

# Storage and Wetlands on Agricultural Land

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# ▶ Today's Presenter



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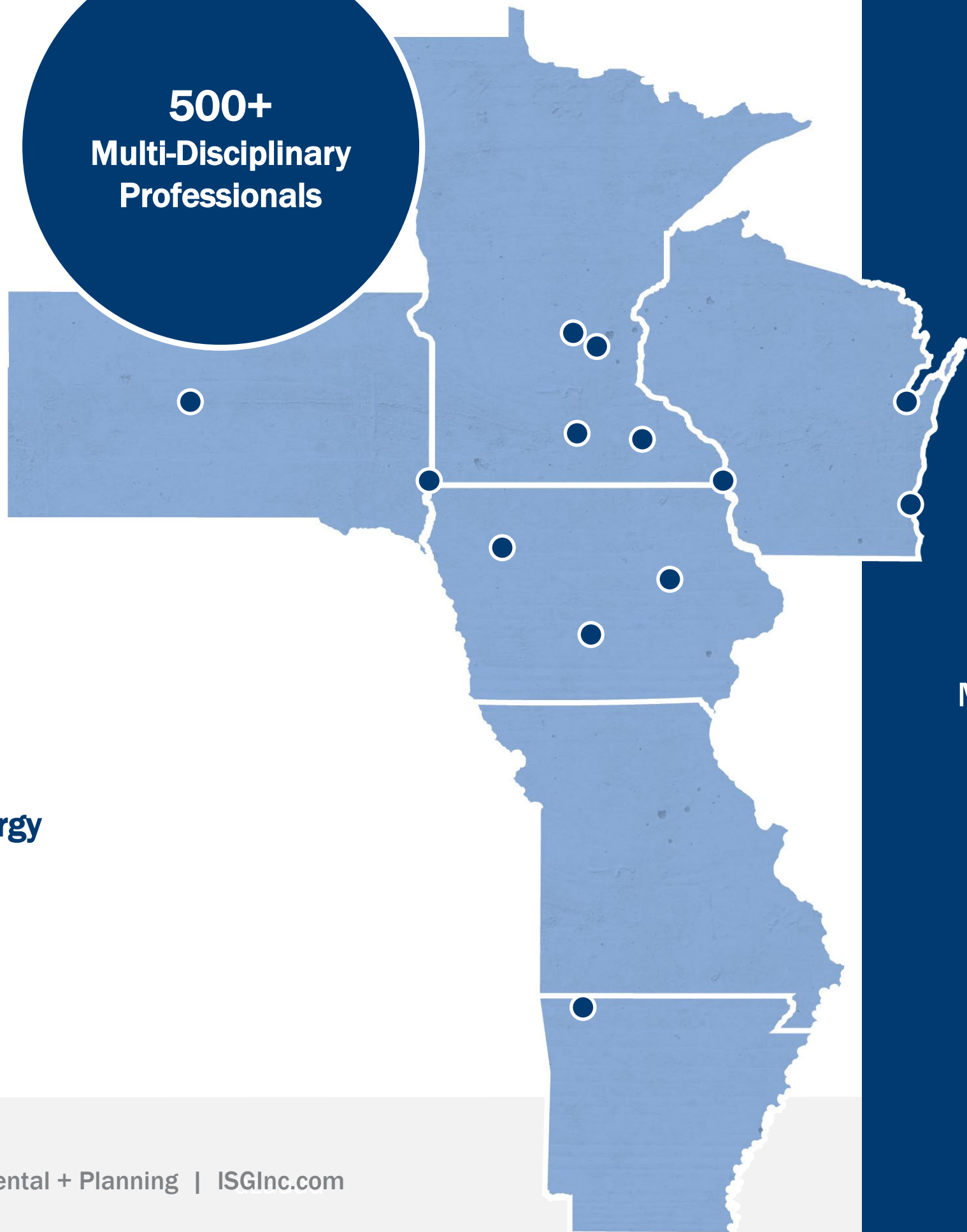


