Information Item

Metropolitan Area Water Supply Advisory Committee

Meeting Date: August 8, 2023

Topic

Content for chapters one and two of the updated metro area water supply plan

District(s), Member(s):	All
Policy/Legal Reference:	Minnesota Statute 473.1565
Staff Prepared/Presented:	Lanya Ross, Environmental Analyst, Water Resources, 651-602-1803
Division/Department:	Environmental Services

Background

MAWSAC is responsible for guiding and approving a metropolitan area master water supply plan, with input from the Technical Advisory Committee (TAC). The plan provides guidance for local water supply systems and future regional investments; emphasizes conservation, interjurisdictional cooperation, and long-term sustainability; and addresses reliability, security, and cost-effectiveness of the metropolitan area water supply system and its local and subregional components.

The Twin Cities metropolitan area water supply plan provides a framework for sustainable long-term water supply planning at the regional and local level in a way that:

- Recognizes local control and responsibility for water supply systems
- Is developed in cooperation and consultation with local regional, and state partners
- Protects critical habitat and water resources over the long term
- Meets regional needs for a reliable, secure water supply
- Highlights the benefits of integrated planning for stormwater, wastewater, and water supply
- Emphasizes and supports conservation and inter-jurisdictional cooperation
- Provides guidance by identifying key challenges and available approaches

The plan provides guidance to help communities take the most proactive, cost-effective approach to long-term planning and permitting to ensure plentiful, safe, and affordable water that supports the prosperity and livability of the region for future generations.

The updated metro area water supply plan will reflect 2022 MAWSAC recommendations and 2023 committee and local stakeholder engagement

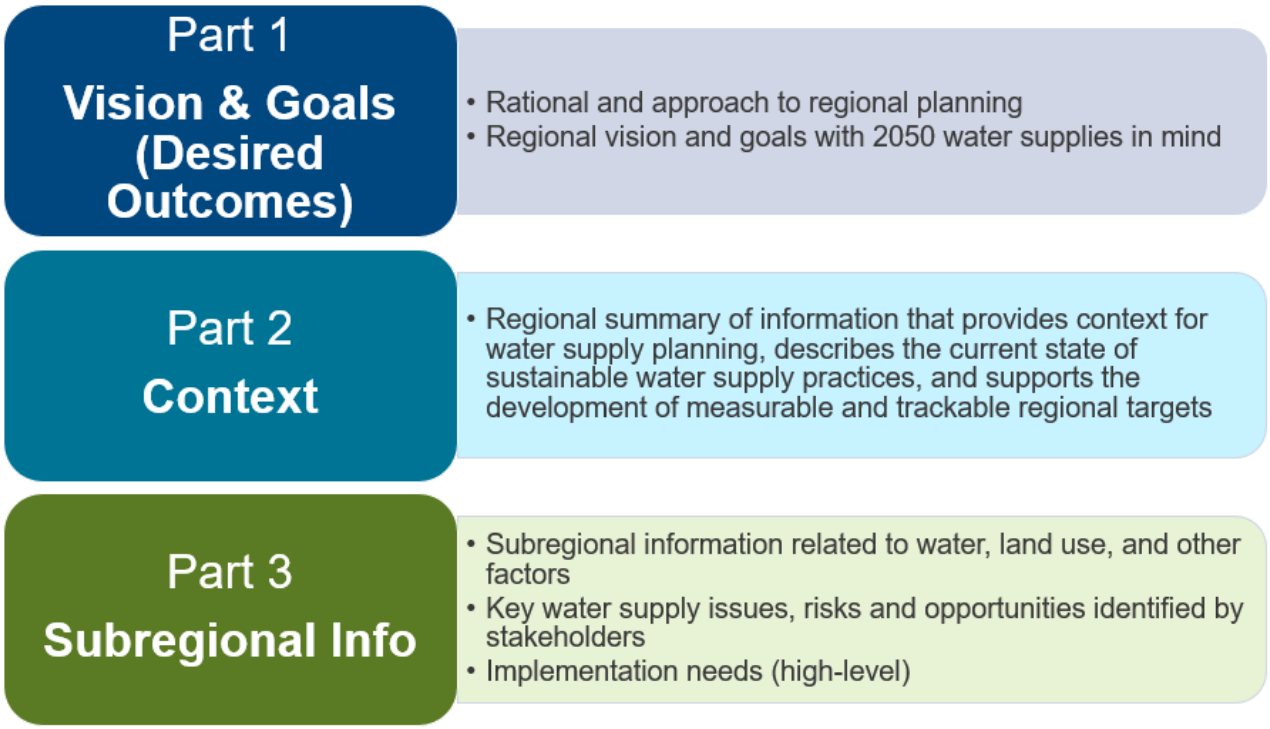
The Twin Cities metro area master water supply plan was first developed in 2010 and updated in 2015 in connection with the regional development guide and water resources policy plan. It is being updated again as part of the decadal update of the regional development guide.

MAWSAC, in its 2022 report to the Council and MN Legislature, recommended updating the 2050 regional plans to support MAWSAC goals, customized for subregional and local conditions.

Approximately 50 local water supply stakeholders provided input to the process at a workshop held in March 2023. Further subregional engagement is planned in 2023 and 2024 to inform the final plan.

The updated metro water supply plan is expected to include three key components

This business item focuses on the first and second parts: Vision & Goals and Context.



The rest of this document includes:

- Proposed table of contents for the full metro area water supply plan update
- Revised content for chapter one
- Proposed content for chapter two

Request to committee members: Review and provide input for chapters one and two of the updated metro area water supply plan

MAWSAC will be asked to recommend revisions to chapters one and two of the updated metro area water supply plan.

Note that the content for chapter one was generally endorsed by TAC and MAWSAC in December 2022. The current draft should be reviewed, but major changes are not expected.

This is the first time that MAWSAC will review the draft chapter two. Input will be used to substantially revise the draft.

Review as an individual committee member and share comments with Council staff. Also feel free to share with your organization and partners, with the goal of getting input to share with the Council – to ensure that you feel comfortable voting to approve the final draft.

Is there enough detail? Do we need to include more?

Should anything be revised or deleted?

Provide input on measures: What kinds of information helps understand progress?

Work on the plan will continue through 2023 and into 2024, with the goal of approving a complete plan in 2024.

CHAPTER ONE
UPDATED METRO AREA WATER SUPPLY PLAN
PROPOSED TABLE OF CONTENTS FOR COMPLETE PLAN

Chapter 1: Regional Outcomes

- Rationale for and approach to regional water supply planning
- Key components of the region's water supply system
- High-level roles of the Council and its partners
- Shared principles
- Desired outcomes for the region's water supply

Chapter 2: Regional Water Supply Planning Context (Draft)

The Water Supply Atlas may be referenced to provide more detailed information about the region's water supply conditions. Chapter two will be a regional summary of information that provides context for water supply planning, describes the current state of sustainable water supply practices, and supports the development of measurable and trackable regional targets. It may include:

- Regional water supply setting
  - The importance and scale of water supply management in the region
  - How the region uses water
  - How much water is used in the region
  - Water supply sources
  - Sustainable limits of sources
  - Infrastructure connecting sources to users
- Regional challenges
  - Climate
  - Development and redevelopment
  - Changing economy and demographics
  - Funding and financial conditions
- Regional strategies
- Regional dashboard measures to frame progress

Chapters 3-10: Subregional Water Supply Planning (Draft)

Content in each subregional chapter will be developed with subregional water supply work groups and will vary depending on each subregion's needs and interests. Potential content includes:

- Connection to regional planning
- Subregional water supply setting
- Subregional water supply issues (hazards and risks) that are a shared priority, described in a way that supports required content in Part IV of the local water supply plan template
- Subregional mitigation approaches of shared interest, drawing from existing information provided by communities in their existing local water supply plans
- Recommended strategies for the subregion, reflecting sustainable water supply practices tailored to each subregion's different conditions/resources
- Implementation plan, which may include Joint Powers Agreements of MOUs for cost sharing for professional services to assess or address common issues

CHAPTER ONE
UPDATED METRO AREA WATER SUPPLY PLAN
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CHAPTER ONE
UPDATED METRO AREA WATER SUPPLY PLAN

Rationale for and approach to regional water supply planning

Rationale for regional water supply planning

The Twin Cities seven-county metropolitan area is home to three million people, over half of Minnesota's population. Securing residents' safe and plentiful water – while protecting the region's diverse water resources – requires coordinated, interdisciplinary and ongoing effort.

