

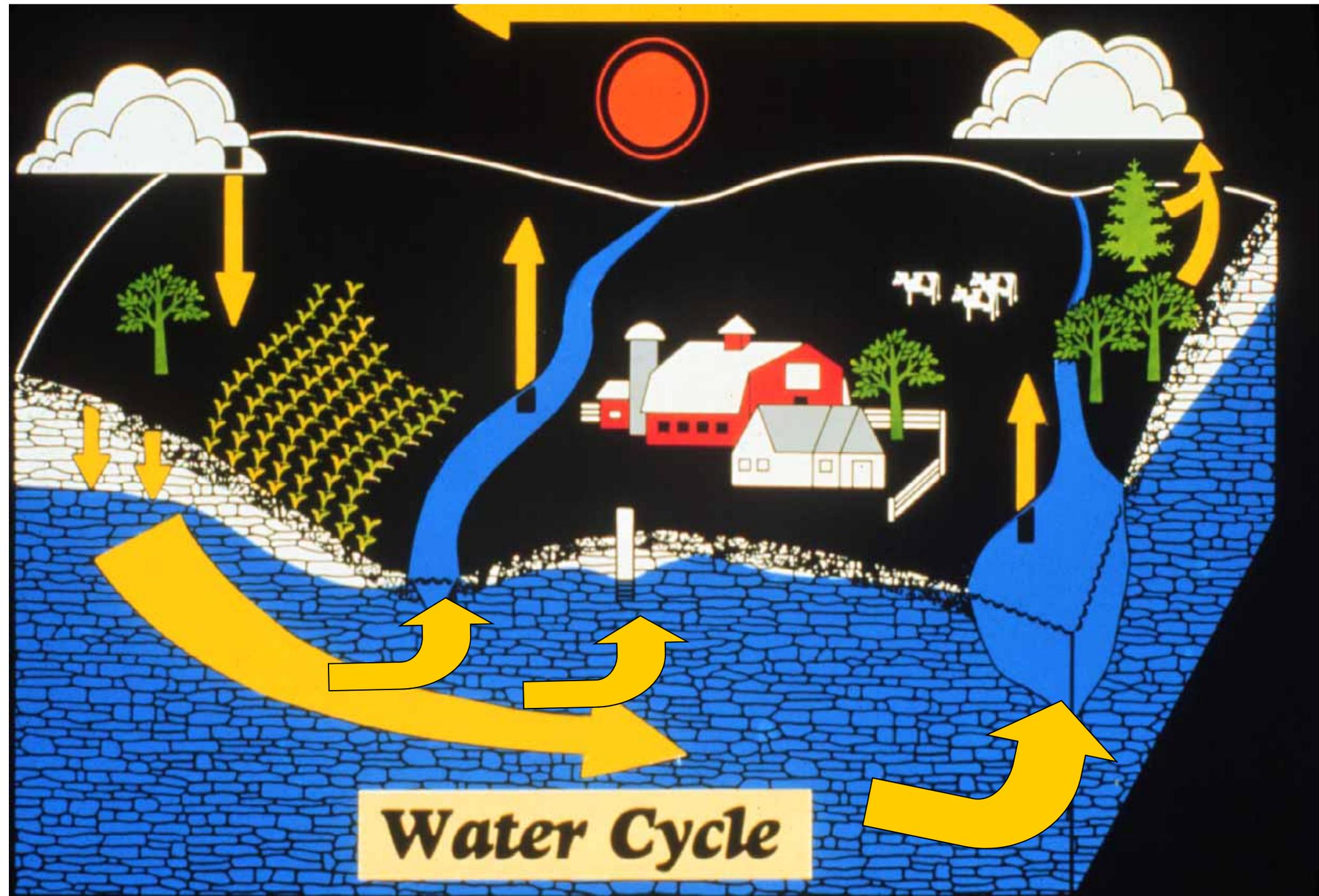
The Consequences of Not Managing Groundwater in Wisconsin:

The Central Sands as Case Study

George J. Kraft, University of Wisconsin – Stevens Point and
University of Wisconsin - Extension



