3 Metro Area Water Supply Plan

Rationale for and approach to regional water supply planning

The Twin Cities seven-county metro region 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. *Learn more in the Water Supply Planning Atlas.*

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, and is an appropriate role for the Metropolitan Council.

We recognize the responsibility and authority of local water suppliers to provide water. However, 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.

Providing guidance for local water supply systems

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 coordinated action to support the water needs of current and future populations without adverse impact to natural and economic resources.

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 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:

- Supports local control and responsibility for water supply systems
- Is developed in cooperation and consultation with local, regional, and state partners
- Highlights the benefits of integrated planning for stormwater, wastewater, and water supply

The collaborative process to develop and implement this 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 plans

The metro area water supply plan is informed by and supports the 2050 regional development guide, Imagine 2050, and is part of the 2050 Water Policy Plan. It more specifically provides water supply-related considerations for developing regional, subregional, and local plans as well as supporting programs.

Funding for regional water supply planning

Since 2010, the primary source of funding for the Met Council's regional water supply planning has been Minnesota's Clean Water Fund. This funding supports the following two Met Council programs that increase communities' implementation of projects to help achieve sustainable water supplies:

1) Water demand reduction grant program: Provides grants for communities to implement water demand reduction measures to ensure the reliability and protection of drinking water supplies.
2) Metropolitan area water supply sustainability support: Implementing projects that address emerging drinking water supply threats, provide cost-effective regional solutions, leverage inter-jurisdictional coordination, support local implementation of water supply reliability projects, and prevent degradation of groundwater.

The Clean Water Fund, however, cannot be used for the following water supply-related planning activities:

1. Review of local water supply plans, comprehensive plan updates and amendments, wellhead protection plans, or other environmental review documents.
2. Technical support for communities in developing local plans
3. Coordination and support for the Metro Area Water Supply Advisory Committee and its Technical Advisory Committee or subregional water supply work groups
4. Coordination and development of the Metro Area Water Supply Plan.

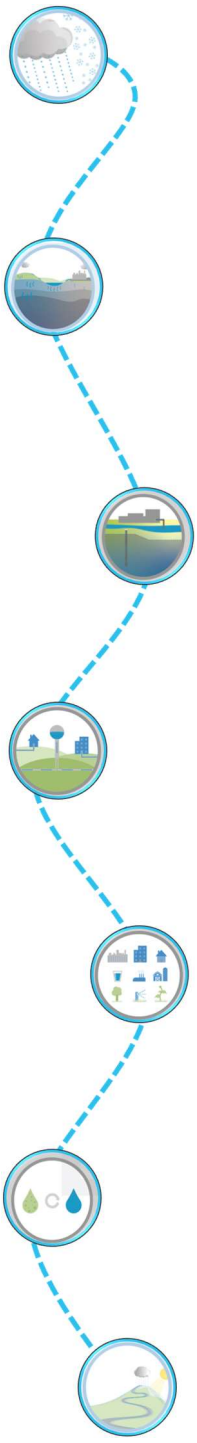
Water supply planning work, therefore, has been historically funded through limited Met Council funds.

This Metro Area Water Supply Plan lays out stakeholder-identified needs for continued financial support through resources such as, but not limited to, Minnesota's Clean Water Fund.

Regional water supply context

General water supply setting

Effective water supply planning looks at the entire water cycle. Understanding the region's "waterscape" helps identify upstream issues and opportunities, downstream impacts, and relationships among water stakeholders and agencies. Keeping these elements in mind is important when discussing water supply policy and planning. *Learn more in the Water Supply Planning Atlas.*



Climate and weather
The region's water ultimately comes from precipitation that falls locally and in upstream watersheds. Precipitation quickly fills surface water sources, while it takes decades to centuries to reach deep aquifers.

Landscape (source areas)
The amount and quality of water that we can pump from surface and groundwater sources depend on the environment that precipitation travels through. In this region, urban, suburban, and rural areas each have different water sources, soils, geology, and land use patterns.

Water supply sources
We pump water from four extensive and interconnected underground layers of rock, gravel and sand (aquifers) and from the Mississippi River. These sources supply large volumes of water for commercial, industrial, and residential uses. We also have growing opportunities to use treated stormwater and reclaimed wastewater, which could provide water for non-potable uses such as cooling or irrigation, and potentially even for drinkable use in the future.

Water supply infrastructure
Over 100 municipal community public water systems provide most of the region's water. These systems include surface water intakes, wells, treatment facilities, storage, and distribution pipes that provide safe water. Additionally, over 60,000 non-municipal wells serve parts or all of many communities. Privately-owned wells and subsurface sewage treatment systems, which are maintained by their owners, must meet well codes and local regulations.

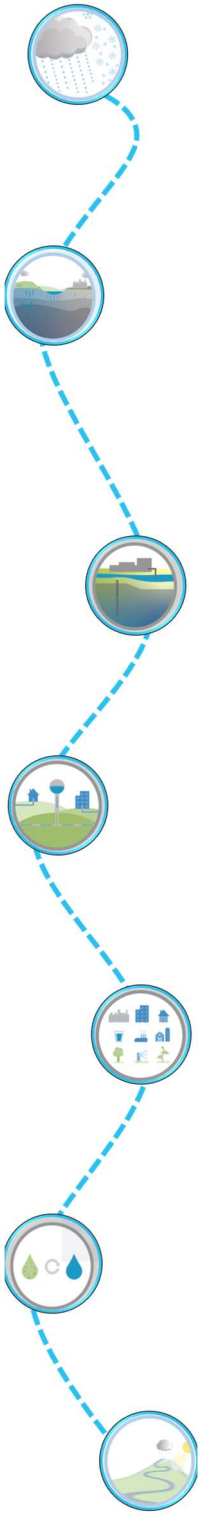
Water users/customers
Clean water is essential for everyone. People and businesses in our communities use large amounts of water for commercial, industrial, and residential purposes. As customers, they fund the infrastructure needed to supply this water and also pay for the disposal of used water.

Wastewater and water resource recovery infrastructure
Over 10,000 miles of local infrastructure collect wastewater and send it to a regional system including nine water resource recovery facilities. Homes and businesses may use private subsurface sewage treatment systems or connect to a community system. Regional treatment cleans water to meet state and federal standards.

Discharge to environment
Stormwater and treated wastewater are released back into the environment, sometimes cleaner than the water it is discharged to. This water then flows downstream to other users and eventually to the Gulf of Mexico.

Challenges for the region's water supply

Everything that happens on land impacts water, and all water is connected. Recognizing the upstream and downstream connections among water supply hazards helps to identify the biggest risks and focus monitoring and mitigation measures. *Learn more in the Water Supply Planning Atlas.*



Climate and weather

Minnesota is known for its extreme seasonal differences, and precipitation varies significantly from year to year. Flooding, drought and recharge changes are current challenges, and climate change serves as a risk multiplier.

Landscape (source areas)

Land use affects the quality and quantity of our water supply through things like paved surfaces, agriculture, industry, snow and ice removal, and stormwater management. Various contaminants from different sources can pollute water, and the landscape's sensitivity varies. Managing the water supply impacts of development is a key challenge that local plans must address.

Water supply sources

The region's water supply sources are interconnected and have various limitations and costs. Not all sources are equally available or productive, and some are not available year-round. Recharge rates vary, and there may be nearby competing demands where high volume water use in one location affects another. Sources also differ in their risk of contamination and may have existing pollution. Their use may be impacted by regulated withdrawal limits and treatment requirements to protect public and environmental health.

Water supply infrastructure

Both municipal and non-municipal water suppliers face challenges in meeting supply needs, maintaining public health, and keeping water affordable. These challenges include aging infrastructure, cybersecurity risks, changing water demand due to growth and development, decreased revenue, contamination, new and stricter regulations, and a changing workforce. Private well and subsurface sewage treatment system owners also face issues; many older systems no longer meet updated codes and ordinances.

Water users/customers

By 2050, about 650,000 more people and 500,000 new jobs will be in the region compared to 2020. If we keep using water as we do now, this growth will raise water demand, stressing current infrastructure and sources. Planners must carefully weigh the impact of new demands, especially from businesses and new high-volume users, to understand local costs and benefits. Building trust with water customers and communities is crucial for ensuring enough resources to provide and safeguard water supplies.

Wastewater and water resource recovery infrastructure

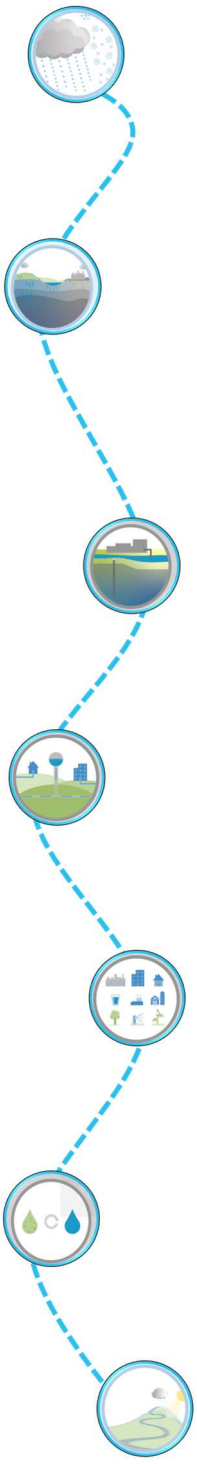
Utilities face challenges to provide affordable, safe, and trusted wastewater treatment. The decisions customers make about water use and disposal affect local and regional wastewater system, impacting investments in capacity, treatment, and maintenance. Aging infrastructure, decreased revenue, contamination, and changing workforce exacerbate the challenges.

Discharge to environment

When the water quality standards for water downstream change, it can affect the systems that manage wastewater and water supply upstream.

Opportunities for regional water supply planning

Successful water supply planning includes supporting opportunities throughout the region's 'waterscape' to implement practices to monitor, protect, and restore natural and built water resources. *Learn more in the Water Supply Planning Atlas.*



Climate and weather

Paying more attention to and putting more resources into reducing energy use and improving stormwater management can also help to protect our water sources and better manage water demand.

Landscape (source areas)

New development and redevelopment are opportunities to use water more efficiently and protect both where our water comes from and infrastructure downstream. For example, using better indoor appliances and fixtures and drought-resistant landscaping can help limit indoor and outdoor water use, and keep usage balanced through the year. Choices about land use also matter in making sure we use water sustainably and prevent contamination in the long term. It's also important to have good guidance on how many people will be living here in the future, so our plans for growth fit well.

Water supply sources

Long-term planners now have better information about the size and vulnerability of source water areas, thanks to improved monitoring, mapping, and modeling. This helps them make smarter decisions when planning and investing in water resources. There's also more interest and investment in exploring different water source options, such as reusing water, teaming up with nearby systems, and expanding the use of surface waters.

Water supply infrastructure

With more focused on and resources for water supply asset management planning, there is a chance to promote integrated water management within and among communities. Another opportunity lies in educating and offering incentives for monitoring and maintenance to private well and subsurface sewage treatment system owners. This not only safeguards public health but also empowers individuals to make informed decisions.

Water users/customers

Ongoing education and engagement, supported by state and local controls and incentives, provide an opportunity to encourage water efficient practices (indoor and outdoor) and build support sustainable investments in water supply in source water protection.

Wastewater and water resource recovery infrastructure

We have opportunities to maximize the benefits of our current local and regional infrastructure investments. For instance, by reducing inflow and infiltration, we can enhance capacity. Similarly, by reusing reclaimed water, we can expand water supply availability.

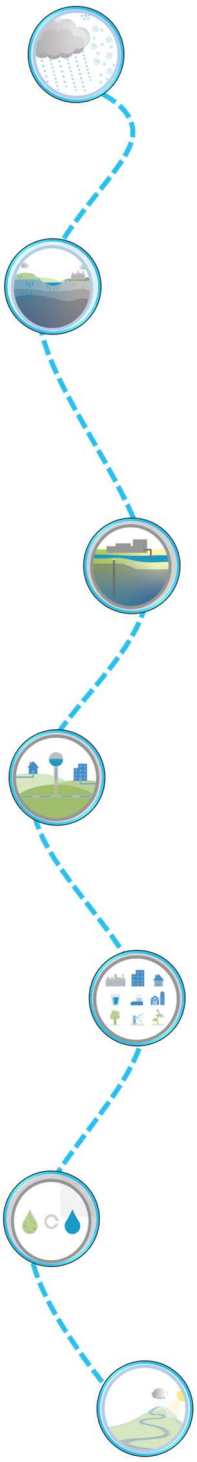
Discharge to environment

Examining the entire water cycle to meet downstream discharge standards presents an opportunity to pinpoint the most cost-effective areas for changes that benefit the entire region. This approach can also enhance natural systems, stabilize temperature fluctuations during droughts, and increase supply for downstream users.

High-level roles for water supply planning and implementation

Everyone – agencies, business, individuals – has a responsibility for ensuring sustainable water supply planning. Collaborative actions are needed at the individual level, the local government level, the regional level, and the state and federal levels. Some examples of key roles are summarized below.

Climate and weather



Local governments take a wide range of local actions to mitigate climate and climate change risks in their communities. Met Council implements its internal Climate Action Work Plan and supports local planning and implementation. The State of Minnesota provides statewide climate adaptation and mitigation action, critical climate research, convenes flood and drought response teams, and takes many other actions.

Landscape

Local governments have land use authority along with some counties. Watersheds, counties, and Met Council have roles guiding land use. As regulators, state water agencies help incentivizing public and private sectors to improve land use best practices.

Water supply sources

Local governments are tasked with identifying sustainable water sources, applying for water appropriation permits, and collaborating with neighboring jurisdictions. State water agencies serve as regulators, collecting and analyzing water data, assessing supply risks, setting standards and rules, developing best practices, approving local plans and permits, administering funding programs, and offering technical assistance and training. Met Council evaluates regional water resources and offers planning, guidance, and resources to safeguard them.

Water supply infrastructure

Both public water supply systems and owners of private wells are responsible for developing, maintaining, and using wells for domestic and commercial needs. Local governments supply water to customers in compliance with Safe Drinking Water Act standards. They set rates, maintain infrastructure, monitor water quality and quantity, establish emergency procedures, enforce demand reduction measures, and plan for land use, water supply, and capital improvements. State agencies license contractors and other professions affecting drinking water, oversee water well construction and sealing, approve local plans and permits, administer funding programs, and offer technical assistance and training.

Water users/customers

Residents, property and business owners have an important role to play as rate payers and choosing best practices for their properties and businesses. They can also have influence with their city councils and township boards. State, regional, and local water supply planners can communicate information and tools to support them.

Wastewater and water resource recovery infrastructure

Local governments plan for local land use, water supply, wastewater (municipal and subsurface sewage treatments systems) and capital improvements. Met Council does the same at the regional scale, including operation of the state's largest regional wastewater treatment system.

Discharge to environment

Met Council monitors receiving waters. State water agencies as regulators collect and analyze water information, assess water supply risks (quantity and quality); and develop standards and rules.

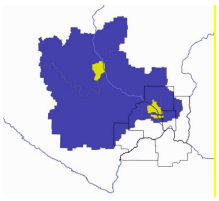
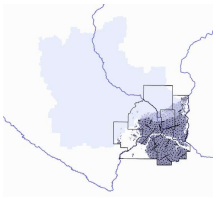
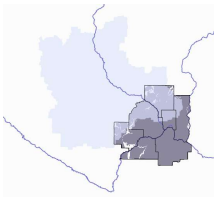
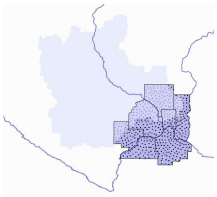
Regional water supply action plan

Regional approaches reflect how water supply conditions vary across the region

Water supply conditions vary widely across the region and among communities. Each city has different sources, treatment methods, and water use patterns. For example, some areas have high commercial and industrial demand, while others mainly use water for residential purposes. What works for one community may not work for others, so regional water supply planning must consider when setting goals and tracking progress. As communities plan for future water needs, their approaches will be influenced by their unique water supply situations. *Learn more in the Water Supply Planning Atlas.*

Locations of different water sources

Table 3.1. The Twin Cities region generally relies on the Mississippi River and four primary aquifers for non-power purposes, and each source has different management considerations.

Water source	Management considerations
	Mississippi River: - Currently not available to some growing communities - Quality impacted by watershed practices outside the region (dark blue) - Water quality requires high levels of treatment and highly vulnerable to contamination, particularly potential contaminants in the Priority A Source Water Protection Area (yellow) - Usually the first supply source to be limited by drought
	Glacial aquifers: - Challenging to identify the location of the most productive sand and gravel layers, although glacial sediments are present across the region - First aquifer to be recharged - Vulnerable to contamination - Water quantity and quality varies
	Prairie du Chien-Jordan aquifer - Not available to some growing communities, particularly in the north and west - As the most heavily used aquifer in parts of the region, greater likelihood of water-use conflict - Connected to some protected surface waters - Vulnerable to contamination, particularly where fractures exist and where bedrock above it has been eroded
	Tunnel City-Wonewoc aquifer - Productivity varies greatly across the region and is highest where it is fractured or weathered - Connected to some protected surface waters - Vulnerable to contamination where fractured and where bedrock above it has been eroded
	Mt. Simon-Hinckley aquifer - Use restricted by Minnesota law - Very slow recharge rate - Significant groundwater mining has occurred historically, creating a regional cone of depression - Relatively low vulnerability to contamination

Type of community development

A range of community types – with different land use characteristics, density expectations and water supply needs – exist in the Twin Cities region. Some communities are highly urbanized, while others are agricultural and rural (**Figure 3.1**). Regional land use policies and supporting strategies, including those that connect to water supply priorities, are framed around community designations.

