

Using Groundwater in 21st Century Minnesota



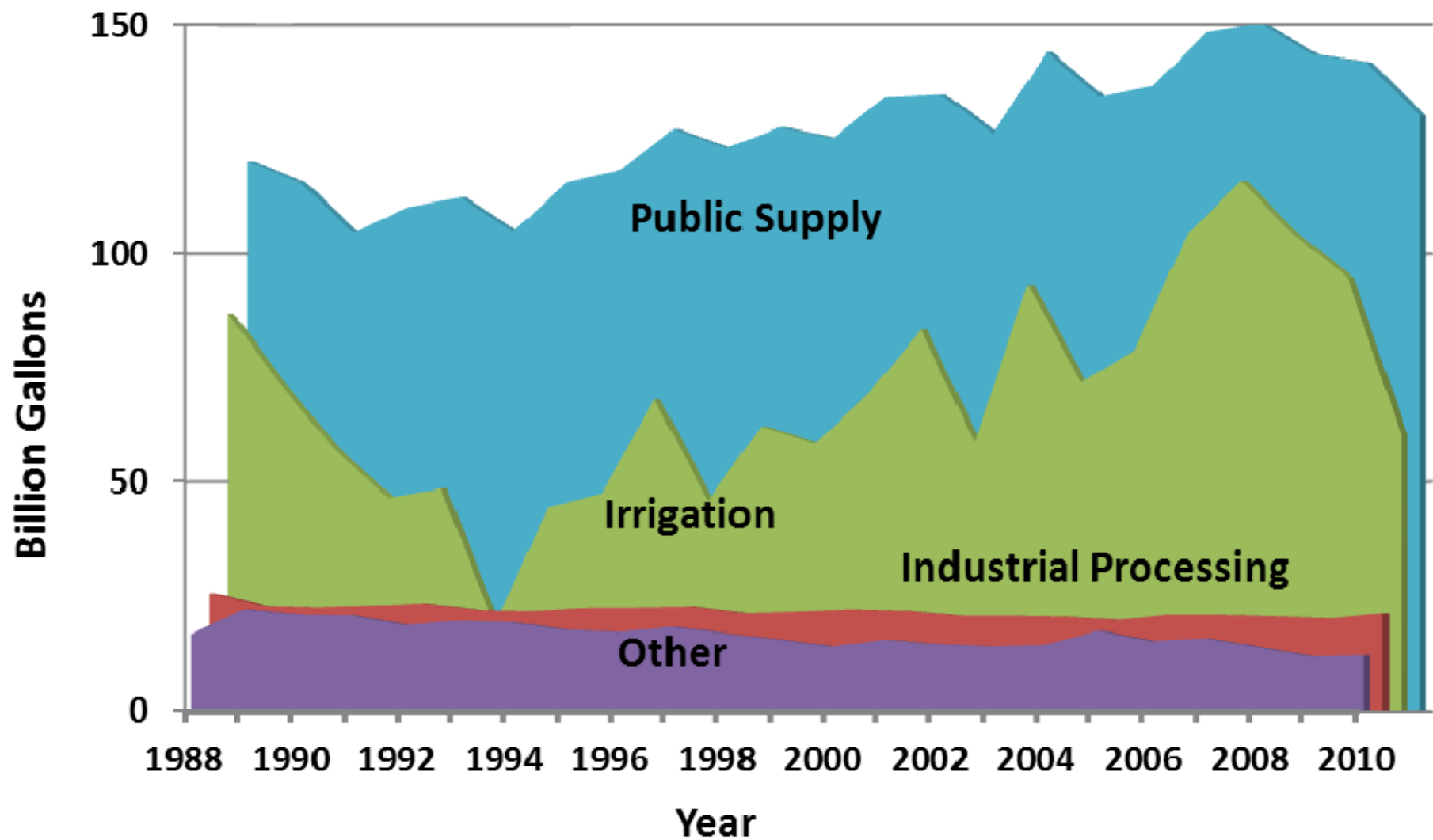
Jason Moeckel
Minnesota DNR
Division of Ecological and Water Resources



- Groundwater is critical for people, agriculture, business and nature
- We are using more groundwater than ever before
- Sustainability will require working together in new ways