The seven-county region is relatively water-rich. However, communities face a range of challenges as they work to meet current and future water demand. The region's population continues to grow. Groundwater pumping is increasing. Land use is changing. Naturally occurring and man-made pollutants impact water supplies. And variable weather like floods and droughts, as well as longer-term climate change, affect water supplies.

Bringing together the many different and changing facets of water supply into a regional picture is outside the scope of any one community, yet it is necessary to adequately plan for the region's growth and economic development.

The Metropolitan Council recognizes the responsibility and authority of local water suppliers to provide water. A regional perspective is also important, because the effects of local water supply decisions do not stop at community boundaries. Communities often share the same or interconnected water supply sources – aquifers cross many political lines, for example – and the cumulative impact of decisions made by individual communities can be significant.

The Metropolitan Council forecasts that the region will add about 824,000 residents over the next 25 years (note: this document will be updated with final forecasts before final approval and adoption). A pressing concern is the impact that future development might have on the reliability and availability of the region's water supplies.

The development of this plan is not motivated by widespread water shortages or crises. Rather, this plan is a response to the recognized benefits of developing and maintaining a plan that supports current and future populations without adverse impact to natural and economic resources.

The collaborative process to develop and implement the metropolitan (metro) area water supply plan supports communities to take the most proactive, cost-effective approach to long term planning and water supply permitting to ensure plentiful, safe, and affordable water for future generations.

How this plan relates to other regional and local plans

The metro area water supply plan is informed by and supports the 2050 regional development framework and is part of the water resources policy plan (figure 1). It more specifically provides water supply-related considerations for developing regional, subregional and local plans and supporting programs. It provides high-level vision and goals as well as subregional recommendations to inform local water supply plan and comprehensive plan updates.

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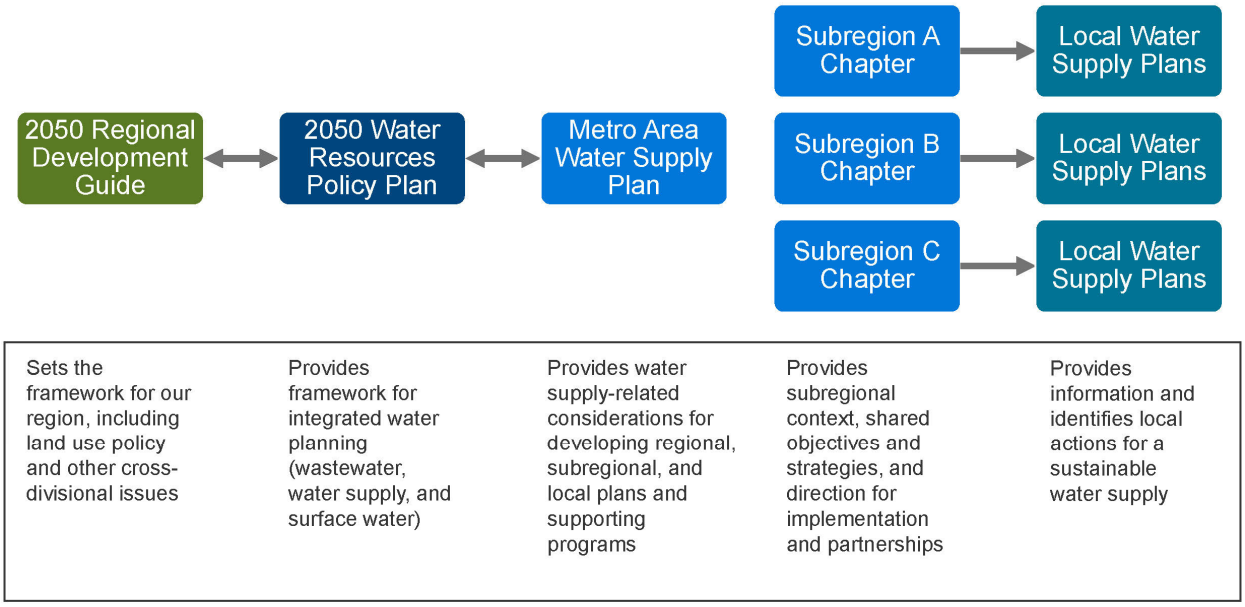

Figure 1. Relationship among different regional and local water supply plans that are part of the Met Council's comprehensive planning process. The Metro Area Water Supply Plan is a part of the Water Resources Policy Plan and provides water supply-related considerations for regional, subregional and local plans and supporting programs.

