



White Bear Lake Area Comprehensive Plan Update – NE Metro GWMA Meeting



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metro council.org

Agenda



1. Background
2. Summary of work group meetings to date
3. Next steps

Background - Comprehensive Plan Legislation (1/3)



- The Minnesota legislature provided \$2 million in funding for the Metropolitan Council to form a work group to develop a comprehensive plan to ensure communities in the White Bear Lake area have access to sufficient drinking water to allow for municipal growth while ensuring the sustainability of surface and groundwater resources to supply the needs of future generations.
- The completed plan must be submitted to the Minnesota Legislature by June 30, 2027

Background - Work Group Members (2/3)



The Metropolitan Council has established a work group consisting of:

- Commissioners or designees from the DNR, MDH, and MPCA
- Representatives from Metropolitan Area Water Supply Advisory Committee (MAWSAC) and St. Paul Regional Water Services.
- The communities of Stillwater, Mahtomedi, Hugo, Lake Elmo, Lino Lakes, North St. Paul, Oakdale, Vadnais Heights, Shoreview, Woodbury, New Brighton, White Bear Lake, White Bear Township, and North Oaks.

These communities combined have a water service population slightly over 300,000 people or approximately 10% of the metro region's total population.

Background - White Bear Lake Work Group Development (3/3)



- Each community and agency was requested by Met Council to assign a representative to the work group
- Met Council conducted one-on-one meetings with each of the work group members in July and August, 2023
- Work group meetings commenced in January 2024. Four additional meetings have been held since January.

Work Group Meeting No. 1 – January 17, 2024



1. Welcome & Introductions
2. Project overview
3. Summary of one-on-one conversations
4. Previous studies
5. Roundtable discussion to hear concerns and suggestions

Past related studies

Feasibility Assessment of Approaches to Water Sustainability in the Northeast Metro – Metropolitan Council, December 2014

Report to the Minnesota State Legislature: Concept Cost Report for Augmentation of White Bear Lake with Surface Water – DNR, February 2016

Regional Groundwater Recharge and Stormwater Capture and Reuse Study – North and East Metro Study Area – Metropolitan Council, May 2016

Minnesota's PFAS Blueprint – MPCA, February 2021

Conceptual Drinking Water Supply Plan for PFAS in the East Metro Area – MPCA, August 2021

Reuse of Stormwater and Rainwater in Minnesota – MDH, January 2022

Groundwater Modeling Analysis for White Bear Lake Court Case – DNR, June 2022

Ramsey County Stormwater Reuse Assessment – Ramsey County/Barr Engineering – December 2021

Work Group Meeting No. 2 – March 14, 2024



1. Project history and background
2. Small group discussions for developing a problem statement
3. DNR groundwater model presentation
4. Topics to present? The work group wanted to learn how the different water chemistry from a surface water supply system would affect their water systems, mainly corrosion of pipes, etc.