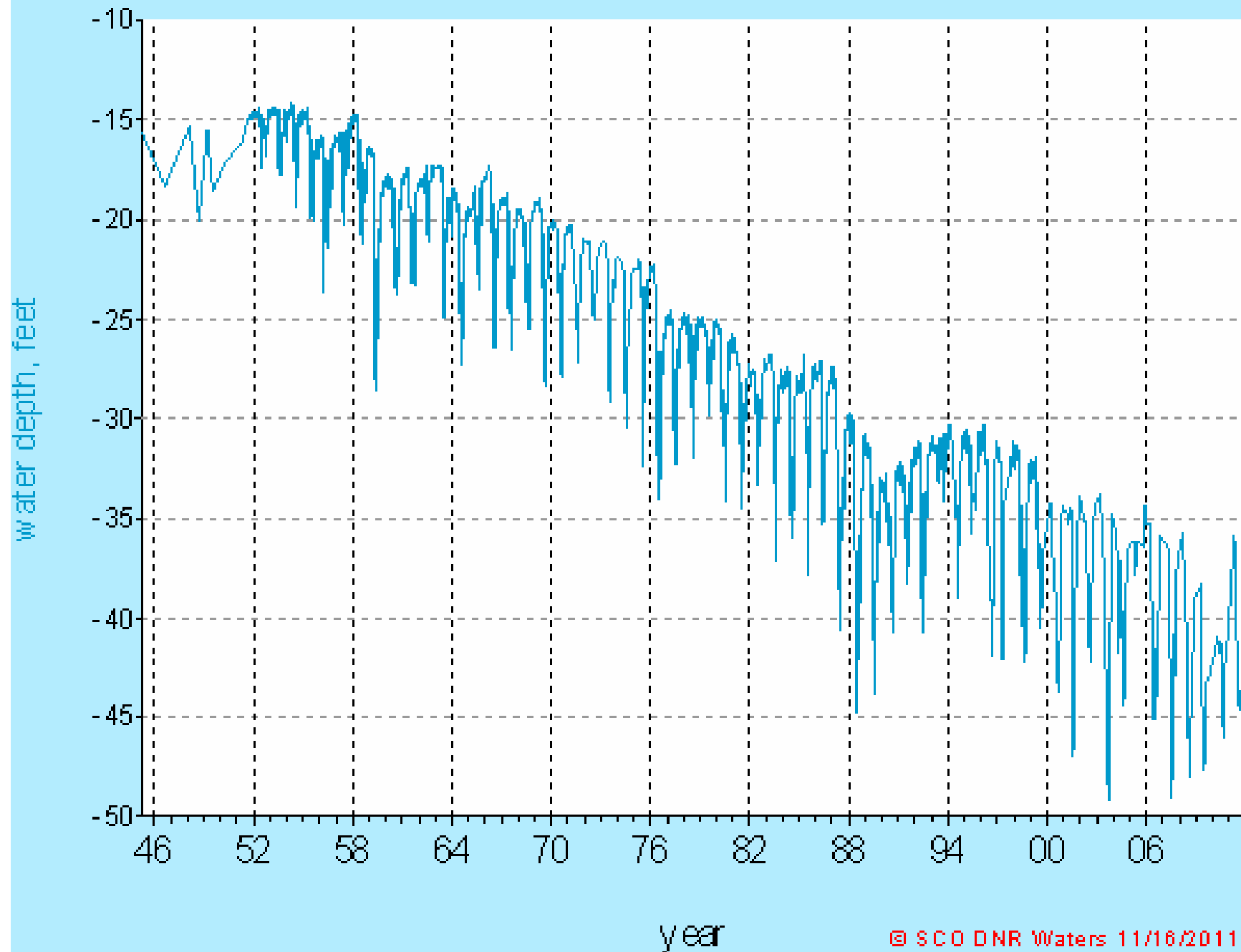


Minnesota Groundwater Use

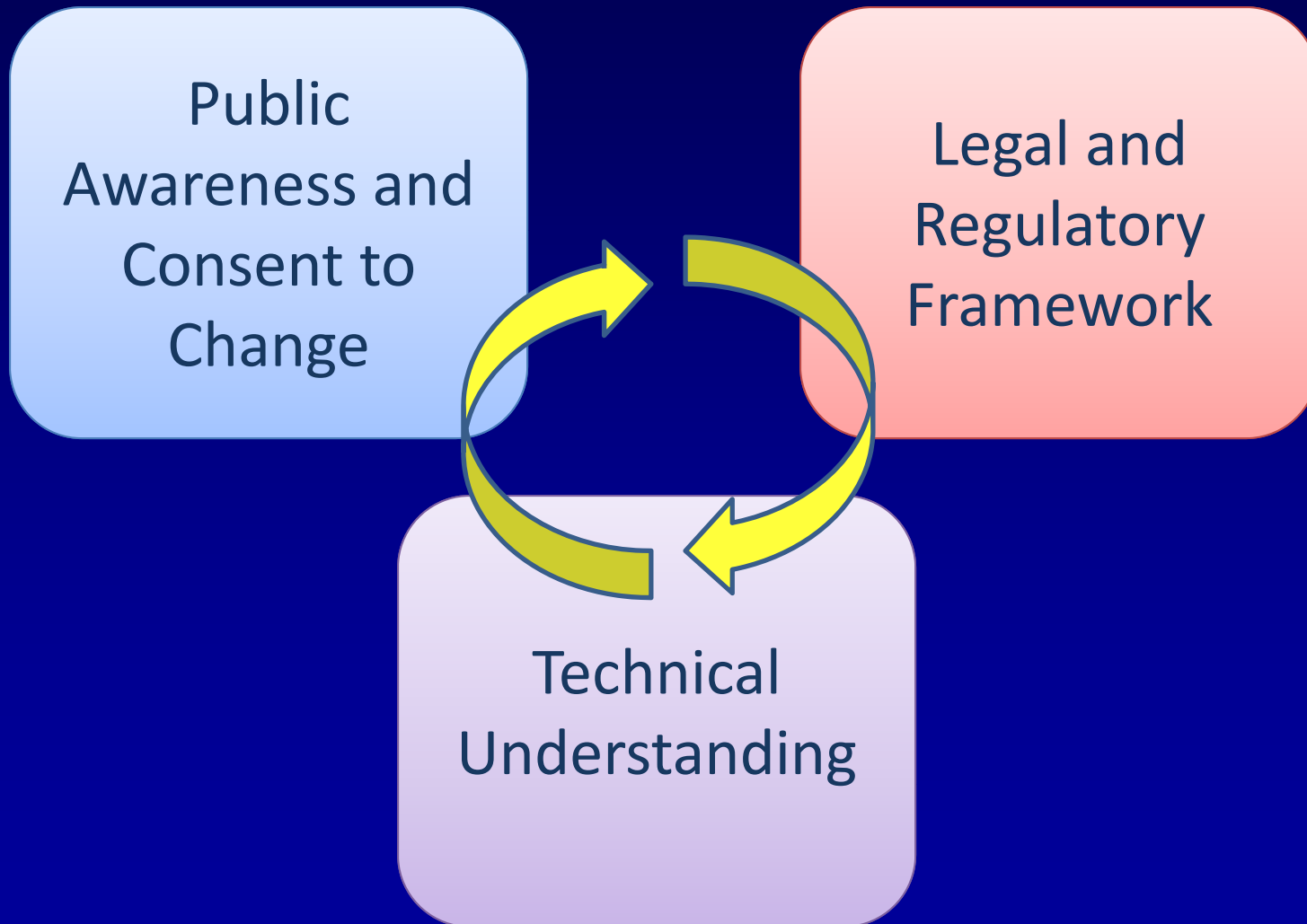




Well 27010



The Governance Challenge...



