

# The State of Minnesota's Circular Water Economy

*Current state and future directions*



# FRESHWATER



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# FRESHWATER

Mission to inspire and empower people to value and preserve water.

We do this through:

- community engagement
- research
- policy

# *Circular water*

## REUSE, EFFICIENCY, RECHARGE

Goal: **Build a robust circular water economy to ensure a water-secure future.**

- Integrate water systems into One Water.
- Protect public and ecosystem health
- Support economic development
- Allow for agricultural production
- Assure water for recreation



# *Circular water economy*

**A circular water economy recycles and recovers resources within the water use and treatment cycle to maximize value for people, nature, and businesses**





# What is the State of Minnesota's Circular Water Economy?

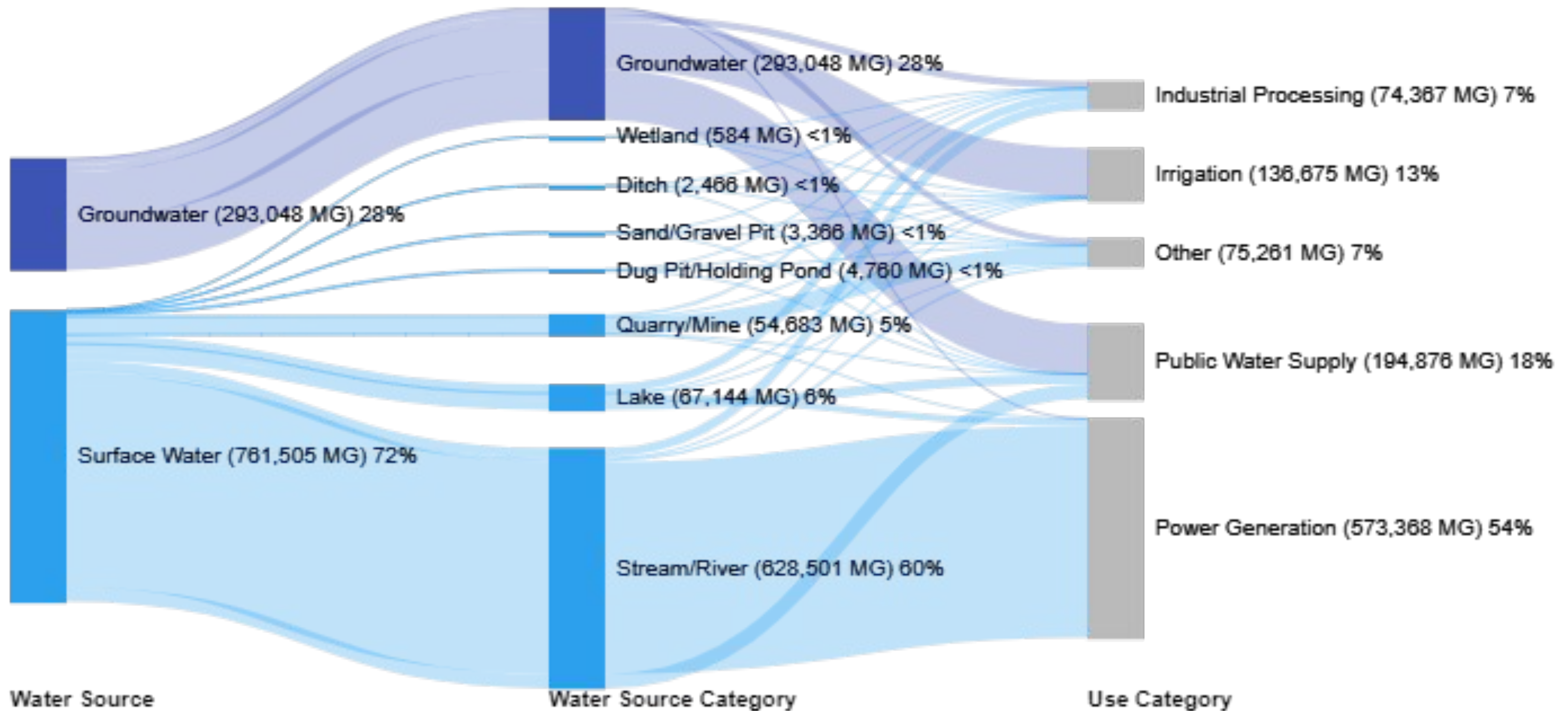


# *Understanding our circular water economy*

- 1. Who uses water in Minnesota?**
- 2. Desktop review of our status.**
- 3. Interview water users across economic sectors.**
- 4. Identify themes and opportunities.**