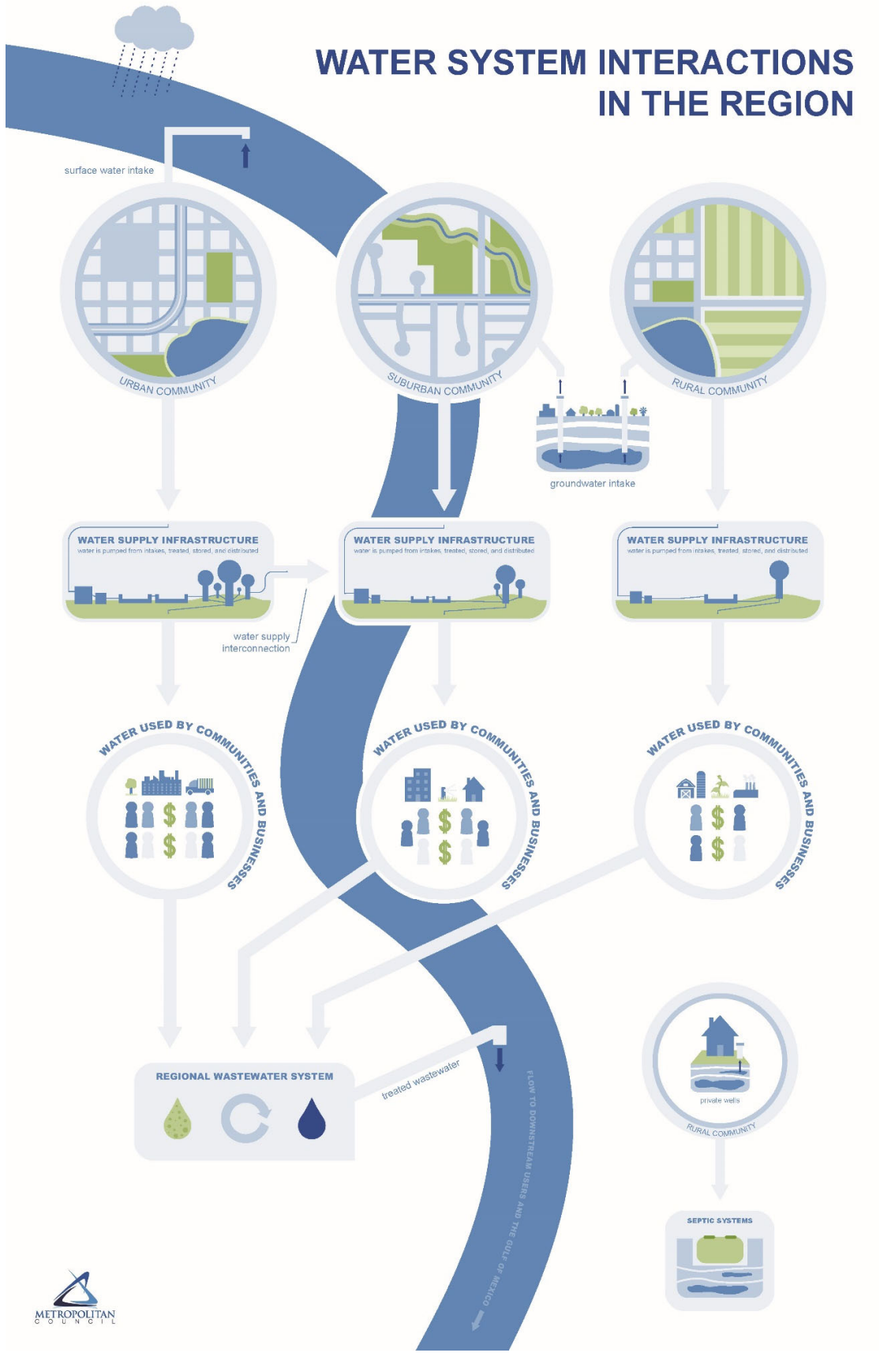

Figure 2. Illustration of key components of the region's water system, from source though use and reclamation to discharge back to the environment.

1.2 Key components of the region's water supply system

As illustrated by figure 2, the ultimate source of water for the region is the precipitation that falls locally and in upstream watersheds.

The amount and quality of water that we are able to pump from surface water and groundwater sources is controlled by the environment that the precipitation moves through to reach those pumps. In this region, we have urban, suburban, and rural communities – all with different surface water resources, soils and geology, and land use patterns.

Private wells serve parts of many communities, but local public water supply infrastructure serves the bulk of the region and includes the surface water intakes, wells, and any interconnections; treatment; storage; and distribution pipes that provide safe water. Private homes and businesses may use private wells or connect to a community water supply system. Private well and septic system infrastructure processes are designed to meet well code and local ordinances.

Reuse of stormwater is a source that is sometimes used to supply nonpotable water demand, usually for irrigation. The size and design of stormwater reuse infrastructure varies considerably across the region and is influenced by changing local and state guidance. **TAC: what key messages should the report include about stormwater reuse?**

It is the people and businesses in those communities who pay for the water supply infrastructure, with very limited help as needed by state and federal funding through programs like the Minnesota Public Facilities Authority Drinking Water and Clean Water Revolving Funds. People and businesses use water for a wide range of purposes; clean water is critical for everyone to function. The same people and businesses also pay to dispose of the water once it has been used.

Local wastewater infrastructure collects used water and conveys it to a regional system. Private homes and businesses may use private septic or connect to a community wastewater system. Private well and septic system infrastructure processes are designed and managed to meet well code and local ordinances.

Regional wastewater treatment reclaims water to meet state and federal water quality standards. The treated effluent is discharged back into the environment, sometimes cleaner than the water it is being put back into. From there, water flows downstream to other users and eventually to the Gulf of Mexico.

Water supply conditions vary across the region and from community to community. A key challenge for regional water supply planning is that each city is unique with access to different sources, using different treatment approaches, and supplying different uses. For example, some communities have large commercial and industrial demand while others use water mainly for residential purposes. What works for one community may not work or fit for another nearby community – which must be considered when setting regional goals and objectives and tracking progress for the region's shared water supply resources.

The Water Supply Atlas provides more detailed information about the water supply conditions across the region.

1.3 High-level roles of the Council and its partners

Everyone – agencies, business, individuals – has a responsibility for ensuring sustainable water supply planning. Collaborative actions are needed at the individual level, the community level, the regional level, and the state and federal level.

- *Private Water Supply (Well) Owners* develop, maintain and use wells for domestic and commercial purposes. All are required to be in compliance with the well code and local ordinances, although additional well management expectations vary among domestic (household) well owners, industrial/commercial well owners, and crop irrigators as their interest and issues are quite different.
- *Communities/Public Water Suppliers* provide water to customers in compliance with Safe Drinking Water Act standards; set rates to support systems; develop and maintain infrastructure; monitor drinking water quality and quantity; ensure emergency procedures are in place; develop and enforce demand-reduction measures; plan for land use, water supply and capital improvements; and may regulate water use and well drilling. Some communities may, if delegated by the Minnesota Department of Health, have authority to regulate the construction, sealing, and maintenance of wells (examples: Bloomington and Minneapolis). Communities also have land use planning authority.
- *Metropolitan Council*, as the regional policy-making body, planning agency, and provider of essential services, brings stakeholders together to set regional strategy and provide essential regional services. It provides planning support and direction, operates the state's largest wastewater treatment system, and provides regional water planning and monitoring.
- *State water agencies* as regulators have a role incentivizing public and private sectors to improve service. They collect and analyze water information; assess water supply risks (quantity and quality); develop standards and rules; license contractors and other professions that impact drinking water (such as well drillers); regulate water use appropriations, water well construction and sealing, and land use activities; develop best management practices; approve local plans and permits; administer funding programs; and provide technical assistance and training.
- *Counties* have authority to prepare and adopt groundwater plans and guide land use that includes zoning, shoreland, and mining operations. Townships may delegate authority to the county to do land use planning on their behalf, for example. Some counties may also, if delegated by the Minnesota Department of Health, have authority to regulate the construction, sealing, and maintenance of wells (example: Dakota).
- *Soil and Water Conservation Districts* may, if the authority is delegated by the county, prepare and adopt county groundwater plans, set priorities, address issues, and build local capacity for the protection and management of groundwater.
- *Watershed Organizations (Watershed Districts and Watershed Management Organizations)* work to protect water resources through watershed management plans and the work they do to implement those plans. This can include working with local governments on land use planning issues, water quality and quantity monitoring and management activities, and other conservation projects.
- *Minnesota Legislature* provides policy direction and, in some cases, directs funding.

1.4 Shared principles

Whether public or private, all water supplies are drawn from an essential natural resource that is shared by the entire region.

The present and future challenge of providing citizens with an adequate, safe supply of water extends across community boundaries. The contributions of all participants—utilities, communities, environmental groups, and others—have value in how communities manage water.

MAWSAC's seven principles guide how the Council and its partners approach work to achieve sustainable water supplies for the region:

1. Water supply planning is an integral component of long-term regional and local comprehensive planning.
2. An understanding of the region's long-term water supply availability and demand is necessary to identify a specific community's or subregion's water sources.
3. All hydrologic system components, naturally occurring and human-built, must be carefully evaluated when planning water infrastructure.
4. The quality of the region's water is a critical component of water supply planning.
5. Interjurisdictional cooperation is a viable option for managing short-term water supply disruptions and for sustainably meeting long-term water supply needs.
6. Regional and local cost-effectiveness and fair cost-sharing are considered when identifying water supply options.
7. Wise use of water supplies is critical to ensuring adequate supplies for future generations.

1.5 Desired outcomes for the region's water supplies

Ensuring sustainable water supply for the region, now and in the future

This plan sets out to achieve a sustainable water supply for the entire region now and in the future. This means: all people have access to clean, safe, affordable water and wastewater services; all water and wastewater systems have sufficient funding to provide affordable services; and all communities share in the economic, social, and environmental benefits of investment in water systems.