DNR Statutory Mission

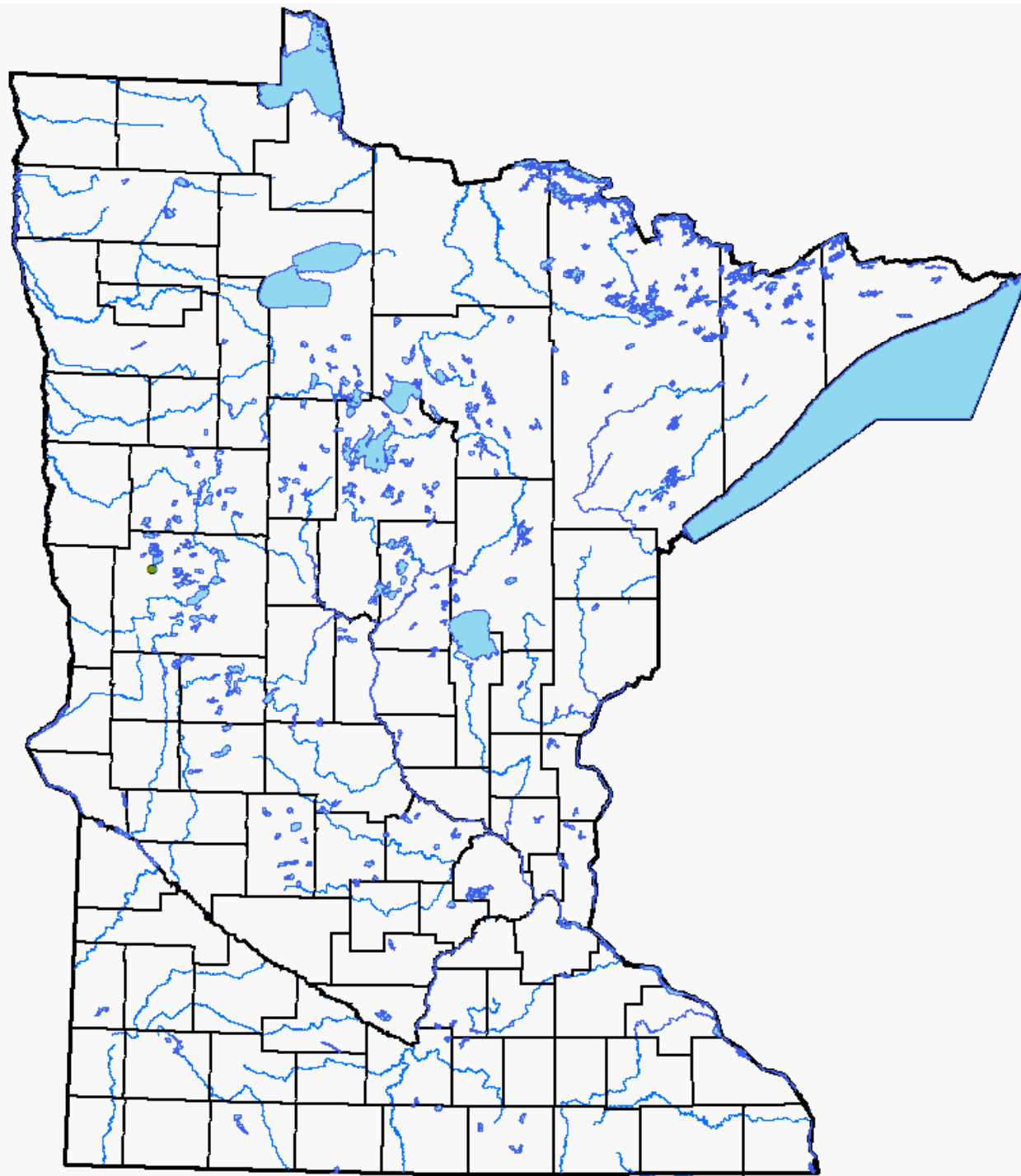
The Commissioner shall develop and manage water resources to assure an adequate supply to meet long-range seasonal requirements for domestic, municipal, industrial, agricultural, fish and wildlife, recreational, power navigation, and quality control purposes from waters of the state.