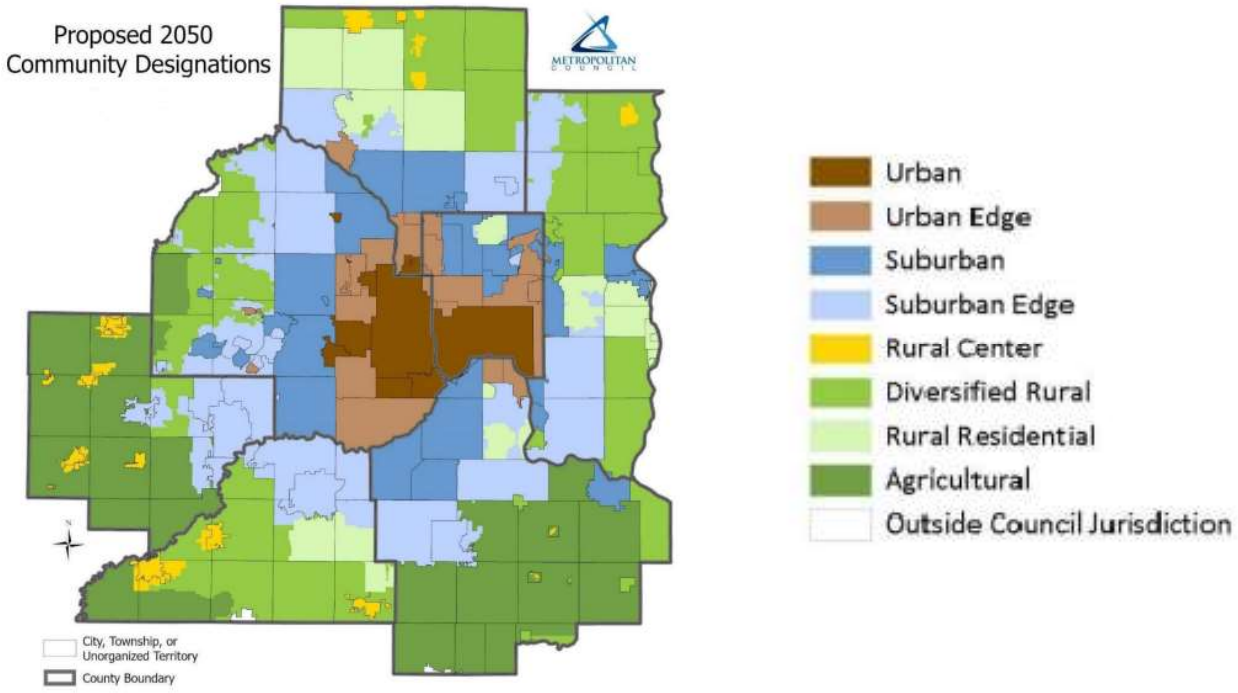


Figure 3.1: Community designations are one way to illustrate the different community types in the Twin Cities region, using the perspective of land use and density

Type of water supply systems

Community designations show similarities in land use, but water supply conditions can still vary widely within these categories. When planning for local water supply needs, it's important to understand the different water supply situations and planning requirements that communities in the metro region typically face.

For example, communities in categories 1-3 need to develop and implement local comprehensive plans, local water supply plans, and wellhead protection plans. Communities in category 4 develop local comprehensive plans and local water supply plans, but no wellhead protection plans. Communities in categories 5-8 develop and implement local comprehensive plans.

1. **Independent municipal community public water system with appropriation permit (Example: Shakopee, through Shakopee Public Utilities).** People and businesses in 86 communities can access water through a municipal community public water supply system that is owned by the community. The community has a permit from the Minnesota Department of Natural Resources to pump water from a local source for that supply. Privately-owned wells, nonmunicipal public water systems and/or nonmunicipal community public water systems also provide water in these communities. All of these communities have land that has been or is being designated as a Drinking Water Supply Management Area. *In 2020, almost 1.5 million people were served by the water sources supplying these public water supply systems.*

Between 2020 and 2050, the population in these communities is expected to grow by about 400,000 people.

2. **Municipal community public water system with appropriation permit, also supplying neighbor(s) (Examples: Minneapolis, Burnsville, White Bear Township).** People and businesses in 10 communities can access water through a municipal community public water supply system that is owned by the community. The community has a permit from the Minnesota Department of Natural Resources to pump water from a local source for its municipal public supply. The community also provides water to people and businesses in one or more neighboring communities. Privately-owned wells, nonmunicipal public water systems and/or nonmunicipal community public water systems also provide water in these communities. All of these communities have land that has been designated as a Drinking Water Supply Management Area. *In 2020, approximately one million people were served by the water sources supplying these public water supply systems. Between 2020 and 2050, population in these communities is expected to grow by almost 200,000 people.*

3. **Municipal community public water system with both appropriation permit and purchasing source water from neighbor (Bloomington, Edina, Fridley, Lexington, Oak Grove, Savage).** People and businesses in six communities can access water through a municipal community public water supply system that is owned by the community. The community has a permit to pump water from a local source for its municipal community public supply. The community also receives (buys) water from a neighboring water supply utility. Privately-owned wells, nonmunicipal public water systems and/or nonmunicipal community public water systems also provide water in these communities. *In 2020, almost 200,000 people were served by the water sources supplying these public water supply systems. Between 2020 and 2050, population in these communities is expected to grow by about 40,000 people.*

4. **Municipal community public water system purchasing source water from neighbor(s) (Examples: Golden Valley, Little Canada).** People and businesses in 12 communities can access water through a municipal community public water supply system that is owned by the community. The community receives (buys) water from a neighboring water supply utility for its municipal community public supply, and customers receive a bill from their own municipal community public water system. Privately-owned wells, nonmunicipal public water systems and/or nonmunicipal community public water systems also provide water in these communities. All of these communities have land that has been designated as a Drinking Water Supply Management Area for one or more neighbors. *In 2020, almost 200,000 people were served by the water sources supplying these public water supply systems. Between 2020 and 2050, population in these communities is expected to grow by about 25,000 people.*

5. **Privately-owned wells, nonmunicipal public water systems, and/or nonmunicipal community public systems - no municipal community public water system (Examples: Afton, Blakely Township):** People and businesses in 60 communities can access water through privately-owned wells or through nonmunicipal public water systems and/or nonmunicipal community public water systems. 41 of these communities (68%) have land that's been designated as a Drinking Water Supply Management Area for one or more neighbors. *In 2020, these communities had a combined population of approximately 105,000 people. Between 2020 and 2050, population in these communities is expected to grow by about 11,000 people.*

6. **Neighbor provides municipal community public water system and source (Examples: Lakeland Shores, Maplewood):** People and businesses in eight communities can access

water through a municipal community public water supply system that is owned by a neighboring public water supply system. The community's source of water is the responsibility of a neighboring water supply utility, and customers receive a bill from that neighboring municipal community public water supply system. Privately-owned wells, nonmunicipal public water systems and/or nonmunicipal community public water systems also provide water in these communities. Four of these communities (50%) have land that's been designated as a Drinking Water Supply Management Area for one or more neighbors. *In 2020, these communities had a combined population of approximately 82,000 people. Between 2020 and 2050, population in these communities is expected to grow by about 10,000 people.*

7. **Neighbor provides limited municipal community public water system (mostly privately-owned, noncommunity, and/or nonmunicipal community wells) (North Oaks, St. Mary's Point).** People and businesses in two communities can access water primarily through nonmunicipal wells. In limited areas, people and businesses in the community can also access water through a municipal community public water supply system that is owned by a neighboring public water supply system. The community receives (buys) water from a neighboring water supply utility. Privately-owned wells, nonmunicipal public water systems and/or nonmunicipal community public water systems also provide water in these communities. Both of these communities have land that has been designated as a Drinking Water Supply Management Area. *In 2020, these communities had a combined population of approximately 5,500 people. Between 2020 and 2050, population in these communities is expected to grow by about 500 people.*

8. **Planning for independent municipal community public water system (Credit River).** People and businesses in one community can access water through privately-owned, noncommunity, and/or nonmunicipal wells alone, but the community is currently planning for a municipal community water supply system. Part of the community has been designated as a Drinking Water Supply Management Area for one or more neighbors. *In 2020, this community had a population of approximately 5,500 people. Between 2020 and 2050, population in this community is expected to grow by over 1,000 people.*

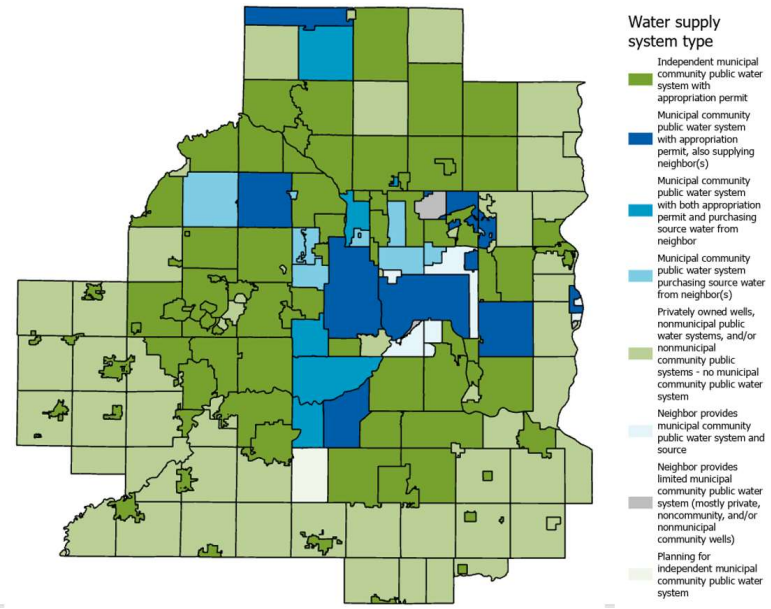


Figure 3.2 Water supply systems vary from community to community. When planning for local water supply needs, it's important to understand the different water supply situations and planning requirements that communities in the metro region typically face.

Water use patterns differ by community type

Given the different development patterns in different communities, it is not surprising that water demand patterns and related infrastructure needs vary as well. Just one example of this is illustrated in **Figure 3.3** – how summer versus winter water use varies by community designation.

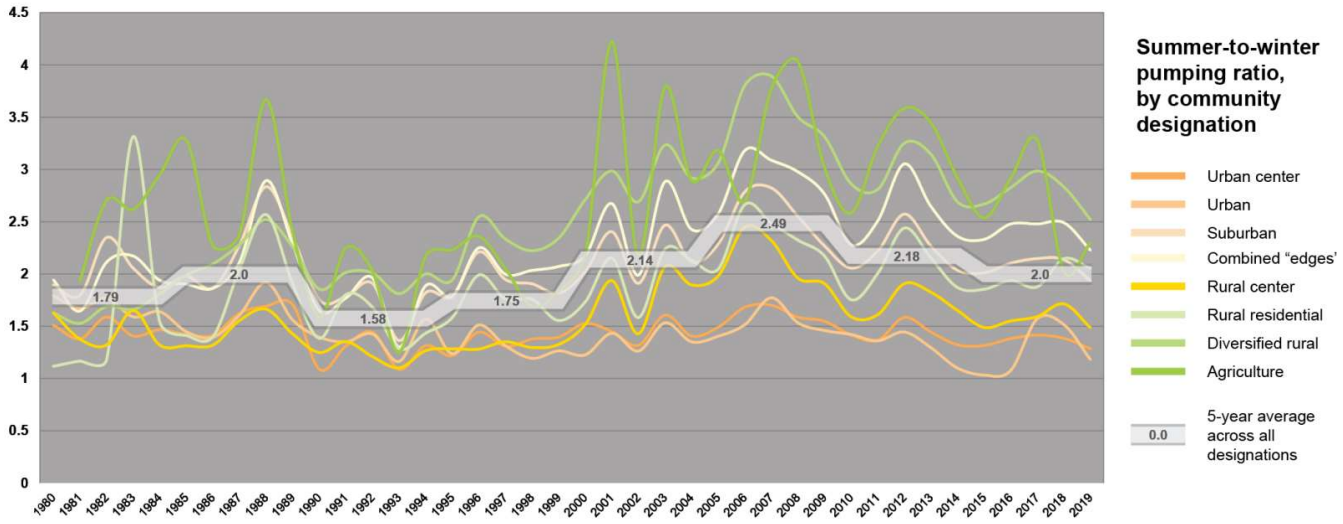


Figure 3.2: How summer versus winter water use varies by Thrive MSP 2040 community designation. This information illustrates the benefit of tailoring regional water policy development and technical assistance by community type or designation; different communities

Given these eight different community designations, five different water sources, eight different water supply systems configurations, and the many other local differences, one size cannot fit all and we benefit from taking a subregional approach. See the subregional chapters of this plan for more detail about those approaches.

Definition of success for water supply planning in the metro

Stakeholders engaged in the update of this plan shared their hopes for the region's water future – if we are successful, what does the region look like? This plan is grounded in those perspectives, shared through the Metro Area Water Supply Policy and Technical Committees and through subregional water supply engagement in late 2023 and early 2024.

1. *Water supply infrastructure.* Public water suppliers can act quickly, be well informed about their decisions, and equitably address aging infrastructure, contamination, changing water availability, changing water demand, and financial challenges. Communities and their water supply are resilient to climate change and other impacts, because there is sufficient funding and other resources for water supply such as infrastructure, staff, new technology, etc. Measures of success may include:

    - All communities have incorporated local controls to enhance water supply infrastructure resilience into local comprehensive planning and implementation.
    - All public water suppliers have identified and have access to alternative short- and long-term water sources in case of disruption or limitations of their primary sources.
    - Public and privately-owned water system owners collaborate more frequently with each other and agencies on asset management planning, emergency response, efficiency programs, source water protection, and other needs.

- Capital planning includes a minimum 10-year spending projections and factor in lifecycle estimates for major capital assets.

- Treatment and distribution infrastructure renewal is maintained with identified budgets and revenue sources.

2. *Water quality.* Communities have the resources they need to provide clean, safe water for everyone. A shared process is developed that allows communities, water utilities, and regulators to understand and respond in a more coordinated and effective way to both contaminants of emerging concern and existing contamination. Measures of success may include:

   - Water suppliers continue to meet water quality standards.

   - There is an increase in investment for public water suppliers and privately-owned well users to treat water.

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 – so that growth is responsible and supported by reliable and adequate water supply. Development is done in ways that balance communities' economic needs while protecting the quantity and quality of source waters that are vital to the region's communities. A measure of success may include:

   - All communities have incorporated water efficiency and source water protection actions into their comprehensive plan updates and local implementation, so that water suppliers can support "more with less".

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. Measures of success may include:

   - We understand as a region where water supply-related challenges from groundwater-surface water interaction take place.

   - Groundwater and surface water source interactions are adequately monitored using digital sensors and artificial intelligence (AI) across the region, and data inform impact analyses.

   - There is an increase in the number of local controls adopted by communities to mitigate water supply-related challenges posed by groundwater and surface water interactions.

5. *Sustainable water quantity.* Communities and water agencies have a common understanding of the sustainable limits of groundwater and surface water sources and work together to collectively make plans that sustain an adequate supply – for people, the economy, and the function of local ecosystems. 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. Measures of success may include:

   - As a region, the average indoor and outdoor water use per person declines.

   - There is an increase in the number of water reuse installations, leading to a corresponding decrease in drinking water use for non-essential purposes.

   - The percentage of acres of new and redevelopment that incorporate turf grass alternatives increases.

To achieve success, stakeholders identified the following as necessary conditions:

- All the voices are heard as community plans are made and implemented – so that the full range of diverse water supply needs are met.
- Public trust and understanding are enhanced, and a culture shift around water use has occurred.
- Collaborative and proactive approaches for engagement, planning, and plan implementation are taken within and across communities.
- The policy framework is streamlined and improved.
- State and regional support and funding for planning and plan implementation is increased.

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.

Water supply is sustainable when its use does not harm ecosystems, degrade water quality and quantity, or compromise the ability of future generations to meet their water resource requirements.

The region's water supply may be considered sustainable when:

- Water use does not exceed the estimated limits of available sources, taking into account:
    - Impacts to aquifer levels (such as reducing water levels beyond the reach of public water supplies and privately-owned wells),
    - Impacts to surface waters and aquatic resources, including diversions of groundwater that affect flows and water levels, and
    - Impacts to groundwater flow directions in areas where groundwater contamination has, or may, result in risks to public health.
- Planned land use and related water demand is consistent with long-term design capacity for water supply infrastructure, when that design capacity is based on sustainable sources.
- Individual water use supports sustainability and appropriate mechanisms are in place to limit or forego nonessential water use during emergencies.
- Risk to infrastructure and public health is managed through ongoing assessment and investment.

This definition of water supply sustainability incorporates statutory descriptions of sustainability in Minnesota statutes, chapter 103G. Additionally, this definition goes beyond those statutory descriptions to more explicitly acknowledge infrastructure and land use, and it is described in a way that can be translated into quantifiable terms that can be incorporated into technical analyses that support estimates of sustainable limits.

Actions to support successful water supply planning

This action plan was developed in partnership with the Metro Area Water Supply Advisory Committee, its Technical Advisory Committee and participants of a subregional water supply stakeholder engagement process. It is possible and expected that actions not reflected here may emerge in subsequent years. If so, this plan will be amended following the process described in Appendix X.

Key steps for action

A regional framework for action (**Figure 3.3**) organizes work in a way to help achieve the desired outcomes for the region's water supply. Some actions are most effective region-wide. However, some actions are more suited to certain parts of the region and are therefore described in more detail in the subregional chapters of the plan.

Figure 3.3. The framework for action to achieve Metro Area Water Supply Advisory Committee goals includes four general buckets of work. Regional action to support successful water supply planning generally fall across the framework.

High-level schedule for different phases of work

The following actions are expected to be ongoing, although the outputs are expected to shift through the region's decennial planning process. For example, activities in 2025-2028 will focus more heavily on supporting local plan updates; activities in 2028-2030 will be more focused on supporting for local plan implementation; and work in 2030-2035 is expected to shift to program evaluation to inform regional policy and plan updates (**Figure 3.4**).