University of Wisconsin-Stevens Point
Center for Watershed Science and Education



Water Cycle

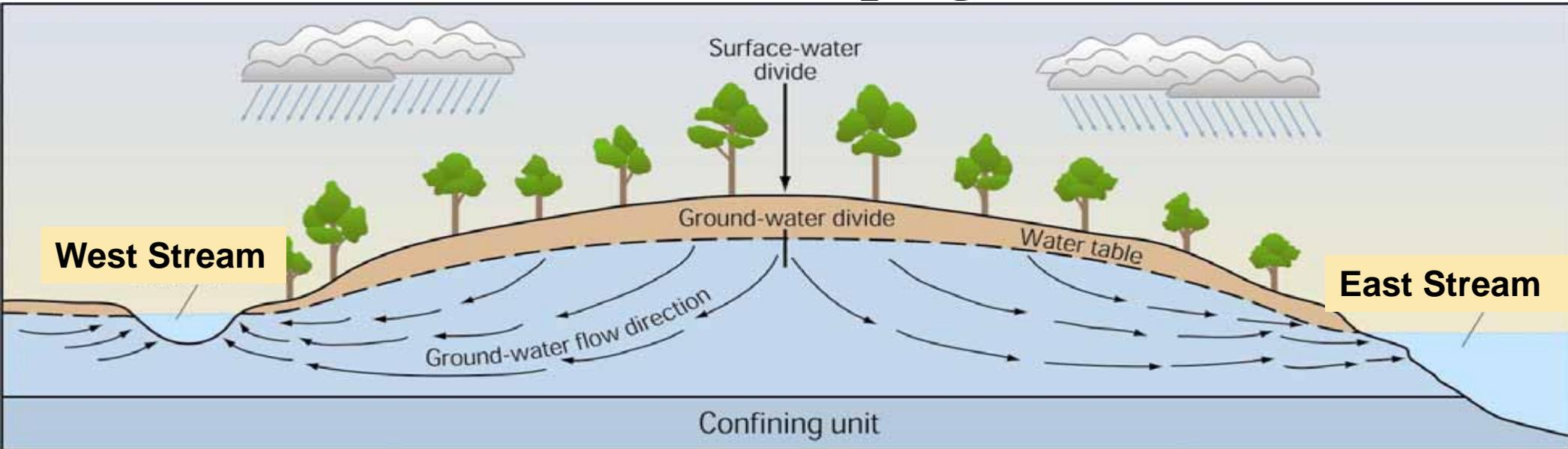


jsonline.com

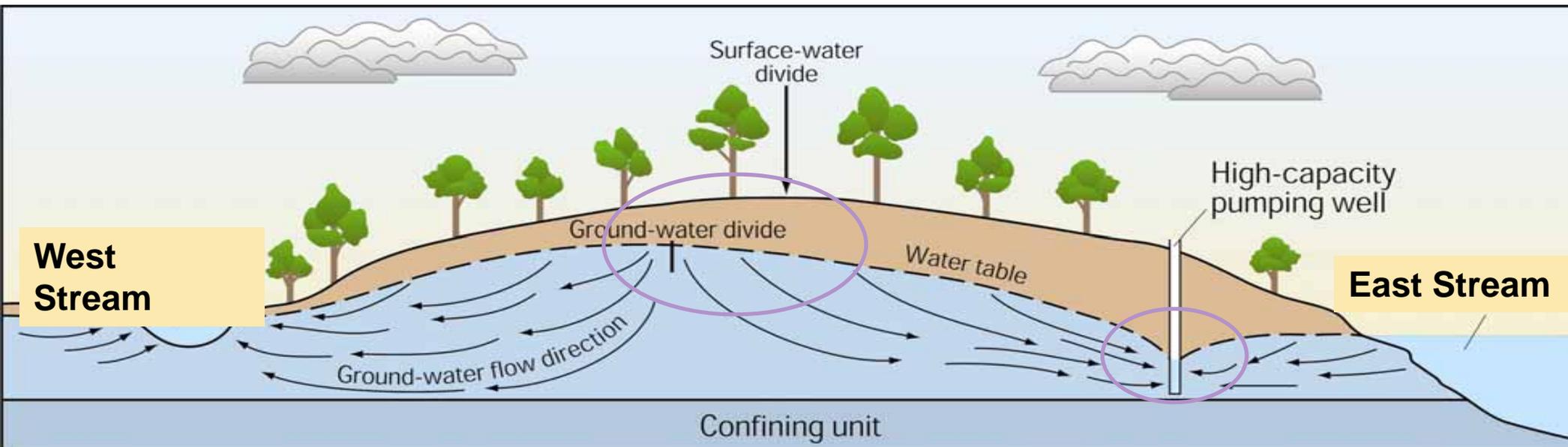


clearlake-wi.gov

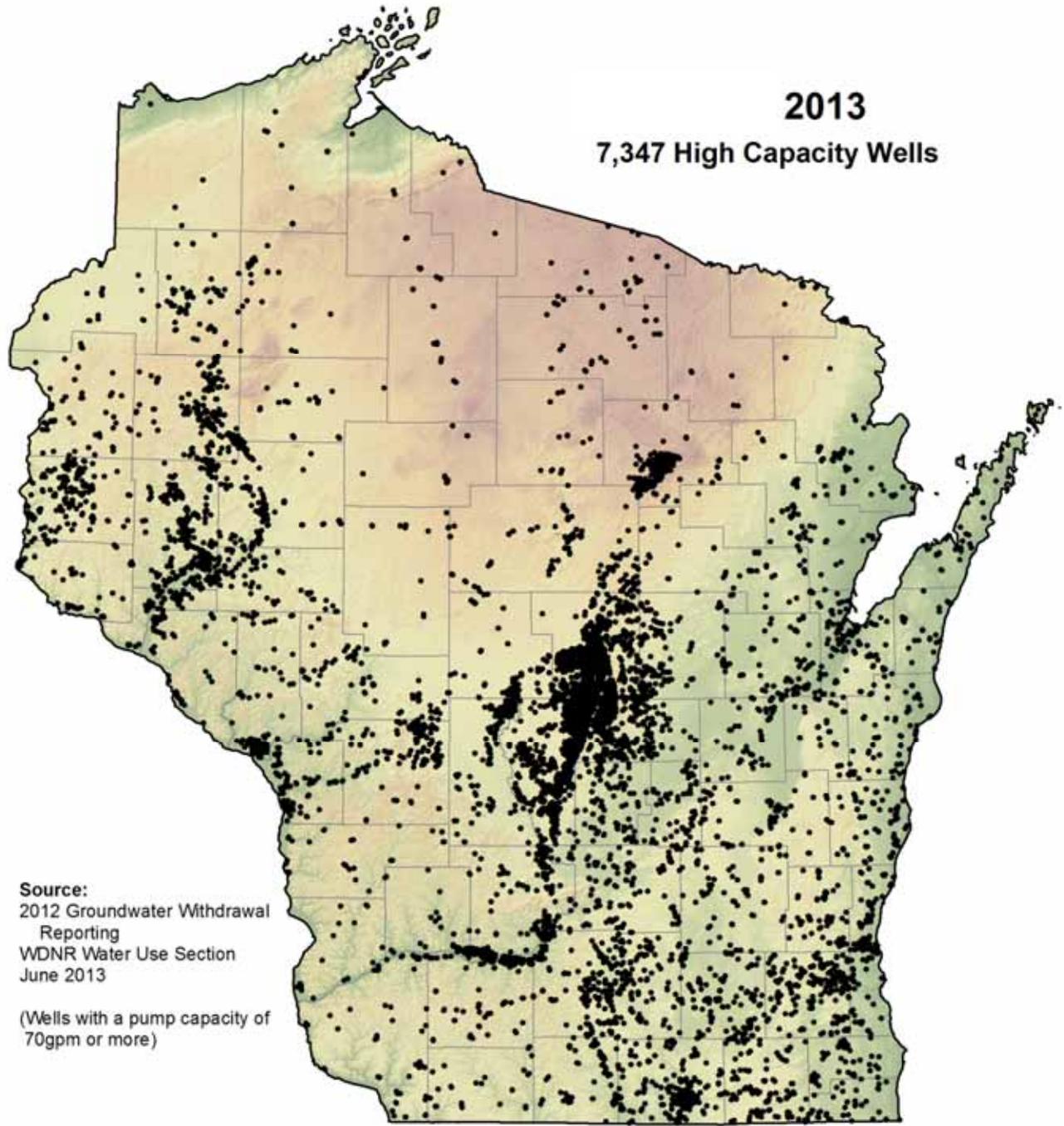
No Pumping



With Pumping



The Wisconsin Overview