Focusing regional water supply work on shared priorities

Regional goals provide broad directional statements that more specifically define desired future conditions – if the vision is successful, what does the region look like? The following goals illustrate what the Council, with its partners, will work toward for the region's water supplies:

1. *Water Supply Infrastructure.* Communities can act quickly, thoughtfully, and equitably to address aging infrastructure, contamination, changing groundwater conditions, changing water demand, and financial challenges.
2. *Water Quality.* Communities have the resources they need to provide a safe water supply. A shared process is developed that allows communities, water utilities, and regulators to respond in a more coordinated and effective way to both contaminants of emerging concern and existing contamination.
3. *Land Use and Water Supply Connections.* Public water suppliers, land use planners, and developers have tools, funding and authority to work together – supported by aligned

agency directions - to guide and support development in ways that balance communities' economic needs while protecting the quantity and quality of source waters that are vital to the region's communities.

4. *Understand and Manage Groundwater and Surface Water Interactions.* Water resource managers, community planners, and leaders understand how groundwater and surface water interact and how those interactions impact water supply sustainability.
5. *Sustainable Water Quantity.* Communities and water agencies understand the sustainable limits of groundwater and surface water sources. Agency directions are aligned and support local plans to supply demand that exceeds sustainable withdrawal rates using the most feasible combination of alternative groundwater or surface water sources, conservation, reclaimed wastewater and stormwater reuse.

Key steps for action

The following steps set a regional framework for action in areas that will help achieve the desired outcomes for the region's water supply.

Recognizing the different conditions across the region, specific activities are likely to vary and will be described in more detail in the subregional chapters of the plan.

Measures can be set and tracked for both the region and by subregion, to keep attention and resources focused on planned work and adapt to improve outcomes. A culture of continuous improvement increases the likelihood that plan updates incorporate lessons learned, knowledge is being shared among staff, and procedures are effective and up to date.

Collaboration is enhanced and capacity is increased

- Leaders are engaged through MAWSAC, TAC, subregional work groups and other venues
- Technical experts are connected to plan and for project scoping and deliverables
- Capacity is increased through outreach, training, and career development opportunities

The region's water supply system and its subregional components are assessed

- The region's water supply system is documented at a multi-community scale and information gaps are filled
- Technical studies provide up-to-date information about water supply hazards across the region
- Local and, if developed, subregional water supply plans include an evaluation of water supply risks, based on known hazards

Mitigation measures are evaluated

- Existing and potential mitigation measures for priority risks are identified and evaluated through technical studies
- Risks are reassessed and prioritized risks, after taking into consideration the effectiveness of mitigation measures.

Practices to reduce risk are planned for and implemented

- Work is guided by subregional water supply groups, consistent with regional policies and state regulation
- Technical assistance by Council and partners is targeted to support MAWSAC and subregional goals
- Coordinated plan for emergency response linked to increased funding, to better prepare for the unexpected
- Updated comprehensive plans, budgets, and monitoring programs to support both economical growth and the implementation of risk reductions practices

The following general practices to promote sustainable water supplies have been identified. Chapter two of the plan will provide regional information describing the current state of these practices and supporting the development of measurable and trackable targets. Subregional chapters may also include information about practices customized for conditions in those areas.

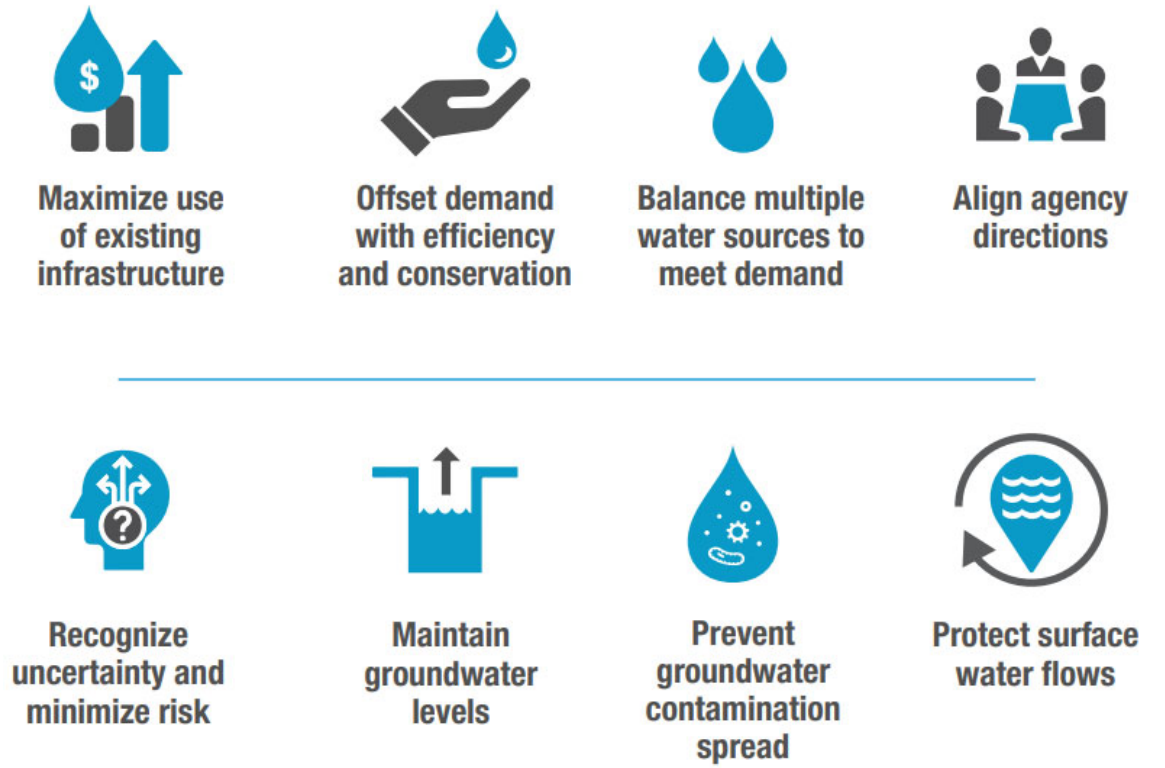

Figure 3. Sustainable water supply practices to support the vision of sustainable water supplies for the region.

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UPDATED METRO AREA WATER SUPPLY PLAN
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F. Regional ratio of summer to winter monthly municipal water use
G. Regional average residential water use per person
H. Total water use (groundwater, surface water, stormwater reuse, and combined)
I. Trend in groundwater observation wells and piezometers
J. Water quality trends
K. Number of communities participating in Council water supply-related incentive programs
L. Number of water supply system partnerships for maintenance and emergency back-up
M. Land use change in recharge areas

CHAPTER TWO
UPDATED METRO AREA WATER SUPPLY PLAN

Note to reviewers: Infographics will be developed to support the information presented in Chapter 2. These will be drafted once TAC and MAWSAC generally agree on the core content.

Chapter 2 is intended to provide high-level information that will be most impactful for communicating with local and state decision-makers and water planners. More detailed information about water supply conditions in the region will be available in the Water Supply Planning Atlas and water resource policy papers.

The proposed statistics can be calculated using various existing datasets such as currently adopted local water supply plans, the Minnesota Permitting and Reporting System, the Minnesota Drinking Water Information System, geospatial data on Minnesota Geospatial Commons, and Met Council datasets.