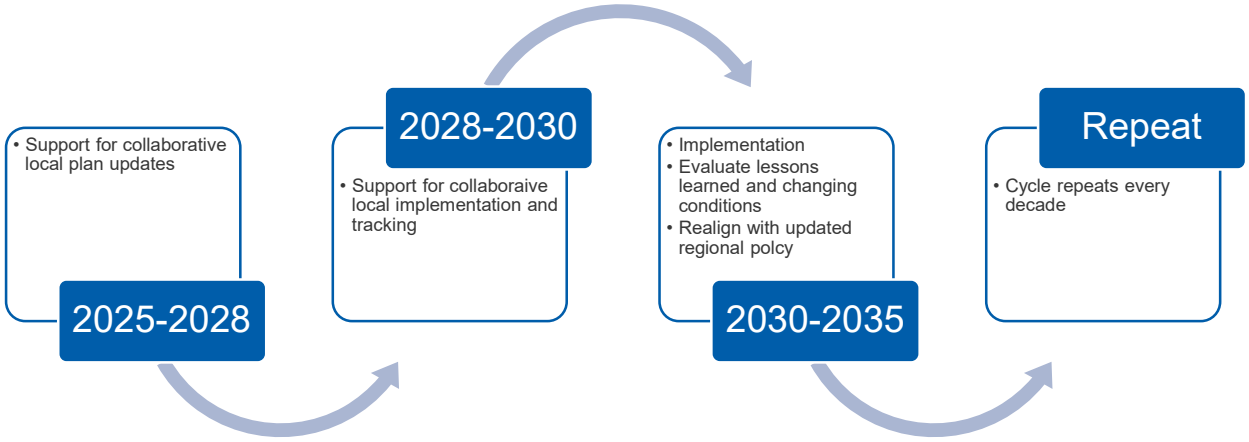


Figure 3.4. High-level schedule for different phases of water supply planning work.

Table 3.2. Regional water supply actions that Met Council commits to support in collaboration with local and state partners, in alignment with regional water policy.

Regional water supply planning actions	Supporting Regional Policy
Collaboration and capacity building	
Met Council will continue to convene leaders across the water sector to set the scope and direction of regional water supply planning work through groups including the Metropolitan Area Water Supply Advisory Committee (MAWSAC) and their Technical Advisory Committee (TAC) and any other water-related advisory groups established by Met Council.	Integrated water
Met Council will convene and support work planning and implementation for subregional water supply groups, using subregional chapters of this plan as a foundation. Priorities include: • Collaborating on priority issues in different parts of the region, supporting local plans and scoping projects and deliverables • Collaborating to advance regional priorities • Collaborating on local comprehensive plan updates • Collaborating on local implementation	Integrated water
Met Council will continue to connect technical experts with a wide range of perspectives and skills by convening task forces and work groups to collaborate on region-wide water supply challenges and goals. These groups would support regional and local planning, implementation, and scoping projects and deliverables. Priorities include: • Assessing and comparing the benefits, costs, and feasibility of reusing reclaimed wastewater for different high-volume industrial, agricultural and/or other commercial purposes.	Integrated water, reuse
Met Council will seek resources and industry partners such as American Water Works Association and American Public Works Association, etc. to provide inter-organizational trainings focused on subregional water supply challenges to share lessons learned and build strong working relationships and open dialogue. Priorities include: • Support for asset management • Support for emergency preparedness	Integrated water, workforce
Met Council will collaborate with state and local partners to develop and advocate for legislative initiatives including funding requests and statute and rule changes that advance progress on locally-identified challenges and opportunities that align with regional water supply priorities	Integrated water, reuse

Regional water supply planning actions	Supporting Regional Policy
Met Council will seek out and advocate for resources to work with partners to develop effective messaging and maintain a public education and awareness campaign that supports identified water supply needs to promote a strong and shared understanding of issues, customized with local partners for local audiences. Priorities include: • Raising wide-spread awareness about water supplies, general concerns related to water use versus source limitations and water quality (including privately-owned wells), and the value in normalizing consciousness of water conservation and efficiency • Building a more educated and supportive future customer base by collaborating with state and local partners to promote information about public water systems • Supporting public support for and local enforcement of water conservation and efficiency ordinances by developing and promoting educational materials for community water leaders about ordinances and other local controls and why they are important • Supporting workforce development by working with state and local partners to develop and advocate for the use of high-school and middle school curriculum templates and videos. • Other water reuse education needs identified by subregional water supply groups.	Integrated water, workforce, reuse, pollution prevention
Met Council will seek resources and industry partners such as American Water Works Association and American Public Works Association, etc. to work with trades and workforce development organizations to create water sector career skill development opportunities and strengthen the water sector workforce talent pipeline, including water supply workforce.	Workforce

Regional water supply planning actions	Supporting Regional Policy
System assessment	
Met Council will work with state and local partners to seek resources to include water supply risks in its monitoring, data, and assessment work. Priorities include: • Evaluating water demands of potential new industries moving to the region • Understanding risks of long-range land use and water management (water supply, watershed, and wastewater) to privately-owned, domestic wells • Understanding changing climate impacts on water supply infrastructure and sources • Understanding risks for water supply from groundwater-surface water interaction • Exploring opportunities to leverage artificial intelligence in this work • Other needs identified by subregional water supply groups (see subregional chapters of this plan).	Monitoring, data, and assessment; climate
Met Council will work with partners to seek resources to describe, document, and diagram the region's water supply system at a multi-community scale and in a way that acknowledges and respects water utility security needs. Priorities include: • Consistent criteria across the region for describing water needs of different land use types, • Ongoing adaptive technical modeling support for supply and distribution, regional groundwater modeling. • Other needs identified by subregional water supply groups (see subregional chapters of this plan).	Monitoring, data and assessment,
Mitigation measure evaluation	
Met Council will work with partners to conduct technical studies to identify and evaluate existing and potential mitigation measures for priority water supply risks. Priorities include: • Evaluating the efficacy of native landscapes relative to other water use reduction strategies, • Return on investment (ROI) analyses to understand what conservation strategies are the most cost-effective.	Monitoring, data and assessment, conservation

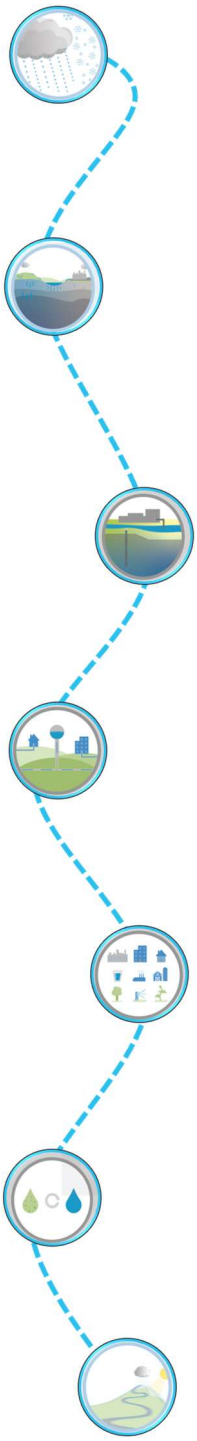
Regional water supply planning actions	Supporting Regional Policy
Planning and implementation	
Met Council will center water supply planning as a key element as it convenes and supports ongoing subregional water planning. Priorities include: • Supporting local governments working together on local planning and implementation to identify and consistently address high-priority water supply risks within and across communities • Collaboratively updating local comprehensive plans, budgets, and monitoring programs to support both economical growth and the consistent implementation of risk reductions practices • Sharing best practices and lessons learned to continuously improve	Integrated water, conservation and sustainability
Met Council will develop and provide technical assistance (guidance and incentives) to local partners to advance progress on implementation that supports municipal and non-municipal users and aligns with regional water supply priorities. Priorities include: • Model ordinances for water reuse and water efficient landscaping and low flow appliances in new developments • Model cost structures • Expanding Met Council incentives for water efficiency beyond 2024 programming	Integrated water, reuse, conservation and sustainability
Met Council will collaborate with the state departments of natural resources and health to support local planning and implementation for municipal and non-municipal users that addresses high-priority water supply risks within each community and provides neighboring communities information to accurately assess and plan for their own risks. Priorities include: • Developing a framework for coordinated multi-community wellhead protection and land use planning • Improving coordination on local comprehensive plan and local water supply plan updates	Integrated water, conservation and sustainability
Met Council will work with partners to advocate for increased state and federal funding to address impacts of water quality and quantity concerns on water supply infrastructure.	Conservation and sustainability

Regional water supply planning actions	Supporting Regional Policy
Met Council will collaborate with state and local partners to develop, update, and implement emergency response planning linked to increased funding. Priorities include: • Supporting Minnesota Department of Natural Resources-led efforts to enhance the State Drought Plan and plan implementation • Coordinating the development and adoption of municipal drought use policies, so that they are in place before droughts occur	Conservation and sustainability, climate
Met Council will develop, track, and report on regional and subregional indicators and performance measures. This information will be used to evaluate mitigation measures and continuously improve water supply planning, guided by the Metro Area Water Supply Advisory Committee, its Technical Advisory Committee, and subregional water supply groups. This may be regularly reported as a 'State of the Region's Water Supply' summary or factsheet, which would support public review and update of this Metro Water Supply Plan more frequently than every ten years and would support required updates to the Legislature and Met Council.	Monitoring, data and assessment

Regional indicators and performance measures

Setting and tracking regional and subregional indicators and performance measures helps focus attention and resources on planned work and adapt to improve outcomes. A culture of continuous improvement ensures that plan updates incorporate lessons learned, staff share knowledge, and procedures stay effective and current.

Regional indicators



Climate
Impacts from and community responses to climate-related water supply hazards such as flooding, drought, extreme heat, warming winters, and longer growing seasons.

Landscape (source areas)
Current and future land use and associated potential contaminants and water demand, particularly in Drinking Water Supply Management Areas.

Water supply sources
Source water quality, groundwater levels, river flow, ecosystems and water sensitive to changing groundwater levels, designation of areas as special well and boring construction areas; a summary of well interference/conflict reports, and trends in estimated volume of water being reused.

Water supply infrastructure
Metro-focused summaries of annual Minnesota Department of Health's drinking water report results, Public Facility Authority's estimated funding needs, American Society of Civil Engineers' water supply infrastructure report card, and the number of privately-owned wells drilled and sealed.

Water users/customers
Estimates of current and projected metro population (served and unserved); current and projected water use by category, season, indoor vs. outdoor, and source; and trends in per person water use. Note: If the region used an average of 80 gallons per person per day, 2050 growth could be supplied with the amount of water used regionally by municipal community public water supply systems in 2007 (the highest historic water use).

Wastewater and water resource recovery infrastructure
Impacts from (re)development on indoor water use and related wastewater generation, wastewater flow trends, and water quality impacts of community use of water softeners.

Discharge to environment
Quality and quantity of waters receiving reclaimed wastewater.

Performance measures

Performance measures are information about Met Council operations, services, investments, programs and policy objectives. These measures relate to what Met Council has more control over and help provide evidence of whether objectives' targets are being reached.

- Subregional work group activity that includes collaboration on topics such as asset management planning, emergency response, efficiency programs, source water protection and other needs
- Task forces established with local stakeholders
- Development and use of outreach and engagement materials
- Technical assistance provided to local planners (examples: number of wellhead protection plan and local water supply plan updates supported)
- Local plan updates that include:
    - Adoption of local controls to enhance water supply infrastructure resilience
    - Alternative short- and long-term water sources in case of disruptions or limitations
    - Capital planning that includes a minimum 10-year spending projections and factor in lifecycle estimates for major capital assets.
- Financial resources for local partners (examples: grant funding, state appropriations)
- Impacts of water supply plan implementation projects and programs (example: gallons of water saved through efficiency grants)

Subregional water supply action plans

During and after the development of the 2015 Master Water Supply Plan, Met Council heard from stakeholders that “one size does not fit all”, and that future regional plans need to more fully reflect the differences across communities. In 2022, responding to that feedback, MAWSAC recommended that Met Council approach planning for the Metro Area Water Supply Plan from a subregional perspective. Met Council committed to supporting a robust subregional engagement approach for the 2025 Metro Area Water Supply Plan update.

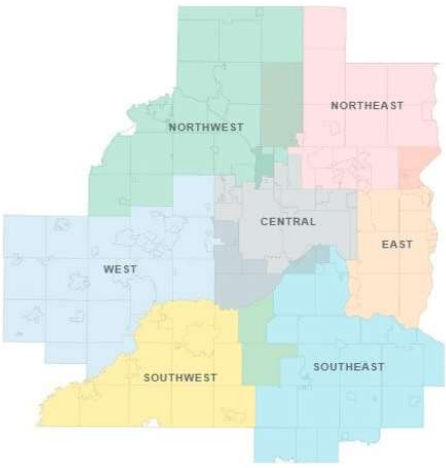


Figure 3.5. Subregional water supply planning areas, from the Water Supply Planning Atlas.

From March 2023 through February 2024, Council staff embarked on a highly participatory engagement campaign to fulfill that charge, using subregional boundaries established through the development of the Water Supply Planning Atlas (figure 10). The intent of this engagement was to:

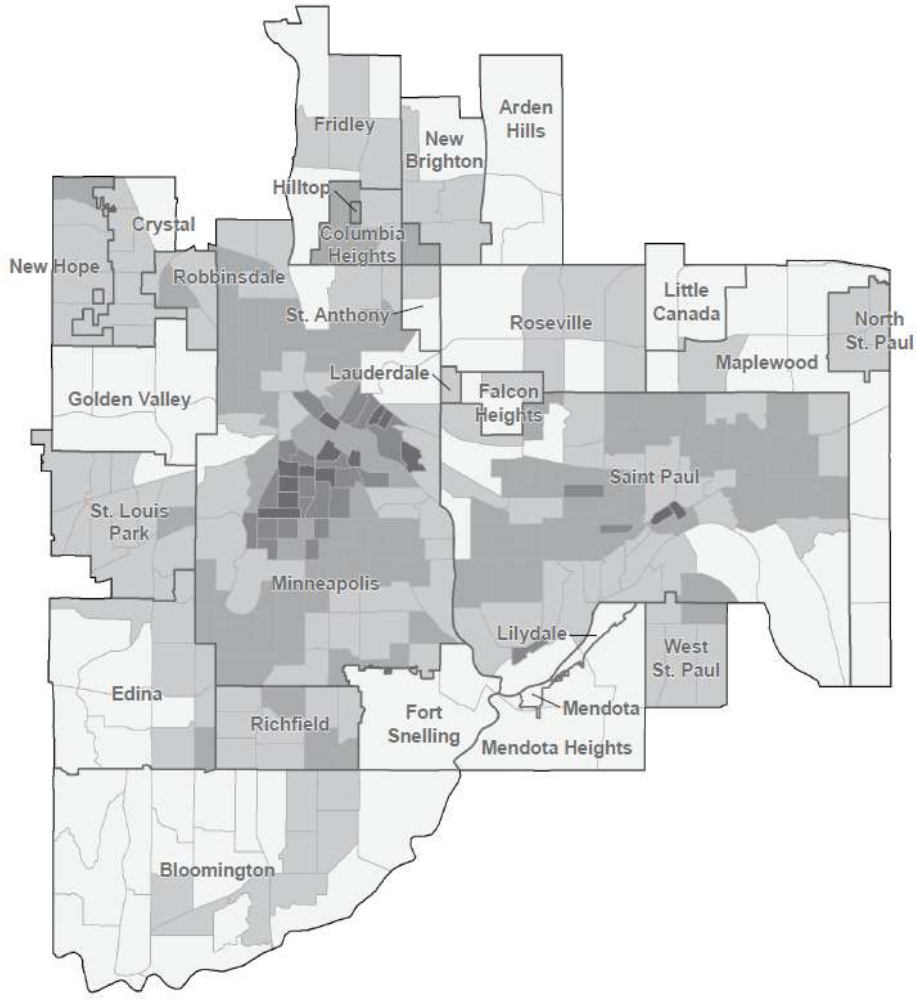
- Integrate water supply, watershed, and land use planning perspectives
- Build a shared vision for water supply in the subregion
- Prioritize issues and opportunities
- Develop an action plan to guide implementation
- Enhance relationships within the subregion and with the Council

Core teams of local leaders in each subregion was engaged in the summer of 2023 to collaboratively design how to engage their peers. Starting in the fall of 2023 and continuing through the winter of 2024, 2-3 workshops were hosted in each subregion to draft content in line with the intent described above.

Around 150 individuals participated in the seven-month process, representing 76 cities and townships and 44 non-community organizations. Perspectives included utility directors, watershed staff, community development planners, agency staff, nonprofits, large-volume water users, and more. The outcomes from their work—often in their own words—are included in the subregional action plans in this section. These subregional action plans reflect the input given at the time of the engagement. While the plans as they stand will guide the Met Council’s water supply planning work in each of these subregions, many of the actions will be ones they take on themselves, and they are expected to evolve over time as new issues and opportunities emerge.

Participants expressed appreciation for the engagement work done to develop these chapters, and requested that subregional engagement continue as a way to support focused implementation. The Council is committed to this continued engagement, as reflected in the regional commitments in this Metro Area Water Supply Plan as well as commitments included in the 2050 Water Policy Plan.

Central Metro subregional water supply action plan



Water supply planning context and current conditions

Everything that happens on land impacts water, and water is all connected.

The Central Metro subregion group includes the cities of Minneapolis and Saint Paul, the communities served by those municipal community public water supply systems, and other surrounding communities. These communities are in the urban center of the region. This is the most highly developed part of the metro and the most densely populated.

The Central Metro subregion is unique among the seven subregions, in that the Mississippi River is the primary drinking water source for most communities. Some communities, such as Bloomington, use a combination of groundwater and surface water to provide water, while others, such as New Brighton, rely primarily on groundwater, but may utilize a connection to the Minneapolis or the Saint Paul system during an emergency or as needs dictate. Some communities use groundwater as their only source of drinking water.

Few residents in this part of the metro receive their drinking water from privately-owned domestic wells. However, there's a greater concentration of wells for industrial or commercial purposes here than in other parts of the region. Additionally, 23 of the 27 communities in the Central Metro subregion overlap with or are adjacent to land that has been identified as a Drinking Water Supply Management Area.

With the region as a whole expected to grow by more than 650,000 people between 2020 and 2050, the Central metro subregion will continue to see growth. Preliminary estimates, which are being evaluated with community input through spring of 2024, suggest that approximately 221,000 more people, 87,000 more households, and 194,000 new jobs will be added to the area by 2050 compared to 2020.

Over the past two decades, communities have continued to grow, but overall water use has generally declined since the late 1980s when water use peaked. However, density is likely to increase to accommodate estimated growth through development and redevelopment. To deliver service to more homes and businesses, communities may need new infrastructure to increase water supply, treatment, and storage capacities, and to expand water distribution systems.

Expansion of water supply systems comes at a cost and is not without financial, social, or environmental risk. To be sustainable, communities and the region must maximize current infrastructure investments and consider how growth, land use changes, climate impacts, inequity, and other challenges stress water resources and supply systems.