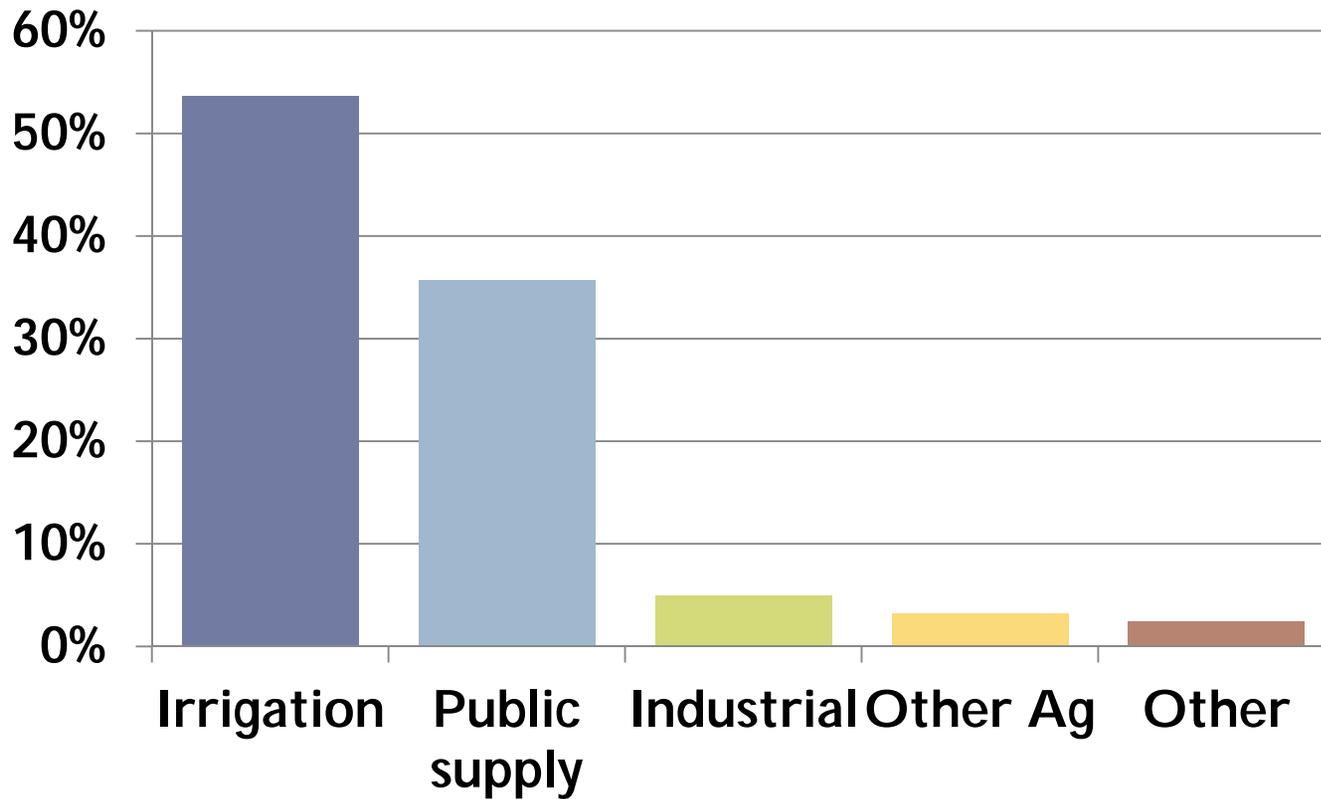
2013

7,347 High Capacity Wells

Source:
2012 Groundwater Withdrawal
Reporting
WDNR Water Use Section
June 2013

(Wells with a pump capacity of
70gpm or more)

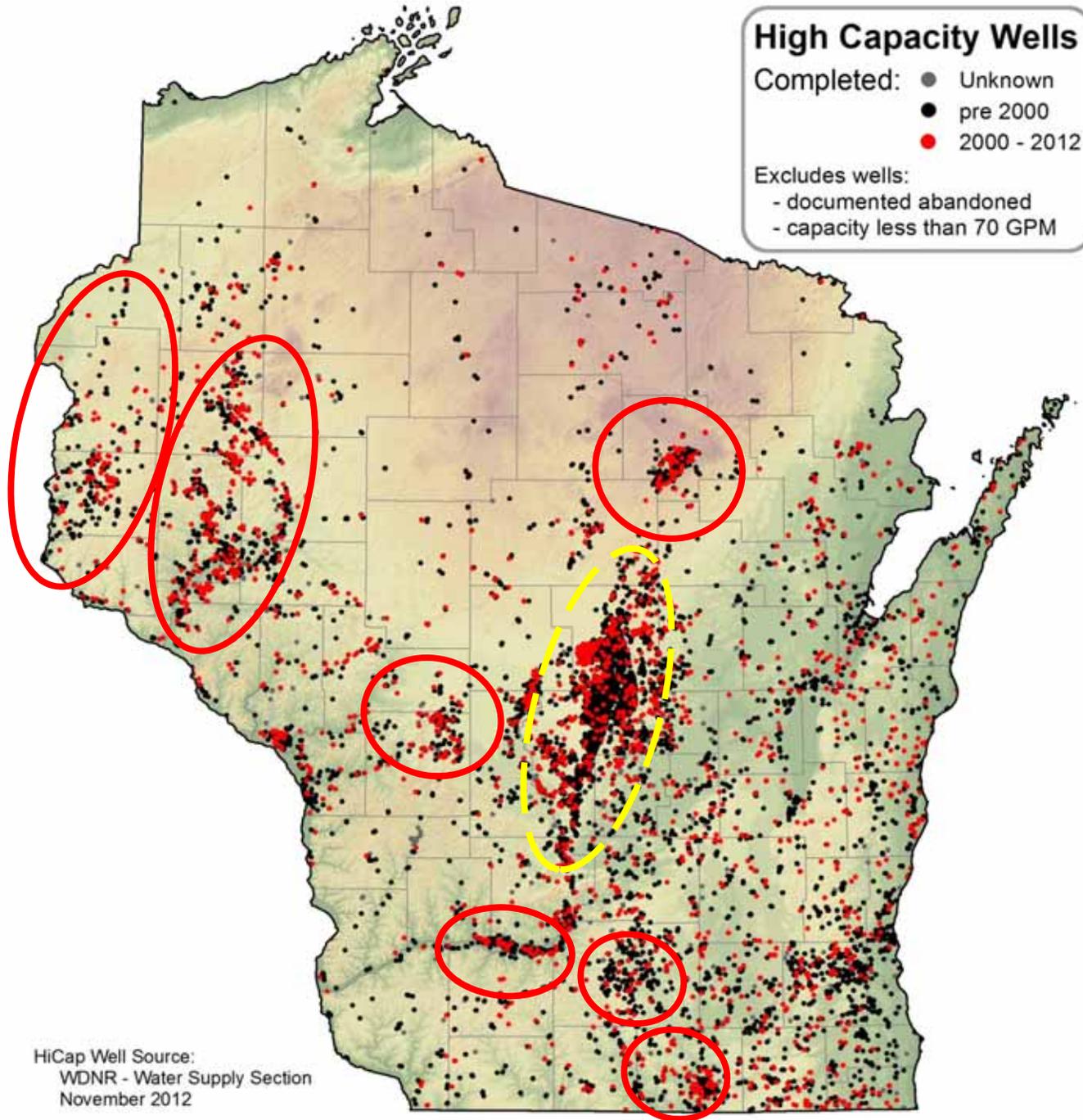
Wisconsin 2012 Groundwater Hi-Cap Well Pumping - 278 Billion Gallons



