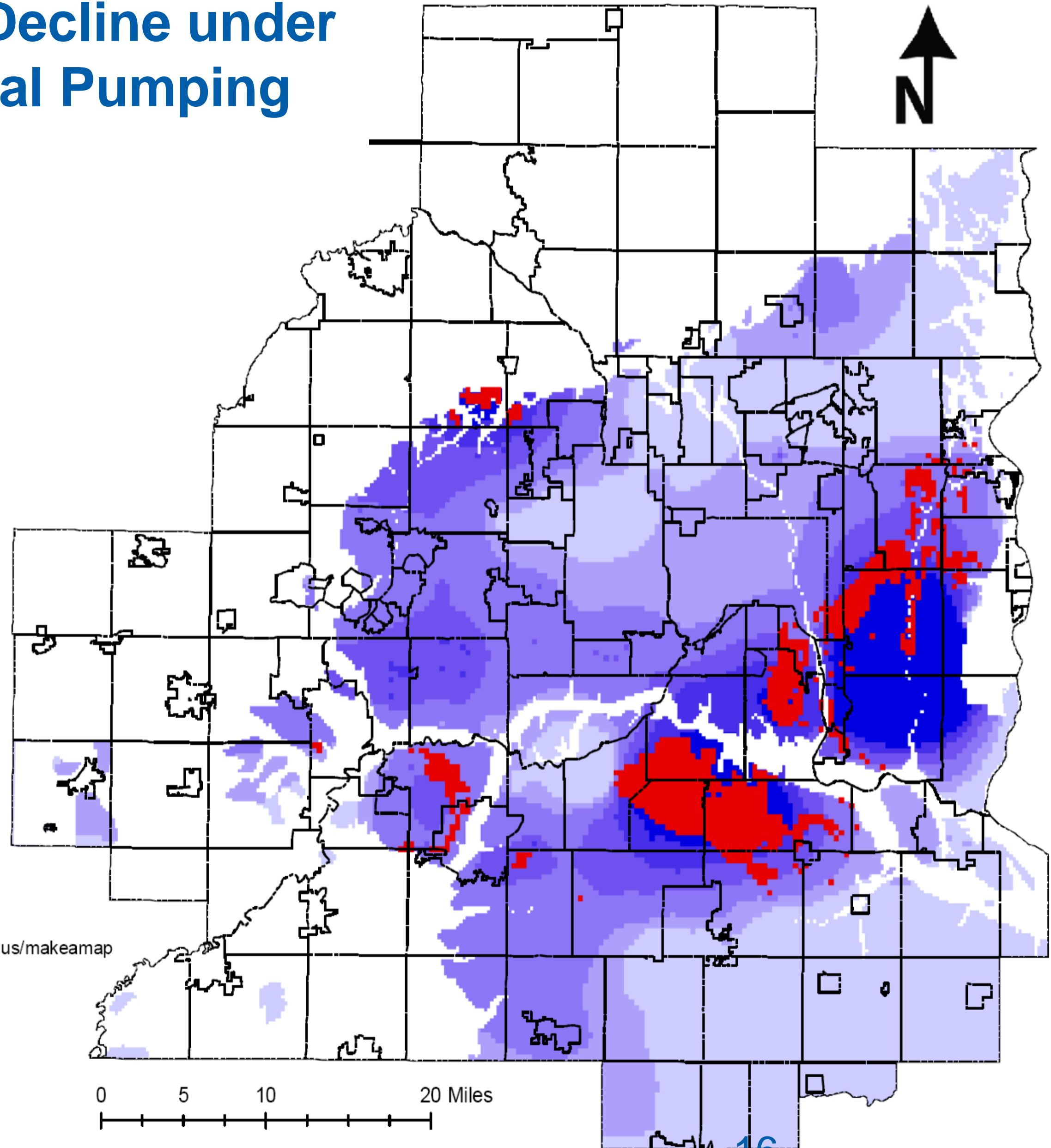
Source:
Metropolitan Council

PDC-J Aquifer Decline under 2050 Avg. Annual Pumping

Model-projected Drawdown: 2050



Note: These model results assume long-term average conditions and continued development of traditional water supplies. Summer conditions may exacerbate short-term drawdown.






