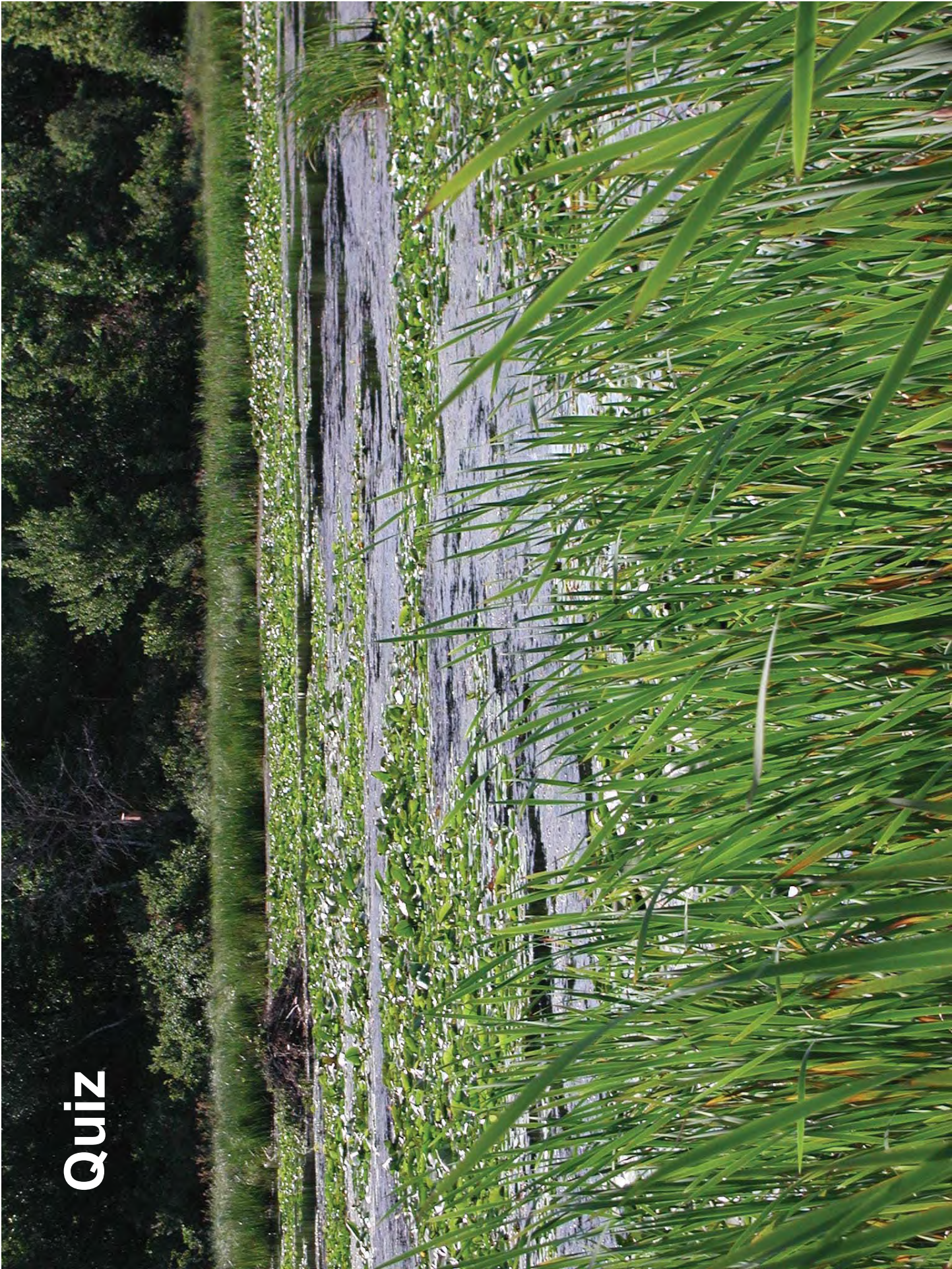


# *“Our Connected Waters”*



**Darrin Hoverson**  
**Minnesota DNR**  
**Division of Ecological and Water Resources**





# Quiz









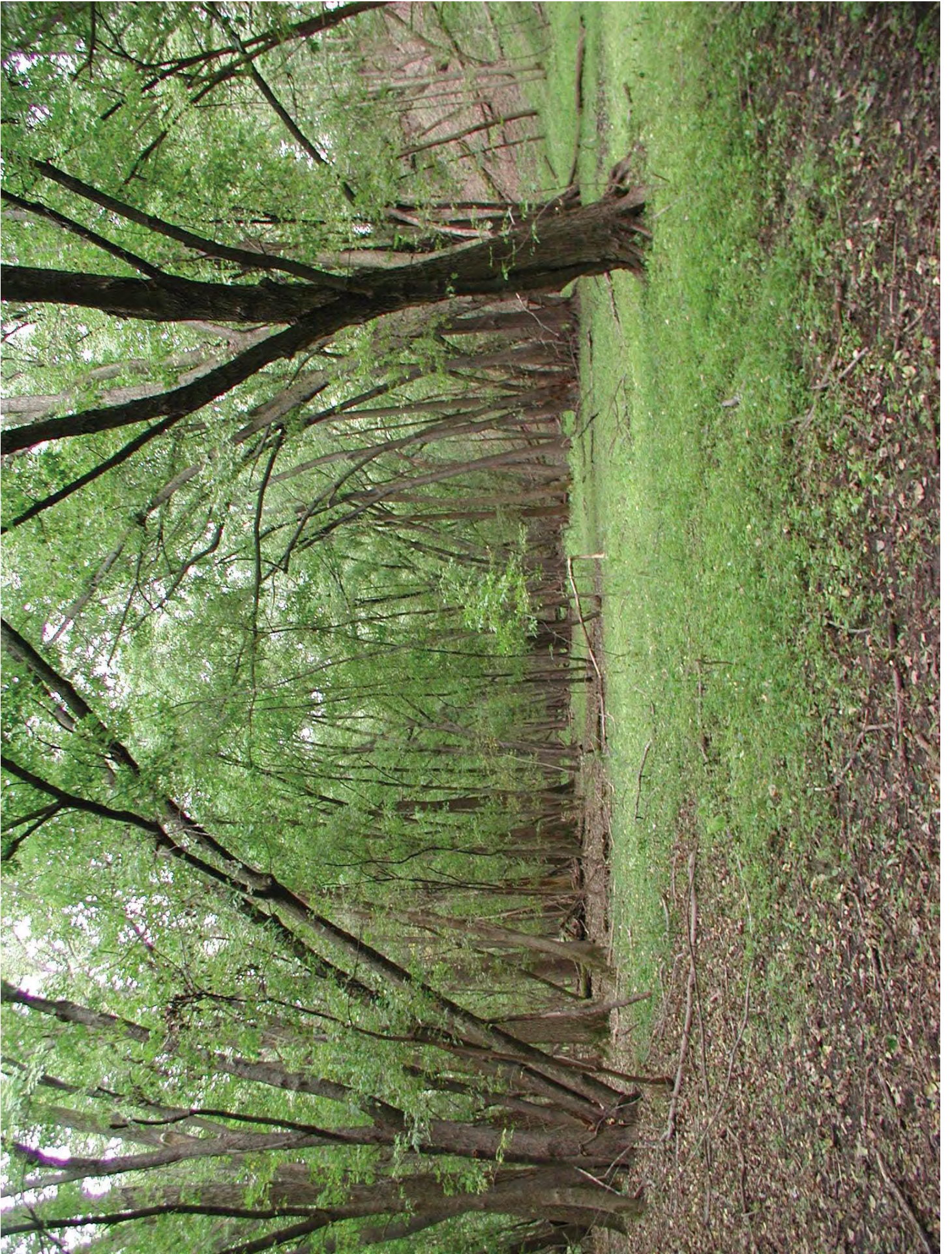






















# Many Types of Wetlands





# Many Types of Wetlands





# Many Types of Wetlands





# Many Types of Wetlands





# Many Types of Wetlands



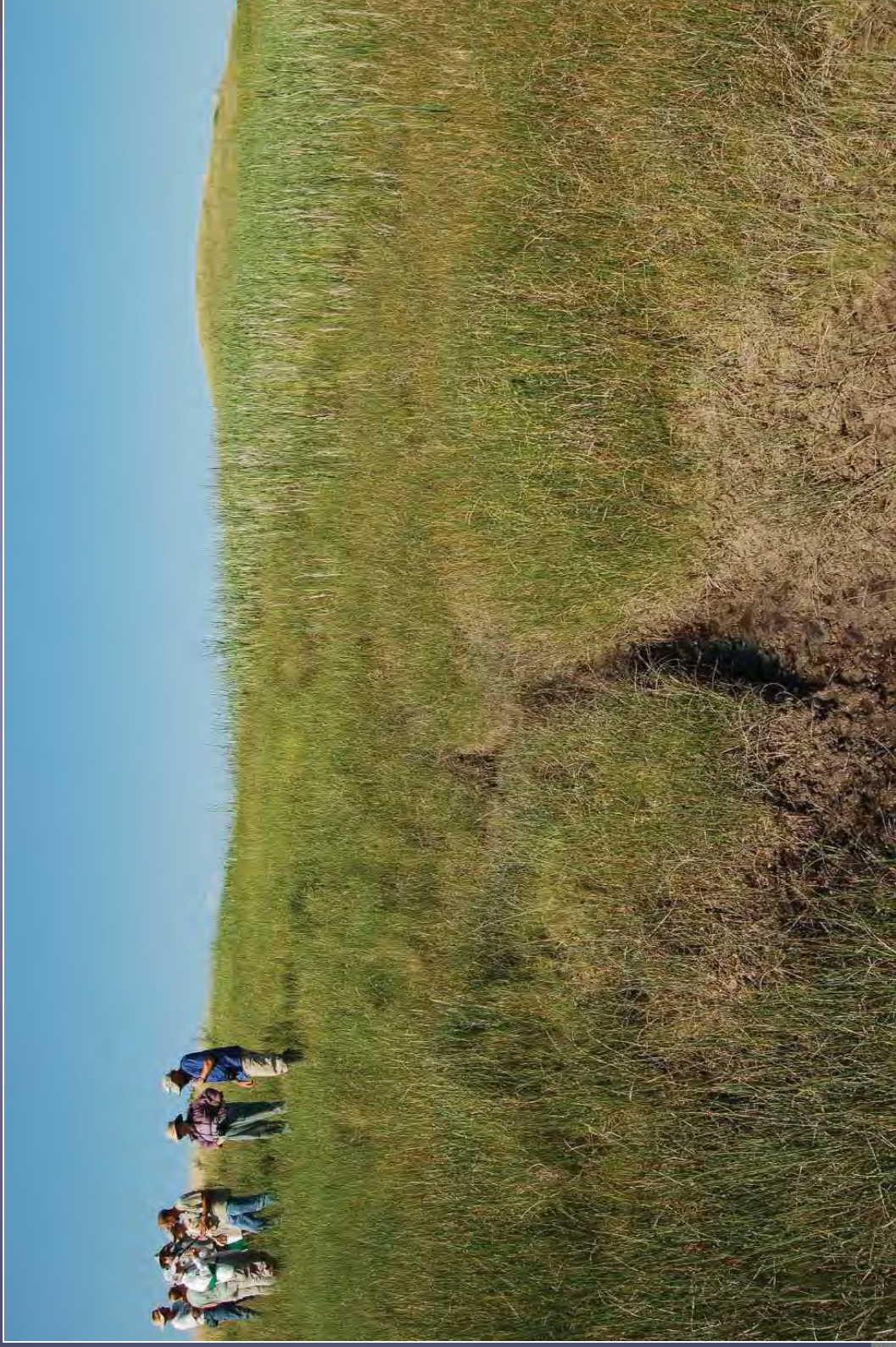


# Many Types of Wetlands





# Many Types of Wetlands



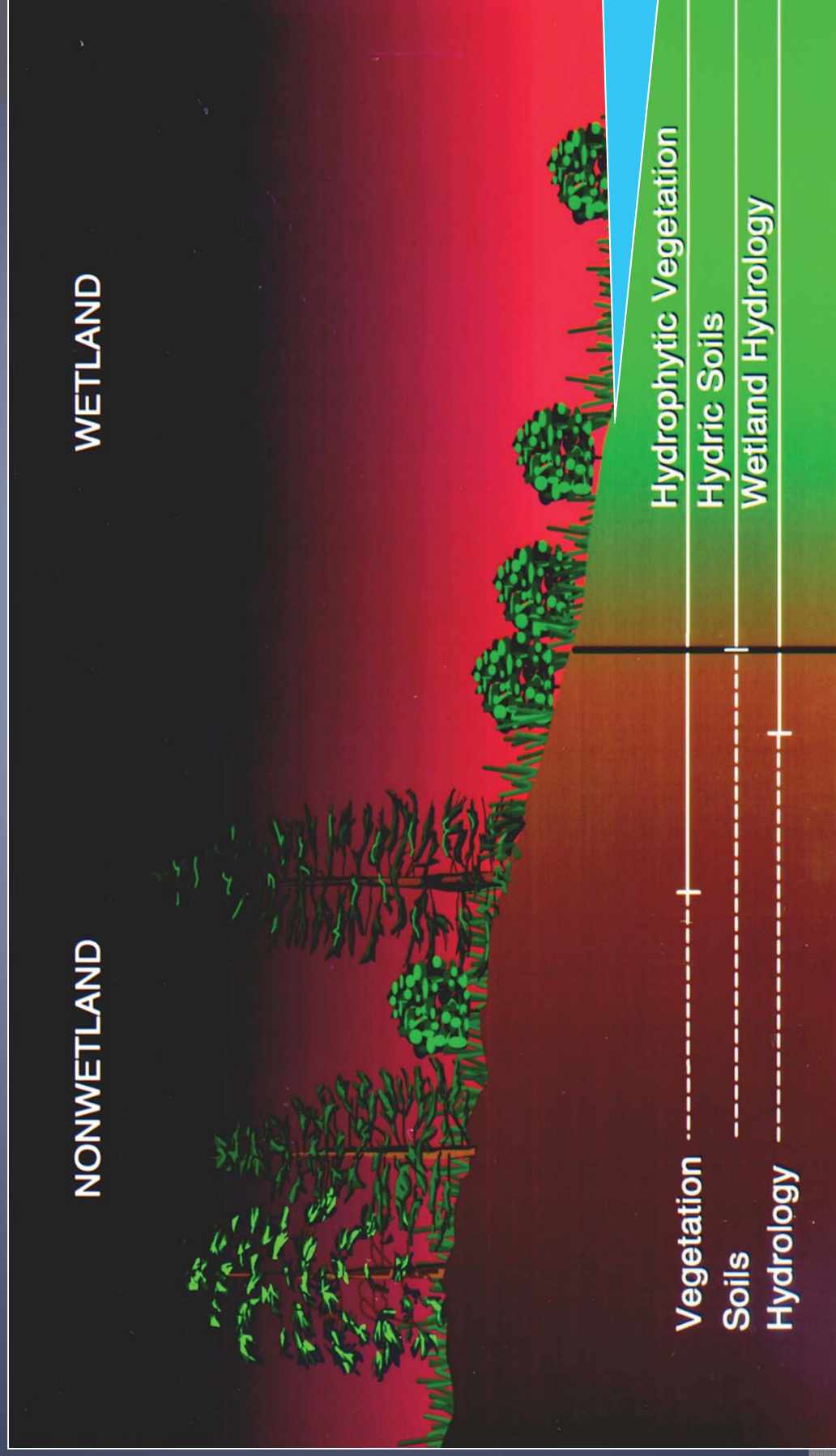


# Wetlands Have:

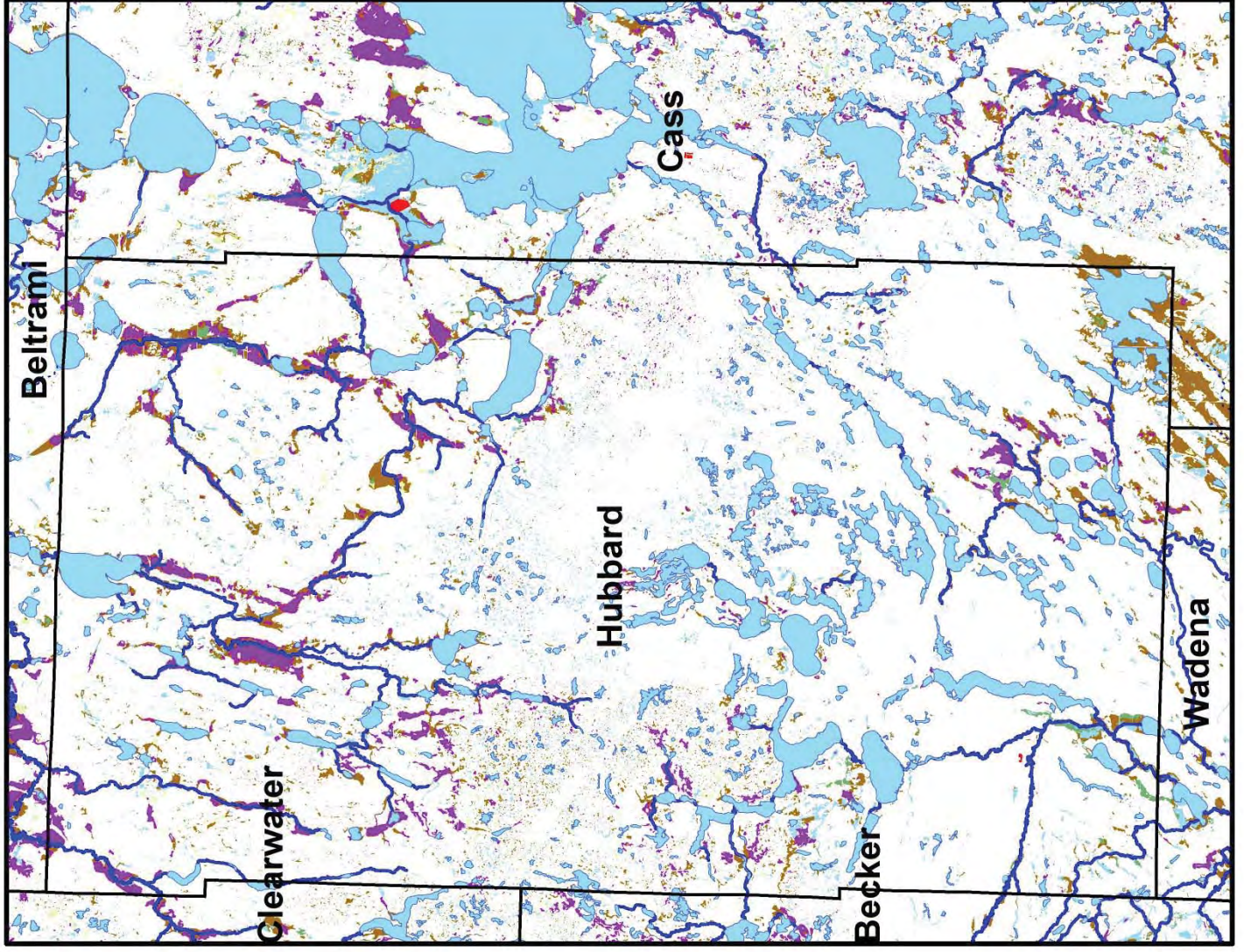
- ◉ **Water (Hydrology)** – Inundation or saturation to the soil surface for at least part of the growing season
- ◉ **Hydric Soils** – soils developed under anaerobic conditions
- ◉ **Hydrophytic Plants** – plants adapted to growing in wet conditions



# The 3-Parameter Approach









# Benefits of Wetlands

An illustration of a wetland landscape. In the foreground, there are green reeds and lily pads with pink flowers. A large fish is swimming in the water. In the middle ground, there are two ducks and a swan. In the background, there are more reeds and a small boat. The sky is blue with some birds flying.

Wetlands act as sponges, temporarily storing flood waters and releasing them slowly, thus reducing flood damage.

Wetlands create tremendous recreational, research, and tourism opportunities.

Wetlands are considered "nature's nurseries" by providing critical habitat for fish, wildlife, and waterfowl.

Wetlands act as "nature's kidneys" by removing pollutants, such as nutrients and sediments, from water flowing through them.

Wetlands provide protection from storms and ice by absorbing wave energy and buffering shorelines against erosion.