High Capacity Wells

- Completed:
- Unknown
 - pre 2000
 - 2000 - 2012

- Excludes wells:
- documented abandoned
 - capacity less than 70 GPM



HiCap Well Source:
WDNR - Water Supply Section
November 2012

Wisconsin's *de facto* Groundwater Pumping Policy?

"It's permissible for any lake, stream, or wetland to be dried by groundwater pumping, if not by a single well*, by the cumulative effects of many wells."

*Pending possible change by the legislature.

Central Sands





Almond

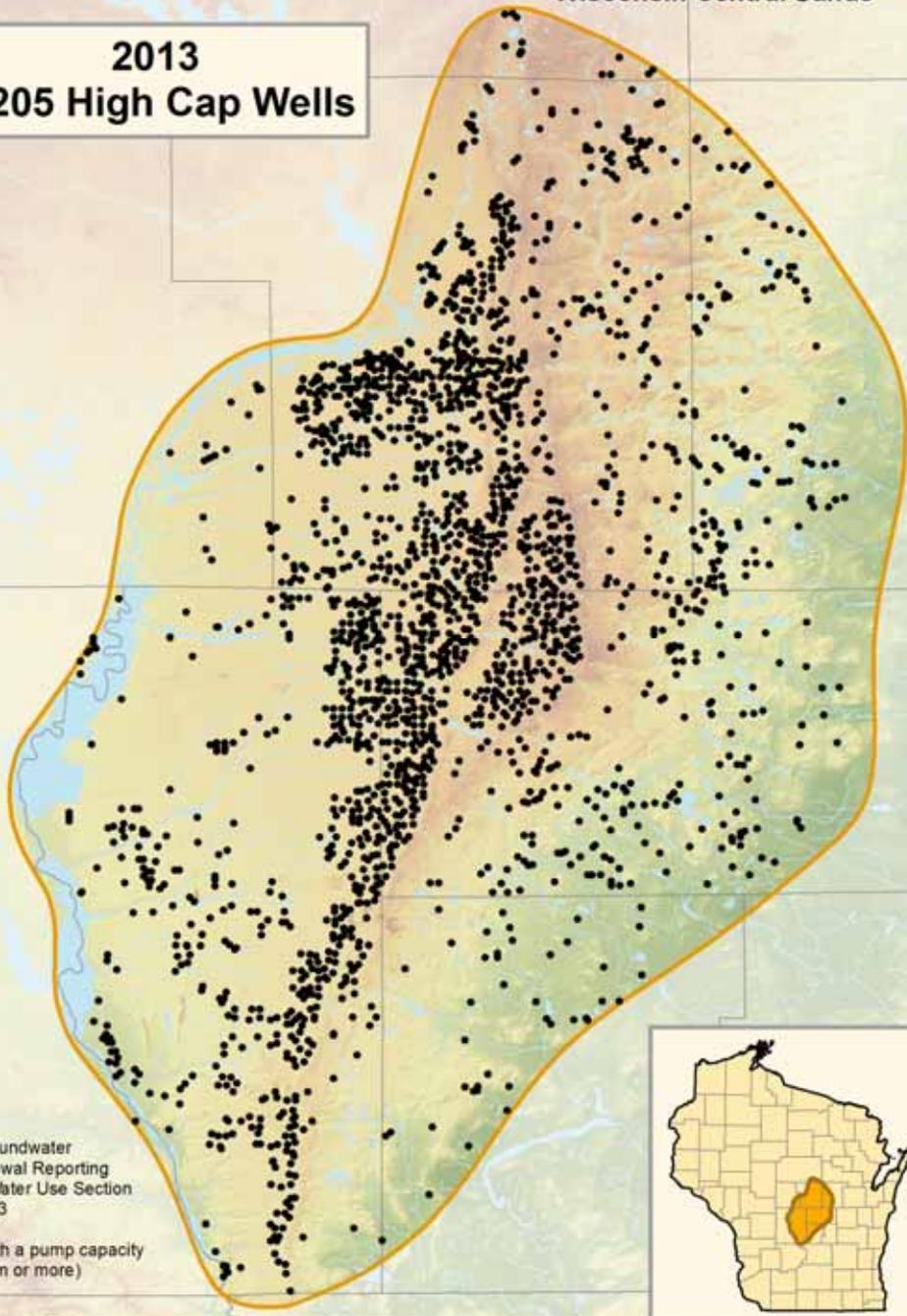
Long Lake

Image USDA Farm Service Agency
© 2012 Google
Image © 2012 DigitalGlobe

Google earth

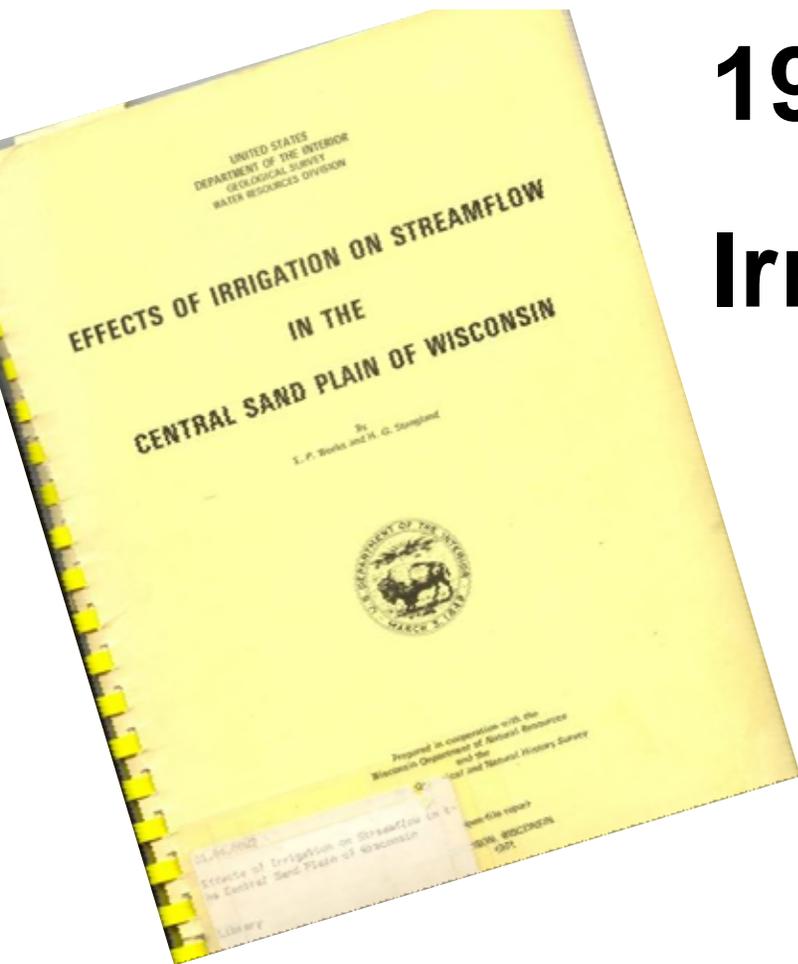
Wisconsin Central Sands

2013
2,205 High Cap Wells



Source:
2012 Groundwater
Withdrawal Reporting
WDNR Water Use Section