Beyond quantity, several quality-related items are also of concern in the Central Metro subregion:

- Increased impervious cover
- Source water protection (which requires collaboration with communities well beyond the seven-county metro planning region for surface water-sourced communities)
- Legacy contamination
- Emerging contaminants such as PFAS and chloride
- Continued pursuit of water reuse

While management of water supply is ultimately a local responsibility, we know there is value in working together on water supply projects. Current partnerships are a testament to that. Water is all connected, and it does not follow jurisdictional boundaries—the work must acknowledge that as well.

Our water is facing threats from familiar and new contaminants including PFAS, nutrients, and chloride. We will support technical work/research to produce good information about water supplies so that our decision-makers and the public can make timely, informed choices about actions that impact our shared water supplies.

The Central Metro chapter of the Water Supply Planning Atlas contains more details in the description of current challenges.

Stakeholder-defined vision of success for water supply planning in the Central Metro subregion
Water supply planning for the Central Metro subregion is successful if the following outcomes are produced or conditions are met in the long term:

- Regional collaboration supports information sharing, public education, and shared access to data such as source water quality and consumption
- Strategies are implemented to optimize efficiency in operations
- Regional growth planning considers sustainable source water availability
- Reliability of infrastructure for anticipated growth is maximized through the implementation of asset management practices
- Source water is protected through collaboration and enforcement efforts, and the region uses a diversity of source water
- Adequate funding is available for water infrastructure

- Improve public engagement
- Focus on public health
    - Health guidance for new contaminants
    - Eliminate lead in homes, including water service lines, private home plumbing and lead paint
- Plan is useful to communities with public water systems and privately-owned wells for planning purposes
- Have a culture shift around non-essential water use to change behaviors, such as lawn irrigation
- Water rates are affordable for customers
- Education that our drinking water is safe

Issues and opportunities

Stakeholder engagement we conducted in the Central Metro subregion in 2023-2024 identified several issues and opportunities related to water supply planning. They are listed here in alphabetical order.

Agency coordination

Communication, data sharing, transparency, coordination, efficiency, and general partnership between and with agencies should be enhanced.

Asset management and investment

There is an overall lack of funding for water supply, including to maintain, grow, and expand infrastructure. Funding for water supply and asset management can be better coordinated and secured through many efforts including:

- Adoption of improved asset management strategies
- Work to secure long-term funding for compliance issues
- Leverage existing funding sources
- Have grants from different levels of government to support this work
- Work with agencies to allow asset replacement related projects score higher on grant applications
- Focus on infrastructure investment and sustainability
- Engage with and educate local elected officials on the importance of this work, and to lobby to secure funding

Communication

- Communication needs to be proactive, targeted and tailored to specific audiences, and across platforms. At the same time, it needs to be coordinated and consistent.
- Communication of scientific information needs to be relatable, and contain the “why”, “what”, and “how” to inspire both understanding and action at household and policy-making levels.
- Increase the extent to which water supply is valued and prioritized by the public through intentional cultivation and strategic communications.

Data and technology

There is an overall lack of meaningful data for water suppliers, and the data that exists can be hard to find and access. A subregion-wide database for cities to share well and aquifer pumping data should be developed. Additionally, new technology is being developed, such as artificial intelligence, but is currently underutilized. The Central Metro subregion should utilize and explore how to incorporate new technology and tools in their work.

Education and engagement
Education and engagement are key to achieving success in all water supply work. Education and engagement efforts need to interact with diverse audiences including schools, politicians, the public, and public and private partners. Education and engagement should focus on:

- The importance of source water protection
- Water quality and quantity
- The cultural value of water
- Water conservation and efficiency
- Prevention is cheaper than remediation
- Building trust in the safety of drinking water throughout the Central Metro subregion that is currently lacking due to cultural barriers and lack of trust in the government.

Planning
Water management strategies (stormwater, groundwater, surface water, land use, etc.) should be aligned to achieve effective planning and to help align goals and policies with their resources. Currently, stakeholders feel there are multiple competing priorities and poor prioritization. Additionally, the Central Metro subregion is the densest of the seven subregions and is expected to see an increase in population in the next 10 years. Growth impacts water supply and sewer, and questions on how best to handle this remain. Better planning in the Central Metro subregion could look like:

- Locals have more control and say in regional planning
- A comprehensive plan that is representative of the group needs
- Align regional growth to be more sustainable and water wise
- Develop intercity wellhead protection plans and water supply plans—common problems often have common solutions

Water conservation and efficiency
Conservation and efficient water use support sustainable water supplies. Minnesota is projected to experience more drought events, and water suppliers must consider the ability of their water source(s) to meet higher water demands during such events. Education on conservation has been identified as a priority for the Central Metro subregion, specifically changing public ideas around lawns and irrigation and changing from traditional turfgrass to pollinator friendly lawns and less water-intensive, more drought-tolerant turfgrass.

Additionally, conservation efforts need to be able to keep pace with increasing population, and an accepted balance of ground and surface water sources for the region should be considered. Plans and policies should encourage and incentivize redevelopment in the urban core, protecting important recharge areas outside the core.

Water quality
Existing contaminants need to be addressed before they enter groundwaters and surface waters and begin to prepare to respond to contaminants of emerging concern while working to reduce confusion and conflict between statutes and regulations. Currently, Central Metro subregion stakeholders feel that statutory regulations are evolving as the list of contaminants continues to expand. Additionally, they note experiencing the following constraints:

- As detection limits get lower and regulations get stricter, there needs to be an increase in funding to address them

- It is difficult to stay abreast of evolving water quality regulations and standards due to increasing understanding of the risk of contaminants of concern.
- PFAS treatment and disposal costs need to be considered
- As our knowledge of PFAS increases with evolving science, our understanding of its long-term health impacts is changing, which can lead to confusion among the public.

Workforce
There is a need to address workforce concerns, including staffing shortages, the lack of necessary funding for staff, turnover, and ability to attract and retain staff, and conversely, onboarding staff without enough mentors or supervisors.

Other focus areas for consideration
Finally, these focus areas were not heard during the Central Metro subregion's first workshop but were heard across several other subregions and included for discussion at the Central Metro subregion's second workshop.

- Reuse: Support use of reuse to reduce water demand.
- Chloride: Pursue limited liability legislation and support best practices to reduce chloride contamination from road salt and water softeners.
- Source water protection: Enhance source water and wellhead protection efforts for both known and emerging contaminants.
- Climate change: Climate change needs to be factored into future planning for water use as well as resilience to extremes and climate impacts.

Prioritized focus areas and action plan
As part of the engagement process, stakeholders identified the following priorities for the Central Metro subregion. Stakeholder-identified statements for what success looks like in 10 years are also included for each.

Affordability
- There will be equitable access to safe, affordable water for all.
- Terms like affordability will be defined.
- We will understand how to balance affordability with rates and act to do so.
- The general public understands the value of water.

Asset management and investment
- Assets will be in place to reliably service the needs of each community.
- Government will invest in additional assets to address changing standards.
- Assets will be planned for and replaced before end of life.

Data and Technology
- There will be a central database for water system information, including water quality testing results that is publicly accessible, regulatory agencies, and public water systems.

Education and engagement
- Communication will be coordinated in terms of content and actions between communities.

- There will be consistent messaging regarding source water protection, water quality, conservation water reuse (irrigation), cultural value of water, cultural barriers, lack of trust, and that contamination prevention is less costly than removal.
- Young people will speak intelligently about water, water use, water resources, etc. with continued levels of complexity so that they can shape future commentary. This should drive workforce as a secondary effect.
- Additionally, to help shape and influence belief in public water, community engagement needs to target lower income areas and non-native Minnesotans that have moved to the state.

Planning

- Water availability, quality, and sustainability will be the first step to inform land use, development, population growth, transportation, etc.
- Built-out communities need to evaluate for capacity and growth and the ability to provide water to such growth with infrastructure expansion and redundancy
- There will be more consistent guidance for contaminants of emerging concern (CECs), to plan for expanded future treatment

Water conservation and efficiency

- We will move away from Kentucky bluegrass lawns
- We will be maintaining current water consumption levels or minimizing rate of increase (per person)
- Rules that facilitate and promote water conservation and efficiency will be adjusted/implemented
- Research to implement will be advanced – household level, community level, commercial, and industrial

Water quality

- Water supplies will meet current and future health guidance standards
- We will know how to prevent contaminants of emerging concern from entering water supply
- There will be chemical reviews prior to use regarding disposal to water or soil discharge

Workforce

- Utilities will be fully staffed
- There will be skilled applicant pools
- Workforce will be more representative of the communities served

It should be noted that, as a part of the discussion, communication and agency coordination were identified as “implementation considerations” in that they would be needed (either as a strategy or something to manage for) in order to support success for any of the other focus areas. As such, these were requested to be incorporated into action plans to address priority focus areas.

Table 3.3 reflects an action plan drafted by participants in a subregional water supply planning workshop series. We expect that actions not reflected here may emerge as important steps needed to be taken in subsequent years. This list, therefore, is a reflection of what was being considered in late

2023. The list has been organized according to the Metro Area Water Supply Advisory Committee's 2022 proposed framework to achieve progress on regional goals (**Figure 3.6**).

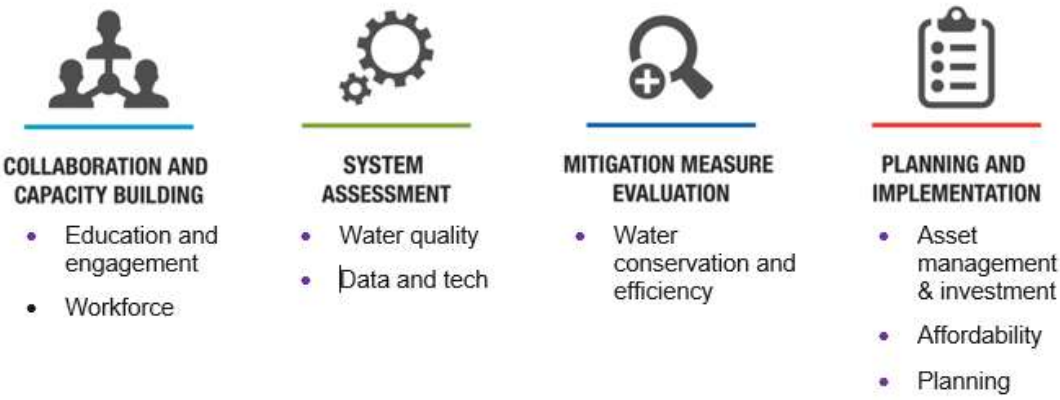


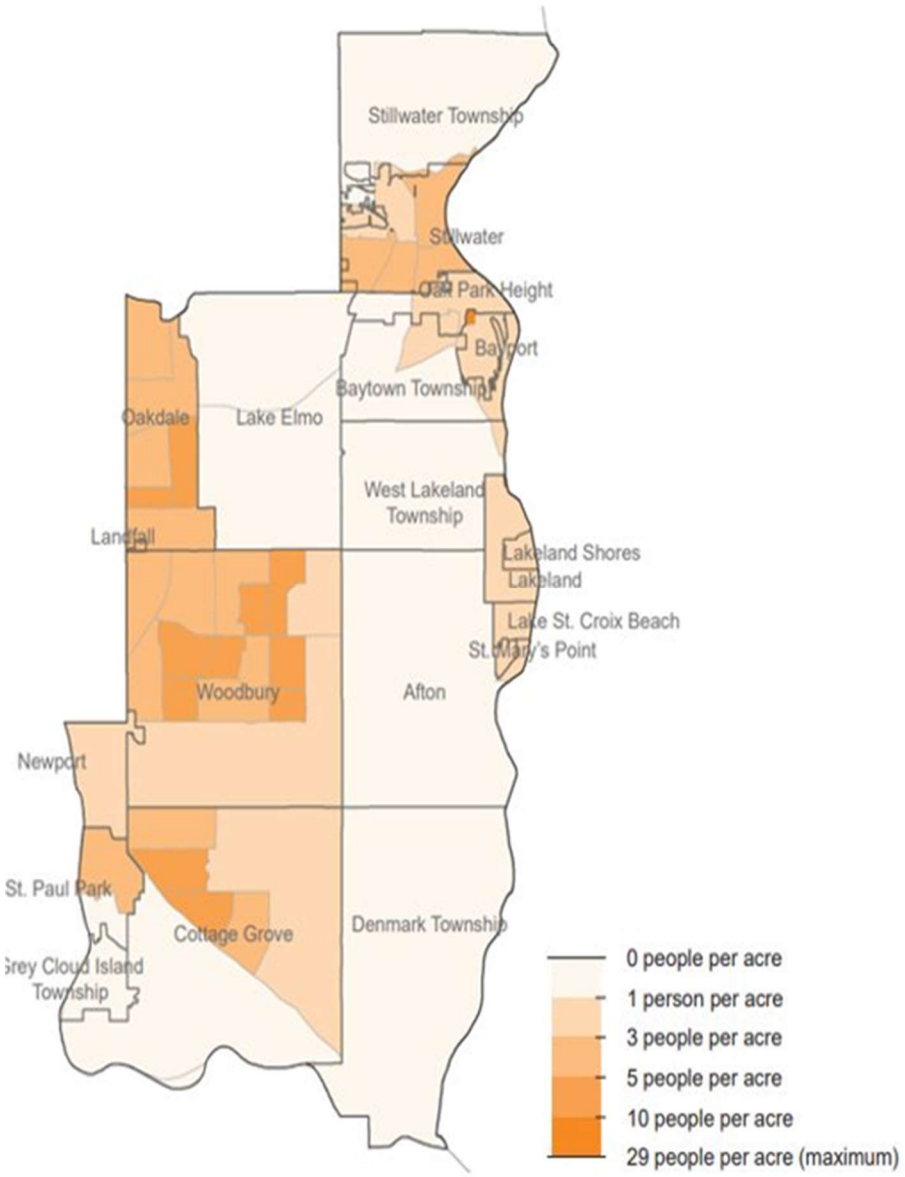
Figure 3.5. The framework for action to achieve MAWSAC goals includes four general steps. Central Metro subregion focus areas generally fall across the framework steps.

Actions to support success

Table 3.3:Subregional water supply stakeholders proposed several actions to work on over the next 10 years (and in some cases, 25 years) to set the subregion up for long-term success in the priority focus areas discussed in this chapter. The action plan includes possible roles for leads, Met Council, subregional groups, and local entities. This action plan is intended as a high-level, long-term, collaborative planning tool. The details may change as collaboration gets underway and depending on resource availability.

ACTION	RELATED FOCUS AREAS	CONNECTED REGIONAL WATER POLICY PLAN POLICY	10 YEAR PLAN		25-YEAR PLAN			POSSIBLE INVOLVED PARTIES
			2025 2030	2030 2035	2035-2040	2040-2045	2045-2050	
COLLABORATION AND CAPACITY BUILDING								
Convene a communications committee with utility representatives that will explore	Education & Engagement							
	Education & Engagement							
	Education, Planning	Conservation & Sustainability						
	Education, Affordability	Conservation & Sustainability						
Create and implement education and engagement for diverse audiences around actions	Education, Water Conservation & Efficiency	Conservation & Sustainability						
Grow partnerships with technical schools and tribal colleges to increase education-	Education, Workforce	Water Sector Workforce						
Increase outreach to high schools, and the public about jobs in the field through	Education, Workforce	Water Sector Workforce						
	Education, Workforce	Water Sector Workforce						Cities and agencies with facilities
Utilize internships, and similar programs to jumpstart careers in the industry at a younger age.	Workforce	Water Sector Workforce						Utilities
SYSTEM ASSESSMENT								
The state agencies convene a team to create a database clearinghouse that houses water quality data, provides management and analysis, and the ability to transfer data for stakeholder analysis.	Data & Technology	Monitoring/Data/ Assessment		X				MDH, MPCA, DNR, MNIT
Continue to convene subregion to work with state agencies on creation of data clearinghouse and the prioritization of tech improvements.	Data & Technology	Monitoring/Data/ Assessment	X	X				Public water supplies Agency commissioners
Research water treatment methods that have a high confidence to handle unknown, emerging contaminants, then identify and prioritize most at risk communities.	Water Quality, Planning	Pollution Prevention	X					MDH
Conduct proactive sampling and health studies for contaminants of emerging concern	Water Quality	Pollution Prevention	X					MDH
Create a program for surveillance and testing of new contaminants in drinking water and wastewater.	Water Quality	Pollution Prevention	X					
Increase upstream water quality monitoring for surface water intakes.	Water Quality	Pollution Prevention		X				MDH, MPCA, Watersheds, USGS
Creation of policies and leverage of funding to reduce non-point source pollution and contamination	Water Quality	Pollution Prevention						MPCA, MDA, and Met Council
Identify best available technologies and provide region-specific life cycle cost estimates for new treatment technologies to handle emerging contaminants.	Water Quality	Conservation & Sustainability, Pollution Prevention		X				MDH and suppliers
Perform a review of infiltration requirements and change if needed to provide better protection.	Water Quality, Planning	Integrated Water Management	X					MPCA, MCES, DNR, and MDH
MITIGATION MEASURE EVALUATION								

Collect water supply data to inform our current state and to help inform what will be feasible in the next 10, 20 years, and beyond.	Water Conservation & Efficiency	Monitoring/Data/ Assessment		X				Water utilities, water users, state agencies, and academia
Work with state agencies to advocate for reuse and to limit the barriers to implementations.	Water Conservation & Efficiency	Reuse	X					
Create different actions and priorities for irrigation and personal/household use.	Water Conservation & Efficiency	Conservation & Sustainability	X	X				DNR MDH
Pass ordinances to mandate low flow appliances in new developments.	Water Conservation & Efficiency	Conservation & Sustainability	X					Cities and state agencies
Met Council to continue providing water efficiency grants.	Water Conservation & Efficiency	Conservation & Sustainability	X	X				Met Council and MPCA
Pass ordinances to require native and drought-tolerant landscaping on new and redevelopments.	Water Conservation & Efficiency	Conservation & Sustainability	X					Cities and state agencies
PLANNING AND IMPLEMENTATION								
Work to leverage and make funds available to make necessary upgrades, improvements, and replacements.	Asset Management & Investment, Affordability	Conservation & Sustainability	X					Cities
Create education tools to engage decisions makers and the community on asset management	Asset Management & Investment, Affordability	Conservation & Sustainability	X					City engineers/public works directors
Asset replacement planning/CIP to project expenditures and likely rate changes	Asset Management & Investment, Affordability	Conservation & Sustainability	X					City councils
Convene a team to standardize asset management platforms – identifying needs, deficiencies, and high-risk assets.	Asset Management & Investment, Affordability	Conservation & Sustainability		X				MDH and MPCA
Work with Met Council to create growth and land use policy that is supported by infrastructure, water supply, and wastewater treatment capacity.	Planning	Integrated Water	X	X				Met Council, local governments, and DNR
Work with the legislature to take pressure of metro to grow by encouraging growth in regional centers: Mankato, Moorhead, Duluth, Rochester, Worthington, etc.	Planning							State – Legislature planning
Met Council integrate water resource planning into local planning assistance decision making.	Planning	Integrated Water	X					Met Council and DNR
Convene the subregion and define what affordability means, identify barriers to achieving affordability and how to overcome them.	Affordability	Conservation & Sustainability	X	X				Met Council
Work to identify and leverage a source of funding to help water producers negotiate the changing regulations.	Affordability, Water Quality	Conservation & Sustainability, Pollution Prevention	X					State agencies/EPA/Met Council
Incorporate review of groundwater impacts into stormwater management design and develop guidance for how stormwater practices impact groundwater.	Water Quality, Planning	Integrated Water	X					MPCA, Met Council, MDH, and watersheds
Work with state and locals to strengthen protections for surface source water	Water Quality, Planning	Pollution Prevention	X					MPCA and Met Council
Prioritize water treatment systems that need new or modified systems for funding.	Water Quality, Affordability, Asset Management	Pollution Prevention		X				MDH
Perform a rigorous review of existing land practices and their potential for contamination of ground or surface water, and regulations to protect against contamination from occurring.	Water Quality, Planning	Pollution Prevention		X				Met Council, MPCA, MDA, DNR, and MDH


Stillwater Township
Stillwater
Oak Park Height
Bayport
Baytown Township
Oakdale
Lake Elmo
West Lakeland Township
Landfall
Lakeland Shores
Lakeland
Lake St. Croix Beach
St. Mary's Point
Woodbury
Afton
Newport
St. Paul Park
Cottage Grove
Denmark Township
Grey Cloud Island Township
0 people per acre
1 person per acre
3 people per acre
5 people per acre
10 people per acre
29 people per acre (maximum)

Water supply planning context and current conditions

Everything that happens on land impacts water, and water is all connected.