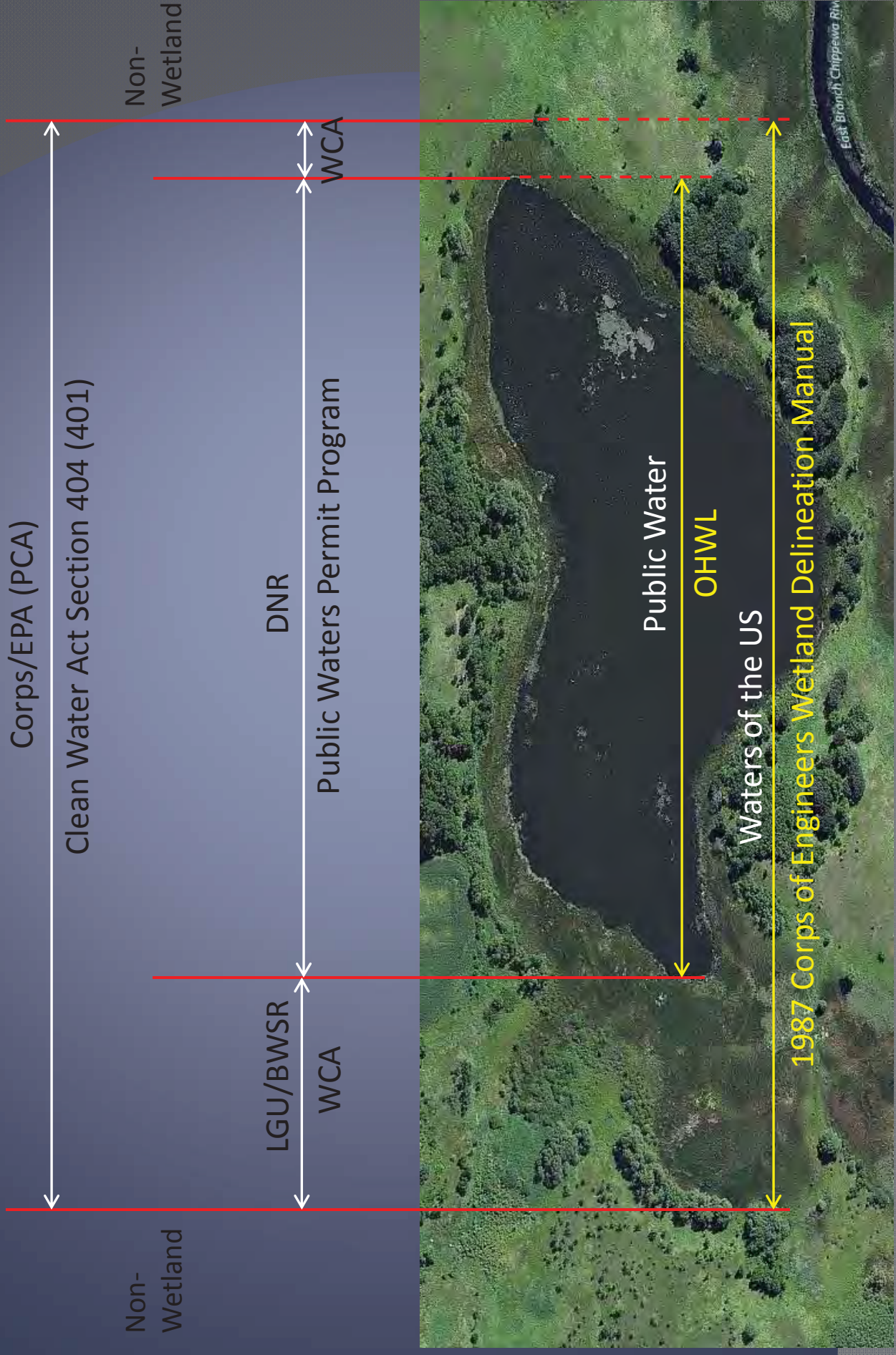


# Four Main Regulations

- Public Waters Permit Program
  - DNR
- Wetland Conservation Act (WCA)
  - Local Governments/BWSR
- Clean Water Act Section 404
  - Corps of Engineers
- National Pollutant Discharge Elimination System (NPDES – Stormwater)



# Jurisdiction:





# What's up with loss?

## MINNPOST

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The Glean

## Minnesota wetland losses five times the size of Minneapolis

By Brian Lambert | 07/31/13



6



Tweet

12



Minnesota has lost wetlands equivalent to five times the size of Minneapolis.

Josephine Marcotty of the Strib writes: "In just five years, Minnesota has lost 312 square miles of valuable wetlands and the natural vegetation that surrounds them — an area about 5.7 times the size of Minneapolis — reducing a resource that provides vital habitat for waterfowl, minimizes floods and keeps agricultural chemicals out of rivers and streams. **Between 2008 and 2012, rural landowners nationwide plowed up**

**11,300 square miles of wetlands** and highly erodible land, most likely because of the high payouts that come with federally subsidized crop insurance, according to an analysis of land use trends released Tuesday. The loss of wetlands was by far the greatest in the Dakotas and Minnesota — a total of 1,142 square miles — according to the Environmental Working Group (EWG), a national watchdog group that uses data to sway federal policy."



### MORE LIKE THIS

Best Buy nabs Napster; also: Target sends more hurricane relief, and tech firms may feel Wall Street meltdown

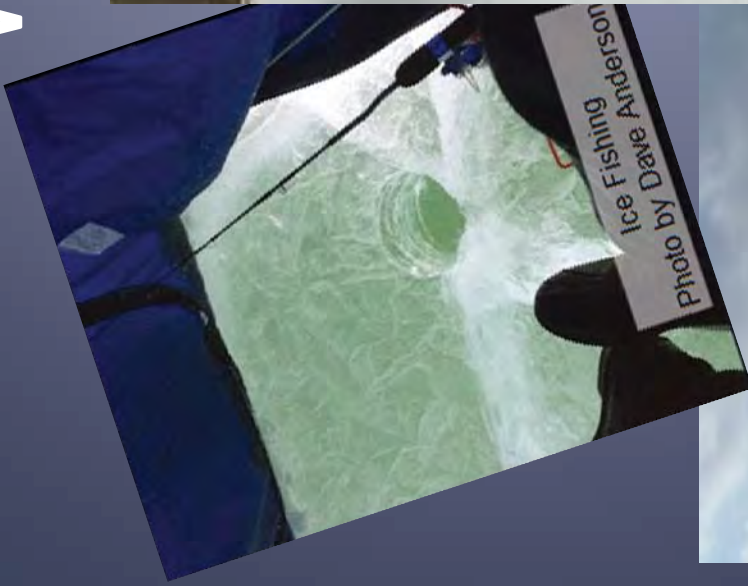


# WHY CARE ABOUT OUR WATER!!





# WHY CARE!!



# -30 Below - COLD!!!



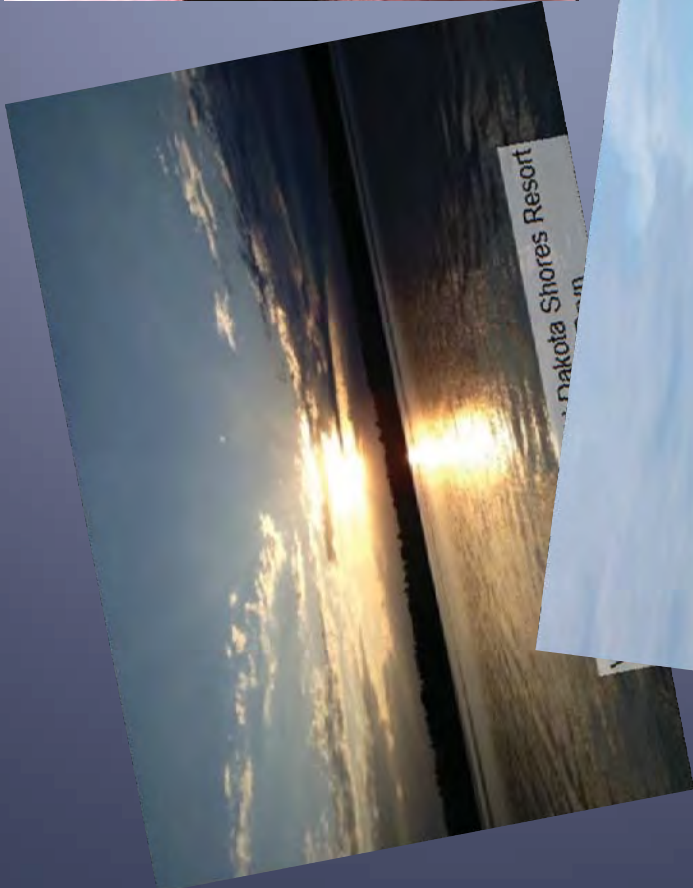
# WHY CARE!!