June 2013

(Wells with a pump capacity
of 70gpm or more)



1970 –

Irrigation Impacts Predicted

With 1/2 the land area irrigated,
during droughts:

- pumping will dry headwaters streams**
- water levels will decline an extra 4 - 5 feet on top of “natural” decline**

Low Lake Levels, Reduced Streamflows...

Little Plover

(Dried up in stretches 2005-2009; and below Public Rights Stage most of the time)





Long Lake Oasis, Waushara County



Long Lake Oasis, Waushara County



Long Lake Oasis, Waushara County



Pickerel Lake, Portage County



Wolf Lake



Stoltenberg Cr., Portage Co



Plainfield Lk, Waushara Co



**Pumpkinseed Lk,
Waushara Co**



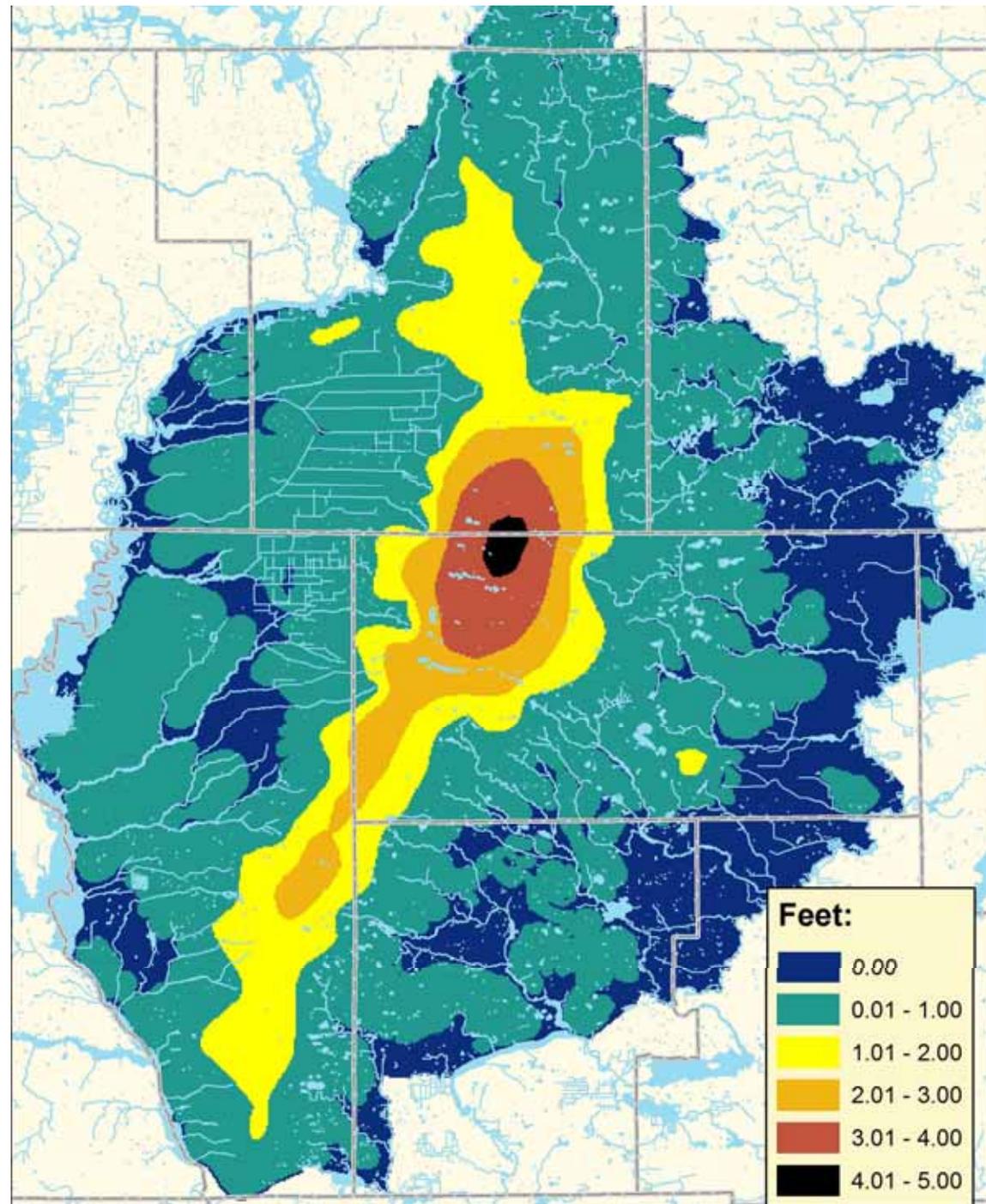
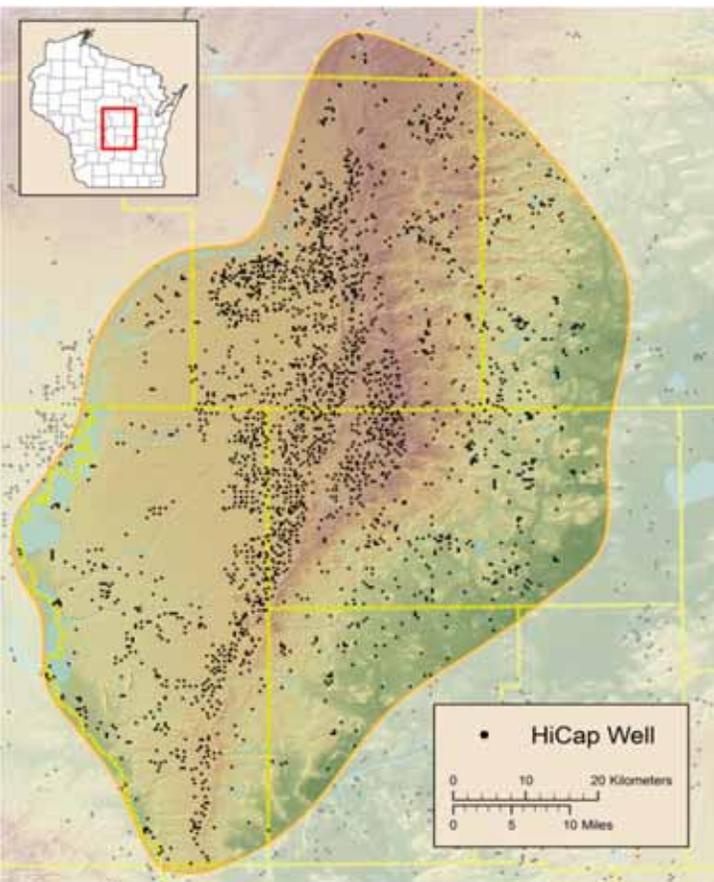
**Washburn Lake,
Waushara County**