Work Group Meeting No. 3 – April 25, 2024



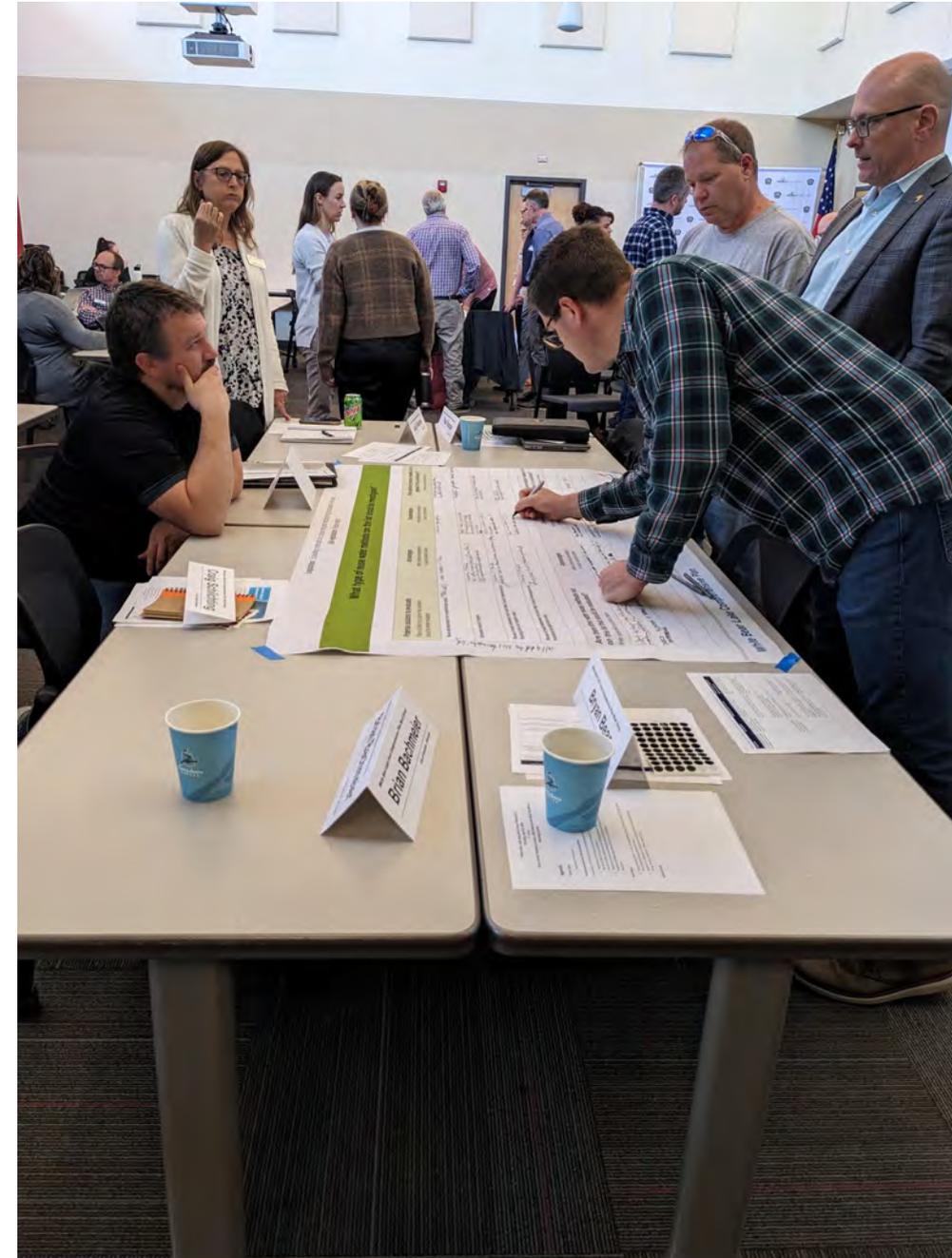
1. Finalized problem statement
2. Small group discussions/brainstorming of methods and potential solutions to address legislation

Meeting No. 3 – Finalized Problem Statement

Problem Statement

Ensure equitable access to sufficient, safe, and affordable water for communities in the North and East Metro areas to meet current and future needs while safeguarding the sustainability of surface water and groundwater resources.

Meeting No. 3 – Work group brainstormed and ranked various potential solutions to further evaluate



Meeting No. 3 – Work group brainstormed and ranked various potential solutions to further evaluate

Legislation: Evaluating methods for conserving and recharging groundwater in the area
Sub-legislation: Projects designed to increase groundwater recharge

What are the sources of groundwater recharge methods on the list that we should investigate?