Communities in the East Metro subregion are almost exclusively sourced by groundwater from the Prairie du Chien and Jordan aquifers. Just over half the communities in the East Metro subregion have municipal community public water supply systems, and the rest rely on privately-owned wells. About three quarters of the communities in the East Metro subregion have some land that has been identified as a Drinking Water Supply Management Area. Throughout, quality and quantity challenges already exist and already impact water supply.

Overall water use peaked in the mid-to-late-2000s. Since then, communities have continued to grow, but overall water use has been slightly less. Increases in efficiency and wetter summers have likely led to this demand reduction. However, recent droughts and growth have led to a significant increase in water use, and use in some areas is approaching, and periodically exceeding, water appropriation permit limits and/or aquifer recharge rates.

Increased impervious land cover, contaminants of emerging concern, groundwater/surface water interaction, and other quality concerns are also prevalent in the region. PFAS contamination is of particular concern, and the challenges with treatment add another wrinkle in considering water availability and the safety of water supply, especially for privately-owned well users. Additionally, 15 of the 20 communities in the East Metro subregion overlap with or are adjacent to land that has been identified as a drinking water supply management area (DWSMA).

With the region as a whole expected to grow by more than 650,000 people between 2020 and 2050, the East Metro subregion will also continue to see growth. Preliminary estimates, which are being evaluated with community input through spring of 2024, suggest that approximately 50,000 more people, 26,000 more households, and 29,000 new jobs will be added to the East Metro subregion by 2050 compared to 2020.

Additionally, climate change serves as a risk multiplier, amplifying the impacts that extreme heat, drought, an extended growing season, and flooding can have on water supply. As growth occurs, implications of PFAS contamination are realized, and climate continues to change, it is important to plan and collaborate now to ensure there is sufficient, reliable, and safe water supply for people, the economy, and the function of local ecosystems.

The East Metro chapter of the Water Supply Planning Atlas contains more details in the description of current conditions and challenges.

Stakeholder-defined vision of success for water supply planning in the East Metro subregion

Water planning in the East Metro subregion is successful if it achieves these shared goals:

- Water supply planning and implementation includes considerations and strategies, as applicable, for conservation, reuse, and recharge
- Resources are protected and water quality is improved with no new contaminants
- All people have access to affordable, clean, safe water, regardless of personal income or community

The following are needed to successfully achieve those goals in the East Metro subregion:

- A mix of voluntary practices, regulation, and planning available

- There is public trust of water supply, and an understanding of its value, challenges and needs

Issues and opportunities

In the East Metro subregion, several issues and opportunities exist related to water supply planning, as identified through review of existing plans and studies or through the stakeholder engagement done in 2023-2024. They are listed in alphabetical order.

Agency coordination

Communication, data sharing, transparency, coordination, efficiency, and general partnership between and with agencies could be enhanced.

Agricultural contaminants

Agricultural contaminants and practices can negatively impact water supply as well as nearby surface water features. To support a sustainable water future as well as the ability to continue to grow food, it is important to increase implementation of best management practices that improve soil health and reduce pollution from nutrients and pesticides.

Chloride

Partnerships and a shared voice are needed to pursue limited liability legislation and support best practices to reduce chloride contamination from road salt and water softeners.

Climate change

Climate change needs to be factored into future planning for water use as well as resilience to extremes and climate impacts.

Communication

Communication needs to be proactive, targeted, and tailored to specific audiences, and across platforms. At the same time, it needs to be coordinated and consistent, relatable, and contain the "why," "what," and "how" to inspire both understanding and action at household and policy-making levels. This kind of intentional and strategic communications approach can increase the extent to which water supply is understood and prioritized by the public and public officials.

Contaminants of emerging concern

The region's water partners need to address emerging contaminants already known and begin to prepare to respond to ones not recognized yet.

Data

Data are lacking to fully understand groundwater resources, including:

- The age and status of existing infrastructure
- Water quality
    - Ambient groundwater monitoring and point of sale testing
    - Emerging contaminants' presence, especially for those with low detection levels
    - Groundwater and surface water interaction
    - Approaches for stormwater and sewage treatment in areas with karst
- Quantity: A subregion-wide database, informed by groundwater level and use monitoring and modeling, should be explored and developed to help determine:

- A water budget
- Alternative drinking water supplies
- Impact of high-capacity wells
- Impact of patterns of precipitation
- Impact of use on trout streams and lakes

Funding
The cost of testing and treatment of contaminated water is a challenge across scales. More funding is needed, particularly at the local level—beyond rate increases—for treatment at the municipal and household levels. Grant awards are not high enough, are not communicated about enough, or are too complicated to pursue. Low-income funding assistance is needed for privately-owned wells. Strategies that maintain affordability are also needed so that everyone has access to affordable and safe drinking water.

General contamination
Contamination from household hazardous waste, land spreading, leaky underground tanks, closed landfills, abandoned wells, mining, etc. must be reduced.

Jurisdictional coordination
Water planning and development can be better coordinated within and across jurisdictions, such as proactive instead of reactive collaboration and funding. This could include:

- Drinking Water Supply Management Areas:
  - Coordinated management of drinking water supply management areas with overlapping jurisdictions (cities, watersheds, etc.)
  - Coordinated management of non-municipal drinking water supply management areas within a jurisdiction
  - Incorporating all drinking water supply management areas (municipal and non-municipal) in land use and development planning.
- Enhanced linkages between watershed and groundwater management
- Collaboration with agencies regarding internal and external use of reuse water
- Vertical coordination of water supply management from state to metro to county to city to household
- Plain language education campaign/materials across the region on groundwater and aquifer recharge/science for public, policy makers, and decision-makers
- Balancing agency expectations for local plans and coordinating agency review processes. For example: aligning Met Council growth expectations with Department of Natural Resources-identified limitations on water supply sources to inform local ordinances, etc.

Per- and polyfluorinated substances (PFAS)
PFAS contamination of ground and surface waters has created public health concerns and water treatment challenges. PFAS chemicals can be long-lived in the environment, requiring significant time and financial resources to remediate. Eliminating exposure to and remobilization of PFAS is a goal to strive for, but challenges exist with capacity to provide testing, requiring the sealing of wells when a resident is connected to municipal supply, understanding groundwater surface water interaction, and funding of long-term mitigation.

Private wells
There is a lack of protection, guidance, and assistance for privately-owned well users.

Public trust
Public trust can be lacking, and takes time to be built.

- Community members do not feel like they are being heard or that their concerns are being heard.
- As science has improved understanding of health risk limits, the communication about what is "safe" has changed, and that has created doubt about government's ability to keep residents safe.

Subsurface sewage treatment systems
Reduce contamination from subsurface sewage treatment systems through free testing, income- and non-income-based replacement assistance, and enforcement of performance rules.

Source water protection
Enhance source water and wellhead protection efforts for both known and emerging contaminants.

Testing capacity and supplies
Ensure capacity for water testing and treatment

Volatile organic compounds (VOCs)
Track and contain contamination plumes especially near public wells.

Water balance

- Loss of recharge areas impacts water supply. With development still occurring, there is an opportunity to protect recharge areas, especially near groundwater-dependent natural resources.
- Conservation efforts need to be able to keep pace with increasing population as well as climate change.
- Reuse should be supported in order to reduce groundwater demand

Workforce
There is a need to address workforce concerns, including retirements, technical training, and expertise, turnover and ability to attract and retain staff.

Prioritized focus areas and action plan

As part of the engagement process, stakeholders identified the following priorities from the focus areas for the East Metro subregion. Stakeholder-identified statements for what success looks like in 10 years are also included for each.

Agricultural Contaminants

- Delisting of surface water features
- There is no groundwater contamination from agricultural practices
- Sustainable agricultural practices do not compromise food availability

Chloride

- No new chloride impairments
- All drinking water wells are still useable
- Some form of limited liability legislation is in place as an incentive to reduce overapplication/unnecessary use of salt by private contractors
- Feasible/viable alternatives to salt are being developed
- Adoption of chloride-specific model ordinances by metro communities

Contaminants of emerging concern

- Public will be informed of existing emerging contaminants, fate in water supply and potential new/emerging contaminants
- State/local and regional leaders will have a plan for identifying emerging and potential contaminants, educate public about impacts and plans to address

Jurisdictional coordination (inclusive of source water protection)

- Met Council fills a gap in the system, after evaluating who does what
- Connect Met Council growth and MUSA planning to water use
- Jurisdictional work is coordinated—no duplication or contradiction
- Managing growth management with water supply, capacity, and natural resources
- Active communication—adaptive management

PFAS

- People have access to PFAS testing
- Eliminate non-essential uses of PFAS, following Minnesota's PFAS Blueprint developed by the Minnesota Pollution Control Agency
- Pragmatic approach to applying risk reduction techniques
- Prioritization of funding to mitigate risk to any degree
- PFAS-free drinking water for all
- Managing the most harmful as demonstrated by technology and studies
- There is funding for changing water quality regulations
- Changing science and effects on standards are addressed

Privately-owned wells and subsurface sewage treatment systems

- Owners know how to maintain systems and protect their health, supported by education of realtors about privately-owned wells and subsurface sewage treatment systems
- Consistent standards for privately-owned wells
- Privately-owned wells and subsurface sewage treatment systems are incorporated into the other focus areas
- Access to affordable or free testing for contaminants of interest to the owner through a centralized public well and water testing system that allows for centralized data

Water balance

- Aquifer levels are stable and managed, and there is sustainable water use for aquifers, ecosystems (no surface water impacts), and future generations (seven generations, approximately 150 years)
- Sufficient land for all uses, including recharge and reserved land for uses needed in the future
- Future flood storage accomplished
- Infiltration in the right locations
- Reuse
    - More support for reuse systems, including guidance for treatment and perhaps standards for residential reuse such as irrigation systems
    - Increase in its use, as well as more coordinated and more holistic efforts
    - Understanding existing reuse of water and increasing that volume
- Reduce volume of groundwater water needed, with a numeric goal identified
- Perception change: people understand water is a finite resource

It should be noted that, as a part of the discussion, the following focus areas were identified as "implementation considerations", in that they would be needed (either as a strategy or something to manage for) in order to support success for any of the other focus areas. As such, these were incorporated in action plans for these priority focus areas:

- Agency coordination
- Climate change
- Communication
- Data
- Funding
- Public trust
- Workforce

Table 3.4 reflects the action plan developed by participants to address the priority focus areas. It is possible and expected that actions not reflected here may emerge as important steps needed to be taken in subsequent years. This list, therefore, is a reflection of what was being considered in 2023-2024. They have been organized according to the Metro Area Water Supply Advisory Committee's 2022 proposed framework to achieve progress on regional goals (**Figure 3.7**).

Figure 3.6. The framework for action to achieve MAWSAC goals includes four general steps. East Metro subregion actions generally fall across the framework steps, as can be seen in the action tables beginning on the next page.

Actions to support success

Table 3.4. Subregional water supply stakeholders proposed several actions to work on over the next 10 years (and in some cases, 25 years) to set the subregion up for long-term success in the priority focus areas discussed in this chapter.

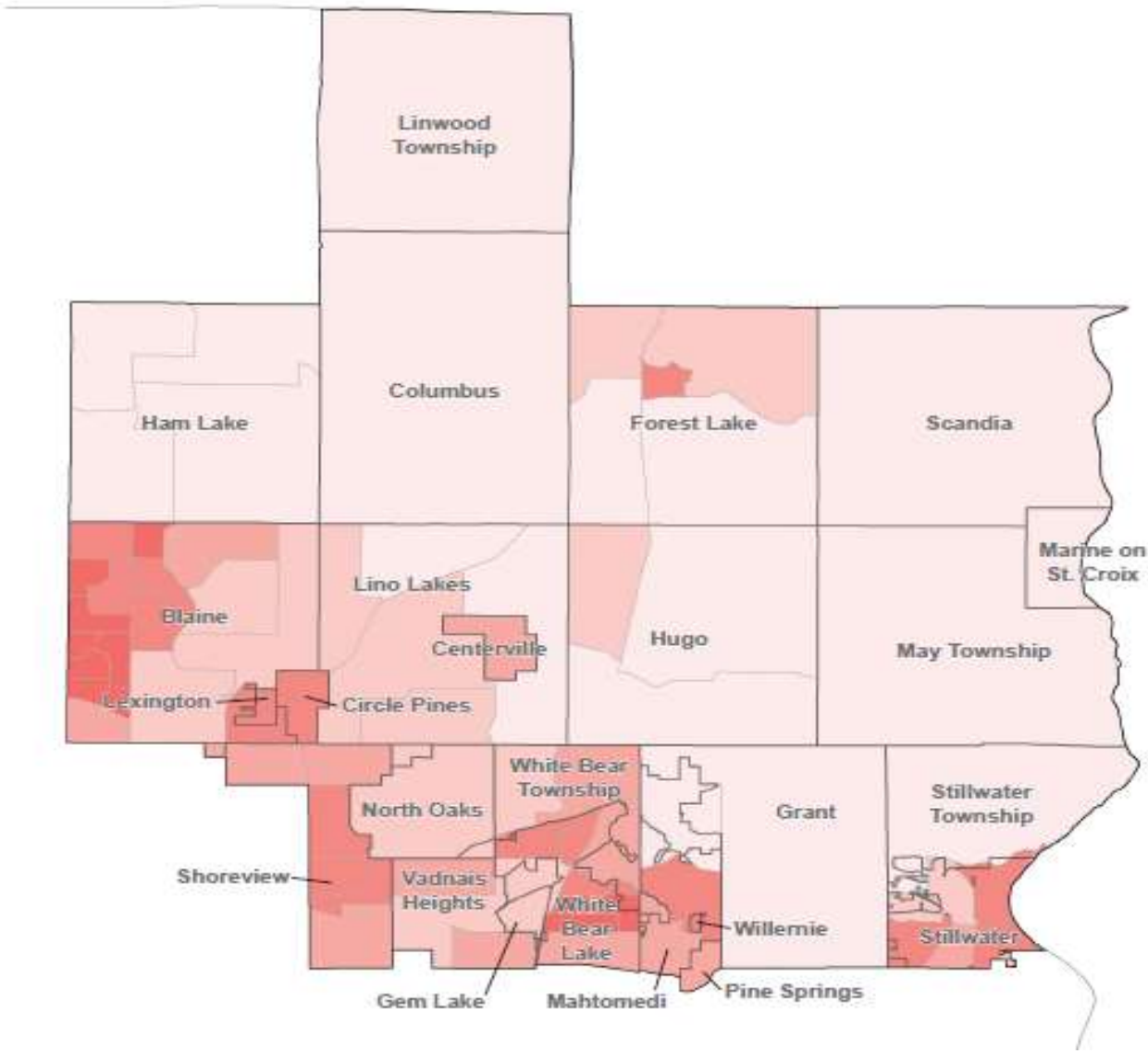
The action plan includes possible roles for leads, Met Council, subregional groups, and local entities. This action plan is intended as a high-level, long-term, collaborative planning tool. The details may change as collaboration gets underway and on resource availability.