Some questions to consider: What year(s) should we use as baseline references? How should the sustainable flows of the region's major rivers be considered? What approach would you recommend taking to estimate the current capacity of the public water supply systems in the Twin Cities metro area?

2.1 Regional water supply setting

The success or failure of water supply management in our region impacts over half of Minnesota's population and over half of Minnesota's jobs across 182 communities. Additionally, our water supply management impacts the unique water-loving plant and animal habitats that are a core piece of our regional identity. For example, many of the lakes, wetlands and streams are connected to the groundwater we also use for water supply.

Water supports what we do every day: drinking, eating, bathing, washing dishes, flushing toilets at home/work/school/events, watering gardens and lawns at home and at work, manufacturing products, bottling beverages, irrigating agriculture fields and orchards, cooling power plants, construction, mining, transporting materials by barge, fishing, swimming, boating, and more.

Most of the region's water is used by power generators, public water supply systems, individual irrigators, and individual projects that generally fall into special categories and water level maintenance.

Based on available data, in 2020, people using municipal water systems in the twin Cities metro area used an average of approximately 105 gallons of water each day for those purposes. Residents using municipal water used approximately 60 gallons of water per person per day. Water use varies from day to day, month to month, and year to year.

Our water comes from several different sources – both surface water and groundwater. While abundant, these sources do have limits and different management considerations.

Groundwater modeling suggests that the ultimate sustainable capacity of the groundwater sources in the Twin Cities metro area is roughly 400-500 MGD (Met Council, 2015).

The sustainable capacity of regional surface water sources in the Twin Cities metro area takes into consideration that flow in the Mississippi, Minnesota, and St. Croix rivers exceeds 3,000 MGD 90% of the time.

Water gets from the source to end users through a complex network of private and public infrastructure investments. Approximately 10,000 miles of municipal water supply distribution pipes bring treated water from over 100 treatment plants to residents and businesses connected to public water systems. Additionally, privately-owned wells also provide water through approximately 60,000 residential wells and 5,000 business wells (MDH, 2022b; MDH, 2023b).

The current capacity of the public water supply systems in the Twin Cities metro area is ### MGD (TBD). ***MAWSAC and TAC: What approach would you recommend taking?***

2.2 Regional challenges

In the years ahead, our region will have to wrestle with maintaining existing systems while addressing some significant challenges.

Current and future climate

Climate is the ultimate source of water, it is one of the biggest drivers of how we use water, we have no control over it, and it is changing in hard-to-predict ways. Over the past several years, temperatures have increased and larger more frequency extreme precipitation events are occurring (DNR, 2023d). The growing season has gotten two weeks longer since the 1950s (University of Minnesota, 2023). Looking ahead, Minnesota is the state with the strongest winter warming in the continuous United States and predictions suggest ongoing warming in all seasons, especially winter, as well as shallower snow depth and fewer days with snow cover (Liess, et al, 2022). To learn more: ***MAWSAC,*** w***hat resources do you recommend?***

Water demand impacts of development and redevelopment

Development and redevelopment across the region will cause changes in water demand. The projected water demand for 2050 is ### MGD, based on an assumed regional population of #.# million people using an average of ### gallons per day. Significant infrastructure investments are planned for public water supply system treatment, wells/intakes, and distribution. To learn more: ***MAWSAC,*** w***hat resources do you recommend?***

Water quality impacts of development and redevelopment

Development and redevelopment across the region may also change the scope water contamination. 2050 forecasts indicate that land use in vulnerable drinking water supply management areas could change in the following ways, under current land use policy A graph of change in acres of different land use types in vulnerable DWSMAs. Some current widespread examples of water supply contamination resulting from development choices include PFAS and nitrate. To learn more: ***MAWSAC,*** w***hat resources do you recommend?***

Workforce impacts of changing economy and demographics

Changing economy and demographics also has implications for current and future workforce. The 2023 regional forecast update finds that workforce constraints limit job growth through most of the forecast period (Met Council, 2023). To learn more: ***MAWSAC,*** w***hat resources do you recommend?***

Finance and investment needs and opportunities

Funding and financial conditions also affect approaches. The U.S. Environmental Protection Agency estimates the 20-year drinking water infrastructure need for Minnesota at over $7.5 billion. An emerging area of concern is the amount of lead in our drinking water, which is caused by lead service lines. Recently, Minnesota increased the Safe Drinking Water Connection Fee from $6.36 to $9.72 per service connection per year starting in 2020, which will restore $80 million over 20 years for local infrastructure needs (ASCE, 2022). To learn more: ***MAWSAC,*** w***hat resources do you recommend?***

MAWSAC: What approach would you recommend taking for a discussion like this → There **is/is not** a projected deficit between regional projected demand and the regional groundwater capacity. However, there **is/is not** a projected deficit between regional projected demand and the regional municipal water treatment capacity. The cost to increase treatment capacity is significant and depends upon several factors. Recent examples of project costs can be found in the City of Dayton, OTHERS.

The age of water supply infrastructure in the region is increasing, increasing the need for maintenance and/or replacement. Based on information reported by communities in local water supply plans, the regional average age of installation of water treatment plants, distribution, and wells are #, #, and # years respectively. Recent examples of projects costs can be found in EXAMPLES. ***MAWSAC: What approach would you recommend taking?***

2.3 Regional strategies

Note to reviewers: What region wide programs and projects should Met Council, with partners, commit to supporting over the next 10 years?

Expect to see substantial review of the content in this section over the coming months, as more input is received through subregional engagement and as regional policies are developed for the 2050 Water Resources Policy Plan. To be most effective, the work identified in this section should be supported by related regional policy and Met Council staff are closely coordinating the Metro Area Water Supply Plan and the Water Resources Policy Plan.

Chapter one identified a framework for action in areas that will help achieve the desired outcomes for the region's water supply. That framework encompasses a wide range of strategies at various scales from local to state. This section highlights strategies that are most effectively done region wide. Subregional chapters will include strategies that are best targeted for the different resources in those areas. The following strategies would primarily be managed by Met Council with input from and to support local and state goals.

Region wide support for enhancing collaboration and increasing capacity should include:

- Support for subregional collaboration for water plan development and implementation, promoting integrated water and aligned organizational approaches
- Support for regular multi-community emergency response training (drought, contamination, etc.)
- Region-wide communication plan for science, impacts, solutions, and funding timelines
- Additional efforts as identified by stakeholders

Region wide assessment of the water supply system should include:

- Support for technical studies that fill regional gaps in the state's water supply-related datasets
- Support for regional water balance modeling, surface and groundwater availability analyses
- Support for regional water demand projections (including scenarios)
- Enhance Met Council Environmental Services water monitoring program to identify opportunities to better support regional water supply planning
- Additional efforts as identified by stakeholders

Region wide evaluation of mitigation measures should include:

- Regional water supply risk assessment to identify areas for enhanced mitigation measures
- Feasibility and cost benefit of enhancing stormwater reuse

Region wide practices to promote planning and implementation to reduce risk should include:

- Support multi-community concept-level analyses of long-term water supply alternatives
- Development of a regional emergency response plan template
- Support for water supply system asset management planning
- Development of inter-agency local comprehensive and water supply plan review standards and technical assistance programming
- Support for water efficiency outreach and incentives through grants and partnerships and funding for organizations like the University of Minnesota Extension, Minnesota Technical Assistance Program and others

As work plans are developed, the following milestones should be considered:

Note to reviewers: What milestones or conditions should be considered as water supply planning and implementation unfolds through 2035? Please add to or revise the table below.

Consider what would be a good high-level 10-year+ milestone/accomplishment versus items that would be most effective to include in a shorter-term work plans or investment plans.