# ► Firm Overview

**500+**  
Multi-Disciplinary  
Professionals

## Business Units

- **Commercial**
- **Education**
- **Food + Industrial**
- **Government + Cultural**
- **Healthcare**
- **Housing**
- **Mining**
- **Public Works**
- **Sports + Recreation**
- **Telecommunications + Energy**
- **Transportation**
- **Water**



# 13

## Midwest Offices

- Rogers, AR
- Des Moines, IA
- Storm Lake, IA
- Waterloo, IA
- Mankato, MN
- Minneapolis/St. Paul, MN
- Rochester, MN
- Pierre, SD
- Sioux Falls, SD
- Green Bay, WI
- La Crosse, WI
- Milwaukee, WI



# ► Changing Climate in Agricultural Drainage



**Infrastructure needs  
and farming techniques**  
*Bigger, faster, less people to feed more*



**Economic**  
*Do we have stability?*



**Processes and review**  
*Everyone has an opinion and lawyer*



**Political**  
*Why can't everyone get along?*



**Mother nature**  
*Don't put the umbrella away*



**Design approach**  
*Using technology to get it right and sell it*

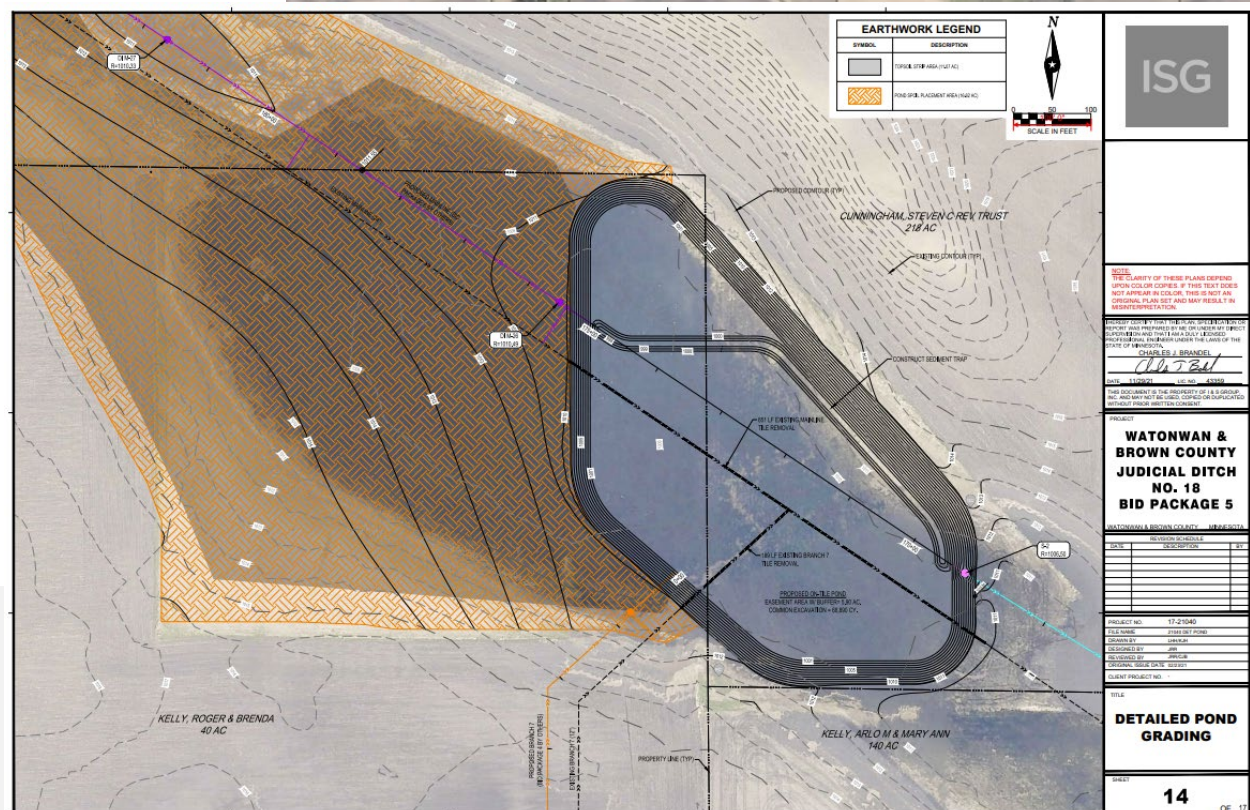
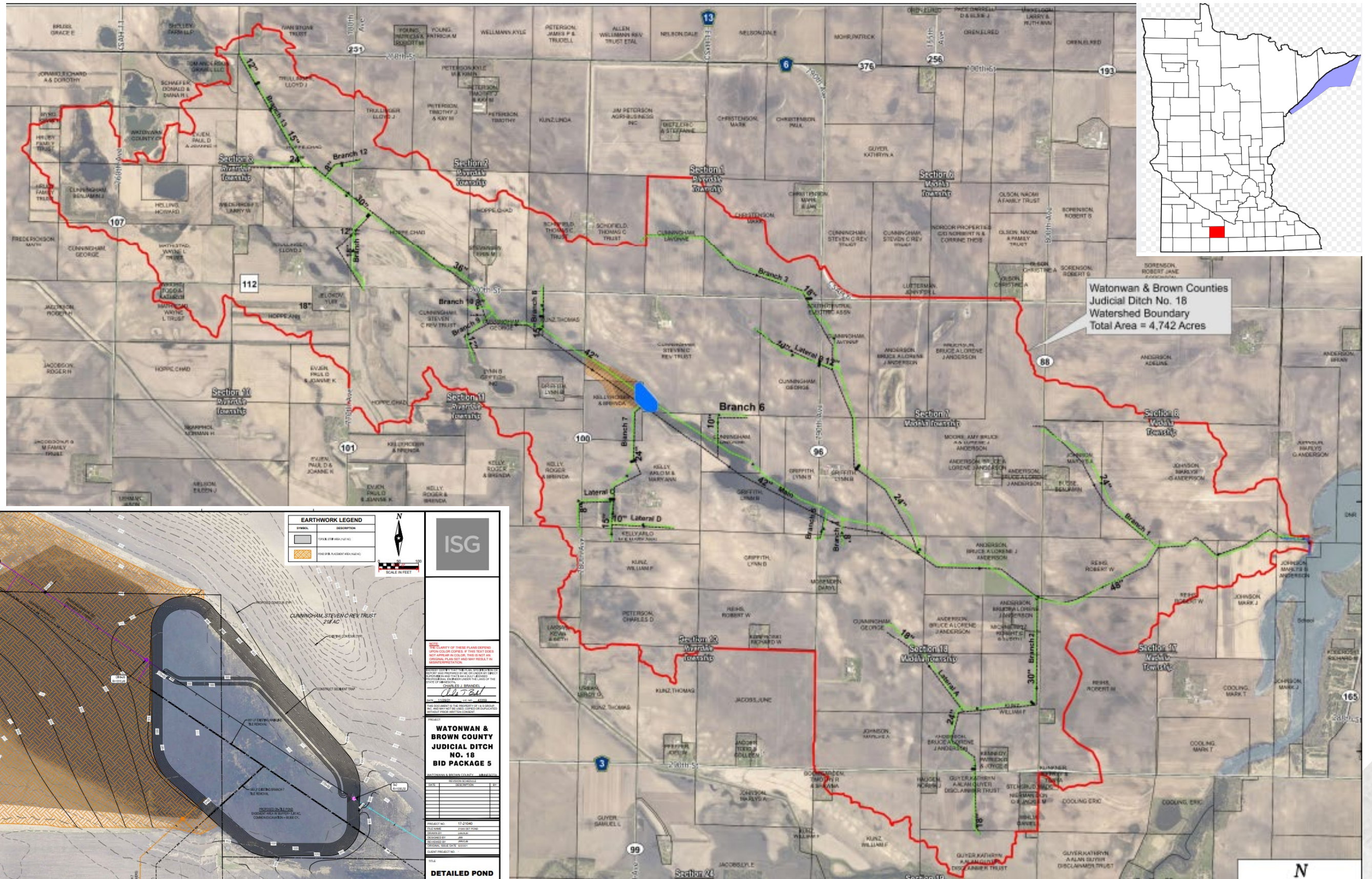