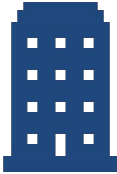

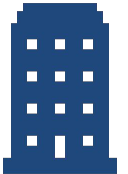


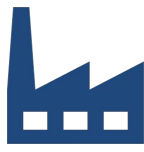



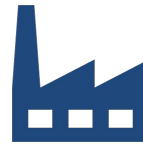

MN DNR permitted water use  
2019-2023 Average (Million gallons/year)



Data source: MN DNR water use permits. Updated August 28, 2024.  
[https://www.dnr.state.mn.us/waters/watermgmt\\_section/appropriations/wateruse.html](https://www.dnr.state.mn.us/waters/watermgmt_section/appropriations/wateruse.html)

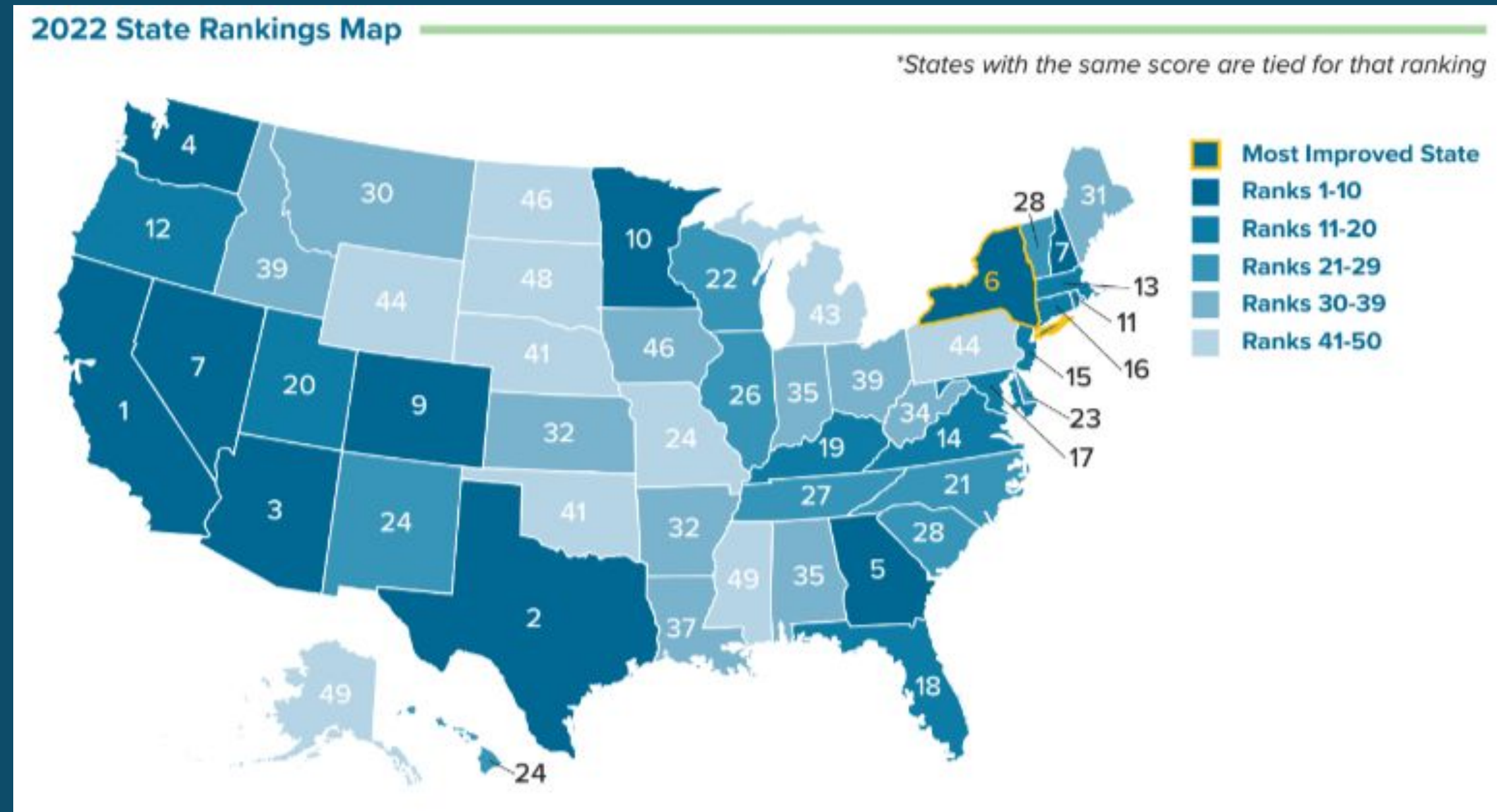


# Status of Reuse and Recharge Regulations

|               | Allowed<br>   | Regulated<br>  | Variance Required<br> | Not Allowed<br> |
|---------------|--|---|--|--|
| Rainwater     |    |    |  |  |
| Stormwater    |   |   |  |                |
| Wastewater    |  |    |                     |  |
| Potable Water |    |   |                     |  |

# Status of Water Efficiency

- MN ranked #10 in Alliance for Water Efficiency's 2022 scorecard



# *Circular Water Interviews*

## INTERVIEW QUESTIONS

1. Is water reuse, recharge, or water efficiency a part of your **current water management strategy**? (or strategies your facilities?)
2. Do you **hope to implement more** water efficiency strategies in the future?
3. What are your **drivers** to implement circular water strategies?
4. What **barriers** exist?
5. What tools or partners would **help** you with this work?