Potential solutions to evaluate <i>Place a sticker if you agree this solution should be further evaluated</i>	Advantages <i>Write potential advantages to each solution below</i>	Disadvantages <i>Write potential disadvantages to each solution below</i>	What additional information needs to be gathered if this is a solution? <i>Please write your answer below</i>
Lake augmentation by treating wastewater from local Met Council interceptors and pumping the treated wastewater into White Bear Lake.	Keeps water in the area helps lake levels directly Cost effective Keeps water in the area	VERY EXPENSIVE...? Previous concern with pathogens Public perception of treated wastewater PFAS	How much opportunity is there and how much needed to make meaningful difference.
Treat wastewater from local Met Council interceptors and inject the treated wastewater into the aquifer to raise groundwater elevations.	Methods are known, already happening	Information concerns may be slow lake level response standards may be needed, but may expense	How much opportunity is there and how much needed to make meaningful difference.
Stormwater collection and infiltration to raise groundwater elevations.	Methods are known, already happening	Water quality questions & concerns → need a meaningful difference	How much opportunity is there and how much needed to make meaningful difference.
Lake augmentation by pumping treated surface water from the chain of lakes into White Bear Lake.	Study complete, costs relatively known → already been reviewed Cost effective water has been being pumped or bought → (DDB)	Low water quality over time → risk of some contamination NORMING CONTROL	How much opportunity is there and how much needed to make meaningful difference.
Combination of lake augmentation and groundwater injection by treated wastewater.	Keeps water in the area may help lake levels but more slowly	Potentially costly infrastructure that is duplicative water chemistry questions	How much opportunity is there and how much needed to make meaningful difference.
Are there other groundwater recharge methods not on this list that should be evaluated? <i>Write potential solutions below</i>	Advantages <i>Write potential advantages to each solution below</i>	Disadvantages <i>Write potential disadvantages to each solution below</i>	What additional information needs to be gathered if this is a solution? <i>Please write your answer below</i>
closed loop potable reuse - direct potable reuse	long term growth reliable	if	AVAILABLE CAPACITY NEEDS INFRASTRUCTURE
Augmentation of WBE or injection to groundwater from sources treated water	available capacity?	if	AVAILABLE CAPACITY NEEDS INFRASTRUCTURE

White Bear Lake Comprehensive Plan

Work Group Meeting No. 4 – May 22, 2024



1. Overview of the St. Paul Regional Water Services system
2. New Brighton/Minneapolis Interconnection
3. City of Waukesha - Water Quality Planning to Transition from Groundwater to Lake Michigan Water
4. Q/A panel discussion
5. Discussed two Request for Proposals (RFPs) for master contracts for consultants – Technical and financial analyses work

Work Group Meeting No. 5 – November 7, 2024



1. Consultant master contract awards
2. Ranked solutions for individual studies
3. Proposed engineering standards and Minnesota rules for consultants to follow
4. Draft scope of services for first the two individual studies related to wastewater reuse
5. Future water demand projections

Consultant master contract awards (1/2)



Water Supplies Studies and Technical Analyses RFP

- Five proposals received
- Evaluation Committee – Bryan Bear (City of Hugo), Tom Wesolowski (City of Shoreview), John Chlebeck (Met Council), Greg Johnson (Met Council)
- Master contracts awarded to Barr Engineering, Kimley-Horn, and SEH for \$500,000 each

Consultant master contract awards (2/2)



Financial Analyses RFP

- One proposal received
- Evaluation Committee – Bryan Bear (City of Hugo), Tom Wesolowski (City of Shoreview), John Chlebeck (Met Council), Greg Johnson (Met Council)
- Master contract awarded to Hazen and Sawyer for \$200,000

Legislation – Evaluate methods for conserving and recharging groundwater in the area (1/3)

Sub-legislation for methods to conserve and recharge groundwater include four main areas to address:

1. Converting water supplies that are groundwater dependent to total or partial supplies from surface water
2. Reuse water, including water discharged from contaminated wells
3. Projects designed to increase groundwater recharge
4. Other methods for reducing groundwater use



Converting water supplies that are groundwater dependent to total or partial supplies from surface water (2/3)

Potential solutions identified by work group

1. Convey treated surface water from St. Paul Regional Water Services to north and east communities.
2. Construct a regional surface water treatment plant near the chain of lakes in the north metro and convey treated surface water to north and east communities.
3. Construct a regional surface water treatment plant near the St. Croix River and convey treated surface water to north and east communities.
4. Redirect stormwater to augment White Bear Lake
5. Construct a closed loop system like Las Vegas
6. Construct a new Mississippi River source and regional water treatment plant separate from St. Paul Regional Water Services

Converting water supplies that are groundwater dependent to total or partial supplies from surface water (3/3)

Top 3 ranked solutions to evaluate

1. Redirect stormwater to augment White Bear Lake – 13 votes
2. Convey treated surface water from St. Paul Regional Water Services to north and east communities – 12 votes
3. Construct a regional surface water treatment plant near the chain of lakes in the north metro and convey treated surface water to north and east communities – 8 votes