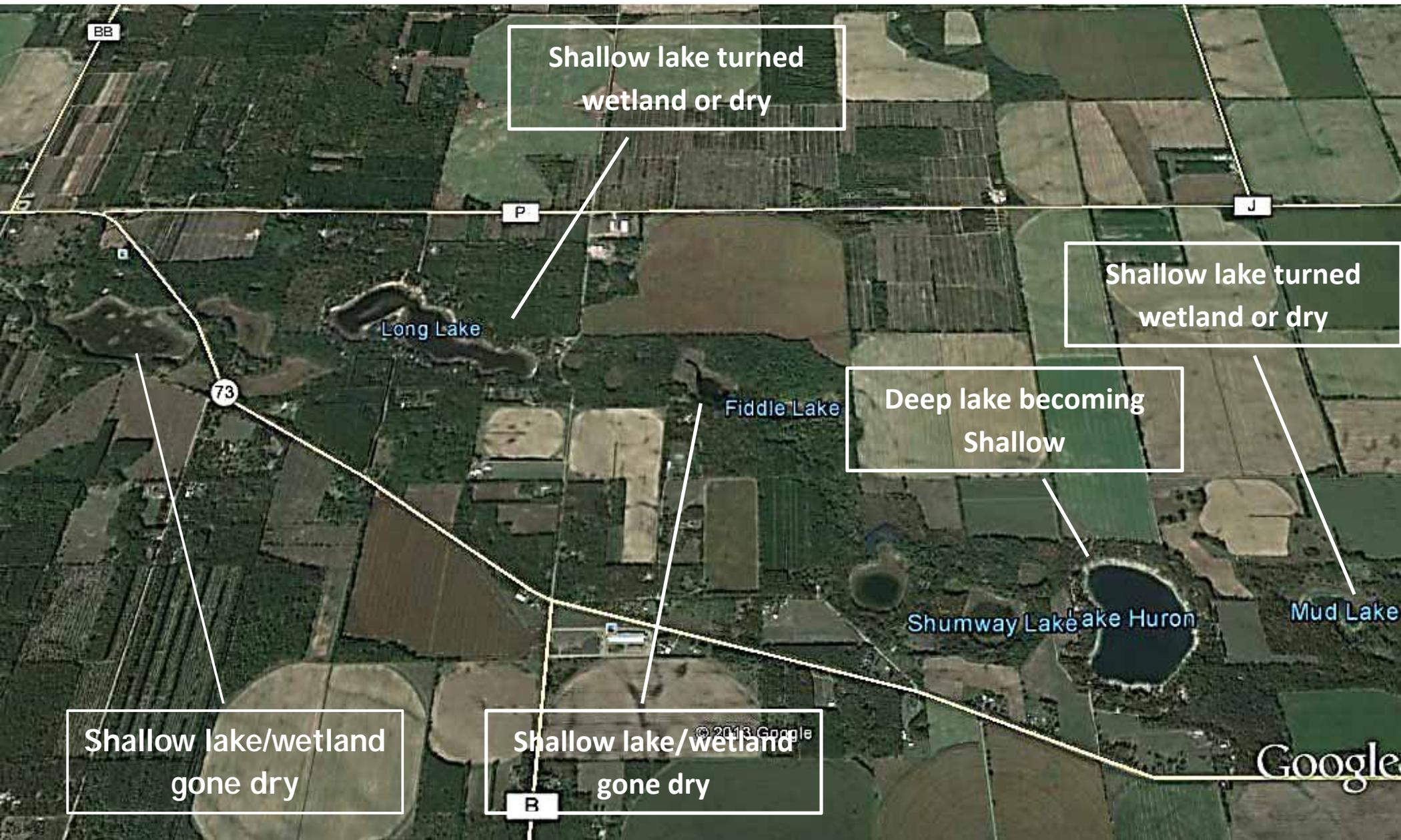
Pumping or???

Pumping or???

- ▶ Record drought!
- ▶ Trees!
- ▶ Climate change!
- ▶ Impervious surface!
- ▶ "It can't be pumping, it has to be something else"!