# *Drivers*

- **Managing operational risks**

# *Barriers*



## *Drivers*

- Managing operational risks
- **Climate change, water variability**



## *Barriers*

# *Drivers*

- Managing operational risks
- Climate change, water variability
- **Reducing costs**

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- **Consumer pressure**

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- **Environmental, Social, Governance (ESG)**

# *Barriers*



# *Drivers*

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- Climate change, water variability
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- Environmental, Social, Governance (ESG)
- **Desire to be good water stewards**

# *Barriers*

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- **Reduced water infrastructure needs**

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- **Managing permit requirements**

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- **Grants or outside funding**

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## *Barriers*

- **Water is cheap - recycling or reuse is has a high ROI**

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- **Short-term evaluation of benefits and costs.**

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- Water is cheap - recycling or reuse is has a high ROI
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- **Risks of partnering outside the organization.**

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- **Regulatory uncertainty for stormwater reuse.**





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- Regulatory uncertainty for stormwater reuse
- **Length of time to implement circularity.**





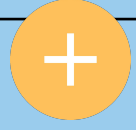



## *Drivers*

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- Water is cheap - recycling or reuse is has a high ROI
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- Risks of partnering outside the organization.
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# Themes by sector

|                          | Implementing now?  | Future opportunities?   | Drivers  | Barriers  |
|--------------------------|--|---|--|---|
| <b>Mining</b>            |    |    | <ul style="list-style-type: none"> <li>• Operational continuity</li> <li>• Water permits</li> <li>• ESG</li> </ul> | <ul style="list-style-type: none"> <li>• Uses for excess water</li> </ul>   |
| <b>Food and Beverage</b> |    |    | <ul style="list-style-type: none"> <li>• Consumer and corporate sustainability ESG</li> </ul>                      | <ul style="list-style-type: none"> <li>• Health regulations</li> <li>• Public partnerships</li> <li>• Complimentary businesses are not nearby (co-location)</li> </ul>  |
| <b>Agriculture</b>       |  |  | <ul style="list-style-type: none"> <li>• Land stewardship</li> <li>• Public health</li> </ul>                      | <ul style="list-style-type: none"> <li>• Annual profitability</li> <li>• Decentralization</li> </ul>  |
| <b>Public Sector</b>     |  |  | <ul style="list-style-type: none"> <li>• Water stewardship</li> <li>• Long-term planning</li> </ul>                | <ul style="list-style-type: none"> <li>• Cost justification</li> <li>• Private partnerships</li> <li>• Complimentary businesses are not nearby (co-location)</li> </ul> |

# Themes by sector continued

|                      | Implementing now?  | Future opportunities?   | Drivers  | Barriers   |
|----------------------|--|---|--|--|
| <b>Oil and Gas</b>   |    |    | <ul style="list-style-type: none"> <li>• Water permits</li> <li>• ESG</li> </ul>   | <ul style="list-style-type: none"> <li>• Public partnerships</li> <li>• Treatment costs</li> </ul>                                 |
| <b>Power</b>         |    |    | <ul style="list-style-type: none"> <li>• Operational continuity</li> <li>• Water permits</li> <li>• ESG</li> </ul>                                     | <ul style="list-style-type: none"> <li>• Treatment costs</li> </ul>  |
| <b>Manufacturing</b> |  |  | <ul style="list-style-type: none"> <li>• Operation continuity</li> <li>• Water permits</li> <li>• Consumer and corporate sustainability ESG</li> </ul> | <ul style="list-style-type: none"> <li>• Public partnerships</li> <li>• Treatment costs</li> <li>• Recharge limitations</li> </ul> |



# State of Minnesota's Circular Water Economy: room to grow



# *Circular water*

REUSE, EFFICIENCY, RECHARGE

Goal: **Build a robust circular water economy to ensure a water-secure future.**

A circular water economy recycles and recovers resources within the water use and treatment cycle to maximize value for people, nature, and businesses





# Recommendations

1. Position MN as the “State of Water”
2. Develop a common language for water circularity.
3. Share best practices and case studies.
4. Manage water like energy.
5. Lead with the economics of water.
6. Encourage alternative water supply sources.
7. Partner across sectors. Outside of property lines.
8. Encourage longer-term thinking.
9. Encourage innovative funding models.