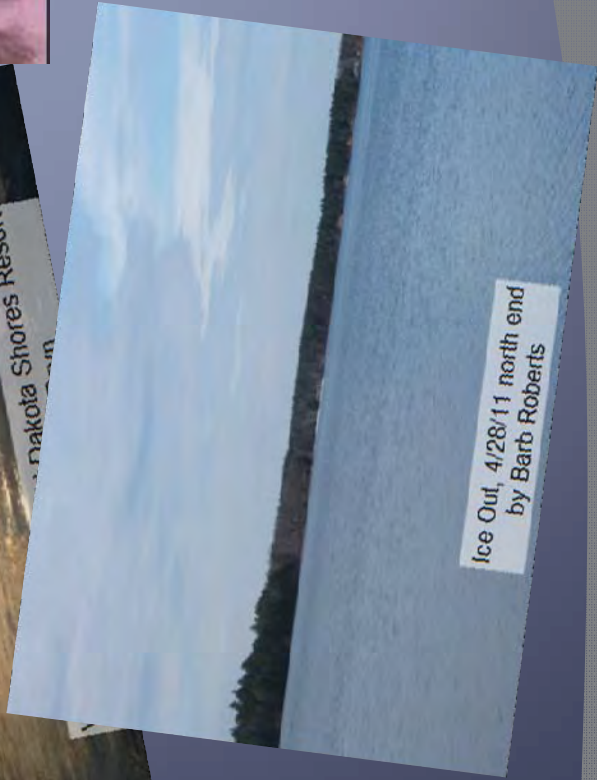
Photo by John Bajandas, July 2011



photo by Barb Roberts



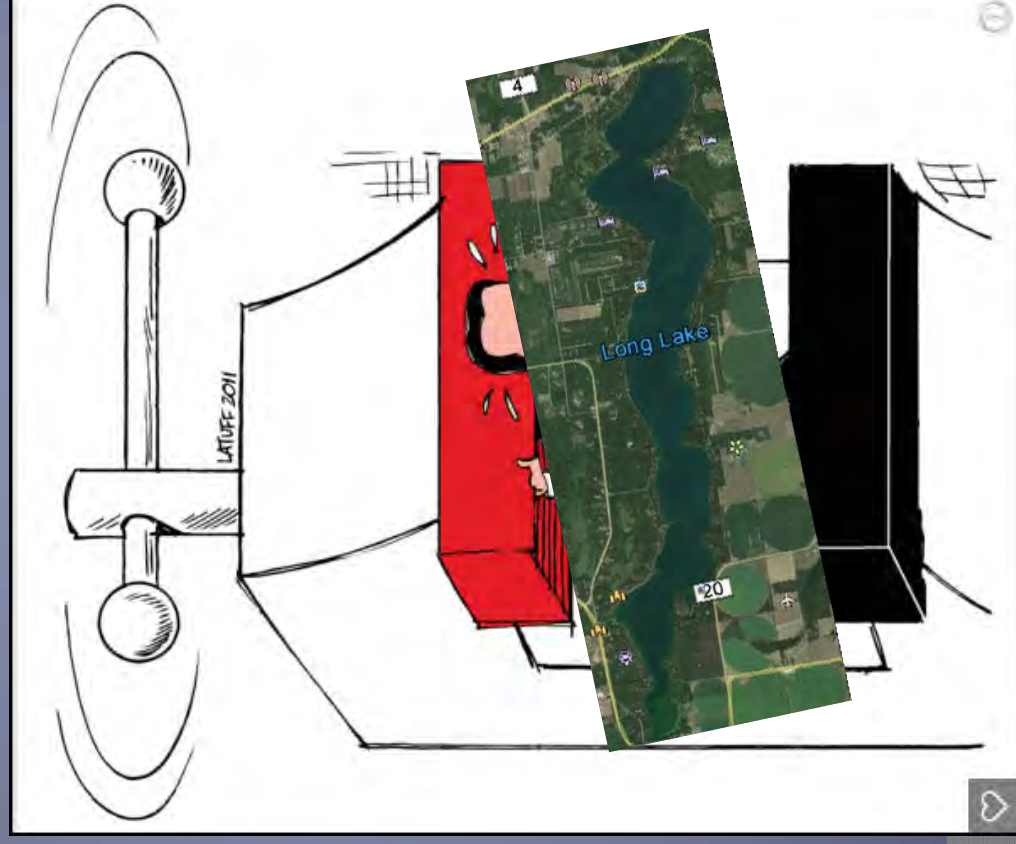
...akota Shores Resort



Ice Out, 4/28/11 north end  
by Barb Roberts



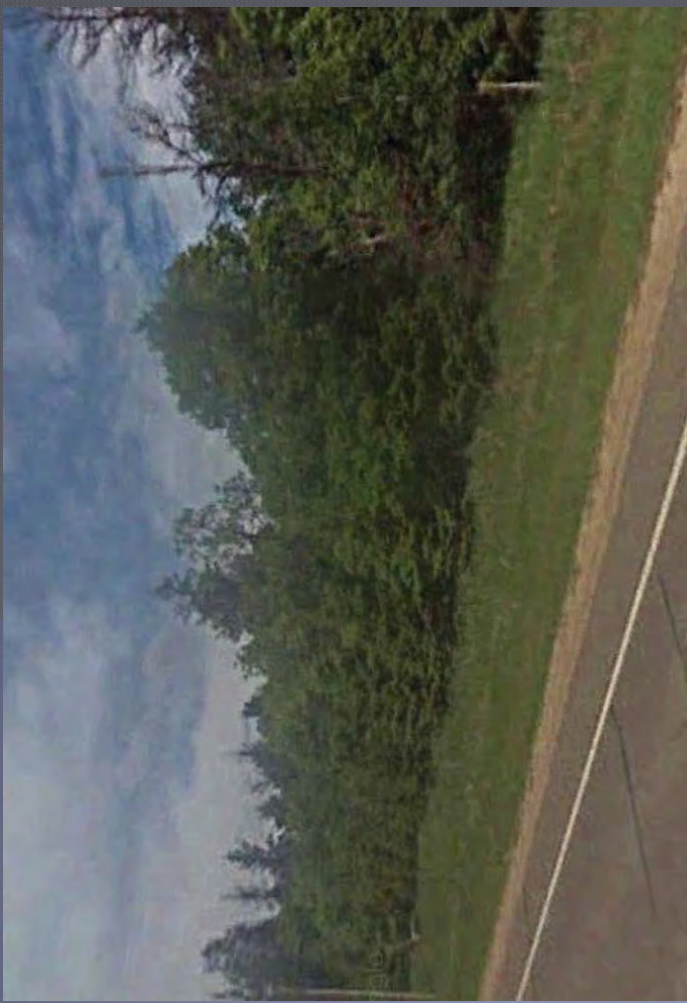
# What are the Pressures on the Area Lakes, Wetlands & Watershed??







# Forests







**Badoura Area (2003-2004 FSA)**

Kettle





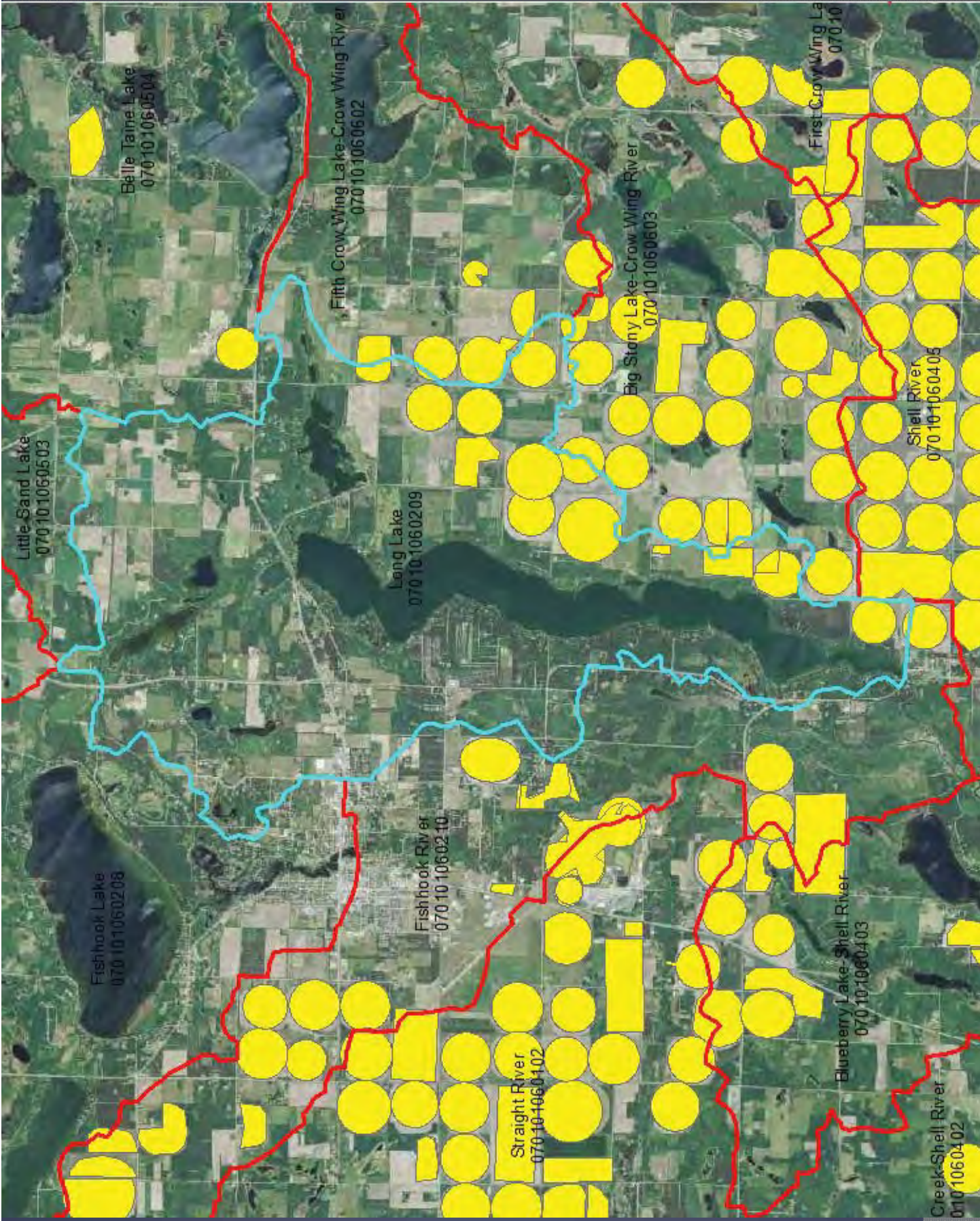
New and Proposed Pivots (2012 fall color)