Riparian Rights



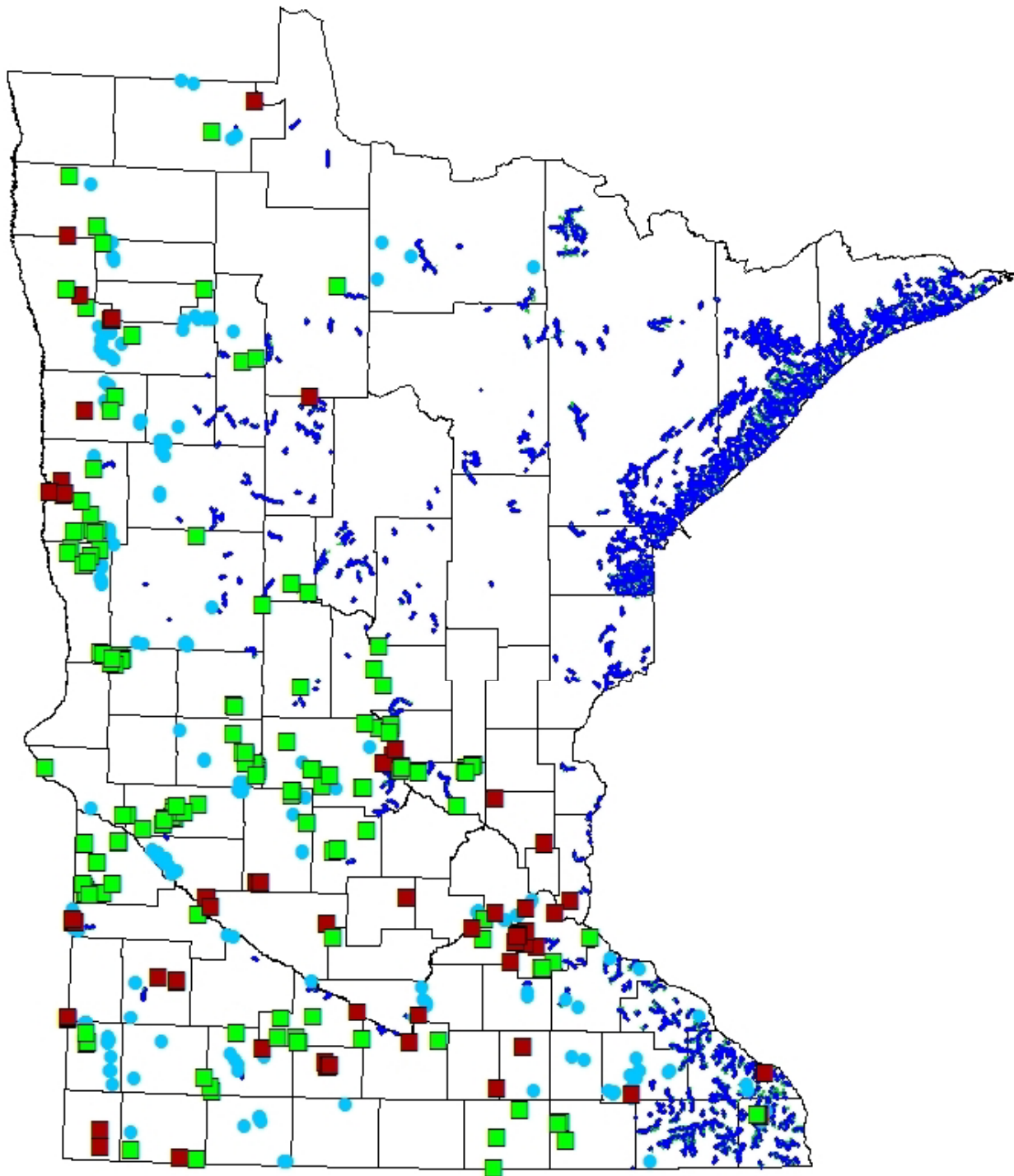
Water Use Priorities

- 1st Domestic uses
- 2nd Consumptive use < 10,000 GPD
- 3rd Ag. Irrigation & Processing
- 4th Power Production
- 5th Commercial & Industrial
- 6th Non-essential uses



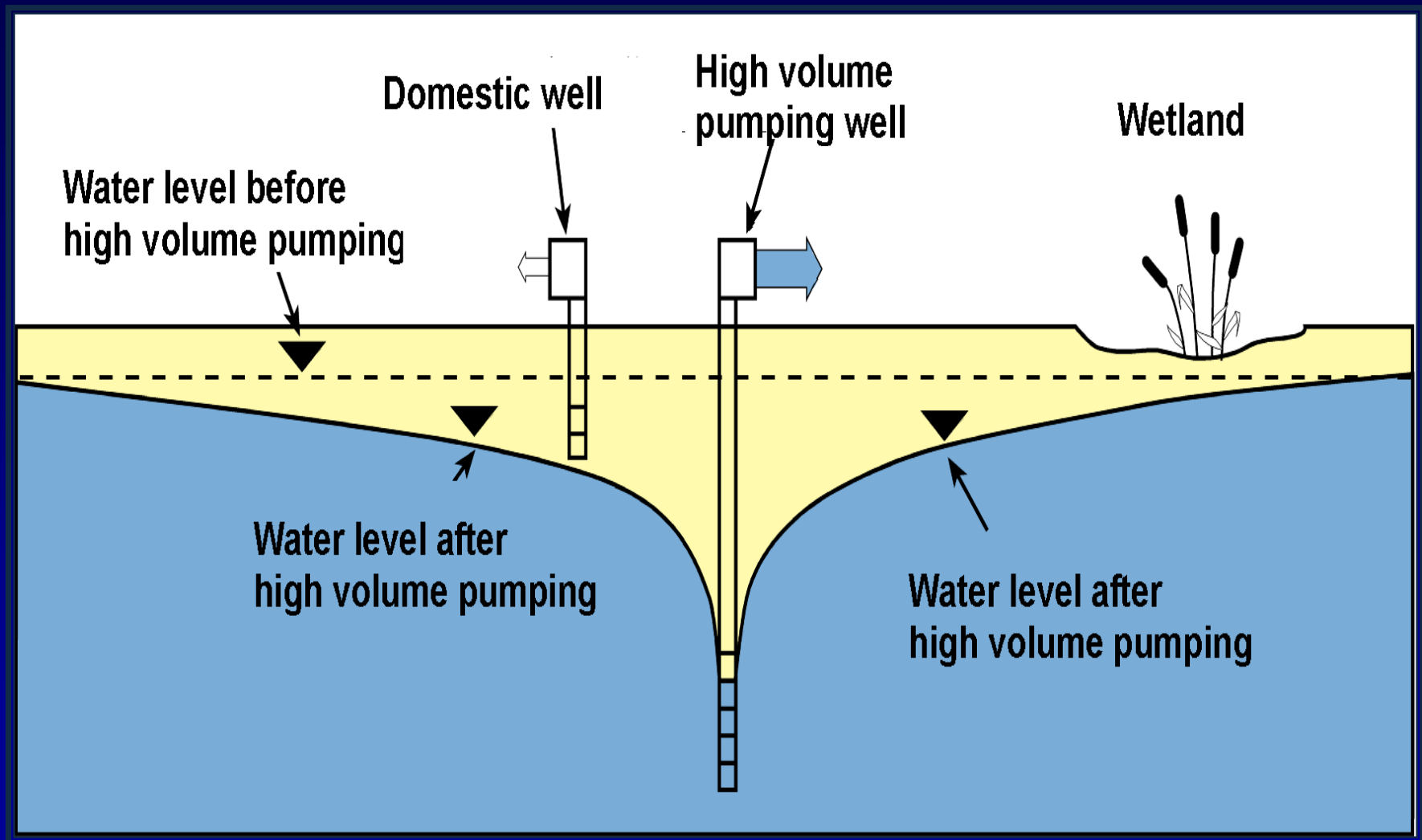
Change in Irrigation Permits 1948 – 2012