Average Water Level Decline from Pumping





Shallow lake turned wetland or dry

Shallow lake turned wetland or dry

Deep lake becoming Shallow

Shallow lake/wetland gone dry

Shallow lake/wetland gone dry

Long Lake

Fiddle Lake

Shumway Lake

Lake Huron

Mud Lake

BB

P

J

73

B

Google

© 2013 Google

We Fiddle While Rome Burns

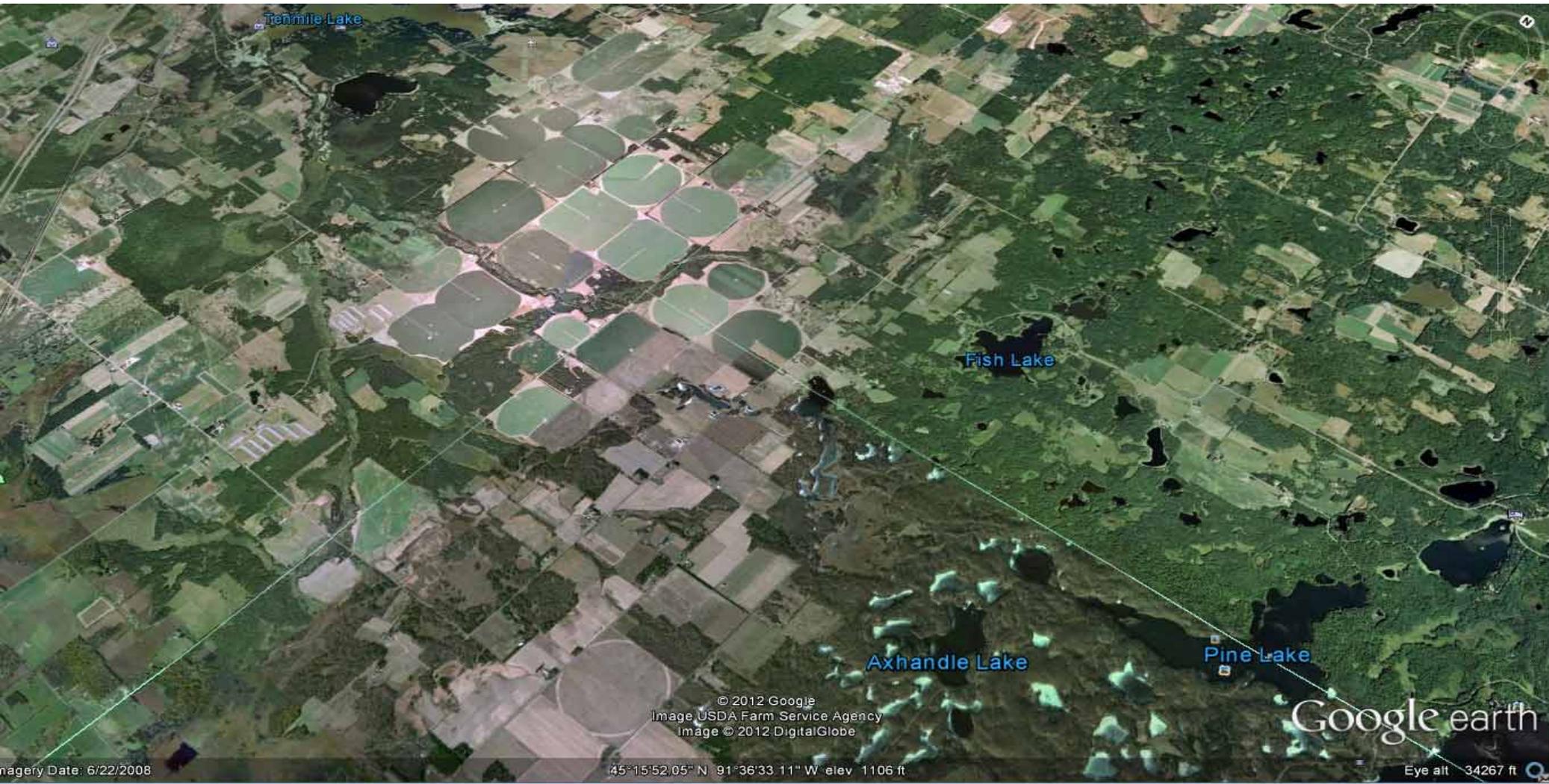
- ▶ “Killer Trees!” (and other spurious causes)
- ▶ “We just don’t know about ...”
- ▶ “More study!”
- ▶ “Solutions” that don’t solve anything.

Not Just a Central Wisconsin Issue...



Lake Beulah

Chetek Lakes Region



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Image USDA Farm Service Agency
Image © 2012 DigitalGlobe