Kettle







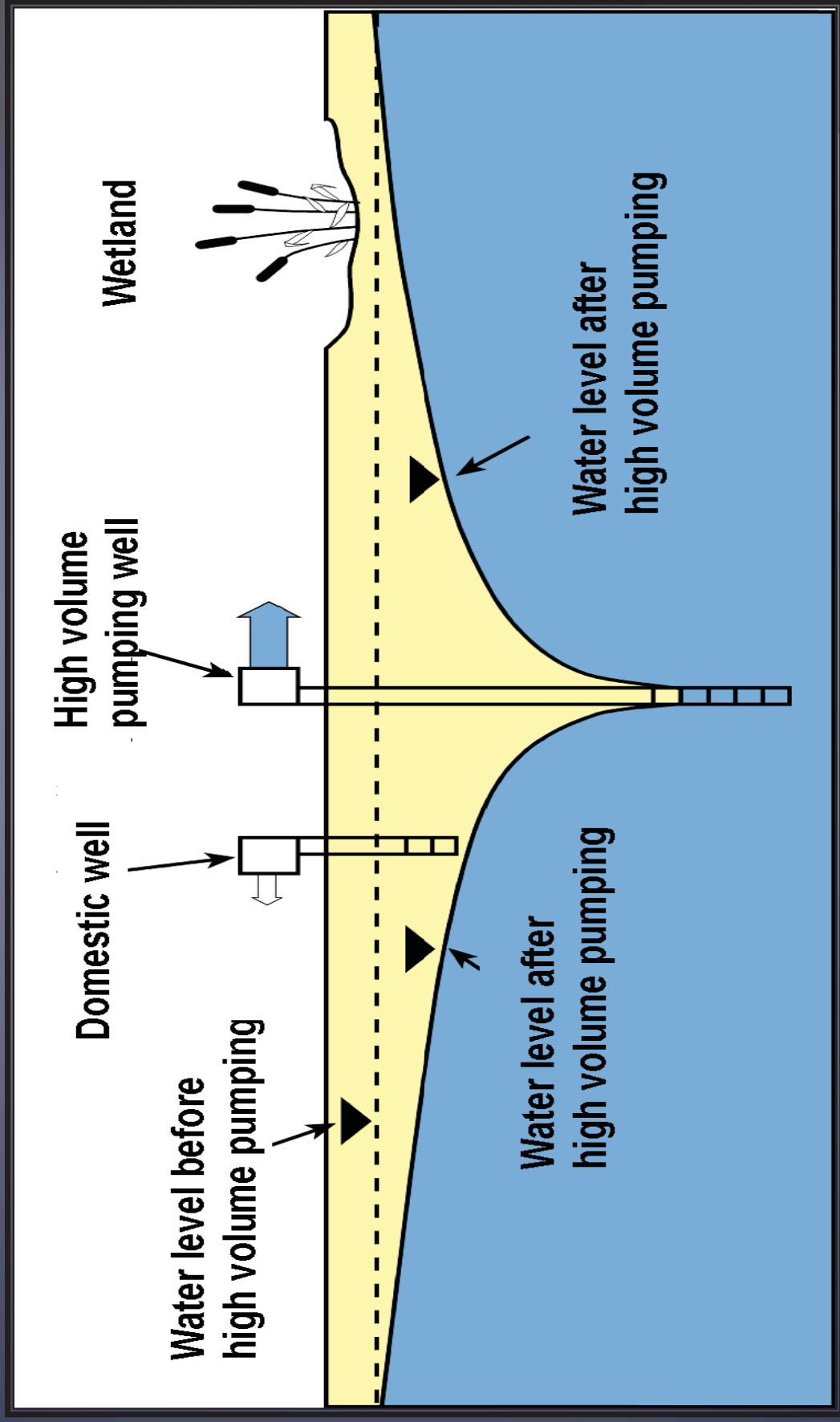








# Ground water withdrawal affects surface water and ground water users

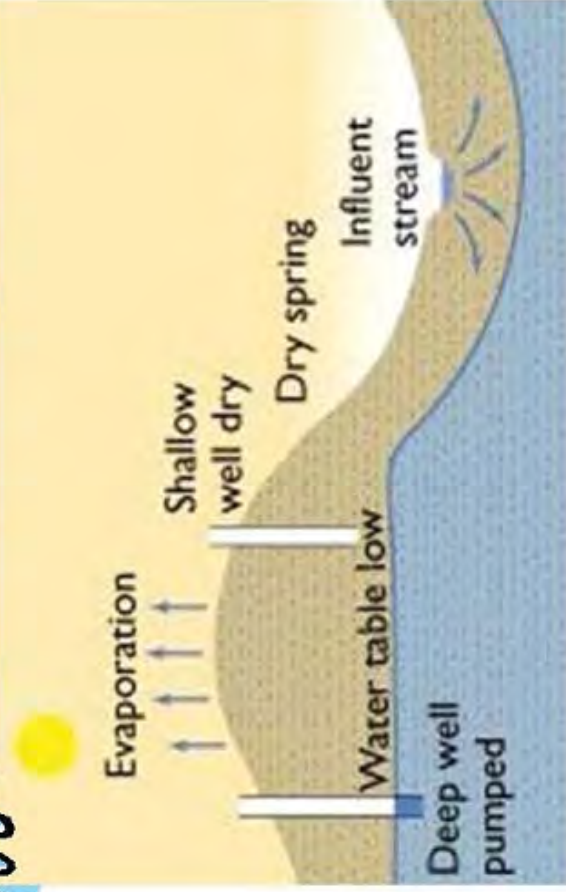


water supply interference

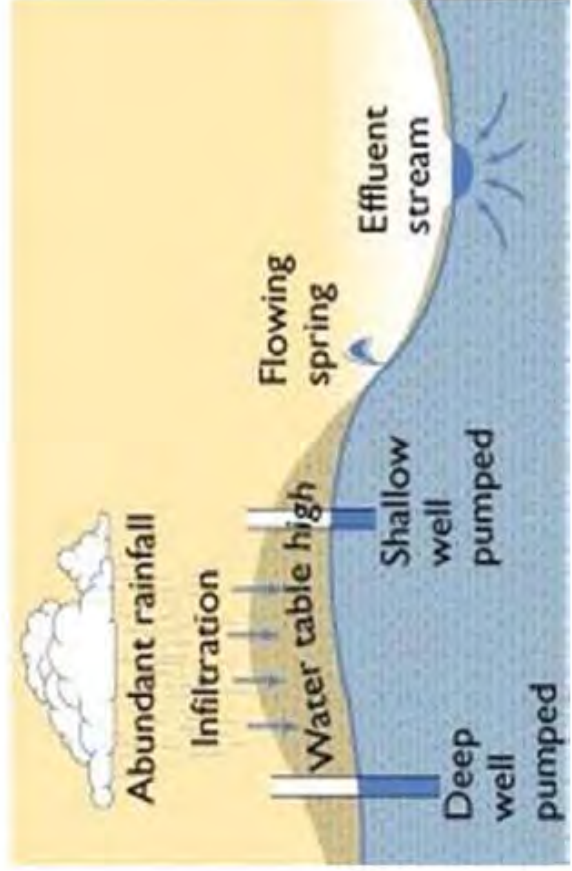




# Dry Period



# Wet Period



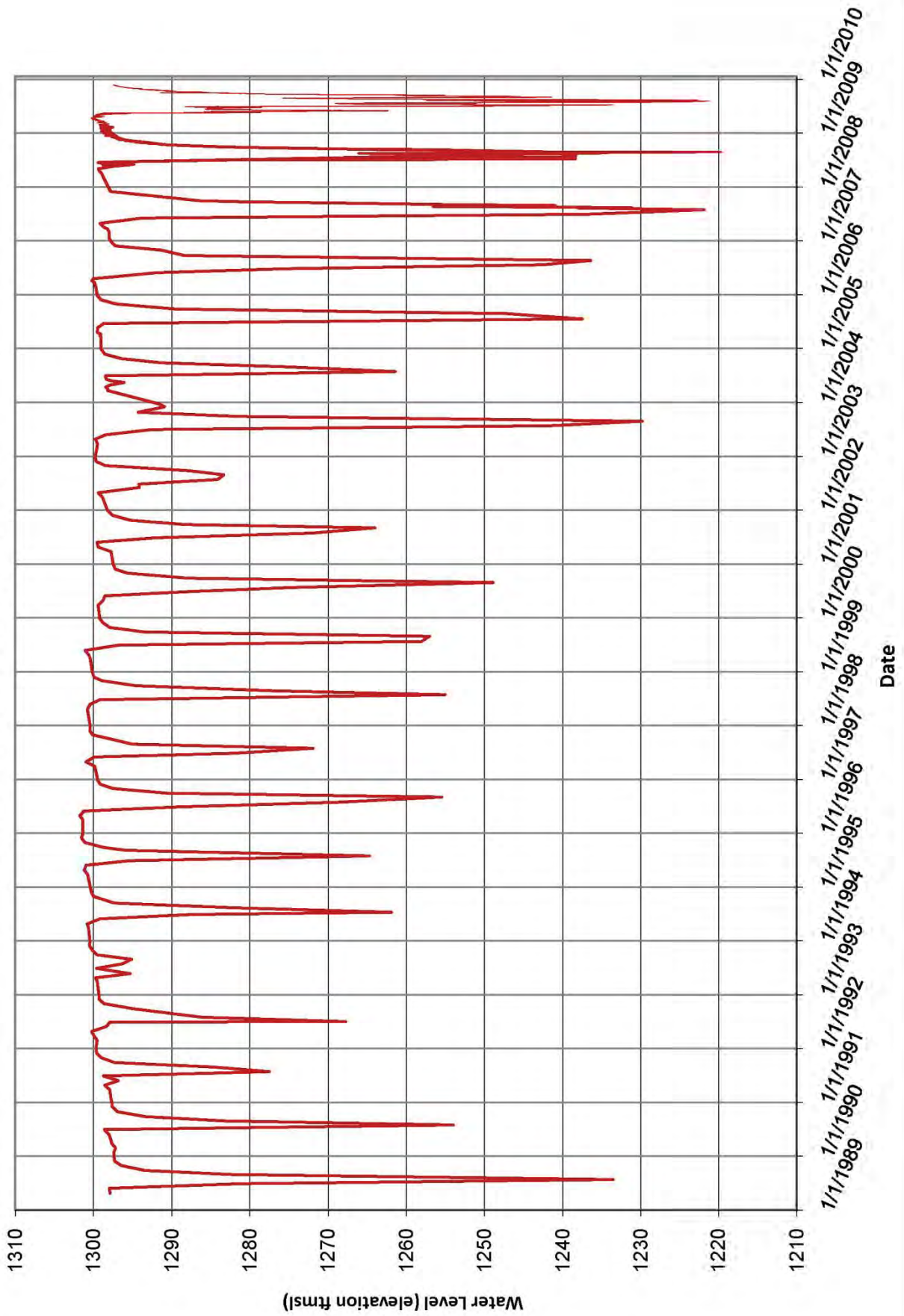


# GW Dependent Features

- Trout Streams
- Wetlands
- Lakes
- Ecosystems (wet forest)
- Trout, invertebrates, certain fishes