# Storage on Ag Land



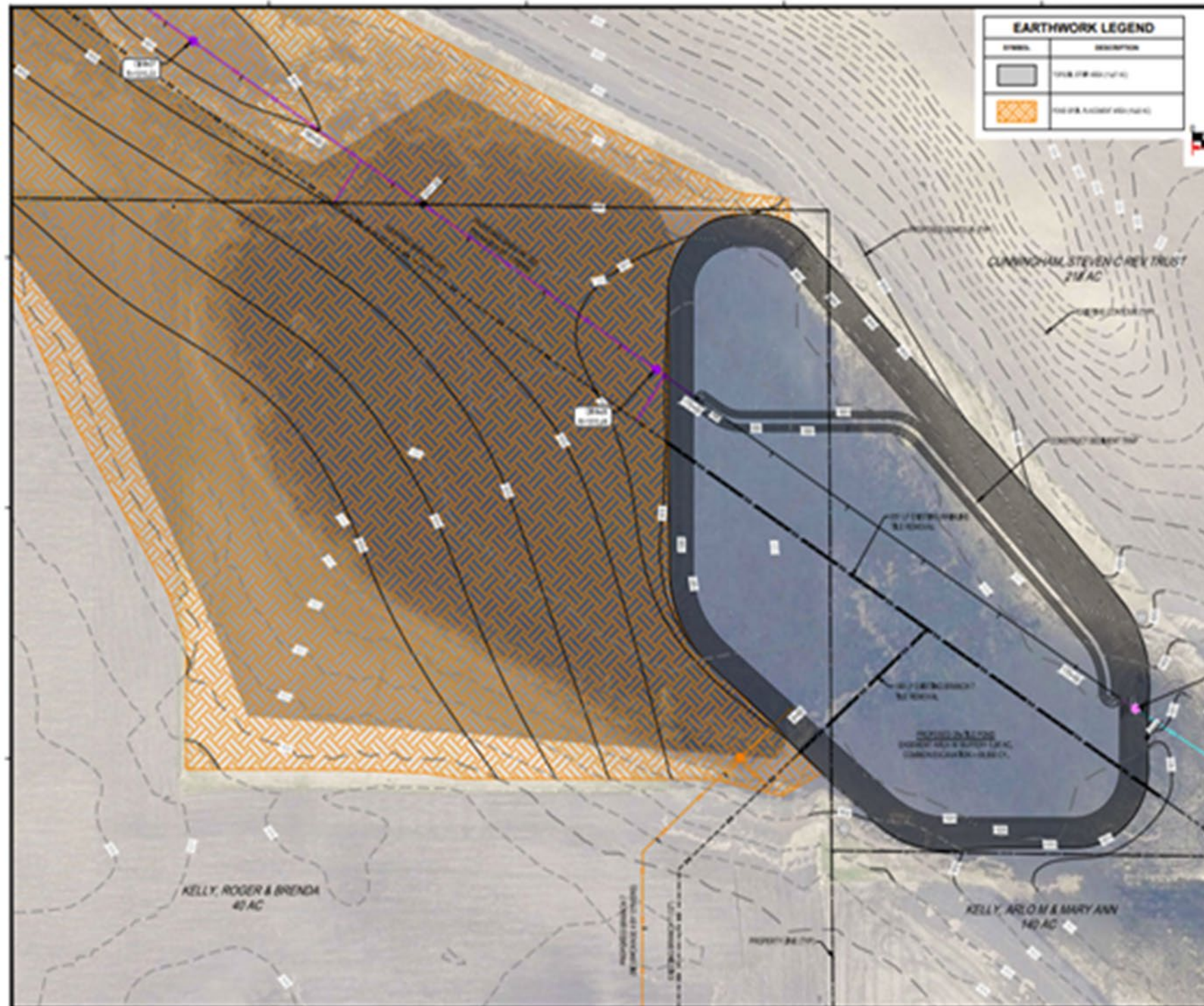


# Watowan/Brown JD 18 Project – 4,742 acres – Reduced Drainage Coefficient





# Design Approach \$565,000 for Storage 3/8" DC Downstream of storage area 2.0% Benefit with Storage and 1





# JD 18 Construction Photos





# ► Storage - Many Opportunities





# Cost Benefit Analysis for Multiple Projects with Storage – No outside funding

Project	Watershed Size	Storage Type	Total Project Cost	Storage Cost	Storage Percentage	Cost Benefit with Storage	Cost Benefit Percentage Without Storage
Jackson JD 13 *	16207	Ponds	\$10,653,600	\$1,550,000	14.55%	1.30%	12.80%
Stevens CD 18	7662	Wetland	\$4,836,900	\$637,636	13.18%	9.54%	26.20%
Jackson JD 9	6846	Pond	\$6,869,000	\$700,000	10.19%	5.30%	18.50%
Watowan/Brown JD 18 *	4742	Pond	\$7,063,600	\$565,000	8.00%	2.00%	10.00%
Martin/Watowan JD 9 *	3670	Pond	\$5,355,700	\$470,000	8.78%	3.00%	11.80%
Martin/Jackson JD 91	1897	Pond	\$2,747,900	\$185,170	6.74%	2.63%	10.00%
Watowan/Brown JD 8	984	Wetland	\$2,976,000	\$850,000	28.56%	<b>-24.66%</b>	12.60%
Blue Earth JD 17	600	Pond	\$1,181,500	\$171,600	14.52%	<b>-12.04%</b>	2.48%
Blue Earth JD 14	670	Pond	\$735,800	\$147,000	19.98%	<b>-17.20%</b>	2.27%
Blue Earth CD 79	487	Wetland	\$1,068,900	\$297,000	27.79%	<b>-14.00%</b>	5.00%
Le Sueur CD 41	460	Pond	\$620,000	\$114,000	18.39%	<b>7.26%</b>	25.48%
Large Projects							
Small Projects							