Activities and milestones to inform water supply planning work 2025-2035

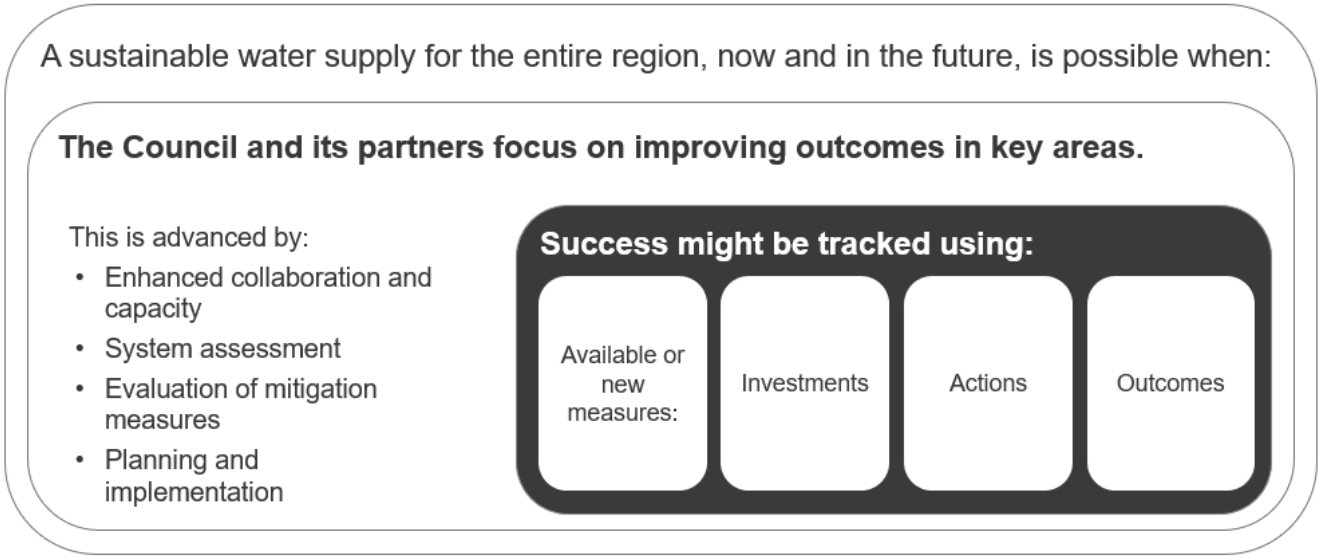
Year	Activities and milestones
Ongoing	Annual subregional collaboration among partners on items identified in the MWSP Implementation Work Plan, through subregional framework established in this plan Bi-annual funding recommendations promoted at legislature, to advance work that provides regional water supply benefit as outlined in this plan Annual or bi-annual update of a Metro Area Water Supply Plan implementation dashboard Annual or bi-annual update and publication of a Council MWSP Implementation Work Plan
2025	State water agency and Council expectations for local water supply-related plans are consistent and review processes are coordinated Regional water supply incentives are targeted through updated Council policies and programs Guidance and technical assistance are provided to local governments and water supply partners, so that the update of local plans advance water supply goals (note: includes systems statements, local planning assistance programming) Local governments begin to update local comprehensive plans and related water supply plans to reflect 2050 forecasts and updated regional policy Met Council will report to the legislature about findings, recommendations, and continuing planning activities
2026	Met Council, with support from local water supply planning partners, will promote funding recommendations at the legislature to support local implementation of water supply-related projects that provide subregional or multi-community benefit as identified in local and subregional water supply plans
2027	Met Council will submit to the legislature a comprehensive plan to ensure communities in the White Bear Lake area have access to sufficient safe drinking water and sustainable surface water and groundwater resources for current and future generations. MAWSAC will report to the legislature with information required under MS 473.1565.

Year	Activities and milestones
2028	All local comprehensive plans submitted to MC and are informed by the updated MWSP; analysis of local plans to ID regional conditions, trends, gaps, etc. Local comprehensive plans and related water supply plans are updated to reflect 2050 forecasts and updated regional policy
2029	Very intentional conversation around funding needs for future work, both planning and implementation (next 5 years of Clean Water Fund recommendations, and then after that)
2030	Report to legislature on water supply planning with recommendations for funding, to be included in the Minnesota Water Plan
2031	
2032	MAWSAC will report to the legislature with information required under MS 473.1565.
2033	Last budget cycle under current Clean Water Fund
2034	A dedicated funding source is in place; Regional development guide and regional policy/system plans updated
2035	Report to legislature on water supply planning Council provides guidance/expectations to LGUs to inform the update of their local plans in ways that advance water supply goals (systems statements) and reflect 2060 forecasts and updated regional policy Regional guidance incentives are targeted through updated Council policies and programs

2.4 Regional dashboard measures to frame progress

By acting across the complete water system, the Council and its partners can improve outcomes in key areas, to achieve a sustainable water supply for the entire region now and in the future.

Figure 4. By acting across the compete water system, the Council and its partners can improve outcomes in key areas, to achieve a sustainable water supply for the entire region. Available or new measures can be used to track success. This figure illustrates the relationships between the regional desired outcomes for water supply, actions, and measures.



Measures

The success of the Council's and partners' actions will be tracked using available and new measures:

- Investment measures help to track how much and where Metro Area Water Supply Plan implementation resources are being directed.
- Action measures help to track state and local efforts and Met Council work supported by the MWSP, resulting from those investments.
- Outcomes measures help to track whether the investments and actions are resulting in sustainable water supply management.

To support consistent and ongoing update, the following measures will be based on datasets that are regularly updated and published by Met Council and agency partners. Annual surveys of local partners are also proposed, to monitor implementation of policies and provide information beyond what is reported in local water supply and comprehensive plans.

The following measures were developed based on information in the 2015 Twin Cities metropolitan area water supply plan; input from MAWSAC, TAC and subregional water supply stakeholders; and on Met Council reporting measures used for Clean Water Fund appropriation requests.

Measures may illustrate progress in one or more of the following areas: water supply infrastructure, water quality, land use and water supply connections, groundwater and surface water interaction, and sustainable water quantity.

CHAPTER TWO
UPDATED METRO AREA WATER SUPPLY PLAN

Note to reviewers: As you review the measure on the following pages, please suggest deletions, replacements, and additions. Share questions and concerns.

Consider: What would help to track the development and impact of policy and funding recommendations? What regional measures would be helpful to ensure we are recognizing uncertainty and minimizing risk? What would help track how well we are aligning agency directions? What measures help us scan for inequities?

These are all preliminary drafts and substantial revision is expected.

Investment measures

A. *Amount of state funding for regional and subregional water supply planning and implementation*

This measure supports progress in the following areas: water supply infrastructure, water quality, land use and water supply connections, groundwater and surface water interaction, and sustainable water quantity.

Proposed Method: Track bi-annual appropriations to Met Council for water supply-related work from the General Fund, the Clean Water Fund, or other sources. Clean Water Fund appropriations are related to annual reporting on the Legacy website.

Proposed Target: Funding adequate to support bi-annual multi-community technical projects in each of the metro area's water supply subregions and to enhance local water efficiency programs across the region.

Why this measure is included: This measure was reported by Met Council in its 2020 report on water supply planning activities to the Minnesota Legislature. It indicates the scale of resources available to support the work and level of support for metro area water supply sustainability from state leaders.

B. *Amount of Council investment in partnerships to reuse reclaimed wastewater*

This measure supports progress in the following areas: water supply infrastructure, water quality, land use and water supply connections, groundwater and surface water interaction, and sustainable water quantity.