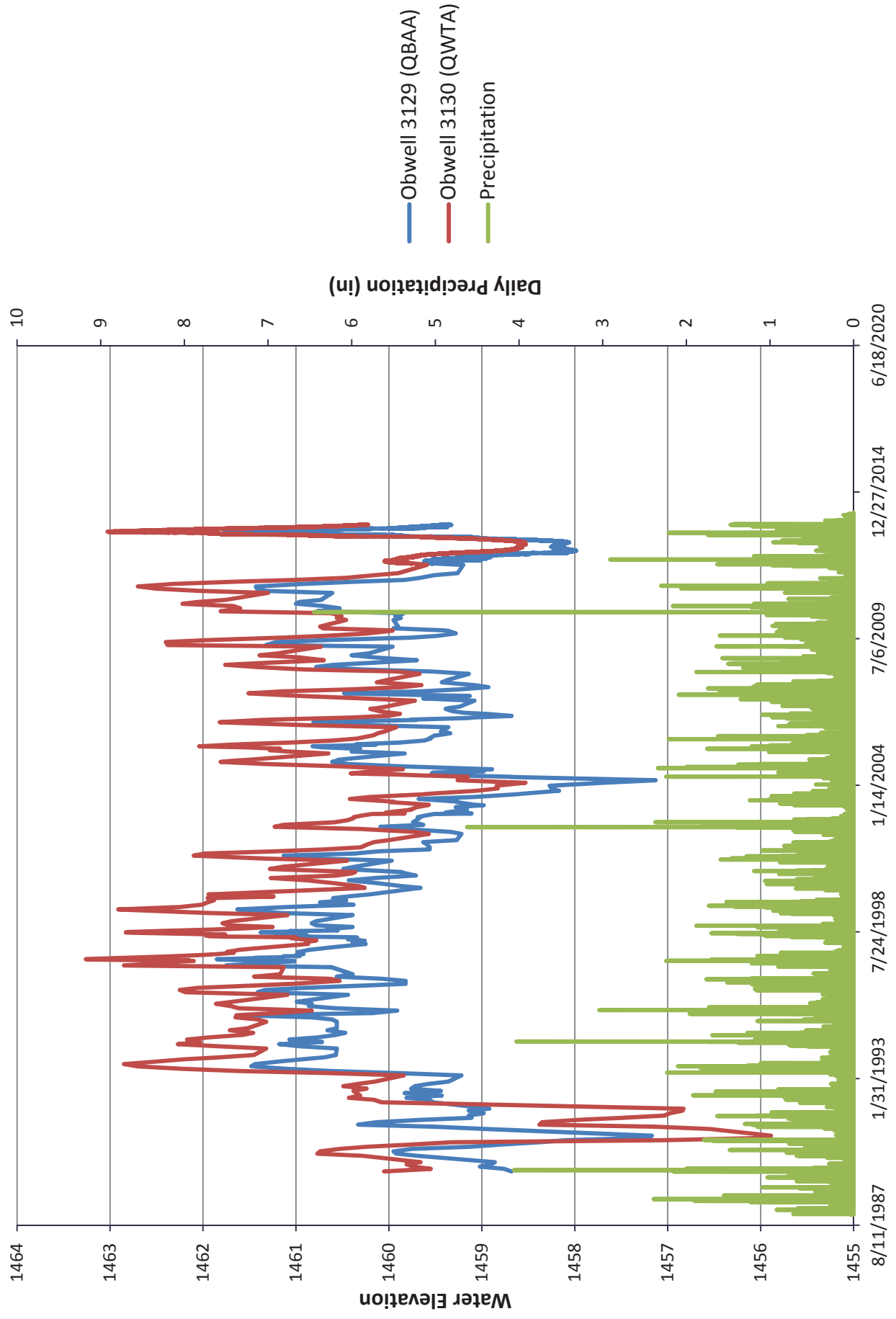


# DNR Obwell 61037 (QBAA) (21 years of record)

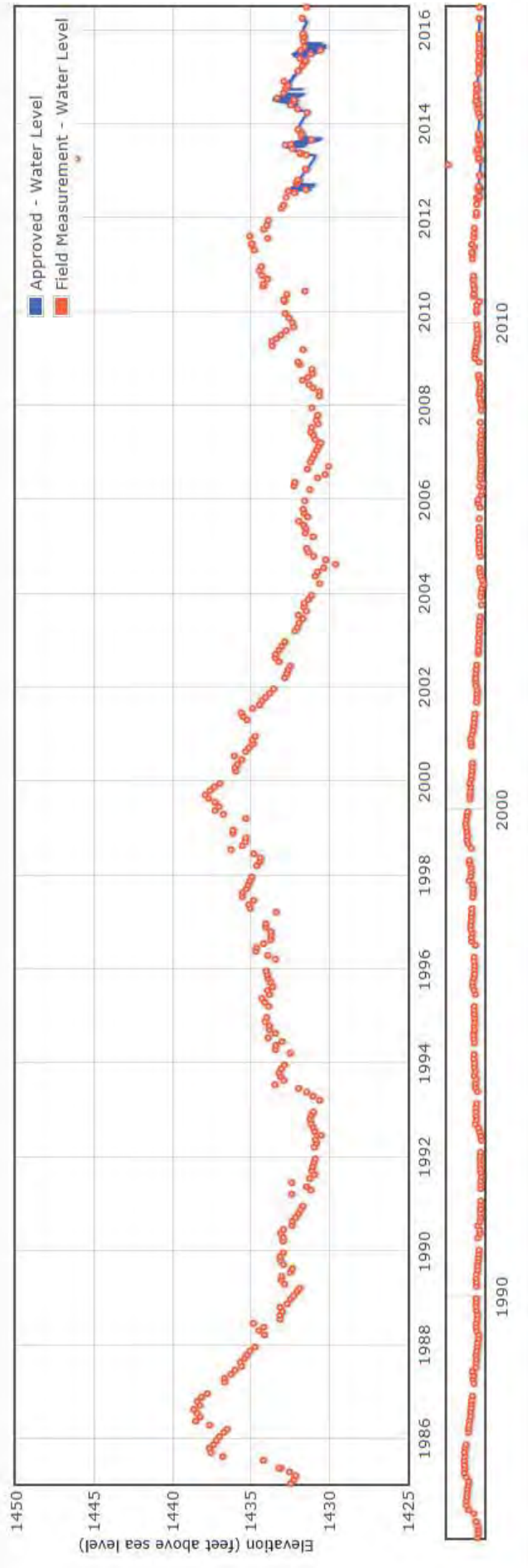
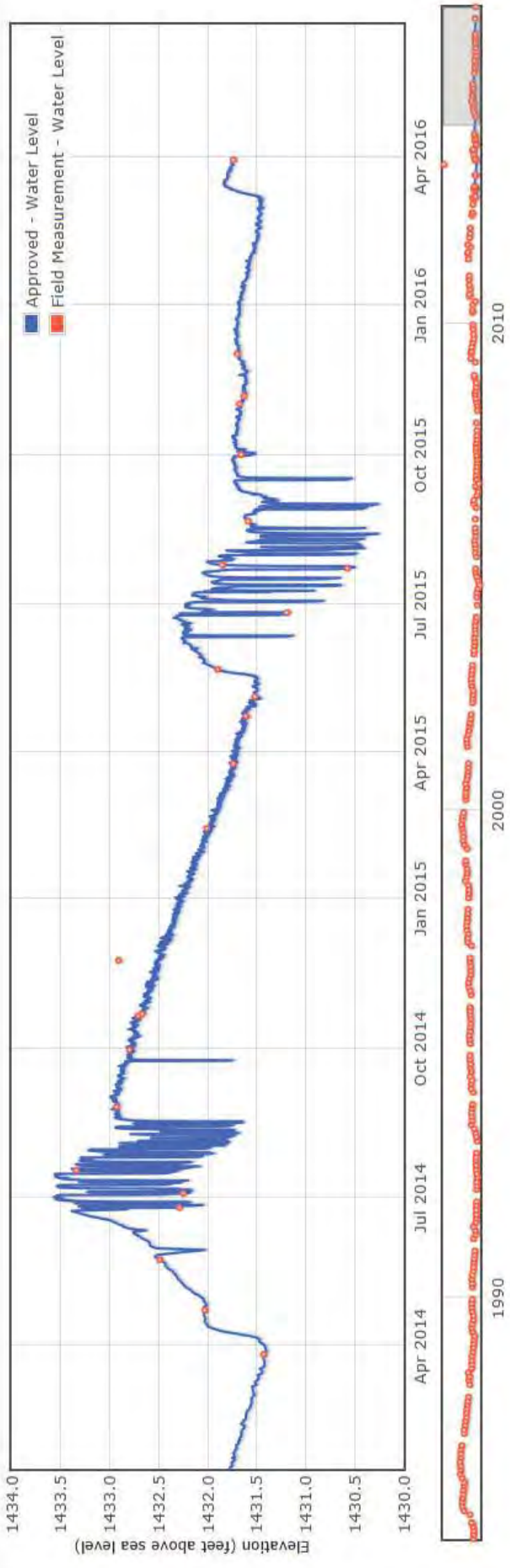




# Obwell Nest 3129 3130

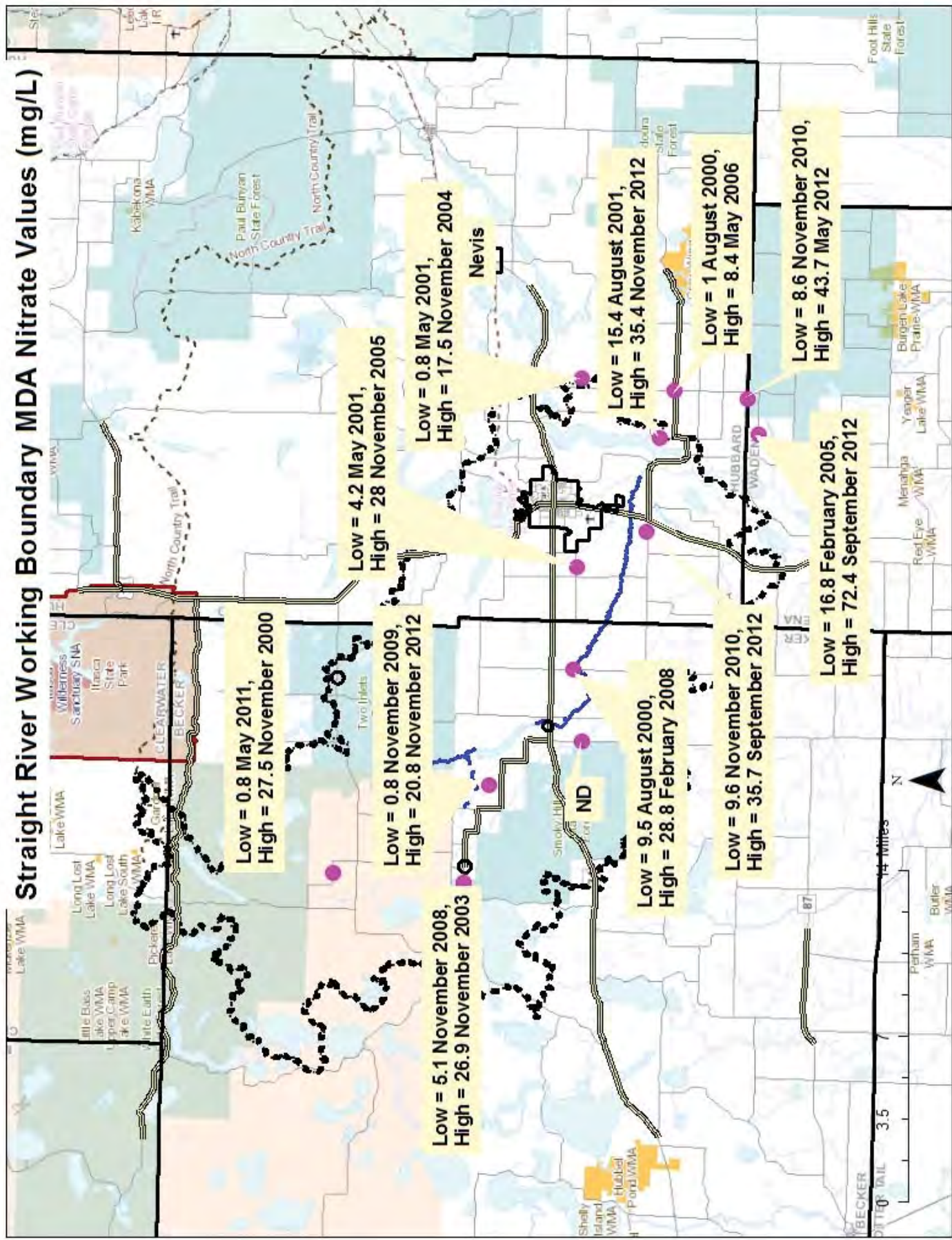








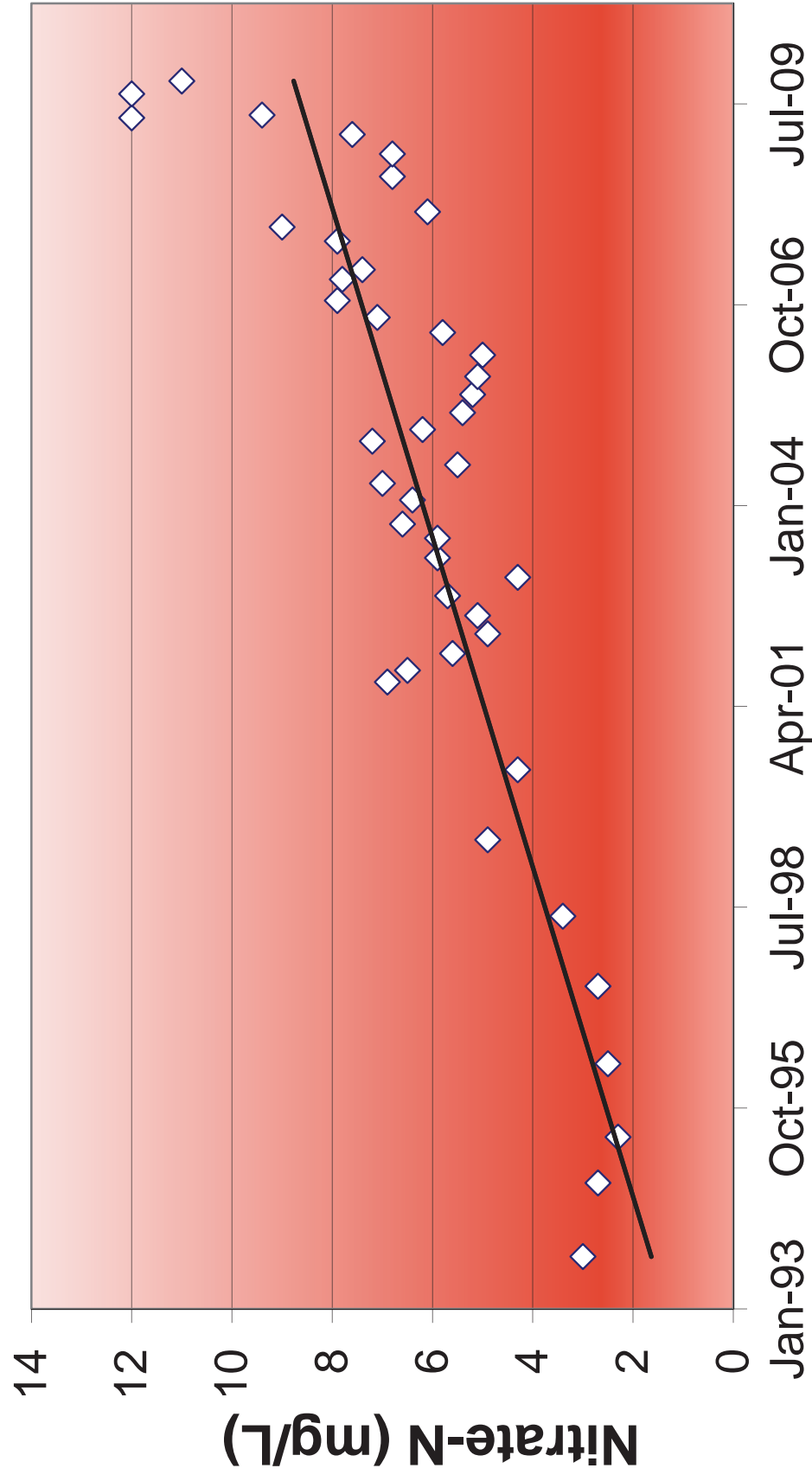
# Straight River Working Boundary MDA Nitrate Values (mg/L)





# Nitrate Loading to Groundwater Can Be Significant In Sensitive Geologic Areas

## PARK RAPIDS WELL 4









# Burning and blowing cause concerns about cleared land

BY SARAH SMITH  
 ssmith@parkrapidsenterprise.com

As more land is cleared for crops, Thursday's gusty winds brought several concerned callers to the Enterprise phone lines.

"We can't keep letting this all blow," said one woman who declined to identify herself. "Every which way you look there's dirt in the sky."

Around noon a caller to the Hubbard County dispatch line reported wild fires near the southwest corner of Long Lake.

It turned out that the dark matter in the clouds was dust.

"You're going to have dust blowing when there's no ground cover," said DNR Forestry chief Mark Carlstrom.

"I don't think it has any-

thing to do with land clearing."

The Hubbard area, which was laden with thick black clouds Thursday afternoon, has been farmed 50 years, Carlstrom said. No new clearing has taken place there.

And areas recently cleared still have the duff intact. That's leaves and debris packed on the ground. "There may be some dust in Wadena County where they cleared," Carlstrom acknowledged.

But it's spring and the wind blows. Wind gusts at or over 40 mph were recorded in Hubbard County Thursday afternoon.

"We're staffed up as far as we can go," Carlstrom said of the forestry personal on call.

"This happens every

spring." But Carlstrom said the county was lucky that no fires had let loose Thursday.

He said while leaving crop residue in the fields might be easier for firefighters to stop spreading flames, it was harder on farmers, who traditionally clear their fields in the fall.