\* 3/8 in/day Drainage Coefficient used Downstream of Storage Areas

**Smaller Projects Cannot Always Support Storage**



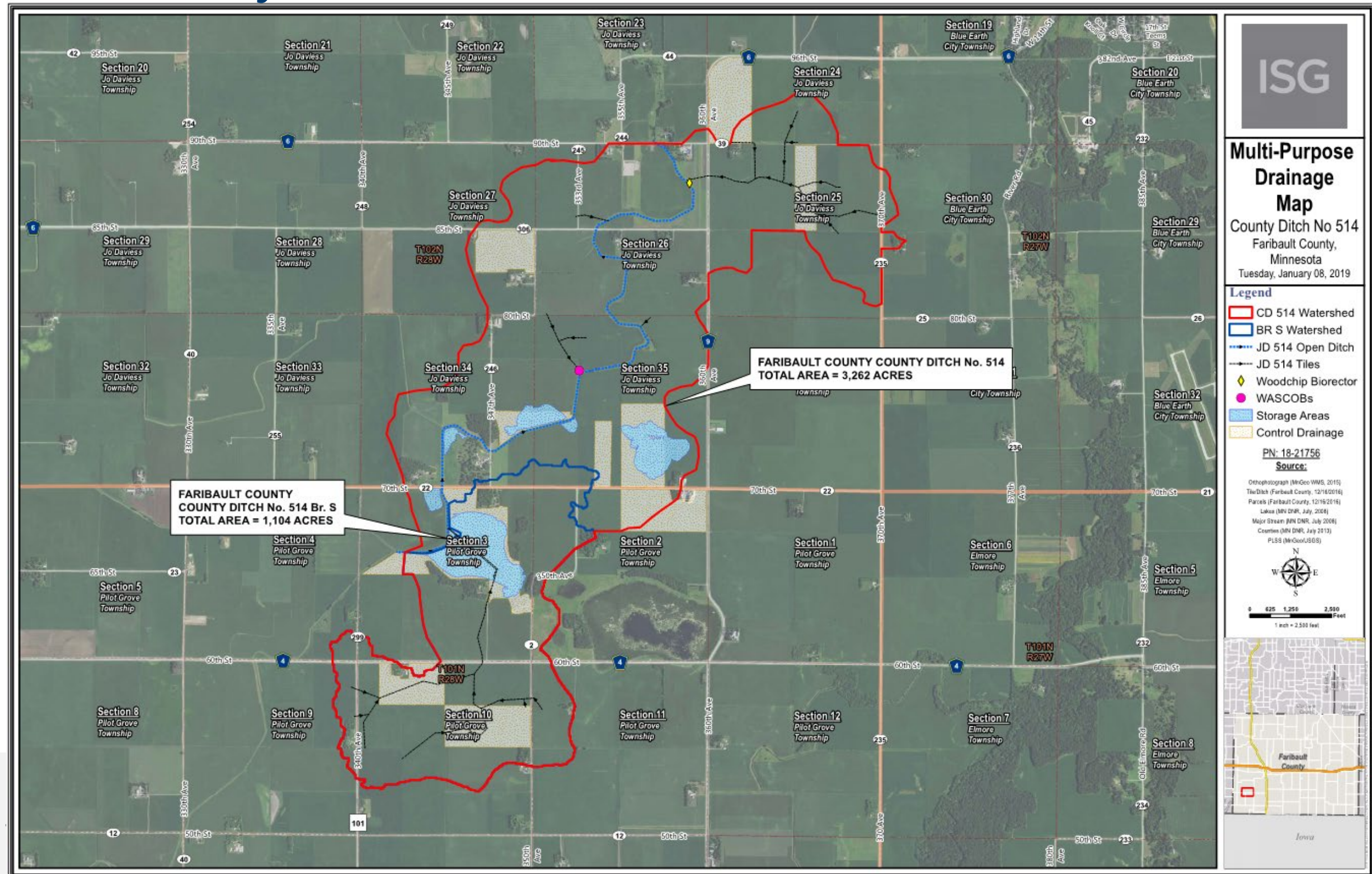
An aerial photograph of a wetland area. A river flows through the center, surrounded by dense green vegetation and trees. The water is dark, and the surrounding land is a mix of green grasses and shrubs. A large blue diagonal overlay covers the left side of the image, and a white diagonal overlay covers the bottom right corner.