Proposed Method: TBD.

Proposed Target: TBD.

Why this measure is included: This measure was identified by subregional stakeholders in May 2023. Note: this measure may not be relevant include, based on Met Council work so far that indicates that reusing reclaimed wastewater is not yet cost-effective.

C. *Partnership/collaboration on legislative efforts and funding recommendations*

This measure supports progress in the following areas: water supply infrastructure, water quality, land use and water supply connections, groundwater and surface water interaction, and sustainable water quantity.

Proposed Method: TBD.

Proposed Target: TBD.

Why this measure is included: This measure was identified by subregional stakeholders in May 2023, related to supporting coordinated efforts for legislative and funding recommendations including programs for financing for agencies of need.

Action measures

A. Number of partners participating in Council-facilitated water supply work groups and events

This measure supports progress in the following areas: water supply infrastructure, water quality, land use and water supply connections, groundwater and surface water interaction, and sustainable water quantity.

Proposed Method: Tracking and annual reporting on the organizations participating in MAWSAC, TAC, subregional work groups, Council-led water supply planning and project teams, and other Council-facilitated water supply-related meetings and events.

Proposed Target: TBD

Why this measure is included: This measure was first proposed in the 2015 Twin Cities Metropolitan Area Master Water Supply Plan (focusing on communities only). Revised to include all partners in general, supports that plan's description of sustainable water supply as that aligns agency directions. A version of this measure has also been used by Met Council to report on Clean Water Fund appropriation impact. It is also related to the 2023 MAWSAC report action step: collaboration is enhanced and capacity is increased.

B. Record of planning guidance provided, including workshops, presentations, planning tools provided, and other related information

This measure supports progress in the following areas: water supply infrastructure, water quality, land use and water supply connections, groundwater and surface water interaction, and sustainable water quantity.

Proposed Method: Tracking and annual reporting about water supply-related guidance tools and training events provided to stakeholders and promoted through Met Council Local Planning Assistance PlanIt program and other venues.

Proposed Target: TBD

Why this measure is included: This measure was first proposed in the 2015 Twin Cities Metropolitan Area Master Water Supply Plan. It is similar to another measure identified in the 2015 Twin Cities Metropolitan Area Master Water Supply Plan: communications, internal and external. It is also related to the 2023 MAWSAC report action steps: collaboration is enhanced and capacity is increased, and practices to reduce risk are planned for and implemented.

C. Current state of sustainable water supply practices

This measure supports progress in the following areas: water supply infrastructure, water quality, land use and water supply connections, groundwater and surface water interaction, and sustainable water quantity.

Proposed Method: Annual survey of water supply stakeholders across the region, focusing on capital plan progress (TBD).

Proposed Target: TBD

Why this measure is included: This measure was identified by MAWSAC, TAC, and subregional stakeholders in 2023. It is similar to these other measures identified in the 2015 Twin Cities Metropolitan Area Master Water Supply Plan: record of implementation strategies that will be completed by water suppliers, as identified in approved and adopted local water supply plans; number of subregional solutions acted on and implemented; number and type of implementation strategies planned; and projects accomplished.

D. Approved community comprehensive plans are consistent with Council policy and align with state water supply goals

This measure supports progress in the following areas: water supply infrastructure, water quality, land use and water supply connections, groundwater and surface water interaction, and sustainable water quantity.

Proposed Method: Annually tracking and reporting on plan review process using Met Council's Local Planning Assistance document management program.

Proposed Target: All updated local comprehensive plans are authorized by Met Council, because they meet review standards for consistency with Council policy and alignment with state water supply goals, including inclusion of 30-year CIP.

Why this measure is included: This measure was first proposed in the 2015 Twin Cities Metropolitan Area Master Water Supply Plan (approved community comprehensive plans) and supports that plan's description of sustainable water supply as that which aligns agency direction. This measure was also identified by subregional water supply stakeholders in March 2023.

E. Local comprehensive plan amendment impacts on approved community comprehensive plans

This measure supports progress in the following areas: water supply infrastructure, water quality, land use and water supply connections, groundwater and surface water interaction, and sustainable water quantity.

Proposed Method: Annually tracking and reporting on plan review process using Met Council's Local Planning Assistance document management program.

Proposed Target: Plan, including capital plans, are followed and unchanged

Why this measure is included: This measure was also identified by subregional water supply stakeholders in March 2023.

F. Number of wells sealed in wellhead protection areas

This measure supports progress in the following areas: water supply infrastructure, water quality, land use and water supply connections, and ___.

Proposed Method: Track the number of reported sealed wells in the seven-county metro area in the Minnesota Well Index.

Proposed Target: TBD

Why this measure is included: This measure was first proposed in the 2015 Twin Cities Metropolitan Area Master Water Supply Plan and supports that plan's description of sustainable water supply as that which prevents groundwater contamination spread.

G. Planning and zoning controls for wellhead protection and recharge areas

This measure supports progress in the following areas: TBD

Proposed Method: In the Met Council review of updated local comprehensive plans, compile and report on identified local controls addressing source water protection.

Proposed Target: All communities in designated Source Water Protection Areas have identified and committed resources to local land use controls to protect source waters and recharge areas.

Why this measure is included: This measure was first proposed in the 2015 Twin Cities Metropolitan Area Master Water Supply Plan and supports that plan's description of sustainable water supply as that which aligns agency directions. This measure was also identified by subregional water supply stakeholders in March 2023.

Outcome measures

A. Customer confidence and satisfaction

This measure supports progress in the following areas: Water supply infrastructure and __.

Proposed Method: Proposed annual survey of water supply stakeholders across the region, assessing people's knowledge about how systems are balancing growth and protection and what success looks like, and their attitudes/level of trust toward their water supply utilities.

Proposed Target: High level of knowledge and confidence

Why this measure is included: This measure was identified by MAWSAC and TAC in 2022 and subregional water supply stakeholders in March 2023.

B. Water treatment effectiveness

This measure supports progress in the following areas: Water supply infrastructure, water quality and __.

Proposed Method: Track and report annual public water supply system drinking water violations in the seven-county metropolitan area (MDH 2023).

Proposed Target: No violations in the seven-county metropolitan area

Why this measure is included: This measure was identified by MAWSAC and TAC in 2023.

C. Available [municipal water system] capacity

This measure supports progress in the following areas: Water supply infrastructure, land use and water supply connections, sustainable water quantity and __.

Proposed Method: TBD. Consider comparison of existing and planned water demand versus water supply capacity. Consider comparison of infiltration/recharge achievements to withdrawals.

Proposed Target: TBD. Long range planned water demand is less than current or planned capacity. There is enough surplus supply to rest wells, allowing for recharge.

Why this measure is included: A measure to evaluate current and planned water demand versus sustainable limits was identified by MAWSAC and subregional water supply stakeholders in 2023. This also relates to the 2015 Master Water Supply Plan description of sustainable water supply as that which maximizes the use of existing infrastructure within sustainable limits.

D. Number of private wells drilled

This measure supports progress in the following areas: Water supply infrastructure, land use and water supply connection, sustainable water quantity and ___.

Proposed Method: Search the Minnesota Well Index for the number of new domestic and business wells drilled each year in the seven-county metro area and compare the number of wells sealed in the same area over the same time period (MDH, 2022b).

Proposed Target: TBD

Why this measure is included: This measure was identified by subregional water supply stakeholders at a workshop in March 2023, as proxy for tracking private water demand.

E. Regional average total municipal water use per person

This measure supports progress in the following areas: Water supply infrastructure, land use and water supply connection, sustainable water quantity and ___.