Hubbard County was listed in a high wind warning by the National Weather Service Thursday.

Governor Mark Dayton Thursday activated the Minnesota National Guard to assist in the effort to suppress wildfires in Minnesota.

The Minnesota Department of Public Safety Homeland Security Emergency Management Division (DPS/HSEM) is coordinating with the Guard to supply two Black-

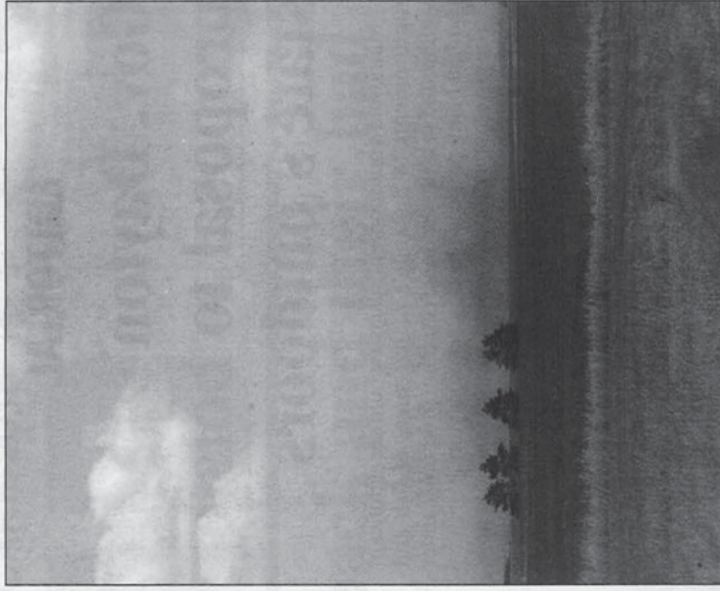
hawk helicopters, equipped with 660 gallon water buckets, to help the DNR respond to fires across the state.

The DNR will determine where to deploy the Guard aircraft. Multiple fires were reported today in the east central part of the state.

A Red Flag Warning was in effect Thursday for much of Minnesota. Low humidity combined with gusty winds will continue to create dangerous fire conditions through Thursday.

Skies looked like fires were burning Thursday around Hubbard County as windswept dirt filled the clouds. Luckily, no fires were found, but several were called in because of the condition of the skies.

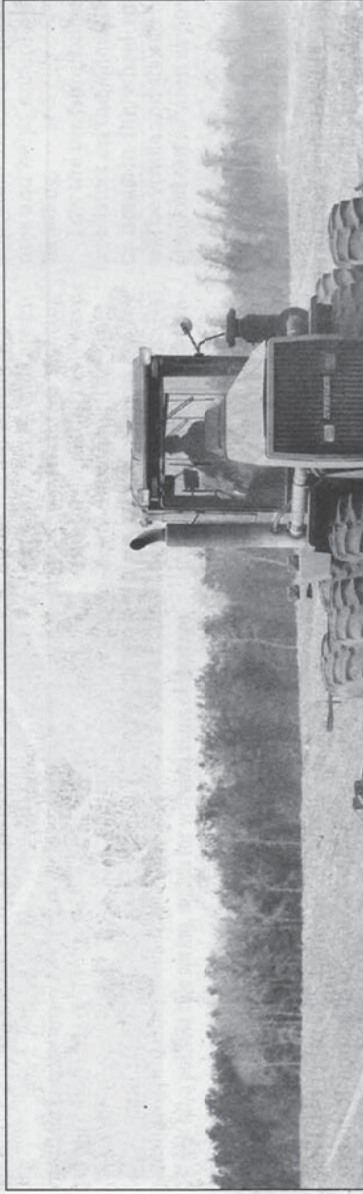
SARAH SMITH/ENTERPRISE



## Fieldwork: Dry ground could lead to early planting this spring

from Page 1A

period in late April and the first three weeks of May. Soybeans: Planting usually begins in early May, with the most active planting period them (farmers) back on their





# Epilogue – What's up with that?

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The Capital

## Minnesota wetland losses five times the size of Minneapolis

By Brian Lambert | 07/31/13

News 6 Views 3

Minnesota has lost wetlands equivalent to five times the size of Minneapolis, Josephine Marroty of the Sierra writes. In just five years, Minnesota has lost 312 square miles of valuable wetlands and the natural vegetation that surrounds them — an area about 5.7 times the size of Minneapolis — reducing a resource that provides vital habitat for waterfowl, minimizes floods and keeps agricultural chemicals out of rivers and streams. **Between 2008 and 2012, rural landowners nationwide plowed up 11,300 square miles of wetlands and highly erodible land, most likely because of the high payouts that come with federally subsidized crop insurance, according to an analysis of land use trends released Tuesday.** The loss of wetlands was by far the greatest in the Dakotas and Minnesota — a total of 1,142 square miles — according to the Environmental Working Group (EWG), a national watchdog group that uses data to sway federal policy.”



### UPPER LIKE THIS

Best Buy raises Superstar, also: Target sends cover by hurricane relief, and food firms may feel Wal-Mart Street-mobility

© 2013 Minnesota Post & Courier



# Shoreland Development

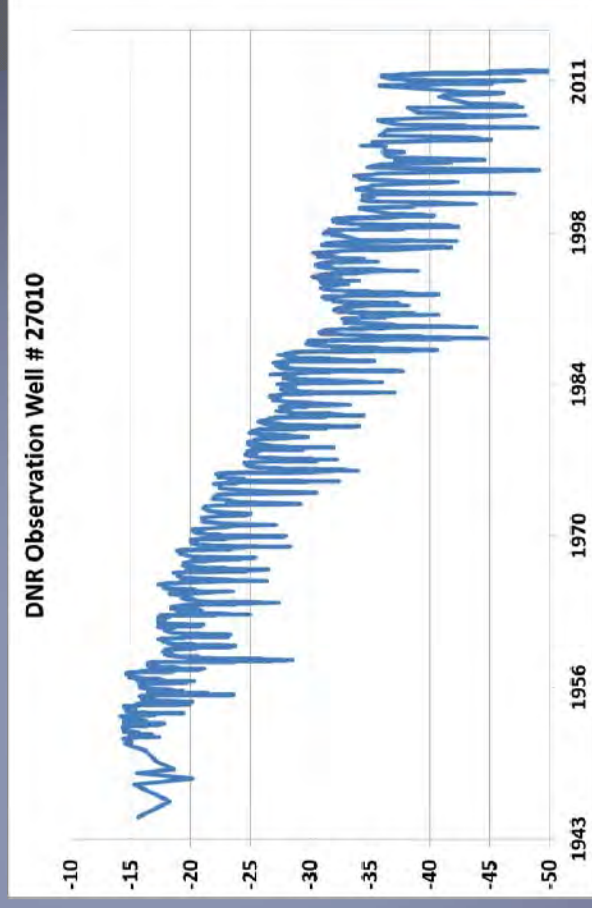




# Sustainable Use

---

- Legal use
- No interference
- No conflicts
- Stay within recharge thresholds
- No adverse effects to key surface waters
- Doesn't degrade water quality







# Water Quantity & Quality

- Ground & Surface Water
- Central MN aquifers are large but limited and is directly connected to surface waters including lakes, stream and wetlands
- Permeable sandy soils and agriculture fertilizers pose risk for nitrate contamination and other water quality impacts
- Potential nitrate concerns in surface water receiving groundwater







# Surface Waters, Drinking Water & Habitat

- Wetlands – directly connected to water table, potential impacts from runoff and herbicides
- Lake and Rivers – increase in temperature and reductions in flow and habitat
- Habitat impacts to fish and other aquatic species
- Source Water Drinking Water Protection – ground and surface water provide clean clear drinking water for downstream users such as Minneapolis & St. Paul





# Crow Wing River WRAP

Crow Wing River Watershed  
Watershed Restoration and Protection Strategy Report

January 2015



wq-ws4-09a



# WRAP Identified the following

- **High Priority Watersheds**
- Maintain and/or improve High Water Quality
  - Preserve & Increase Forest Cover
  - Reduce Phosphorus Loads by 10%
    - Targeted nutrient BMPs
  - Increase waterway & shoreland buffers
  - Support Groundwater Management Area
    - Protect GW Levels, Quality & recharge areas

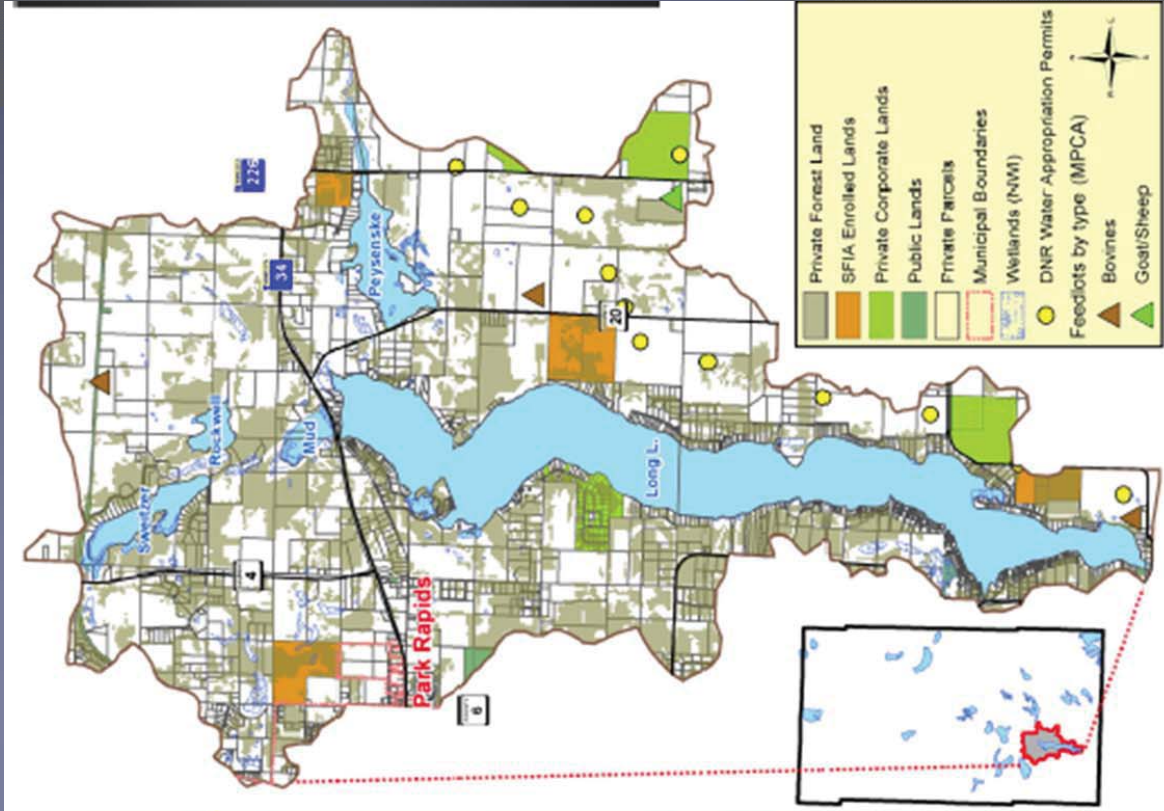
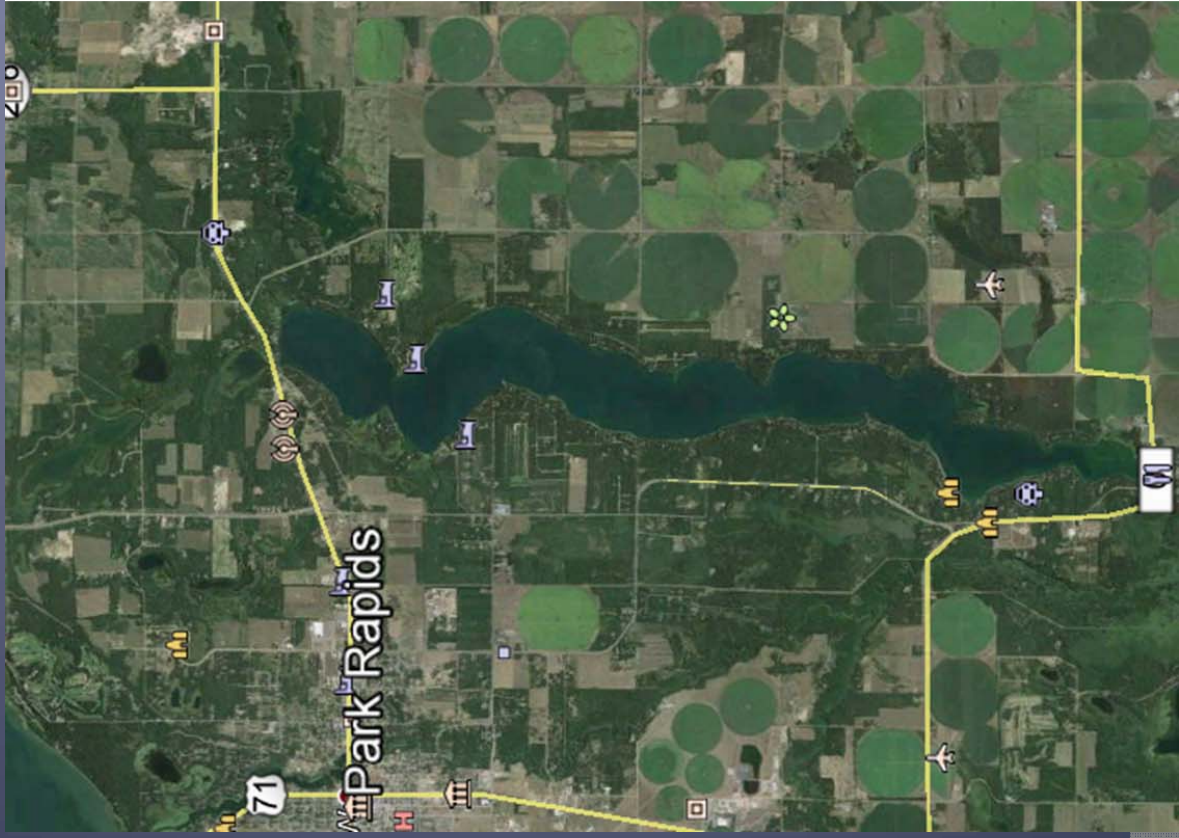