ACTIONS	SUBREGIONAL FOCUS AREAS	RELATED REGIONAL WATER POLICY PLAN POLICY	10 YEAR PLAN		25-YEAR PLAN			POSSIBLE INVOLVED PARTIES
			2025 2030	2030 2035	2035-2040	2040-2045	2045-2050	
COLLABORATION AND CAPACITY BUILDING								
Increase partnerships between public health, county agriculture staff, and trade organizations	Agricultural Contaminants	Pollution Prevention	x					County ag engineers/trade org/public health
Increase understanding of what motivates individual and political change	All		x	x				
Develop standard messaging and content regarding contaminants of emerging concern, privately-owned wells, subsurface sewage treatment systems, and water balance issues. Partner with local government units, watershed organizations, healthcare professionals, and others for regular communications in ways that effectively reach people.	CECs, Private wells, SSTS, Water balance	Pollution Prevention	x	x				Local governments, State, pharma
Advocate for changes to increase lifespan and repairability of products, as well as require proof of no future harm	CECs	Pollution Prevention						
Increase ability for consumers to know what is in the products they are buying	CECs	Pollution Prevention						
Reproduce tools such as No Salt/Low Salt regionwide	Chloride	Pollution Prevention						
Lead on addressing water softening from a wastewater treatment perspective	Chloride	Pollution Prevention						Met Council
Incorporate DWSMAs into land use planning through overlays and other tools for the next comprehensive plan update cycle	Jurisdictional coordination	Integrated Water, Land Use, Pollution Prevention	x	x				Met Council
Improve both horizontal and vertical communication and coordination between and within agencies	Jurisdictional coordination	Integrated Water	x					
Increase coordination within Met Council–transportation, planning, water, parks, etc.	Jurisdictional coordination	Integrated Water	x					Met Council
Support watershed-led education within and across cities	Jurisdictional coordination	Integrated water	x	x				
Increase coordination between wellhead and watershed management needs and efforts	Jurisdictional coordination	Pollution Prevention						
Develop sound policy options that take into account financial, social, and environmental needs.	Water balance	Conservation						
More consistent education across the region on groundwater and aquifer recharge science and how groundwater moves, in plain language and as an educational tool for public and policy makers/decision makers	Water balance	Conservation						
SYSTEM ASSESSMENT								
Require more thorough and ongoing testing of agricultural chemicals to reduce application of agricultural chemicals and contaminants of emerging concern.	Agricultural contaminants, CECs	Pollution Prevention	x	x				MDA, MPCA, DNR, MDH
Increase available funding for staff engaged in research for CECs	CECs	Pollution Prevention	x					
Empower regulatory entities to better collaborate with researchers, academia, and federal partners to identify and take action on CECs that exceed a common supercritical threshold of: - Toxilogical info - Presence data	CECs	Pollution Prevention						

ACTIONS	SUBREGIONAL FOCUS AREAS	RELATED REGIONAL WATER POLICY PLAN POLICY	10 YEAR PLAN		25-YEAR PLAN			POSSIBLE INVOLVED PARTIES
			2025 2030	2030 2035	2035-2040	2040-2045	2045-2050	
- Laboratory capacity to identify CECs Use this info to inform policy and legislative decision-makers (in a timely/efficient manner).								
Conduct a trend analysis for detecting vulnerable water bodies and take action prior to impairment.	Chloride	Pollution Prevention						
Compile a database from all sources of info on wells	Private wells/SSTS	Pollution Prevention						
Establish permanent funding for privately-owned well and septic system repair and replacement	Private wells/SSTS	Pollution Prevention						
Develop a regional or statewide standard for flood storage beyond Atlas-14	Water balance	Climate Change Resilience	x	x				
Adaptively manage for regional water levels based on data collection and evaluation	Water balance	Conservation & Sustainability	x	x				
Reevaluate and update fee structure	Water balance	Conservation & Sustainability						Cities, water suppliers
MITIGATION MEASURE EVALUATION								
Evaluate and share cost/benefit ratios of different actions to reduce application of agricultural chemicals	Agricultural contaminants	Pollution Prevention	x	x				MDA, farmer trade organizations
Research alternatives to chloride use	Chloride	Pollution Prevention	x	x				Research community, road authorities
Develop a tool to assess the cost/benefit for city water suppliers to provide centralized water softening	Chloride	Pollution Prevention						
Determine the appropriate level of treatment needed for various uses of reused water	Water balance	Reuse	x					MDH
PLANNING AND IMPLEMENTATION								
Support the passage of limited liability legislation	Chloride	Pollution Prevention	x					
Identify 3 or more priority locations for demonstration projects showing ways to reduce chloride application	Chloride	Pollution Prevention	x					Local governments, watersheds
Engage rural communities with strategies and a training program for gravel roads and dust suppressants	Chloride	Pollution Prevention	x	x				MPCA
Provide education, outreach, and training to private property managers to reduce their application of chloride	Chloride	Pollution Prevention						
Provide education on water softening for private systems	Chloride	Pollution Prevention						
Review and propose changes to wellhead protection state statute to improve cross-jurisdictional planning	Jurisdictional coordination	Pollution Prevention						MDH, Met Council
Eliminate non-essential PFAS uses	CECs	Pollution Prevention		x				Legislature, industry
Increase funding available to address PFAS contamination	CECs	Pollution Prevention						Federal, State
Increase MDH source water protection grants to more accurately reflect the existing costs		Pollution Prevention	x					MDH
Advocate for legislative change to allow communities to charge rates which would help fund reuse and conservation investments	Water balance	Conservation & Sustainability, Reuse						
Advocate for expanded grant opportunities	Water balance	Conservation & Sustainability						Met Council

ACTIONS	SUBREGIONAL FOCUS AREAS	RELATED REGIONAL WATER POLICY PLAN POLICY	10 YEAR PLAN		25-YEAR PLAN			POSSIBLE INVOLVED PARTIES
			2025 2030	2030 2035	2035-2040	2040-2045	2045-2050	
Encourage consideration of non-municipal water use (restaurants, apartments, mobile home parks, etc.)	Water balance	Conservation & Sustainability, Integrated Water						
Establish a regional water conservation program to support universal conservation messages and efforts. Includes agencies developing shared goals and communicating a shared message.	Jurisdictional coordination	Conservation & Sustainability						
Support the development of regional guidance/goals and other resources to address climate change impacts of drinking water, including variability in groundwater resources and surface water	Climate change, Water balance, CECs	Conservation & Sustainability, Climate Change Resilience						
Need to focus more effort and energy on new development. Currently, we put all the responsibility on individuals to change. Lawn -> native, less irrigation. We need to create the right canvas to begin with. It needs to be systemic change. Start with 50% native yard and no in-ground irrigation.		Conservation & Sustainability						
Core need is to change ordinances and commit to rules. California and New Mexico provide examples where turf lawns were common 25 years ago and now it is only xeriscaping and ultra-efficient irrigation.		Conservation & Sustainability						

Northeast Metro subregional water supply action plan



Water supply planning context and current conditions

Everything that happens on land impacts water, and water is all connected. Communities rely on sufficient, reliable, and safe water supply for health, prosperity, and the function of local ecosystems.

Communities in the Northeast Metro subregion are exclusively sourced by groundwater, mostly from the Prairie du Chien and Jordan aquifers. Most communities in this subregion operate municipal community public water supply systems that provide residents and businesses with water, but some communities do not have public water supply systems. In these communities, which are often more rural, residents get water from privately-owned and operated wells. Additionally, 25 of the 27 communities in the Northeast Metro subregion overlap with or are adjacent to land that has been identified as a Drinking Water Supply Management Area.

Northeast Metro subregion communities have some unique water resource limitations and associated water supply sustainability challenges. These include increasing water demand from a growing

population, shallow aquifers connected to surface waters, the presence of a major groundwater divide, shifting climate trends, and legacy contamination. Communities and state regulators continue to collaborate on solutions to ensure water resources are protected and community needs are met, while use restrictions have been put in place by state regulators.

Overall water use peaked in the mid-to-late-2000s. Since then, communities have continued to grow, but overall water use has been slightly less. Increases in efficiency and wetter summers have likely led to this demand reduction. However, recent droughts and growth have led to a significant increase in water use, and concerns about groundwater and lake level drawdown—and what that means for future water supply and development—are significant in this subregion. Increased impervious land cover, contaminants of emerging concern, groundwater and surface water interaction, and other quality concerns are also prevalent in the region.

With the region as a whole expected to grow by more than 650,000 people between 2020 and 2050, the Northeast Metro subregion will also continue to see growth. Preliminary estimates, which are being evaluated with community input through spring of 2024, suggest that approximately 59,000 more people, 28,000 more households, and 36,000 new jobs will be added to the area by 2050 compared to 2020.

Climate change also has the potential to amplify the impacts that extreme heat, drought, an extended growing season, and flooding can have on water supply. New issues resulting from human impacts continue to emerge that have the potential to further influence the quality and quantity of water available for drinking water supply. With existing supply constraints and challenges, as well as a forecast of continued growth, now is the time to thoughtfully and collaboratively plan to ensure a safe and sustainable water supply—for individual communities, ecosystems, the region, and future generations.

The Northeast Metro chapter of the Water Supply Planning Atlas contains more details in the description of current conditions and challenges.

Stakeholder-defined vision of success for water supply planning in the Northeast Metro subregion
Water supply planning for the Northeast Metro subregion is successful if the following outcomes are produced in the long term:

- Water supply is clean, affordable, and sustainable for humans and ecosystems
- There is regional sustainability and coordination with local control
- Growth and resource protection are balanced
- Source water is protected

The following conditions are needed to successfully achieve those goals in the Northeast Metro subregion:

- Increased culture of stewardship
- Increased trust of water and the water system
- A streamlined and improved policy framework
- Increased state and regional support for planning and plan implementation
- Decisions are scientifically and financially sound
- Current and emerging contaminants are understood and addressed

Issues and opportunities

In the Northeast Metro subregion, several issues and opportunities exist related to water supply planning, as identified through the stakeholder engagement done in 2023-2024. They are listed here in alphabetical order.

Changing behaviors and social norms

Humans impact the environment around them, and we all have a role to play to minimize that impact. Yet, people don't always know, understand, and agree that water supply is something they can and should do something about. Compounding this is a need for a shifting of social norms.

For example, the inertia of expectations and desire for things like green lawns will take effort and time to overcome. The education and outreach approach must be customized to specific audiences (different cities, ages, cultural backgrounds, privately-owned vs public well, levels of decision-making authority, etc.) to make the information relatable and help promote behavior and policy change. That said, a coordinated education initiative across communities with shared resources (such as mobile units) and tools could reduce cost and increase consistency in messaging. Achieving this will require more funding than is currently dedicated to outreach and education initiatives, and funding for something like this could also be used statewide.

Contamination

Various sources of human-made or mobilized contaminants are impacting water supply – both in terms of what is available and the cost of treatment and remediation. Specifically, these include fertilizers and herbicides, subsurface sewage treatment systems, chloride, PFAS, TCE, pharmaceuticals, nanomaterials/compounds, disinfection byproducts, other contaminants of emerging concern, selenium, and manganese. Research, education, monitoring, testing, technological innovation, enhanced rules and enforcement are needed. This includes implementation of the Minnesota PFAS Blueprint.

Funding

As it stands, the cost for water does not reflect the true cost of accessing, treating, and distributing water or maintaining that infrastructure. Yet further changes spurred by quality and quantity challenges require new investments. Sustainable, consistent, long-term source of reliable funding for water quality and quantity initiatives is needed. This could be state and federal funding to support local and regional goals, adjusted and tiered rate structures and policy tools to better reflect the true cost of water, as well as incentives and grants to support further work.

Governmental coordination

Operating in silos creates challenges, as water flows across jurisdictional boundaries, multiple communities tap the same water supply, and the management of water is distributed across agencies though all water is connected.

Agency coordination

Generally speaking, continuing to work towards regional/state planning for water supply with common ground for all agencies is desired. Specifically, stakeholders are interested in seeing increased coordination and consistency between agencies, a streamlining of efforts, and an increase in understanding of the impacts of requirements (and the timing of those requirements) on local offices. Additionally, coordination within agencies is also desired. For the Met Council, there is opportunity at this time to ensure alignment and tie-ins between regional planning guidance and system statements.

Jurisdictional coordination

Working across community boundaries provides has many benefits:

- Provides the opportunity to reduce costs to individual communities in planning
- Reduces instances where neighboring plans conflict with each other
- Provides space for regional considerations and to share best practices or lessons learned, address the needs of multiple types of water systems, more broadly protect source water, and identify innovative opportunities and legislative priorities that meet the goals and needs of multiple communities.

Integrated water management
There is benefit in pursuing an integrated approach to water supply management. But this requires rethinking who is in the room and their roles, including water suppliers and regulators, but also community development and land use planners, natural resource managers, watershed organizations, and counties. It also requires an integration of surface water and groundwater perspectives, increased agency cooperation, and a willingness to develop customized solutions that can achieve multiple benefits.

Managing for uncertainty
It can be challenging to plan for a future with so much uncertainty, including knowing what kinds of growth you'll actually get, the impacts of climate change, or the outcomes of consequential, pending decisions that need to be made.

Policy change
Policy can be used to improve water quality and quantity conditions, but misapplied or reactive, it can also create burdensome requirements and restrictions that hinder the ability to pursue desired, sound actions. The region needs policy changes that create a legislative framework to support action with consistent (yet flexible) regulation, as well as tools to increase compliance. Achieving these changes will require political will, decision-maker understanding of water supply, and a willingness to collaborate.

Privately-owned well user support
Well owners need more education and financial resources to maintain their systems and understand their local groundwater picture, but there are questions about where those resources should come from.

Water quantity
Quantity of groundwater is of major concern, especially in light of the White Bear Lake comprehensive planning effort that focuses on ongoing questions about the future of groundwater availability to support water resources, as well as growth in that area. While the Metro Area Water Supply Plan update and the White Bear Lake Area Comprehensive Plan each have their own predetermined purposes, statutory drivers, and timelines, there are actions that can be taken now to stretch groundwater supply:

- **Conservation.** Efforts systematically rolled out to address high-volume users (residential and non-residential, occupant owned or rental) with monitoring to help target outreach to support smart conservation.
- **Reuse.** Reuse can further increase efficiency by using water more than once, or using stormwater for non-potable purposes, though this would require policy change and clarity.
- **Recharge. Start to** consider wastewater as a resource that could support recharge.

Workforce
Communities are experiencing workforce-related challenges. There are not enough staff or ability to fund their roles currently, and retirements create concern around loss of institutional knowledge and qualified staff. There is a need to increase technical capacity and knowledge of water quantity and

quality among new water supply staff. In addition to addressing these workforce challenges, there is also a variety of technical, scientific, education, and funding assistance that is needed to support communities to respond to and understand the nature of various challenges. Increasing internal staff while also increasing access to regional assistance can reduce the burden of plan implementation and system management experienced by local staff. Specific requests in this category include: ability to model aquifer volumes, shared educational materials, assistance in obtaining funding for infrastructure needs, and resources for risk communication.

Prioritized focus areas and action plan

As part of the engagement process, stakeholders identified the following priorities from the focus areas for the Northeast Metro subregion. Stakeholder-identified statements for what success looks like in 10 years are also included for each.

Governmental collaboration

Agencies

- Shared data
- Not having overlapping work efforts between different agencies and communities

Jurisdictions

- Limited conflicting plans
- Consider scale of planning at aquifer level

Integrated water management

- Having conversations about cost/benefit
- Goal-oriented, achievable rules and regulations for organizations dealing with water resources
- Awareness among local governments about land use planning impacts to water resources
- Reducing complexity of local government involvement in decisions related to water resources
- More thoughtful coordination among agencies to integrate resource concerns/improvements

Changing behaviors and social norms

- Widespread acceptance (industry, business) of alternative land cover and related practices (for example, planting native or drought-tolerant species that then require less irrigation)
- Greater household awareness of water use and implementation of conservation practices
- Coordinated or standardized best management practices/conservation measures for the metro (and beyond)
- Coordinated/shared outreach and education resources for communities
- Regional agency for education
    - Uniform messaging
    - Removes the fear of local governments using a “cowboy approach”

Contamination

- Safe and clean drinking water from tap in both public and private spaces
- Expanded program for discovering and managing emergent contaminants that works collaboratively with other agencies
- Surveillance, remediation, prevention and funding for each

- Continued tracking of trends, such as road salt usage

Funding

- Money for continued research/data collection
- Thoughtful allocation of costs
- Focus on priorities / competing interest

Water quantity

Conservation

- Residential gallons per person per day in cities is on a downward trend while peaking factors are reduced to below two times the January use
- Conservation planning is proactive and not reactionary
- Focus on finding biggest cost-effective actions and develop grant program for adoption
- Groundwater appropriation fees should cover costs for groundwater management

Reuse

- Every community has the option to have a water reuse plan for irrigation
- Supported by agencies/jurisdictions – legislation/law
- Community understanding – education about use and water quality
- Saving water (drinking) – targets for amount-saved goals
- Stormwater
- Wastewater
- Recycled water
- Less-potable solutions

Recharge

- Some percentage (to be determined) of water successfully recharged into aquifers

Water availability

Note: This topic was added by the group in the second subregional workshop to include growth and demand as well as quality-induced pressures on supply.

- Identified solution, acquired funding, started to implement projects.
- Reliable clean water source, sustainable.
- Make decision on whether we have to change – if we do, then solutions and move to projects

It should be noted that, as a part of the discussion, the following focus areas were identified as "implementation considerations," in that they would be needed (either as a strategy or something to manage for) in order to support success for any of the other focus areas. As such, these were incorporated into action plans to address priority focus areas:

- Workforce
- Managing for uncertainty
- Policy change
- (Funding)
- (Changing behaviors and social norms)

Table 3.5 reflects the action plan developed by participants to address the priority focus areas. It is possible and expected that actions not reflected here may emerge as important steps needed to be taken in subsequent years. This list, therefore, is a reflection of what was being considered in early 2024. The list has been organized according to the Metro Area Water Supply Advisory Committee's 2022 proposed framework to achieve progress on regional goals (**Figure 3.8**).

Figure 3.7. The framework for action to achieve MAWSAC goals includes four general steps. Northeast Metro subregion actions generally fall across the framework steps, as can be seen in the action tables beginning on the next page.

Actions to support success

Specific actions steps have been identified for each of the focus areas. While they primarily focus on work needed over the next 10 years, some actions are expected to be ongoing over the next 25 years or more.

Table 3.5. Subregional water supply stakeholders identified several actions to focus on over the next 10 years (and in some cases, 25 years) to set the subregion up for long-term success in the priority focus areas discussed in this chapter.