Metropolitan Council, 8/26/2009
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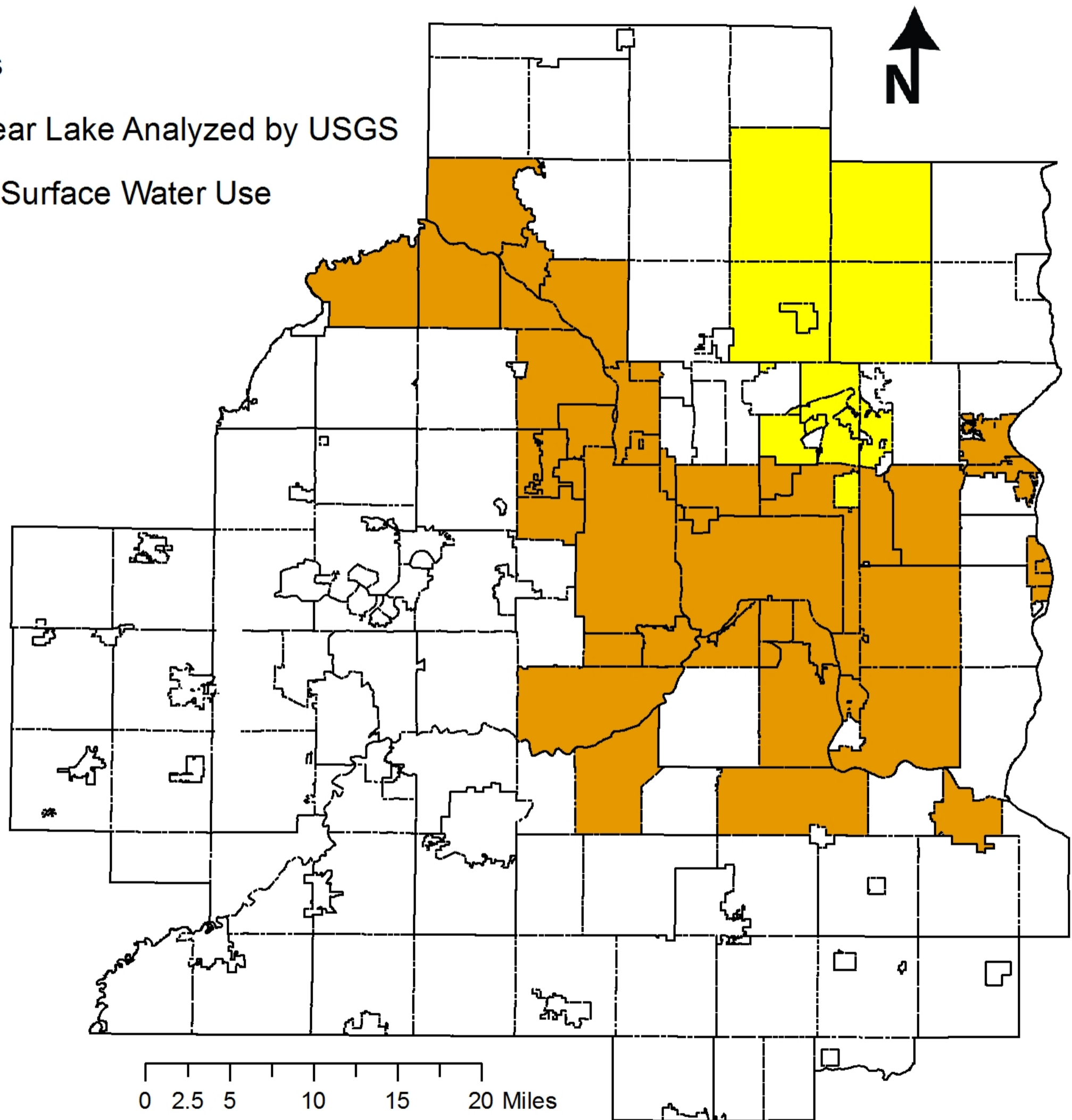
Source:
Metropolitan Council