# Hubbard County Local Water Plan

- Priority Concerns
  - Aquatic Invasive Species
  - Surface Water Quality & Quantity Improvement & Protection
  - Groundwater Quality and Quantity Improvement and Protection
- Minor Watershed Protection Strategy
  - Prioritized, Targeted & Measurable Results



# Once a Priority Minor Watershed Has Been Identified, How Can Local Units Implement?





# Many Legislatively-Created Options Available

## Private Forest Landowner Implementation Toolbox



### Options

Lower Costs, Less Permanent

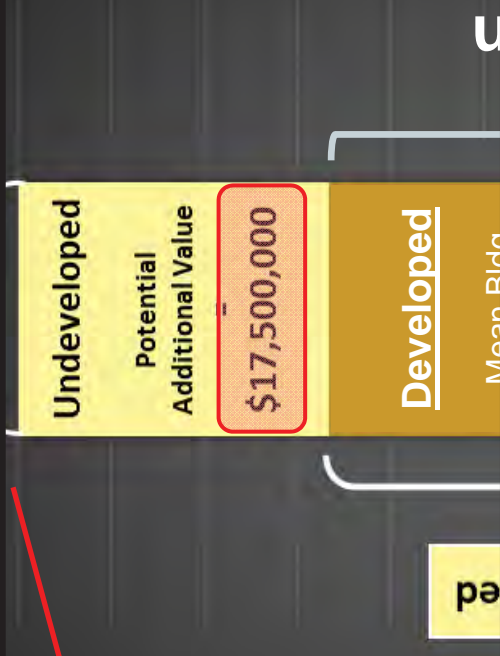
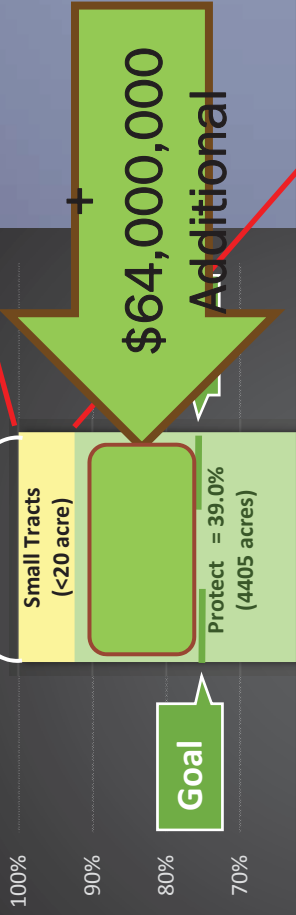
Higher Costs, More Permanent

## Landowners Choose!

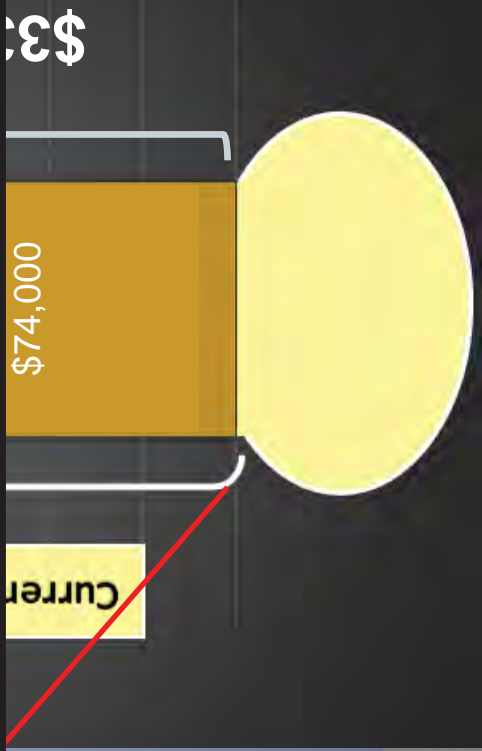
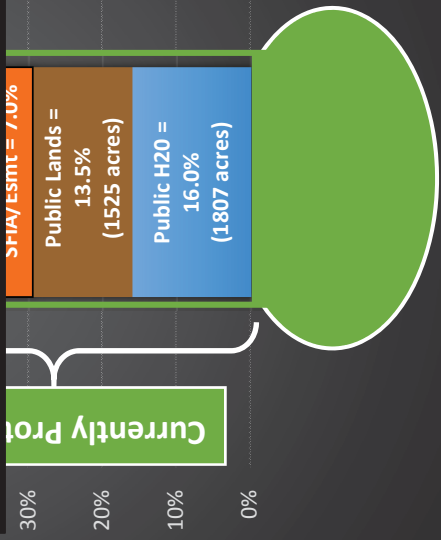


# Can we protect our lakes AND grow our tax base?

## Borden Lake Watershed Protection Status

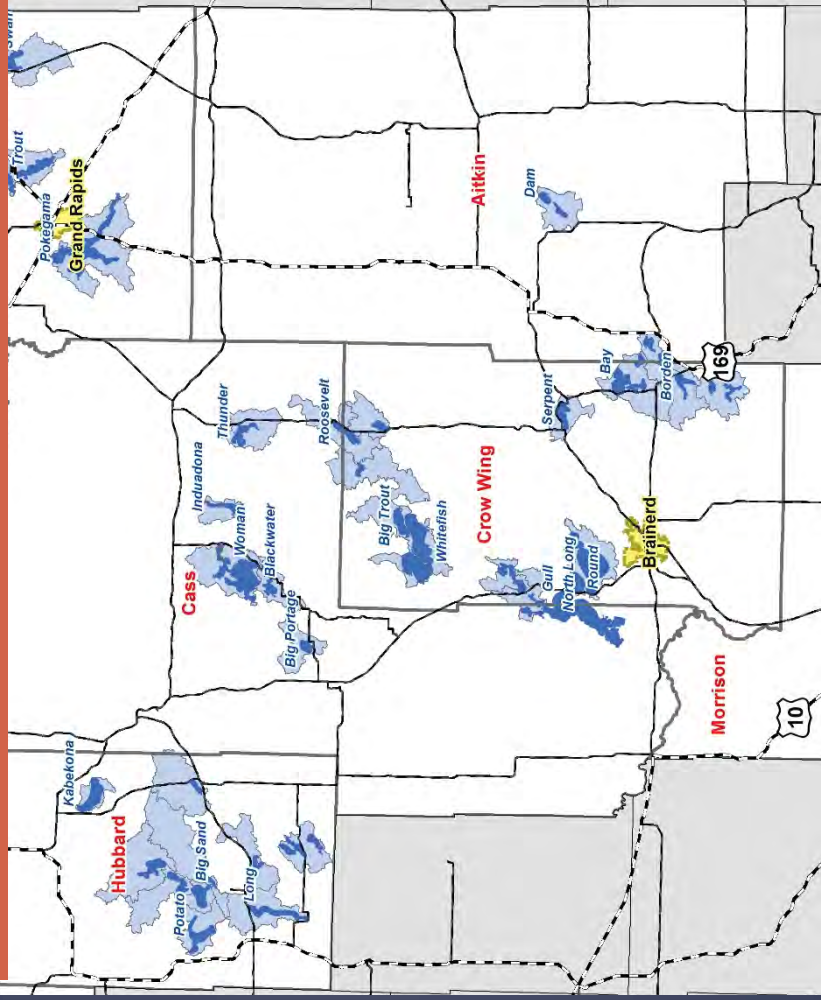


# Lake Protection with Room to Grow!





**\$750,000 just  
recommended for  
LCCMR funding!**



## Example Scenario:

Score = 3 out of 5

- 53 Lakes
  - 36 Watersheds
- Total Needed to get to 75%?**
- 89,824 acres
  - / 36 = mean: 2495 acres

**Cost (50/50 @ \$1500/ac)?**

- SFIA = \$2,500,000
  - +Easements = \$40,500,000
- = \$43,000,000

**Taxable Market Value =  
\$5,100,000,000**

*Keep Forested Lands Forested, Follow the Risk,  
Sell the Whole Toolbox (landowners decide)*





# Forest Preservation

- Forest Stewardship Plans - Watershed
- Proper Forest Management - Watershed
- Conservation Easements
- **“Keep the Forest – Forested”**
  - Tax Incentives
  - Gov’t Programs
  - Timber & Wildlife Value
- Keeping the Forest Intact in Long Lake watershed #1 Focus
- **Property on Lake do have a role**





# Shoreland Management

- Everyone of you in the Room
- Buffers
- Reduce Impervious Surface – Stormwater Management
- Retain Vegetative Cover
- Mitigate for your actions on the landscape
- Proper shoreline use – docks, swimming beaches, riprap, etc.





# Stormwater Management

- Not Just Roads & Cities
- Grass Lawns, Parking Lots, Structure, Driveways, >>>>>
- Manage the Water where it falls
  - Infiltration, Infiltration, Infiltration
  - Swales, Ponds, Buffers, etc.
  - Targeted throughout the watershed
    - Public Areas & Private



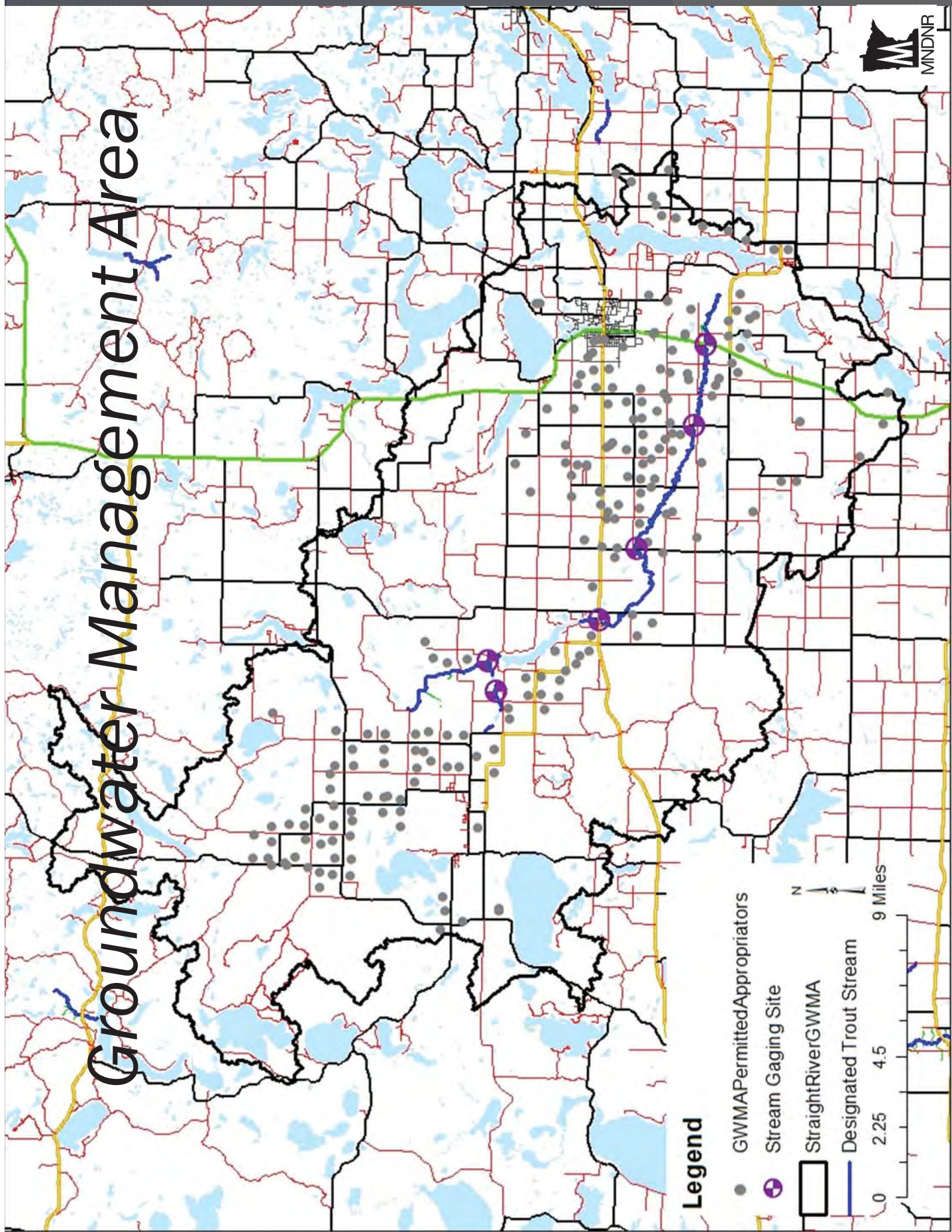


# Targeted Approach

- Follow WRAP & Hubbard LWP
  - **“SO ME THE MONEY”**
- Long Lake Watershed is a Priority
- Target through efforts with Hubbard SWCD & Lake Association
- Looks back upon yourselves on how you can help
- Looking for Measurable Outcomes
  - Projects treating water, improvements in water quality, no decrease in water quality.....

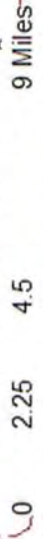


# Groundwater Management Area



## Legend

- GWMA Permitted Appropriators
- ⊕ Stream Gaging Site
- ▭ Straight River GWMA
- Designated Trout Stream







# Permits



MINNESOTA DEPARTMENT OF NATURAL RESOURCES

Amended

## Public Waters Work General

Permit

Expiration Date: 12/31/2018

General Permit Number  
2014-1778

Pursuant to Minnesota Statutes, Chapter 103 G, and on the basis of statements and information contained in the permit application, letters, maps, and plans submitted by the applicant and other supporting data, all of which are made part hereof by reference, PERMISSION IS HEREBY GRANTED to the applicant to perform actions as authorized below. This permit supersedes the original permit and all previous amendments.