Reuse water (1/2)

Potential solutions identified by work group

1. Reuse of treated wastewater from local Met Council interceptors for industrial and agricultural users
2. Stormwater reuse for irrigation
3. Reuse water discharged from contaminated wells
4. Reuse of treated wastewater from local Met Council interceptors for flushing toilets and irrigation water
5. Reuse grey water from sinks for flushing toilets with overall citizen education and buy-in
6. Direct injection of treated wastewater/dewatering into aquifer
7. Reuse commercial manufacturing cooling water
8. Toilet to tap - Start thinking about treating effluent for potable use

Reuse water (2/2)

Top 3 ranked solutions to evaluate

1. Reuse of treated wastewater from local Met Council interceptors for industrial and agricultural users – 12 votes
2. Stormwater reuse for irrigation – 9 votes
3. Reuse water discharged from contaminated wells – 7 votes

MPCA is completing a feasibility study for Project 1007 to treat PFAS and reuse the water from 12 groundwater extraction wells for potable reuse. Additional information can be found at: <https://3msettlement.state.mn.us/projects/project-1007>

Projects designed to increase groundwater recharge (1/2)

Potential solutions identified by work group

1. Lake augmentation by pumping treated surface water from the chain of lakes into White Bear Lake
2. Treat wastewater from local Met Council interceptors and inject the treated wastewater into the aquifer to raise groundwater elevations
3. Stormwater collection and infiltration to raise groundwater elevations
4. Combination of lake augmentation and groundwater injection by treated wastewater
5. Lake augmentation by treating wastewater from local Met Council interceptors and pumping the treated wastewater into White Bear Lake
6. Augmentation of White Bear Lake or injection to groundwater from SPRWS treated water
7. Closed loop potable reuse - direct potable reuse

Projects designed to increase groundwater recharge (2/2)

Top 3 ranked solutions to evaluate

1. Lake augmentation by pumping treated surface water from the chain of lakes into White Bear Lake – 12 votes
2. Treat wastewater from local Met Council interceptors and inject the treated wastewater into the aquifer to raise groundwater elevations – 10 votes
3. Stormwater collection and infiltration to raise groundwater elevations – 8 votes

Other methods for reducing groundwater use (1/5)

Potential solutions identified by work group

1. Lawn watering restrictions (day of week and time)
2. Alternative turf grasses and landscaping
3. Tiered increasing block water utility rates
4. Leak detection and unaccounted for water audits
5. Smart irrigation control and rain sensor program
6. Education and outreach
7. Implement/require/encourage non-potable water reuse for irrigation and process water
8. Enforcement of adopted water conservation policies

Other methods for reducing groundwater use (2/5)

Potential solutions identified by work group (cont.)

9. Commercial and homeowner association irrigation cost share program
10. Pressure regulation on plumbing systems
11. Appliances and plumbing fixture efficiency program and smart irrigation control and rain sensor program
12. Centralized water softening
13. Less manicured lawn "turf"
14. Require commercial accounts that utilize water for cooling equipment to change to other methods for cooling
15. Incentify XERIscaping
16. Include conservation goals in water supply plans

Other methods for reducing groundwater use (3/5)

Top 3 ranked solutions to evaluate

1. Lawn watering restrictions (day of week and time) – 10 votes
2. Implement/require/encourage non-potable water reuse for irrigation and process water – 9 points
3. Tiered increasing block water utility rates – 6 points



Other methods for reducing groundwater use (4/5)

Alternative low input turf grasses

The University of Minnesota will complete a turfgrass species mixture trial at four possible Twin Cities metro area locations:

- (1) St. Paul campus of the University of Minnesota
- (2) Minnesota Landscape Arboretum in Chaska
- (3) UMORE Park in Rosemount, MN
- (4) A publicly accessible space in the eastern suburbs

Other issues and potential solutions not ranked but should be considered (5/5)



1. Future PFAS impacts, treatment requirements, and long-term costs
2. Raising outflow elevation of White Bear Lake to increase storage capacity of lake
3. Maintain existing groundwater wells as a backup supply source to a potential surface water system and study the feasibility of using them as peaking wells