Future Directions

- “Business As Usual” is not a solution
 - Recognizing limits on regional groundwater supplies
 - Balanced use of surface water, groundwater, and reclaimed water

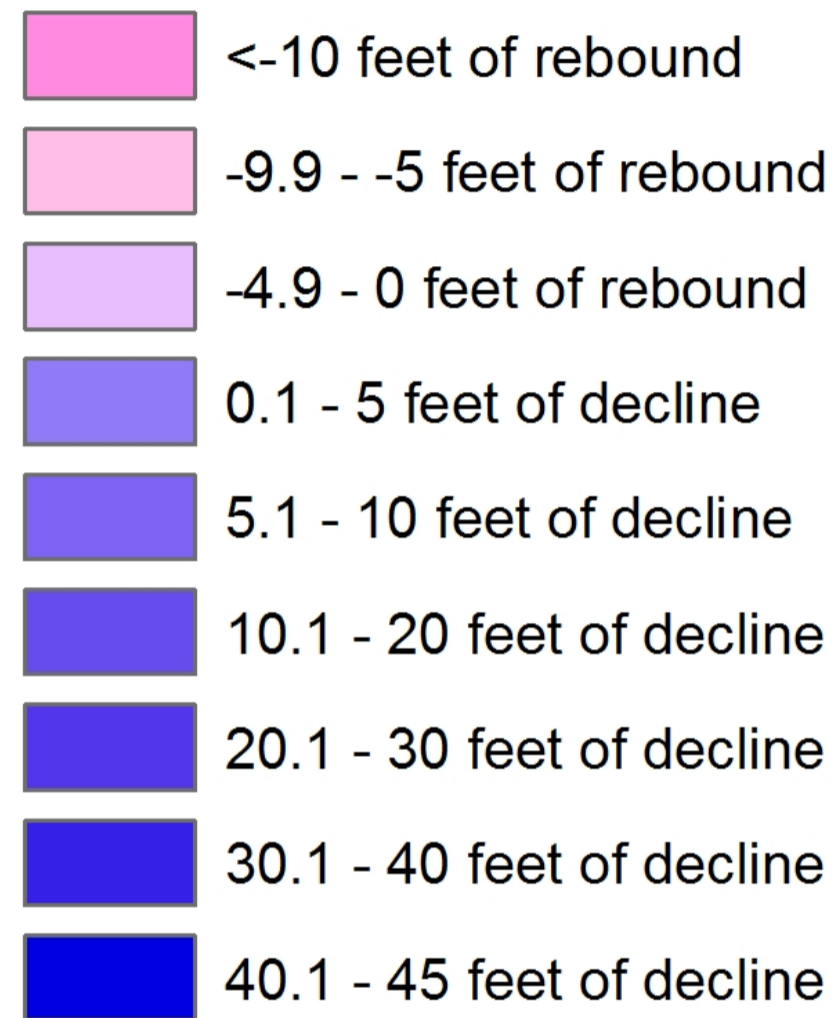


-  City & Township Boundaries
-  Potential Impact to White Bear Lake Analyzed by USGS
-  Master Plan Recommends Surface Water Use