<b>Project Name:</b> Region 1 Bridge & Culvert General Permit	<b>County:</b> Bekker, Beltrami, Cass, Clay, Clearwater, Douglas, Grant, Hubbard, Kitzson, Lake of the Woods, Mahanomen, Marshall, Norman, Otter Tail, Pennington, Polk, Pope, Red Lake, Roseau, Stevens, Traverse, Wadena, Wilkin	<b>Watershed:</b> All watersheds intersecting the 23-county DNR Northwest Region	<b>Resource:</b> All public waters in the 23-county DNR Northwest Region
<b>Purpose of Permit:</b> Bridge, culvert, and stormwater outfall repair and replacement	<b>Authorized Action:</b> Upon notice to and approval by authorized DNR personnel, replacement or repair of bridges (open-bottom structures), culverts (four-sided box, arch, or rounded pipe or barrel) and stormwater outfalls is authorized. The work will be done according to plans and specifications submitted with the application and subject to all terms and conditions of this permit. All work authorized by this permit must be designed by a licensed professional engineer.		
<b>Permittee:</b> Governmental Agencies, Governmental Subdivisions and General Public	<b>Authorized Agent:</b> N/A		
<b>Property Description (and owned or leased or where work will be conducted):</b> Various. The permittee must own, control, or have permission to access and use all lands on which the crossing or outfall is located.			
<b>Authorized Issuer:</b> Tom Hovey	<b>Title:</b> Water Regulations Unit Supervisor	<b>Issued Date:</b> 10/03/2014	<b>Effective Date:</b> 10/03/2014
			<b>Expiration Date:</b> 12/31/2018

This permit is granted **subject to the following CONDITIONS:**

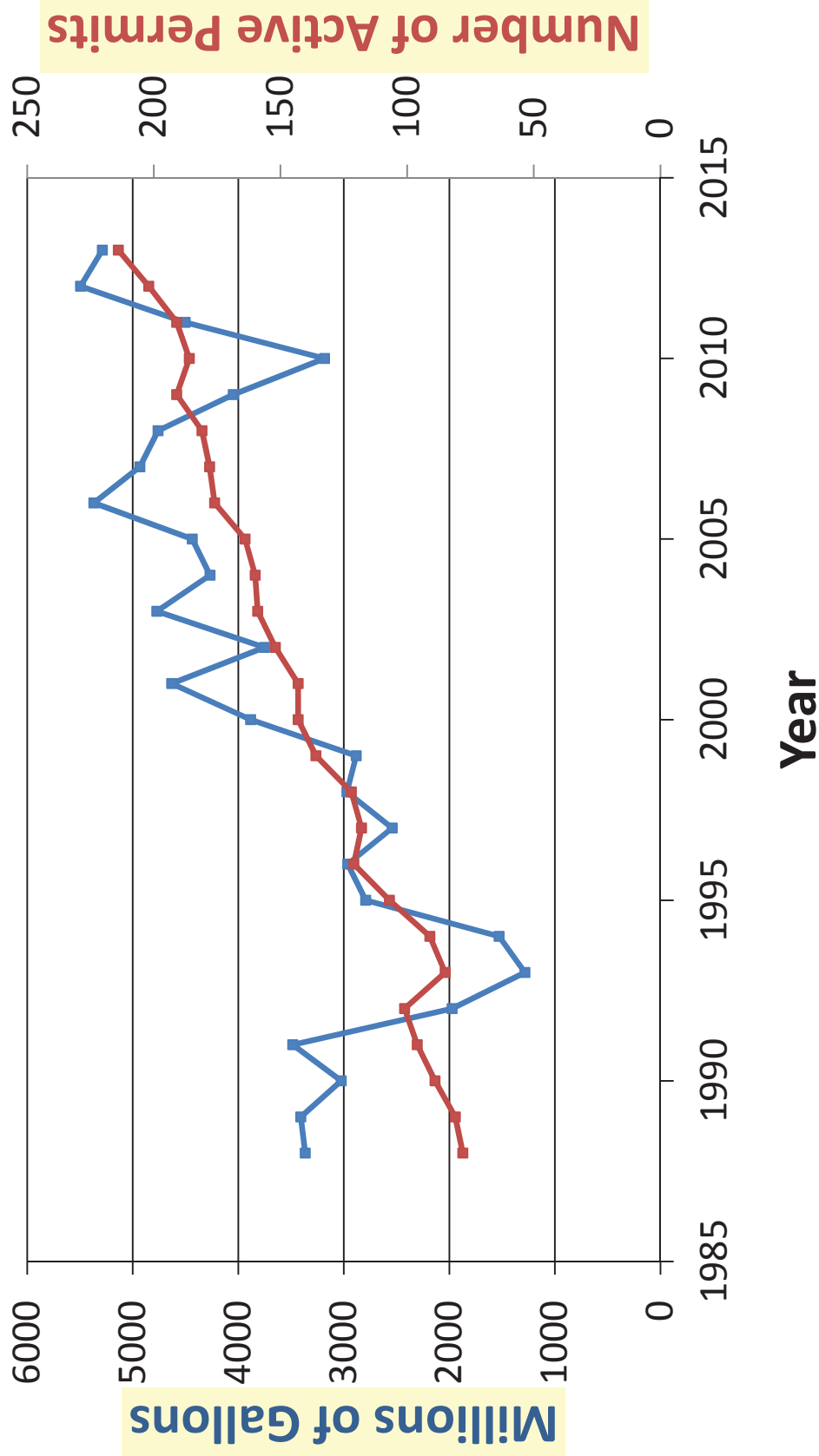
**APPLICABLE FEDERAL, STATE, OR LOCAL REGULATIONS:** The permittee is not released from any rules, regulations, requirements, or standards of any applicable federal, state, or local agencies including, but not limited to, the U.S. Army Corps of Engineers, Board of Water and Soil Resources, MN Pollution Control Agency, watershed districts, water management organizations, county, city and township zoning.

**NOT ASSIGNABLE:** This permit is not assignable by the permittee except with the written consent of the Commissioner of Natural Resources.





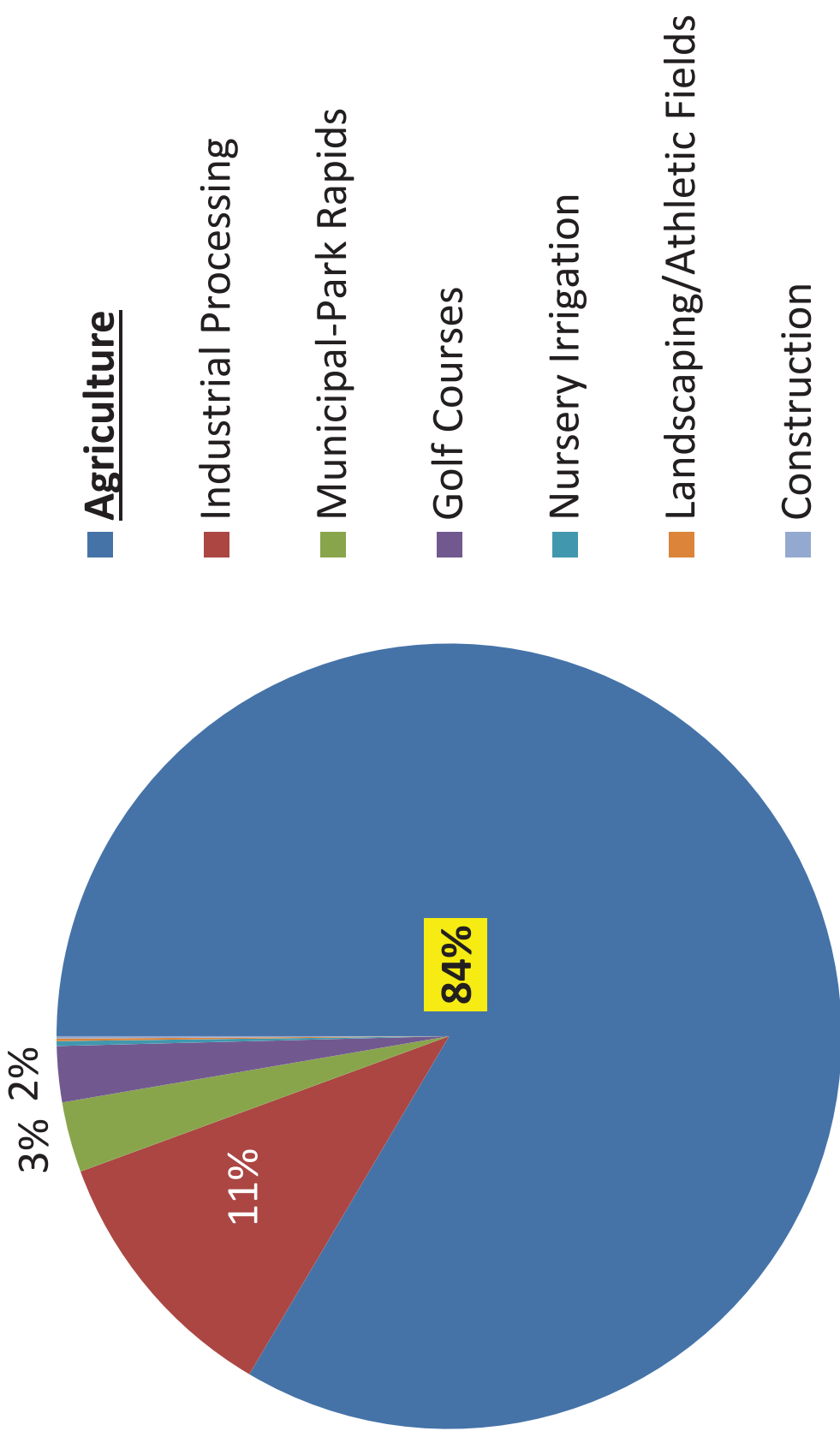
# Reported Agricultural Water Use within Straight River GWMA







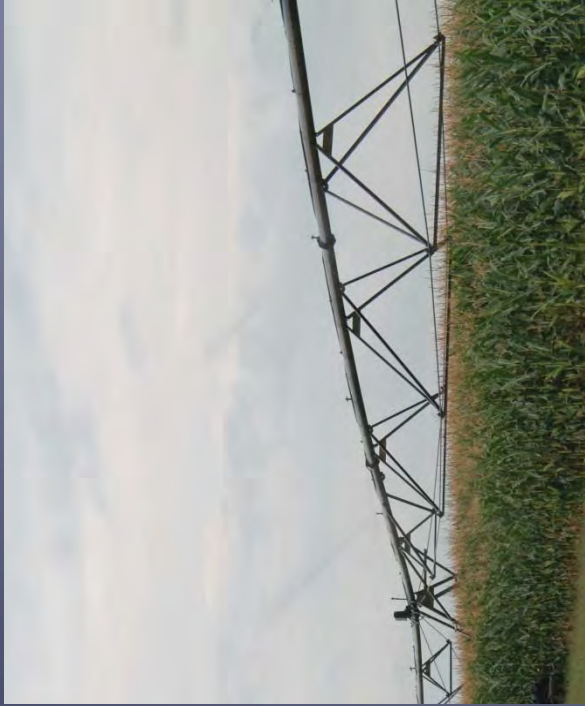
# Water Use SR-GWMA







# Water Conservation





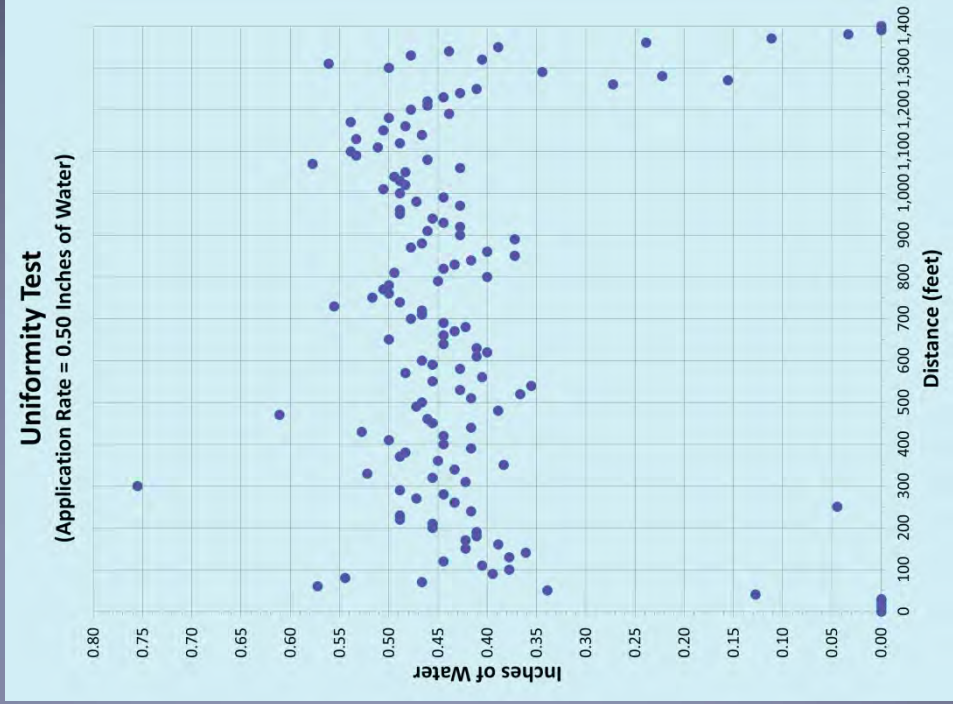


# Cover Crops





# Uniformity Test





# QUESTIONS