- = Crop
- = Non-Crop



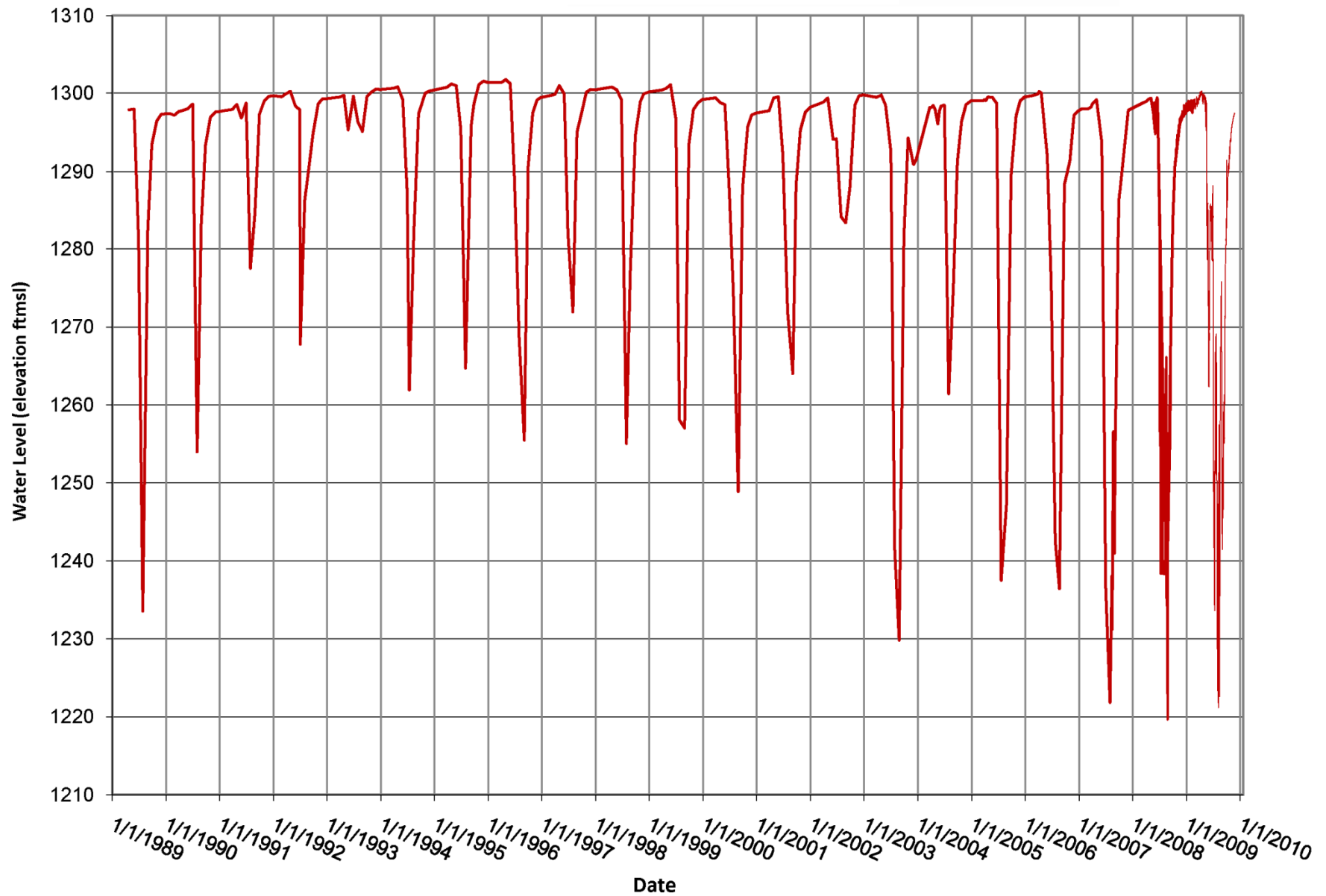
Map of Well Interfer- ence Issues

Ground water withdrawal affects surface water and ground water users



water supply interference

DNR Obwell 61037 (QBAA) (21 years of record)