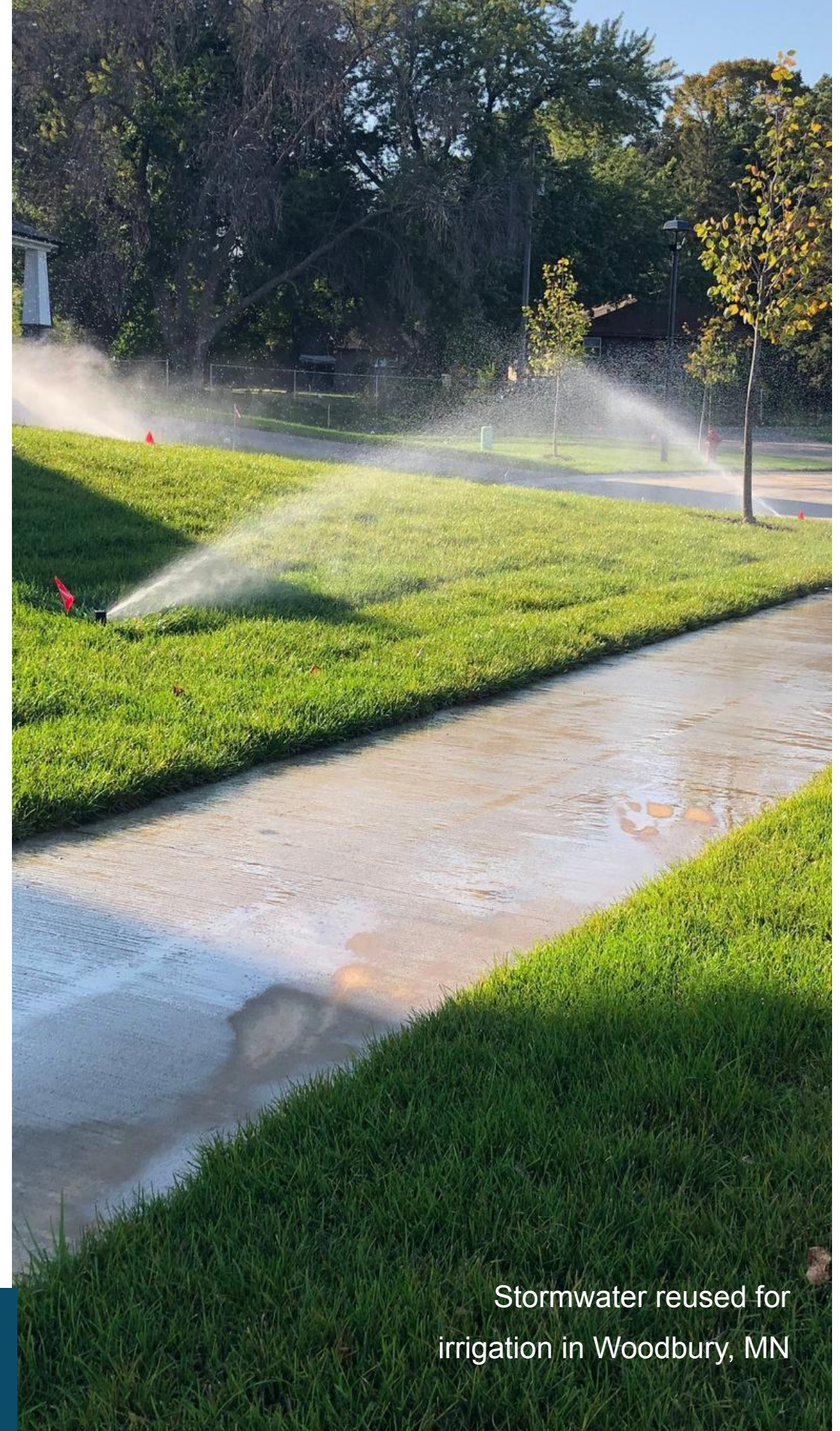
# *Recommendations for MGWA*

1. Continue to evaluate groundwater use.
2. Help others understand the complexity and limits of sustainable groundwater.
3. Look to alternate water sources and water reuse, recycling, or recharge.
4. Encourage evaluation of long-term impacts. Monetize water use and risks.
5. Encourage cross sector partnerships.



*Coming soon:*  
**State of Minnesota's  
Circular Water  
Economy**

Find more detail there - let us know what opportunities or barriers you face with water circularity.



Stormwater reused for  
irrigation in Woodbury, MN

# Thank you



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