# Wetlands on Ag Land



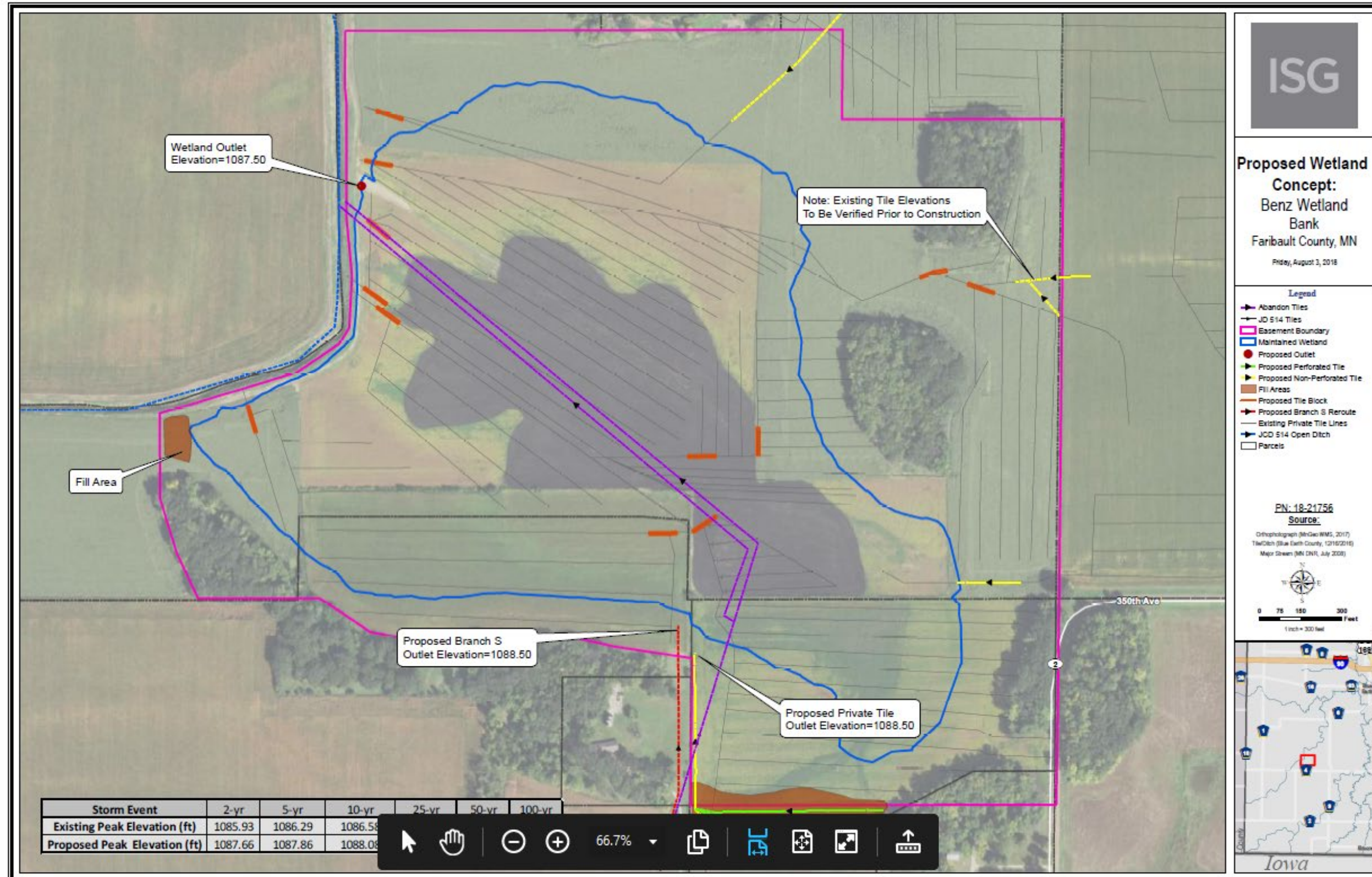
# Wetland Restorations – Start with Planning

## Benz Wetland Bank/Faribault County CD 514 – Landowners and Faribault County





# Benz Wetland





# ► Benz Wetland

- Faribault County Ditch 514 Branch S
- Started with MDM Plan on Repair
- Existing public tile failed
- No depth to gain to repair tile
- Many different expensive options for repair
- Wetland restoration most cost-effective option
- Restored 85-acre wetland
- Entire restoration 160-acres
- Outlet of branch, drained into large drainage system in middle
- Constructed in 2020
- No maintenance to date on drainage system
- Drainage system has access to maintain debris from outlet (if necessary)





# Benz Wetland





# Storage and Wetland Summary

Wetlands and Storage are new way to look at Rural Drainage Design and can protect outlets

Outside pressures and the desire to get it right make all drainage projects challenging

Important to Balance Drainage Needs and Outlet Capacity/Protection

Cost/Benefit – No Benefit for Water Quality

Getting Landowner Support, Farm Group Support is needed along with Research!!

Agency, Private, and Government Support for Funding and projects especially smaller watershed projects – Opportunities are there

Drainage is needed to keep up with the “Changing Climate” and to feed the world but new ways need to be developed to protect our downstream waters





# Questions?

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