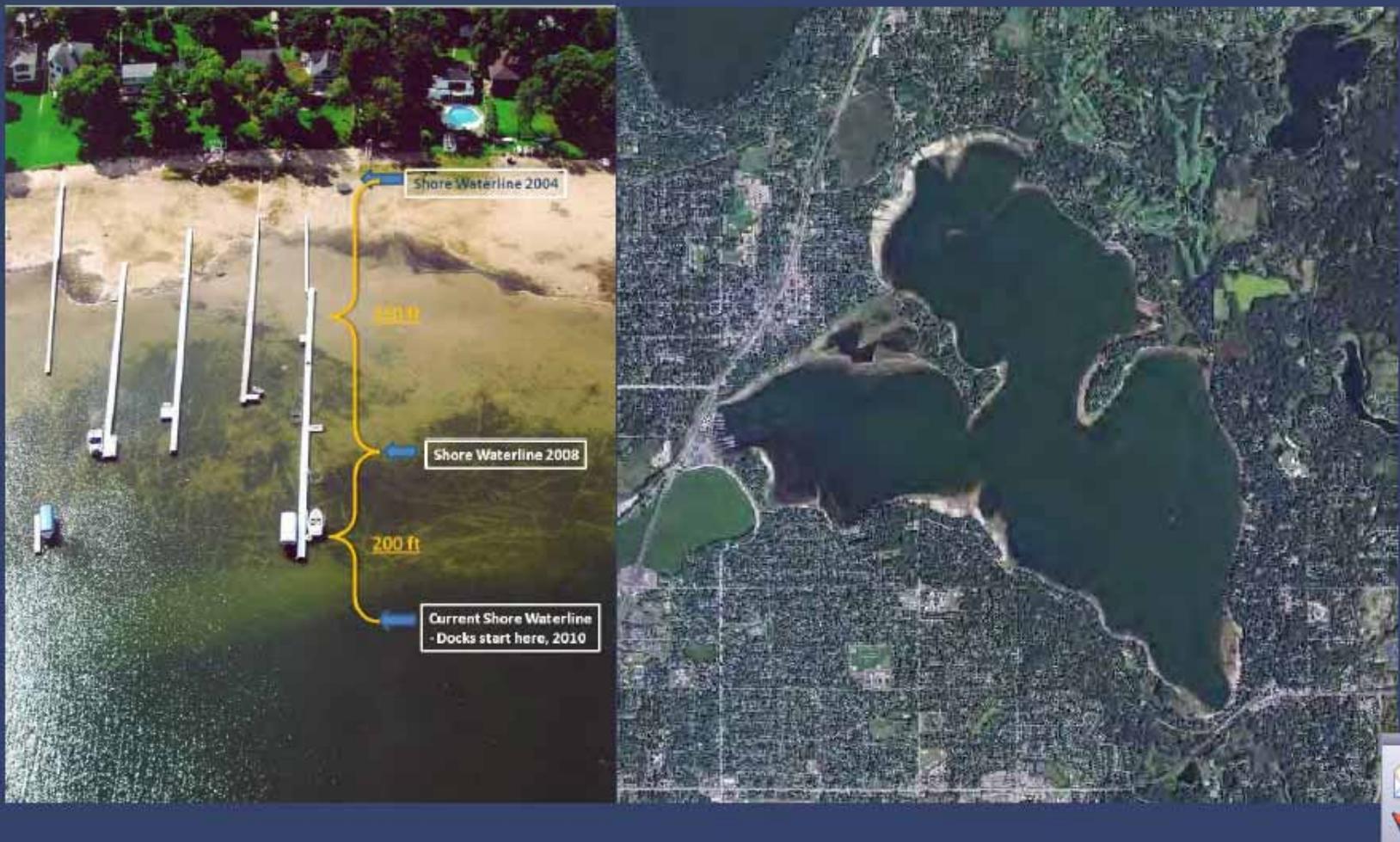
Google earth

Imagery Date: 6/22/2008

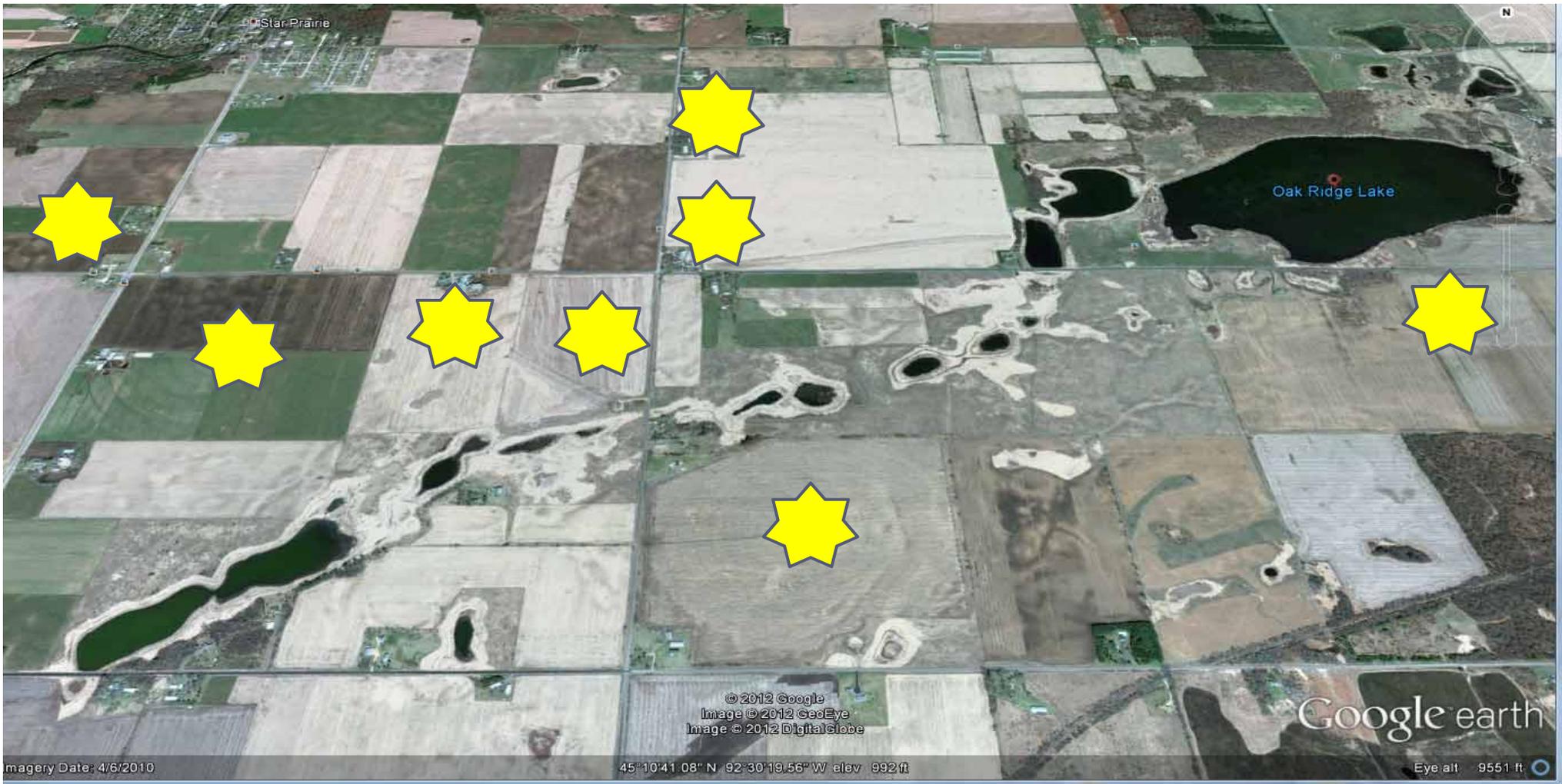
45°15'52.05" N 91°36'33.11" W elev 1106 ft

Eye alt 34267 ft

Characterizing Groundwater/Surface Water Interactions in Lakes: White Bear Lake Study:



White Bear Lake, MN (USGS study)



St. Croix Federal Wetland District



Almond

Long Lake

Image USDA Farm Service Agency
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Image © 2012 DigitalGlobe

Google earth