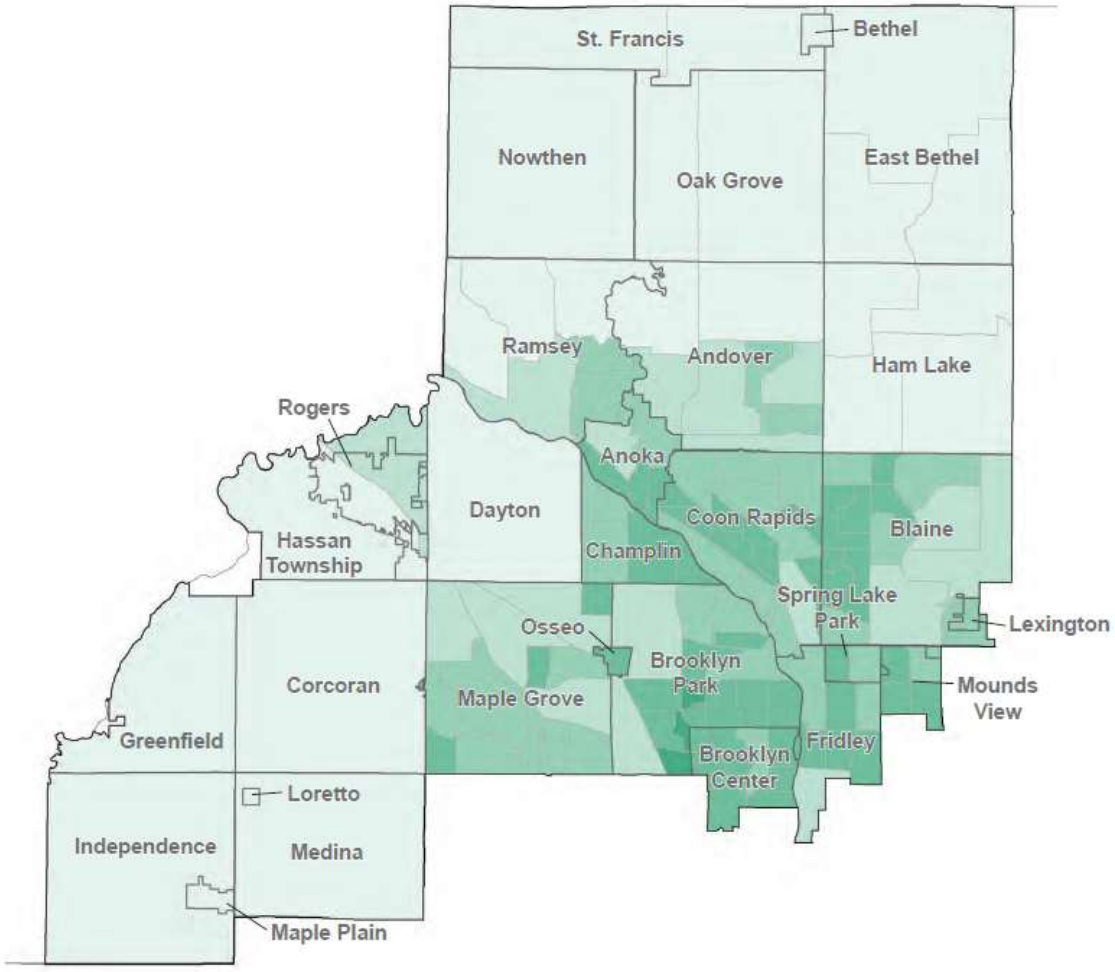
The action plan includes proposed roles for leads, Met Council, subregional groups, and local entities. This action plan is intended as a high-level, long-term, collaborative planning tool. The details may change as collaboration gets underway and on resource availability.

ACTIONS	SUBREGIONAL FOCUS AREAS	CONNECTED REGIONAL WATER POLICY PLAN POLICY	10 YEAR PLAN		25-YEAR PLAN			POSSIBLE INVOLVED PARTIES
			2025 2030	2030 2035	2035-2040	2040-2045	2045-2050	LEAD(S)
COLLABORATION AND CAPACITY BUILDING								
Increase collaboration among agencies for proactive engagement on issues	Agency coordination	Integrated Water						
Increase communication from agencies to local governments with the intent of reducing surprises	Agency coordination							
Coordinate data requests, reporting, and requirements for local governments among agencies	Agency coordination	Monitoring/Data/ Assessment						DNR, Metro Sewer/water use reporting
Increase staff level coordination across agencies	Agency coordination	Integrated Water						
Determine where or under what circumstances multi-jurisdictional planning and collaboration is needed, and then engage in collaborative planning to establish common goals	Jurisdictional coordination							Met Council, County
Connect Homeowners Associations to educational programs	Changing behaviors and social norms	Conservation & Sustainability, Pollution Prevention						UMN Extension
Develop large scale, coordinated education and outreach efforts for both water quality and quantity to increase consistency of messaging and take advantage of economies of scale	Changing behaviors and social norms, jurisdictional coordination	Conservation & Sustainability, Pollution Prevention	x	x	x	x	x	DNR, Local public health, Met Council, MDH
Collaborate with schools for education and plantings	Changing behaviors and social norms	Conservation & Sustainability, Pollution Prevention						Local governments, DNR, schools
Advocate at the legislature for metro and state-wide funding for treatment needs (public water supply and privately-owned wells)	Contamination	Pollution Prevention						
Provide more technical and IT support to develop tools to monitor for or respond to contamination issues	Contamination	Pollution Prevention, Monitoring/Data/ Assessment						Met Council
Establish memorandums of agreement between local governments to support collaboration	Jurisdictional coordination							Local governments in certain areas
Establish standard regulations between watersheds and other agencies, including clarification of DWSMA guidance, while allowing for site-specific flexibility for infiltration	Integrated water management, Recharge	Integrated Water, Conservation & Sustainability	x	x				BWSR, watershed districts, local governments, MDH
Share data between communities	Jurisdictional coordination							
Promote dual uses of recreation areas for recharge and reuse	Recharge	Conservation & Sustainability, Reuse						DNR

ACTIONS	SUBREGIONAL FOCUS AREAS	CONNECTED REGIONAL WATER POLICY PLAN POLICY	10 YEAR PLAN		25-YEAR PLAN			POSSIBLE INVOLVED PARTIES
			2025 2030	2030 2035	2035-2040	2040-2045	2045-2050	LEAD(S)
SYSTEM ASSESSMENT								
Identify available solutions to ensure sustainable water for the future, as well as the funding source or mechanisms to pay for their design and implementation	Water availability	Conservation & Sustainability						MDH, DNR, Legislature
Develop a central tracking tool for water supply system information (GIS and otherwise) that are viewable in a browser	Agency coordination	Monitoring/Data/ Assessment			x	x	x	Met Council
Create a regional contaminant database with tools and information for residents to better understand contaminants	Contamination	Pollution Prevention						Met Council, MDH
Increase funding available for testing and monitoring at the state level	Contamination	Pollution Prevention						MDH, MDA, MPCA
Identify funding and education for municipalities regarding reuse	Climate change, Reuse	Reuse						
Target funding to priority issues	Funding							
Determine needed chemistry for injection of water	Recharge	Pollution Prevention						Met Council, Land use planners, City planners
Define terminology such as “recharge”, “protection”, and “prevention” to ensure consistency and understanding	Recharge	Conservation & Sustainability						MPCA, MGS, DNR
Conduct a localized study to understand where injected recharge or designed infiltration make the most sense	Recharge	Conservation & Sustainability						
Determine whether a change in source of water is needed	Water availability	Conservation & Sustainability						MCES, DNR
MITIGATION MEASURE EVALUATION								
Use best available technology to calculate permits (and provide grants to upgrade)	Conservation	Conservation & Sustainability						DNR
Identify most cost effective actions for conservation and develop grant programs to incentivize adoption	Conservation	Conservation & Sustainability	x	x				DNR with help from UMN Extension, legislature, MDA?
Establish criteria to be reviewed before installing infiltration BMPs	Recharge	Integrated Water, Pollution Prevention						MPCA, MDH, watersheds
PLANNING AND IMPLEMENTATION								
Cities lead by example with installing alternative cover	Changing behaviors and social norms	Conservation & Sustainability						Cities
Provide programs to incentivize private and commercial entities to lead by example	Changing behaviors and social norms	Pollution Prevention, Conservation & Sustainability						Met Council, businesses, lawns to legumes, watersheds
Establish an incentive program for native plantings have city ordinances reflect native planting and conservation goals, and develop a guidance toolkit for maintenance of native plantings	Changing behaviors and social norms	Conservation & Sustainability						UMN Extension
Pass limited liability legislation complete with a secure funding source for outreach and education	Changing behaviors and social norms	Pollution Prevention						
Generate revenue for water user education through conservation rates	Changing behaviors and social norms	Conservation & Sustainability						
Develop a toolkit for technical and financial assistance for large volume users	Conservation	Conservation & Sustainability						
Update DNR appropriations permits process to reflect conservation actions	Conservation	Conservation & Sustainability						

ACTIONS	SUBREGIONAL FOCUS AREAS	CONNECTED REGIONAL WATER POLICY PLAN POLICY	10 YEAR PLAN		25-YEAR PLAN			POSSIBLE INVOLVED PARTIES
			2025 2030	2030 2035	2035-2040	2040-2045	2045-2050	LEAD(S)
Pass legislation to increase appropriation fees to more adequately cover the cost of groundwater management	Conservation	Conservation & Sustainability						
Establish a grant program for public water suppliers to perform system audits and make repairs	Conservation	Conservation & Sustainability						
Engage in ambient groundwater monitoring	Contamination	Pollution Prevention	x	x	x	x	x	MPCA
Engage in ambient monitoring for drinking water	Contamination	Pollution Prevention						MDH
Establish supplemental funding for water systems to help manage changing rates	Contamination	Pollution Prevention						Met Council, Legislature
Provide education for privately-owned well users on well maintenance, testing, and treatment	Contamination	Pollution Prevention	x					MDH
Provide funding for pre-treatment upgrades to old and new plows to reduce chloride use	Contamination	Pollution Prevention						State, cities, county
Promote municipal water quality as safer and cheaper than purchased bottled water	Contamination	Pollution Prevention						
Develop a northeast metro subregional supply plan	Integrated water management	Conservation & Sustainability, Integrated Water						
Pass legislation to allow Minnesota to have groundwater injection control	Recharge	Conservation & Sustainability						MPCA, DNR, Met Council, EPA
Establish decentralized wastewater treatment and use treated discharge for recharge or reuse	Recharge	Conservation & Sustainability, Reuse						
Increase ability to use graywater for recharge	Recharge	Reuse						
Explore options to maintain shallow groundwater levels during construction dewatering through nearby injection of pumped water	Recharge	Conservation & Sustainability, Reuse						
Establish water reuse plans for cities	Reuse	Reuse	x	x				Local governments, partnerships
For greywater, increase educational funding for municipalities/residents	Climate change, Reuse	Reuse						
Create and implement model ordinances to permit stormwater reuse for irrigation	Climate change, Reuse	Reuse						
Provide guidance and incentives for water reuse, including for less-potable uses	Reuse	Reuse	x	x				MDH
Provide public education about water reuse	Reuse	Reuse	x					UMN Extension
Design and construct projects that have been evaluated to show they will support sustainable water use	Water availability	Conservation & Sustainability		x	x	x	x	Water suppliers, DNR

Northwest Metro subregional water supply action plan



Water supply planning context and current conditions

Everything that happens on land impacts water, and water is all connected.

The Northwest Metro subregion covers a large portion of the metro with a variety of community types, ranging from urban to rural. In this part of the metro, a number of water quality and quantity challenges exist that are as diverse as the range of communities. Some resource limitations are related to the underlying geology. Other challenges relate to development, service needs, and water pollution.

Communities in the Northwest Metro subregion rely exclusively on groundwater for their water supply, and many communities do not have access to the most productive aquifers in the region. While most communities in this subregion operate municipal community public water supply systems, other communities do not have a municipal system. In those communities, residents and businesses pump water from privately-owned wells for drinking water. Additionally, 27 of the 29 communities in the Northwest Metro subregion overlap with or are adjacent to land that has been identified as a Drinking Water Supply Management Area.

Overall water use peaked in the mid-to-late-2000s. Since then, communities have continued to grow, but overall water use has been slightly less. Increases in efficiency and wetter summers have likely led to this demand reduction. However, recent droughts and growth have led to a significant increase in

water use. Increased impervious cover, contaminants of emerging concern, groundwater/surface water interaction, and other quality concerns are also prevalent in the region.

With the region as a whole expected to grow by more than 650,000 people between 2020 and 2050, the Northwest Metro subregion will also see growth. Preliminary estimates, which are being evaluated with community input through spring of 2024, suggest that approximately 110,000 more people, 52,000 more households, and 79,000 new jobs will be added to the Northwest Metro subregion by 2050 compared with 2020.

Population growth, as well as corresponding growth in employment and employment centers, will increase water demand. At the same time, climate change serves as a risk multiplier, amplifying the impacts that drought and flooding can have on water supply. As growth occurs, and climate continues to change, it is important to plan and collaborate to ensure there is sufficient, reliable, and safe water supply for people, the economy, and the function of local ecosystems.

The Northwest Metro chapter of the Water Supply Planning Atlas contains more details in the description of current challenges.

Stakeholder-defined vision of success for water supply planning in the Northwest Metro subregion

Water supply planning for the Northwest Metro subregion is successful if the following outcomes are produced in the long term:

- There is adequate supply, and efficient use of that supply
    - Extraction does not exceed recharge or compromise surface water resources
    - Basic needs are met with clean, affordable drinking water for all
    - Infiltration is maximized in new development, and conservation is a norm
    - A diversity of supply is available—other sources, including reuse
- There is improved source water quality and reductions in contaminants of emerging concern (PFAS, chloride, microplastics)
- Climate resilience is increased

The following conditions are needed to successfully achieve those goals in the Northwest Metro subregion:

- Increased understanding
    - Connections between groundwater, surface water, and stormwater management
    - Individual awareness and ownership of the need to reduce impacts
- Sufficient, sustainable funding for infrastructure, staff, adapting to new treatment needs, etc.
- Enhanced coordination around aligned goals—between city departments, between cities, between and with agencies, within agencies

Issues and opportunities

In the Northwest Metro subregion, several issues and opportunities exist related to water supply planning, as identified through the stakeholder engagement done in 2023-2024. They are listed here in alphabetical order.

Asset management

Asset management is important to take care of and extend the life and usability of existing infrastructure. To do so, though, requires sufficient funding, planning (inclusive of conservation planning to reduce needs), and trained staff to do upkeep and maintenance of water systems.

Climate change
Climate change is occurring. This leads to concern about impacts from drought and flooding, as well as uncertainty about future conditions.

Changing behaviors and social norms
Education and outreach to the general public is needed to increase understanding of groundwater management and the process of how water gets to the tap and all that entails. While the audiences may differ (ages, languages, public vs. privately-owned well user, decision-makers), there is a need for increasing the consistency of educational materials and messaging across the region to encourage personal action, shifting of social norms, and a view of groundwater conversation as a nonpolitical need to protect the finite resource for future generations. A coordinated education effort or programs (such as a K-6 outreach program, workshops for residents, privately-owned well user outreach, etc.) is needed to support this aim.

Funding
The current funding structure isn't working. Water is cheap, but the work needed to ensure safe and sufficient water supply is not. As new requirements come out, they often do without a funding source to support compliance. Adjusting the rate structure to reflect the true cost of water and encourage conservation could support a more sustainable funding model, as would an increase in dedicated funding from the state to support compliance and system maintenance for all.

Governmental collaboration
Local governments experience different expectations and conflicting requirements from different entities (MDH, DNR, MPCA, Met Council, City Councils, etc.). Differences across jurisdictional boundaries compound this to make regional water supply planning and plan implementation challenging.

> **Agencies**
> It would be helpful to see agencies align under shared goals, with roles and expectations clearly defined. As a part of this, reviewing and seeking adjustments where rules conflict with each other, sharing data, streamlining roles, and otherwise improving coordination within and across agencies would each make a difference for local communities. Additionally, there is desire to see increased collaboration between agencies and cities.
>
> **Integrated water management**
> Silos within water resource management can be broken down to pursuing multiple water-related benefits at once, rather than treating them as conflicting priorities or creating unintended consequences. Data to support a more integrated approach are needed, such as how to identify or monitor for ecosystem impacts.
>
> **Collaboration into action**
> Increased collaboration alone is not the goal. Rather, intentional collaboration – whether it is within cities, city to city, between cities and agencies, within agencies, or across agencies – can produce enhanced outcomes and action.

Growth and planning
As development occurs, it is important that it happens alongside a comprehensive understanding of groundwater management so that economic development goals are in line with groundwater and ecosystem protection. This could include more compact development or preserving space for parks and recreation infrastructure. Guidance for long-term population forecasting is also needed to support planning for appropriately sized growth.

Privately-owned well users
Education and water testing for privately-owned well users is needed to protect public health and equip people with information to help them make informed decisions. Free well testing should be expanded for low-income privately-owned well users.

Water quality
Whether it is managing chloride (including legacy chloride in soil), addressing PFAS issues, keeping up with other emerging contaminants like microplastics, removing lead from the system, or engaging in research and education, groundwater contamination creates challenges for water supply. Sustained and increased funding is needed in order to keep water safe.

Groundwater quantity/water balance
Groundwater is a finite resource, and in order to provide a good foundation for growth and to meet future needs, action must be taken now.

Conservation
A decreasing trend for peak summer demand can help to reduce infrastructure needs, but will require more widespread adoption of conservation measures (and an increase in funding for these activities). For residents and businesses, this would include things like less lawn irrigation and a shift away from green turfgrass as a norm. For higher water volume users, this may mean appropriation permits are more strictly reviewed. Construction dewatering is also more strictly reviewed, with incorporation of injection wells to retain shallow groundwater.

Reuse
Stormwater reuse for practices like irrigation can reduce groundwater demand for nonpotable uses. Provision for grey water reuse in new buildings and developments could further reduce demand, though would require a change in plumbing codes.

Modeling
Dynamic modeling of groundwater is needed to understand movement, quantity, demand, impacts of high-volume users, and what a sustainable water balance would look like. This kind of data would support informed decision making for growth as well as degree of action required to meet water supply needs.

Surface water sourcing
As constraints on groundwater increase, investigating an expansion of surface water supply is warranted.

Workforce
With recent and upcoming retirements of water operators and other experienced staff, there is a large hole in institutional knowledge that is only expected to increase in the coming years. There is a need for shared workforce planning and strategy to meet workforce needs, including mentorship programs, outreach to schools for recruitment, and introduction of water careers as options. Additionally, there is a need to fund existing and future staffing levels.

Prioritized focus areas and action plan
As part of the engagement process, stakeholders identified the following as priorities from the focus areas for the Northwest Metro subregion. Stakeholder-identified statements for what success looks like in 10 years are also included for each.