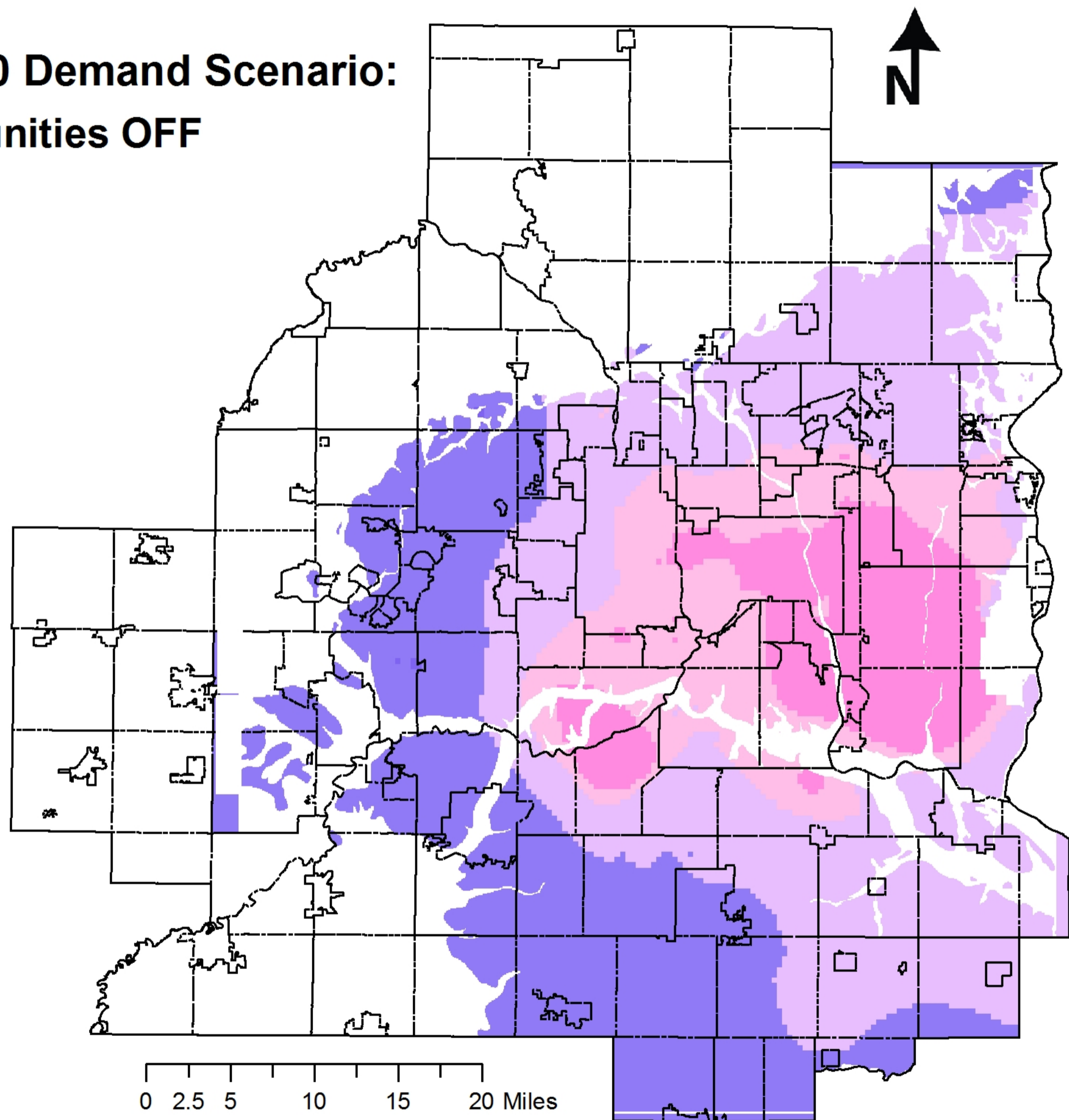


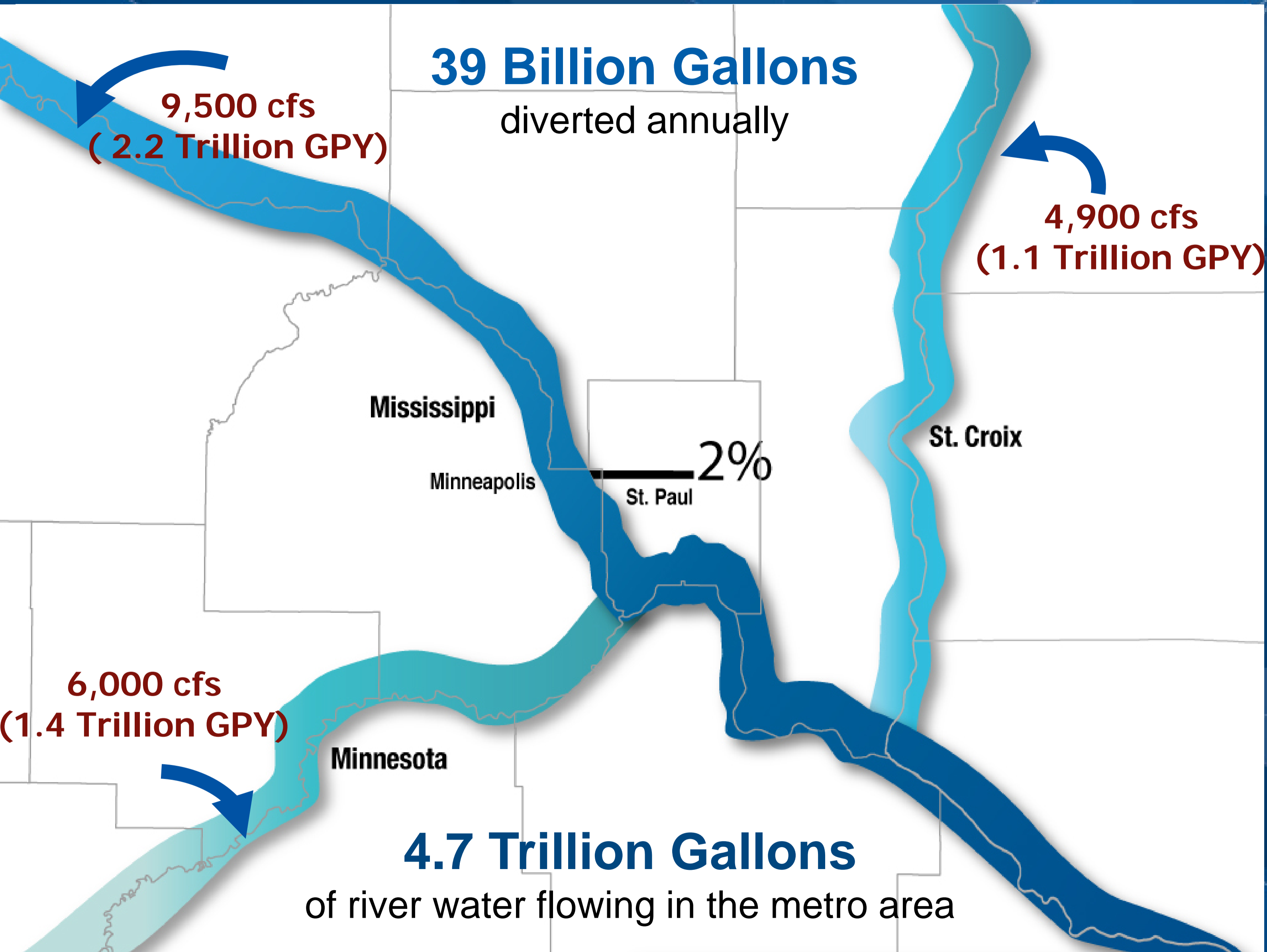
Surface Water

Aquifer Change (ft) - 2030 Demand Scenario: All Wells in Target Communities OFF



Prairie du Chien- Jordan Aquifer





Conclusion

- Region needs to:
 - Restore Balance among water sources
 - Maintain and enhance recharge capability
 - Conservation
- Council needs to
 - Develop growth plans that ensure sustainable water supply