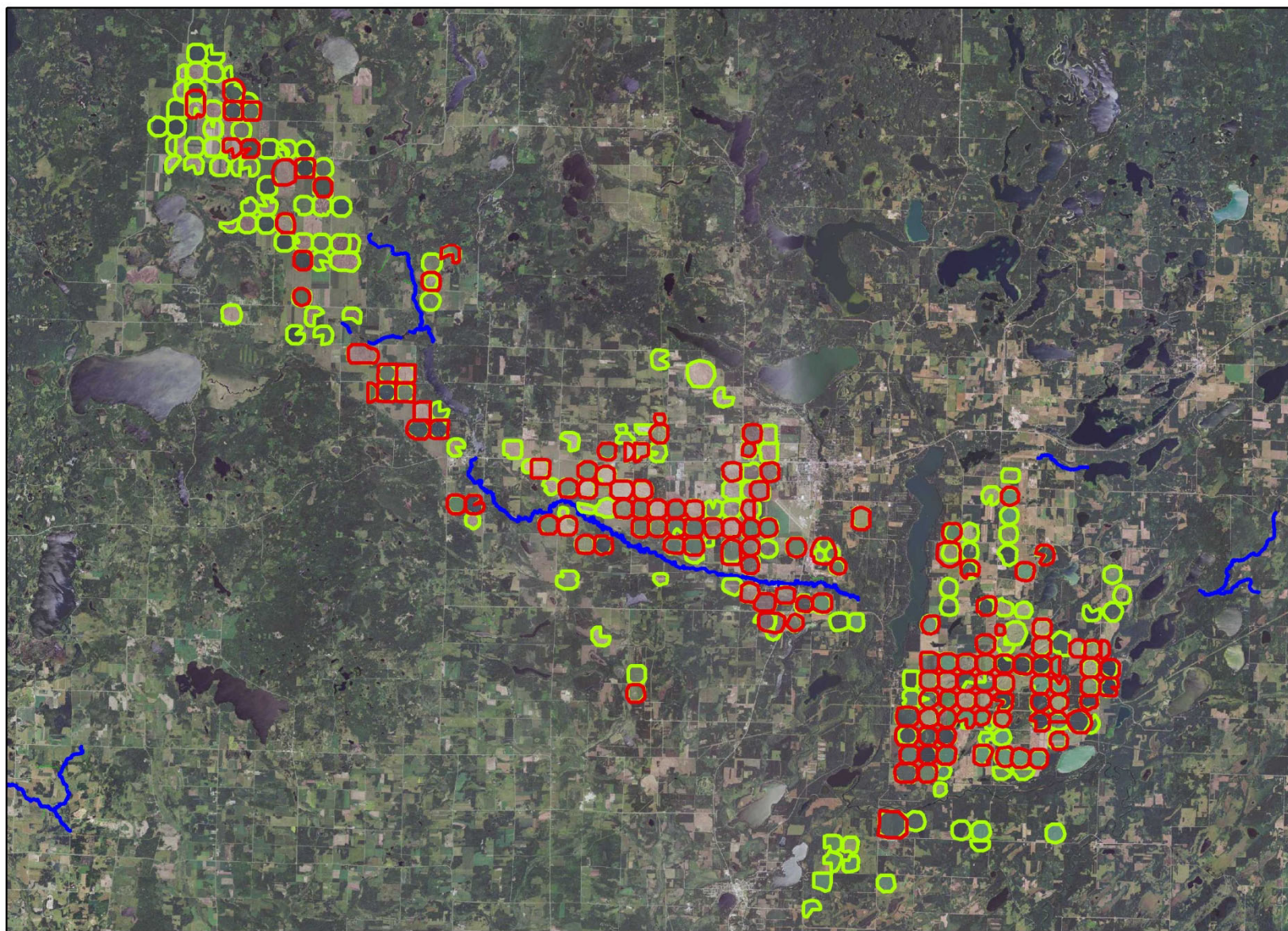
DNR Statutory Mission

The Commissioner shall develop and manage water resources to assure an adequate supply to meet long-range seasonal requirements for domestic, municipal, industrial, agricultural, fish and wildlife, recreational, power navigation, and quality control purposes from waters of the state.

103G.287 Subd. 4.

Groundwater management areas.

- The [DNR] commissioner may designate groundwater management areas and limit total annual water appropriations and uses within a designated area to ensure sustainable use of groundwater that protects ecosystems, water quality, and the ability of future generations to meet their own needs.... consistent with a plan approved by the commissioner ...



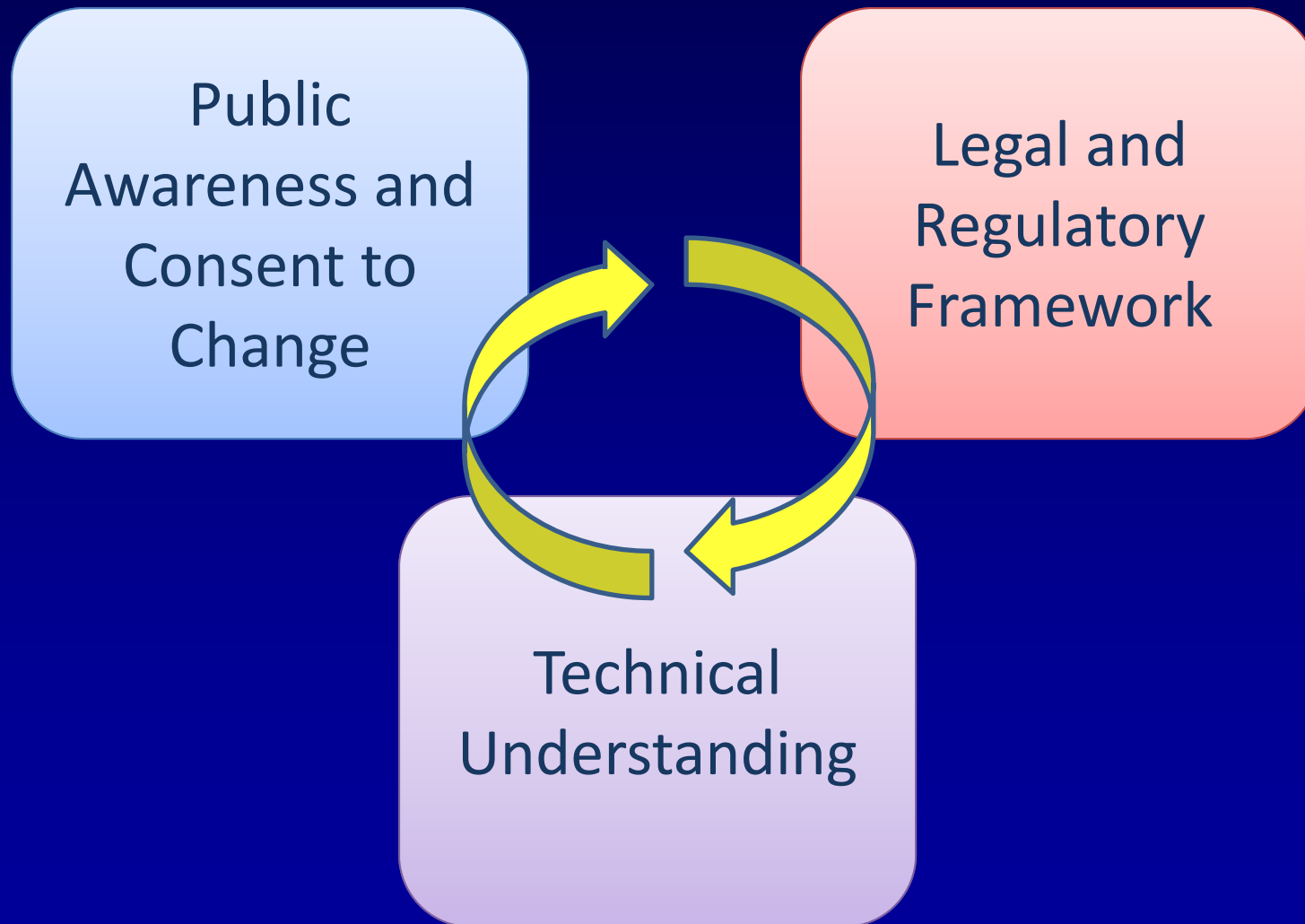
○ 1991 Land Irrigated ○ 2010 Land Irrigated

✓ Designated Trout Stream with
Protected Tributaries

0 1 2 4 6 8 Miles



The Governance Challenge...