Proposed Method: Calculate by dividing total regional municipal water use (including residential, commercial, and industrial) in the seven-county metropolitan area by the population served by public municipal water supply systems (DNR, 2023a; MDH, 2023a).

Proposed Target: Regional average of less than 90 gallons per capita per day (current target in 2015 MWSP)

Why this measure is included: This measure was first proposed in the 2015 Twin Cities Metropolitan Area Master Water Supply Plan and supports that plan's description of sustainable water supply as that which offsets demand with water efficiency and conservation.

F. Regional ratio of summer to winter monthly municipal water use

This measure supports progress in the following areas: Water supply infrastructure, land use and water supply connection, sustainable water quantity and ___.

Proposed Method: Calculate by dividing municipal summer monthly water use in the seven-county metropolitan area by the municipal winter monthly water use (DNR, 2023).

Proposed Target: Regional ratio of summer vs. winter monthly water use is less than 1.6 (the 1990-1994 average ratio used as the current target in 2015 MWSP)

Why this measure is included: This measure was first proposed in the 2015 Twin Cities Metropolitan Area Master Water Supply Plan and supports that plan's description of sustainable water supply as that which offsets demand with water efficiency and conservation.

G. Regional average residential water use per person

This measure supports progress in the following areas: Water supply infrastructure, land use and water supply connection, sustainable water quantity and ___.

Proposed Method: Calculate by dividing regional average residential water use in the seven-county metropolitan area by the population served by public municipal water supply systems (DNR, 2023a; MDH, 2023a).

Proposed Target: TBD. Regional average of less than 75 gallons per capita per day (current target in local water supply plan template)

Why this measure is included: This measure was first proposed in the 2015 Twin Cities Metropolitan Area Master Water Supply Plan and supports that plan's description of sustainable water supply as that which offsets demand with water efficiency and conservation.

H. Total water use (groundwater, surface water, stormwater reuse, and combined)

This measure supports progress in the following areas: TBD

Proposed Method: Report total annual consumptive surface water and groundwater water use for all users in the seven-county metro area that require a DNR water appropriation permit (DNR, 2023a). More work is needed to reliably track stormwater reuse in the region.

Proposed Target: TBD. Reduced regional draw from aquifers and increased stormwater reuse

Why this measure is included: This measure has been used by Met Council to report on Clean Water Fund appropriation impact. This also supports the 2015 Twin Cities Metropolitan Area Master Water Supply Plan's description of sustainable water supply as that which balances multiple water sources to meet demand. It was also by subregional water supply stakeholders in March 2023.

I. Trend in groundwater observation wells and piezometers, including those located at fens and trout streams, taking into account long-term changes in recharge due to changes in weather patterns and climate

This measure supports progress in the following areas: groundwater and surface water interactions, land use and water supply connections, sustainable water quantity, and ___.

Proposed Method: Observation wells in the Cooperative Groundwater Monitoring program (DNR, 2023b), selected to represent key resources in each water supply planning subregion. Selection criteria include wells located away from big pumping wells, upgradient locations in most heavily used water supply aquifers, upgradient of fens and trout streams, and at known groundwater divides. More than 20 years of data is preferred.

Proposed Target: TBD. Minimal impact of nearby groundwater pumping on lakes.

Why this measure is included: This measure was first proposed in the 2015 Twin Cities Metropolitan Area Master Water Supply Plan and supports that plan's description of sustainable water supply as that which maintains groundwater levels and protects surface water flows. It was also proposed by MAWSAC, TAC in 2002 and subregional water supply stakeholders in March 2023.

H. Water quality trends

This measure supports progress in the following areas: water quality, land use and water supply connections, sustainable water quantity, and ___.

Proposed Method: Period trend analysis

Proposed Target: No decline in the quality of surface water or sustainable groundwater

Why this measure is included: This measure was identified by subregional water supply stakeholders at a workshop in March 2023.

J. Number of communities participating in Council water supply-related incentive programs (including but not limited to water efficiency and reuse grant programs)
This measure supports progress in the following areas: TBD

Proposed Method: Ongoing tracking applicants and participants in water supply-related incentive programs using applications and status/financial reports.

Proposed Target: TBD. Grants are optimized to strengthen ability to communicate the importance of source water protection.

Why this measure is included: This measure was used by Met Council to report on Clean Water Fund appropriation impact.

I. Number of water supply system partnerships for maintenance and emergency back-up
This measure supports progress in the following areas: water supply infrastructure, water quality, groundwater and surface water interaction, sustainable water quantity, and ___.

Proposed Method: TBD. Compile water supply interconnections or other back-up water supplies with neighboring communities or other organizations reported in local water plans reviewed by Met Council. Might be supplemented with an annual survey to document partnerships between state and local public water suppliers.

Proposed Target: TBD

Why this measure is included: This measure was first proposed in the 2015 Twin Cities Metropolitan Area Master Water Supply Plan (partnerships reported in local water supply plans) and supports that plan's description of sustainable water supply as that which balances multiple water sources to meet demand. It was also identified by MAWSAC and TAC in December 2022 and subregional water supply stakeholders in March 2023.

J. Land use change in recharge areas
This measure supports progress in the following areas: land use and water supply connections, groundwater and surface water interaction, sustainable water quantity, and ___.

Proposed Method: TBD. Identify regionally-significant recharge areas and monitor and report on land use changes in those areas.

Proposed Target: TBD. No loss of recharge capacity. Increase in acres in conservation programs versus new development.

Why this measure is included: This measure was identified by subregional water supply stakeholders in March 2023.

Glossary

Action – Specific and measurable activity for each objective. May also be considered a practice.

Capacity – The ability to do something; the facility or power to produce, perform, or deploy.

Goal – Broad directional statements that more specifically define desired future conditions. If the vision is successful, what does the region look like?

Hazard – A biological, chemical, physical, or radiological agent in, or condition of water, with the potential to cause an adverse health effect. The potential to cause harm.

Measure – a quantification that indicates the degree to which a performance result is occurring over time.

Practice – Specific and measurable activity for each objective. May also be considered an action.

Objective – Achievable results that advance the goals. May also be considered as outcomes.

Risk – The likelihood of harm taking place.

Vision – Vision is the high-level description of what Met Council and its partners are working to achieve for the region's water supply.

Acronyms and Abbreviations

- BWSR – Minnesota Board of Water and Soil Resources
- CAP – Metropolitan Council's Climate Action Plan
- DNR – Minnesota Department of Natural Resources
- DWSMA – Drinking Water Supply Management Area
- EPA – Environmental Protection Agency
- LWSP – Local Water Supply Plan
- MDA – Minnesota Department of Agriculture
- MDH – Minnesota Department of Health
- MGD – Million Gallons per Day
- MPCA – Minnesota Pollution Control Agency
- MWSP – Metropolitan Council's Master Water Supply Plan
- RDG – Metropolitan Council's Regional Development Guide
- SSTS - Subsurface Sewage Treatment Systems
- SWPA – Source Water Protection Area
- TCMA – Twin Cities Metropolitan Area
- UMN – University of Minnesota
- UMRSWPP – Upper Mississippi River Source Water Protection Project
- WHO – World Health Organization
- WHPA – Wellhead Protection Area
- WHPP – Wellhead Protection Plan
- WRPP – Metropolitan Council's Water Resources Policy Plan

Potential appendices

- Summary of the process to develop and update the metro area water supply plan, including stakeholder engagement
- Summary of changes between the 2010 and 2015 versions, including a similar summary describing the changes between the 2015 and updated version
- Summary of past or ongoing and successful regional water planning or implementation
- Technical appendices (water demand projections, etc.)

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