Preliminary water demand projections (1/10)



One-on-one meetings

Met Council had one-on-one meetings with the communities to discuss the preliminary water demand projections for Year 2050 and ultimate development

Preliminary water demand projections (2/10)



Purpose of water demand projections

- Provide agreed-up projections to the DNR for updating the groundwater model to estimate future long-term impacts to White Bear Lake if communities remained on groundwater supply public water systems.
- Provide consistent projections for each of the consultants for sizing future infrastructure needs and estimating water conservation potential for each of the potential solutions to be evaluated.

Preliminary water demand projections (3/10)



Hugo's potential ultimate development scenarios

- Hugo 1 Development Scenario – Projected ultimate development water service population inside existing Metropolitan Urban Service Area (MUSA) = 37,000 people
- Hugo 2 Development Scenario (includes over 6,100 additional developable acres) – Projected ultimate development water service population inside and outside of existing MUSA = 102,492 people

Preliminary water demand projections (4/10)



Historical water use (2014-2023)

Year	Total Annual Gallons Pumped (ESPWater)	Daily Gallons Pumped	Water Service Population (*)	Average TGPCD
2014	9,198,624,357	25,201,711	255,690	98.56
2015	8,941,579,358	24,497,478	264,877	92.49
2016	8,806,460,965	24,127,290	269,205	89.62
2017	9,253,632,388	25,352,418	270,764	93.63
2018	9,147,624,275	25,061,984	276,565	90.62
2019	8,978,582,327	24,598,856	281,362	87.43
2020	9,568,153,249	26,214,118	285,392	91.85
2021	10,660,476,984	29,206,786	290,302	100.61
2022	10,359,950,985	28,383,427	289,928	97.90
2023	10,915,917,080	29,906,622	300,222	99.62
Range				87.41-101.18
Average (2014-2023)				94.23
% Above Average				6.77
% Below Average				-7.22

Preliminary water demand projections (5/10)



2023 versus 2050 - Projected water service population and average day water demand with Hugo 1 development scenario

- White Bear Lake area water service population - 300,222 people in 2023 versus 374,144 people in year 2050. An increase of 73,922 people.
- Average day water demand - 29.9 million gallons per day (MGD) in 2023 versus 36.7 MGD in year 2050. An increase of 6.8 MGD.

Preliminary water demand projections (6/10)



2023 versus ultimate development – Projected water service population and average day water demand with Hugo 1 development scenario

- White Bear Lake Area water service population - 300,222 people in 2023 versus 449,847 people at ultimate development. An increase of 149,625 people.
- Average day water demand - 29.9 MGD in 2023 versus 43.4 MGD at ultimate development. An increase of 13.5 MGD.

Preliminary water demand projections (7/10)



2023 versus ultimate development – Projected water service population and average day water demand with Hugo 2 development scenario

- White Bear Lake area water service population - 300,222 people in 2023 versus 513,339 people at ultimate development. An increase of 213,117 people.
- Average day water demand - 29.9 MGD in 2023 versus 48.8 MGD at ultimate development. An increase of 18.9 MGD.

Preliminary water demand projections (8/10)



Additional groundwater wells needed with Hugo 1 development scenario for ultimate development

- Hugo – 4 wells
- Lake Elmo – 6 wells
- Lino Lakes – 5 wells
- North Oaks – 4 wells (1 well is backup)
- Vadnais Heights – 1 well

Total – 20 wells

Preliminary water demand projections (9/10)



Additional groundwater wells needed with Hugo 2 development scenario for ultimate development

- Hugo – 16 wells
- Lake Elmo – 6 wells
- Lino Lakes – 5 wells
- North Oaks – 4 wells (1 well is backup)
- Vadnais Heights – 1 well

Total – 32 wells

Next Steps



- **Next meeting date:** 1-3 pm on Thursday, February 4, 2025
- Discuss scope of work for additional studies
- Presentation - DNR groundwater modeling update for future conditions in White Bear Lake Area
- Presentation - MPCA Project 1007 feasibility study



Questions?

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