Choices with Consequences



Working together in new ways...

AgriNews.com: Farmers take lead in Whitewater conservation efforts

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Farmers take lead in Whitewater conservation efforts

By Janet Kubat Willette

jkubat@agrnews.com

Date Modified: 03/01/2012 8:49 AM

[E-mail article](#) | [Print version](#)

LEWISTON, Minn. — Farmers in the Whitewater Watershed are taking the lead in water quality improvement through the Farmer-Led Council of the Whitewater River Watershed.

The council is the first of its kind in Minnesota. It's modeled on similar efforts in Iowa where farmers gather to determine what they need to do to clean up impaired streams in their watershed.

Jim Frederick of Lewiston chairs the council. He's involved because he wants to leave an environmental legacy and wants the land to be in better shape when he's done farming than when he began.

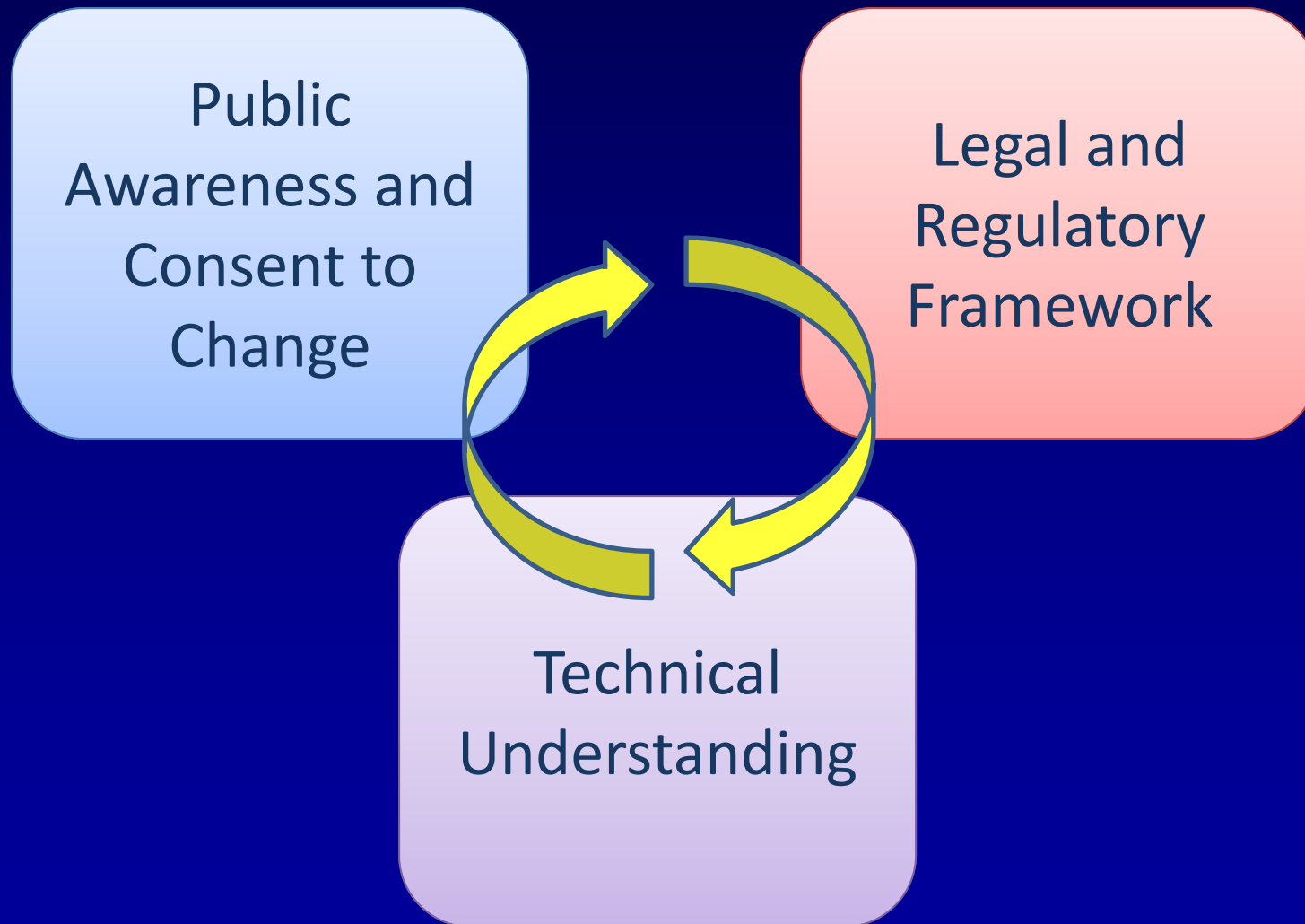


Dan Brandt, Natalie Siderius, Jim Frederick and Jerry Hildebrandt are involved with the Farmer Led Council of the Whitewater River Watershed.

Groundwater Management Strategy

- 💧 Structured decision making and adaptive management
 - 💧 Encourage local engagement in management efforts
 - 💧 Use the best available information to inform management decisions.
 - 💧 Adopt long-term approach to monitoring and management
 - 💧 Share information and make it accessible
 - 💧 Recognize that groundwater and surface-water management are complex and interconnected systems

The Governance Challenge...



In Summary...

- **Groundwater is critical for people, agriculture, business and nature**
- **We are using more groundwater than ever before**
- **Using groundwater well will require working together in new ways**



Thank you!

U.S. Drought Monitor

Minnesota

March 13, 2012

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.79	99.21	95.99	24.10	0.00	0.00
Last Week (03/06/2012 map)	0.79	99.21	95.99	24.10	0.00	0.00
3 Months Ago (12/13/2011 map)	0.81	99.19	56.68	24.08	0.00	0.00
Start of Calendar Year (12/27/2011 map)	0.79	99.21	57.45	24.08	0.00	0.00
Start of Water Year (09/27/2011 map)	48.42	51.58	19.26	4.58	0.00	0.00
One Year Ago (03/08/2011 map)	95.24	4.76	1.76	0.00	0.00	0.00

Intensity:

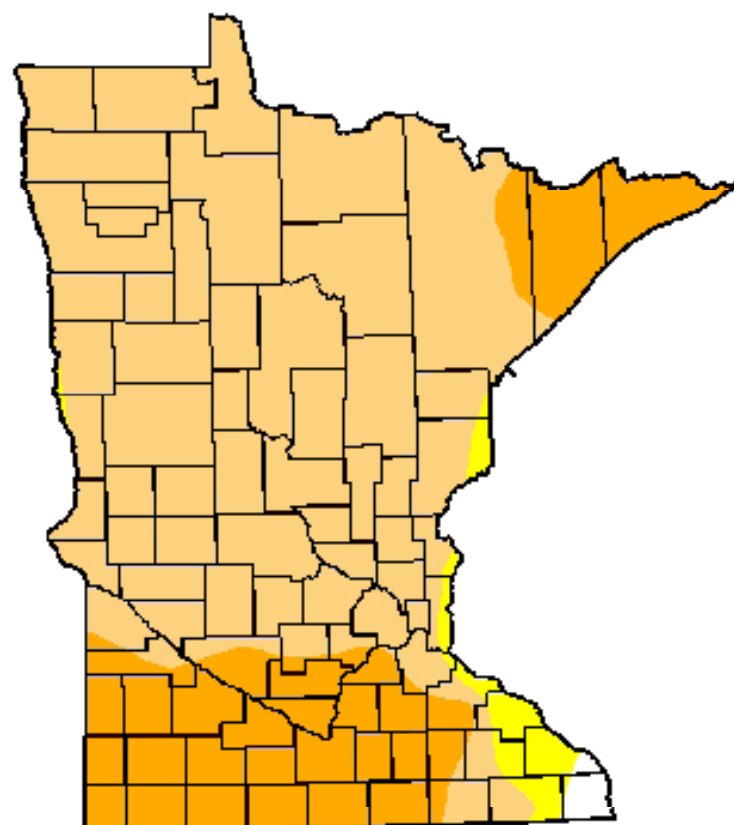
D0 Abnormally Dry

D1 Drought - Moderate

D2 Drought - Severe

D3 Drought - Extreme

D4 Drought - Exceptional



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://droughtmonitor.unl.edu>



Released Thursday, March 15, 2012
Michael Brewer, National Climatic Data Center, NOAA

U.S. Drought Monitor

September 25, 2012

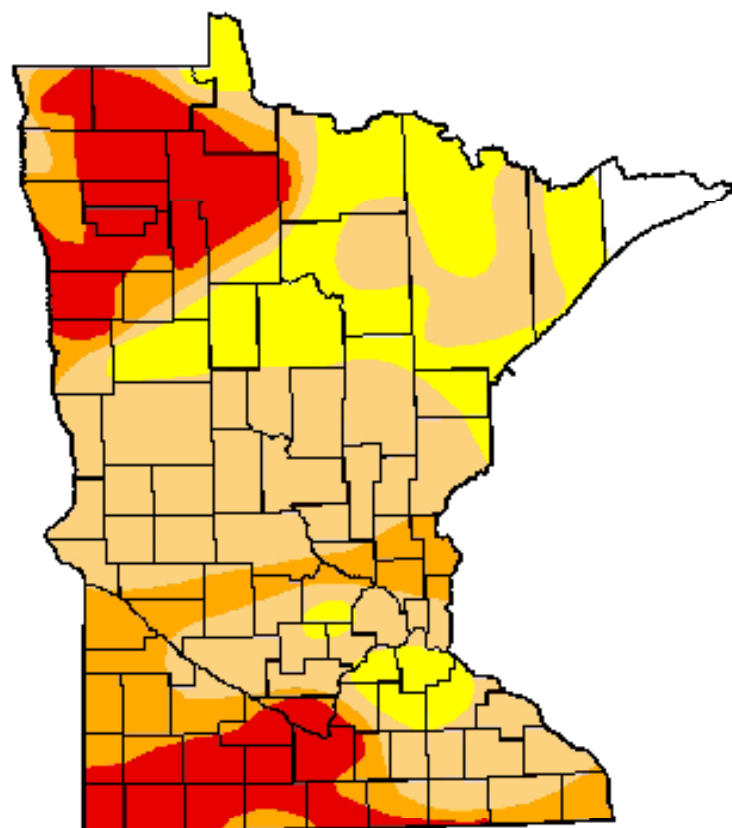
Valid 7 a.m. EST

Minnesota

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	1.92	98.08	77.45	35.36	18.51	0.00
Last Week (09/18/2012 map)	3.80	96.20	64.11	28.17	4.32	0.00
3 Months Ago (08/26/2012 map)	65.56	34.44	13.67	0.00	0.00	0.00
Start of Calendar Year (12/27/2011 map)	0.79	99.21	57.45	24.08	0.00	0.00
Start of Water Year (09/27/2011 map)	48.42	51.58	19.26	4.58	0.00	0.00
One Year Ago (09/20/2011 map)	54.62	45.38	19.26	4.58	0.00	0.00

Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://droughtmonitor.unl.edu>



Released Thursday, September 27, 2012

Anthony Artusa, NOAA/NWS/NCEP/CPC

Bonanza Valley Study Area (Summer Drawdown in the Buried Aquifer, 2009)