Asset management
- An understanding of quantity and quality of assets

- An ability to forecast replacement and upgrade costs

Governmental collaboration

- Required information into one location and government agencies are able to split out what it is that they need, or at least a reduction of duplicative work
- Full overarching model to see inputs and outputs is necessary for regional coordination to understand where conservation action or other action would be useful
- Within government, planners and engineers understand each other and can anticipate results of each other's actions

Groundwater quantity and water balance (inclusive of growth and planning)

- Understanding quality and quantity of supply (distinct aquifers)
- Communicate where recharge areas exist. Recharge areas will be outside Met Council authority so would need to address how/who would set policies in the recharge area.
- Define educational work plan—conservation and awareness of issues

Water quality (inclusive of privately-owned well users)

- Improved sampling methodologies (standards and locations)—individual well (raw water) vs. distributed
- Increased/required testing of wells—make it available and affordable
- Adapting to whatever new standards and requirements there are

Workforce

- Robust asset management/GIS system to capture institutional knowledge
- Consistent pipeline of staff entering the field of water supply, distribution, treatment, and storage
- High schools, technical colleges, and universities actively promoting public works
- Succession planning for those retiring
- Get kids excited about water

As a part of the workshop discussion, participants identified the following focus areas as "implementation considerations," in that they would be needed (either as a strategy or something to manage for) in order to support success for any of the other focus areas. As such, these were incorporated into the action plans to address priority focus areas:

- Changing behaviors and social norms
- Climate change
- Funding
    - Sustainability
    - Short term (grants)

Table 3.6 reflects the action plan developed by participants at and following the second subregional workshop in order to address the priority focus areas. It is possible and expected that actions not reflected here may emerge as important steps needed to be taken in subsequent years. This list, therefore, is a reflection of what was being considered in late 2023 and early 2024. They have been organized according to the Metro Area Water Supply Advisory Committee's 2022 proposed framework to achieve progress on regional goals (**Figure 3.8**).

Figure 3.8: The framework for action to achieve MAWSAC goals includes four general steps. Northwest Metro focus areas generally fall across the framework steps.

Actions to support success

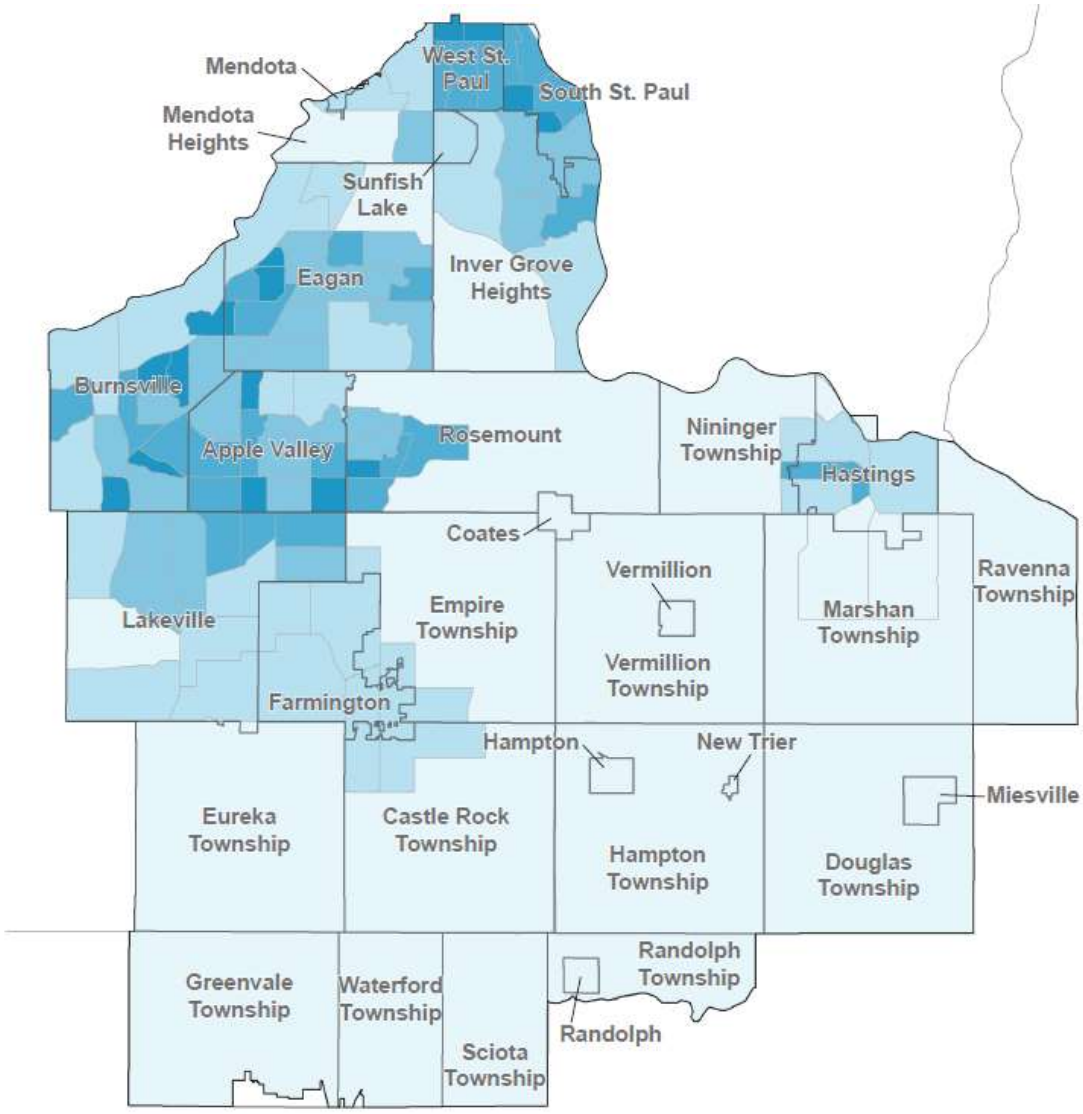
Table 3.6. The following pages reflect the action plan developed by participants at and following the second subregional workshop in order to address the priority focus areas.

It is possible and expected that actions not reflected here may emerge as important steps needed to be taken in subsequent years. This list, therefore, is a reflection of what was being considered in late 2023. They have been organized according to the Metro Area Water Supply Advisory Committee's 2022 proposed framework to achieve progress on regional goals.

ACTIONS	RELATED FOCUS AREAS	CONNECTED REGIONAL WATER POLICY PLAN POLICY	10 YEAR PLAN		25-YEAR PLAN			POSSIBLE INVOLVED PARTIES
			2025 2030	2030 2035	2035-2040	2040-2045	2045-2050	
COLLABORATION AND CAPACITY BUILDING								
Convene regional meetings of cities with appropriate agency staff for meetings to specifically collaborate between public works and city planners	Collaboration	Integrated Water	x					Regional planners (health), local government planners and public works, DNR Area Hydros, Met Council
Encourage more mechanisms for proactive financing rather than reactive funding	Collaboration, Asset Management	Conservation & Sustainability	x	x				MDH, MPCA, Legislature, local governments
Increase understanding of the importance of a sustainable water supply among school aged children, pursue an educational standard	Water Quantity, Workforce	Conservation & Sustainability, Water Sector Workforce	x	x				Cities, Agencies, School District Administrators
Partner with organizations actively participating in STEM events	Workforce	Water Sector Workforce	x	x				Met Council
SYSTEM ASSESSMENT								
Model future needs for supply and distribution	Asset Management	Conservation & Sustainability						
Conduct an inventory of existing assets	Asset Management	Conservation & Sustainability						
Leverage the existing Metro Area Water Supply Technical Advisory Committee (TAC) and subregional water planning groups to establish a workgroup involving agencies and local government representatives and Met Council to identify and advocate for changes or removals to statutes/rules	Collaboration		x					Met Council, Agencies
Define how current data is being used, and share for modeling purposes	Water Quantity	Monitoring/ Data/ Assessment	x					DNR, Met Council, Cities (pumping data)
Develop a comprehensive, dynamic model	Water Quantity	Monitoring/ Data/ Assessment						Met Council/DNR
Increase affordability of accurate testing–particularly for PFAS	Water Quality	Pollution Prevention	x	x				MDH
MITIGATION MEASURE EVALUATION								
Forecast challenges for water supply systems, assess implications and infrastructure needs	Asset Management	Conservation & Sustainability	x	x	x	x	x	Cities, Agencies
Improve treatment technologies to address contamination discovered, with appropriate policy backing and funding	Water Quality	Pollution Prevention		x				Private enterprise
Continue ambient monitoring for early detection and monitoring of new contaminants	Water Quality	Pollution Prevention						MDH, UMCR
PLANNING AND IMPLEMENTATION								
Seek funding for and implement changes to improve asset management and the quality/usefulness of existing assets	Asset Management	Conservation & Sustainability	x	x	x	x	x	Cities, agencies

Support a bill for groundwater modeling funding to create a regional dynamic model for shared use	Collaboration	Monitoring/ Data/ Assessment	x	x				
Continue work between agencies to streamline plans	Collaboration	Integrated Water	x	x	x	x	x	
Continue to improve in best practices that support effective virtual and in-person engagement	Collaboration		x	x	x	x	x	Agencies
Standardize water conservation best practices across the region and state	Water Quantity	Conservation & Sustainability		x				
Explore feasibility and needs for injection wells for deeper aquifers	Water Quantity	Conservation & Sustainability						
Seek funding for solutions to combat contaminants	Water Quality	Pollution Prevention						State/federal
Support peer to peer outreach like master gardeners for privately-owned well and subsurface sewage treatment system users	Water Quality	Pollution Prevention	x	x				UMN extension, Met Council, Nonprofits, private well owners
Continue education to realtors on privately-owned wells and subsurface sewage treatment systems	Water Quality	Pollution Prevention	x	x				UMN extension, MDH, MPCA, or a nonprofit
Enlist communications and behavior change professionals to support effective education and outreach campaigns, especially for privately-owned well users.	Water Quality	Pollution Prevention	x					Schools, cities, watersheds, media
Engage in an education campaign on local water infrastructure importance, challenges, and needs for learning institutions, the general public, and elected officials	Workforce	Water Sector Workforce						Operators, public works staff

Southeast Metro subregional water supply action plan



Water supply planning context and current conditions

Everything that happens on land impacts water, and water is all connected.

The Southeast Metro subregion spans communities in Dakota County, ranging from highly developed older suburbs, to newer suburbs that have experienced significant growth in the last 30 years, to rural agricultural communities dotted with smaller town centers. Generally, as you move from north to south across the county, density decreases and the landscape becomes more rural.

Water supply is provided by a combination of municipal and nonmunicipal public water suppliers and privately-owned wells. Agricultural and commercial entities use water from the same aquifers for irrigation and industrial processes. Groundwater quality and quantity challenges exist throughout the county.

Communities in the Southeast Metro subregion rely almost exclusively on groundwater sources from the Prairie du Chien and Jordan aquifers for their water supplies. Many communities in this subregion operate municipal community public water supply systems that provide residents and businesses with water, but some communities do not have public water supply systems. In these communities, which are often more rural, residents get water from privately-owned and operated wells. One community, Burnsville, uses a combination of surface water from a nearby quarry and groundwater and provides treated water to the neighboring community of Savage. Additionally, 27 of the 32 communities in the Southeast Metro subregion have some land that has been identified as a Drinking Water Supply Management Area, and source water protection is an important goal for public and privately-owned wells alike. Fertilizer and pesticide residuals have been detected in many wells in rural communities.

Overall water use peaked in the mid-to-late-2000s. Since then, communities have continued to grow, but overall water use has been slightly less. Increases in efficiency and wetter summers have likely led to this demand reduction. However, recent droughts and growth have led to a significant increase in water use.

With the region as a whole expected to grow by more than 650,000 people between 2020 and 2050, the Southeast Metro subregion will also continue to see growth. Preliminary estimates, which are being evaluated with community input through spring of 2024, suggest that approximately 88,000 more people, 44,000 more households, and 79,000 new jobs will be added to the area by 2050 compared to 2020. As the Southeast Metro subregion continues to grow, more people will rely on municipal community public water supplies for their water needs. To deliver service to more homes and businesses, communities may need new infrastructure like additional wells and new service lines. Expansion of water supply systems comes with costs and is not without financial, social, or environmental risk. As the region continues to grow and develop, more land conversion to impervious surface is likely.

Communities rely on water supply for health, prosperity, and the function of local ecosystems. As growth occurs, and climate change continues to amplify risks for both quality and quantity, it is important to plan and collaborate to ensure there is sufficient, reliable, and safe water supply for people, the economy, and the function of local ecosystems.

The Southeast Metro chapter of the Water Supply Planning Atlas contains more details in the description of current challenges.

Definition of success for water supply planning in the southeast metro

Water supply planning for the Southeast Metro subregion is successful if the following outcomes are produced in the long term:

- There is an adequate supply for people and ecosystems—one does not compromise the other
- Water is clean, safe, and drinkable.

The following conditions are needed to successfully achieve those goals in the Southeast Metro subregion:

- Communities proactively and collaboratively manage water in an integrated fashion. For example:
  - New development preserves open space for infiltration and incorporates reuse.
  - There is regional collaboration to support water sustainability.
  - Norms have shifted to low-input crops and turf that support conservation.
- All people understand water-related issues and take action to protect and conserve water.
- Sound science informs decision-making.

Issues and opportunities

In the Southeast Metro subregion, several issues and opportunities exist related to water supply planning, as identified through the stakeholder engagement done in 2023-2024. They are listed here in alphabetical order.

Climate change

Climate change, mixed with land use changes, will increase challenges already impacting water supply: more runoff and less infiltration, heat island impact, etc..

Contamination

Water supply faces several quality-related concerns, with greater concern expressed for PFAS and chloride management and response, but concern exists as well for nitrate. Technical and financial support for communities as well as privately-owned well users are needed, as are cost effective solutions to reduce inputs and remove pollutants. Additionally, there is also a need for guidance and support to respond to stricter maximum contaminant level requirements and changing regulations.

Land use and development

Land use is changing as farmland is developed. Population growth has put pressure on water supply, with some communities already exceeding permits or looking to drill new wells. As planning for new development takes place, there is a need and opportunity to manage open space and infiltration opportunities and promote conservation. Opportunities to set development standards for soil health and depth, irrigation, pervious surface, turfgrass and other elements can also be used when that upfront collaboration is not available.

Change of behaviors and social norms

Everyone both impacts water and has a role they can play to protect water. Yet, that role is not fully understood. Education for a variety of audiences (including decision makers, developers, and schools) is needed, as is the development of trust in government, encouragement of behavior change, and the evolution of social norms regarding water use and contamination (for example, green lawns, fertilizer).

Funding

Funding to incentivize practices that benefit water quality and quantity, promote reuse, support and expand staffing, and maintain and repair systems is needed. Whether through adjusting rate structures

and fees, statewide or regional grants, or other funding sources, existing funding is not sufficient for the work needed.

Governmental collaboration

Agencies: Agencies can enhance their coordination within and across their organization, and increase transparency about the ways they do work together. The wellhead protection process is a specific opportunity to improve interagency coordination.

Jurisdictional coordination: Partnerships, resource- and knowledge-sharing, collaborative planning, and aligning goals across jurisdictional boundaries can lead to sustainable water outcomes. As such, there is value to subregional collaboration, planning, and technical assistance to support local action, though funding to support subregional collaboration would be needed.

Asset management

Asset management to take care of the infrastructure we have should be encouraged, while taking into account the variety of challenges aging infrastructure produces (emerging contaminants, extension of pipes, etc.).

Water quantity

Addressing water quantity concerns will require conservation, reuse (including stormwater and wastewater), and recharge. Each of these approaches has its own challenges which need to be addressed as well, including changes in codes or policies, developing certified training for practitioners, planning for land protection, research, and (in some cases) assessment of feasibility.

Workforce

Staffing limitations impact the ability to apply for and track grants, enforce laws or policies, develop plans, create and implement programming, and more. Beyond just the number, there is a challenge with hiring qualified candidates while also facing a loss of institutional knowledge. There is a need to support existing staff, expand staff, provide certification and training, and create space for thoughtful planning and collaboration.

Agricultural systems change

The current corn and soybean paradigm is the result of market pressures. New, lucrative cash crops with lower water and fertilizer demand are needed–for both industrial as well as family farmers. Aquaponics, hydroponics and urban agriculture should be considered for their impact on water supply, as well as new crops such as marijuana and hemp.

Prioritized focus areas and draft action plan

As part of the engagement process, stakeholders identified the following as priorities from the focus areas for the Southeast Metro subregion. Stakeholder-identified statements for what success looks like in 10 years are also included for each.

Workforce

- There will be adequate staffing and expertise at state, county, municipal, and regional levels to sustain plans and to operate systems.
- Work toward grant funding

Contamination

- There will be financial/technical support for source water and privately-owned well testing
- Contaminants of concern will be prioritized based on location

- Maximum Contaminant Limits (MCLs) will be set for manganese
- There will be cost effective approaches for contaminants (contaminants of emerging concern, PFAS, chlorides)

Water quantity

- There will be clear reuse guidance
- Summer-to-winter use ratio will be reduced
- We will have a dynamic model to give an accurate representation of sustainable/available groundwater
- We will understand sustainability of groundwater on a very localized basis
- Water rates will appropriately reflect the value of the water

Agricultural systems change

- Lower nitrogen and phosphorus and biosolids applications to agricultural land
- Lower water consumption or alternative uses from data centers, large water consumers, Niagara bottling
- New and emerging agricultural systems are considered (aquaponics and hydroponics and urban agriculture, as well as new crops such as marijuana and hemp)

Land use and development

- Infiltration rates are equal to predevelopment
- Use is maintainable/sustainable
- Better understanding of water use of land use type (use versus surface water impact)

Asset management

- Potable water leakage is reduced
- Aging treatment plants/piping/pumping systems are replaced
- The right maintenance at the right time
- Planning and funding of replacements
- Coordination between utility and surfacing (for example, conditions assessments)

It should be noted that, as a part of the discussion, participants identified the following focus areas as "implementation considerations," in that they would be needed (either as a strategy or something to manage for) to support success for any of the other focus areas. As such, these were incorporated as action plans to address priority focus areas were developed:

- Funding
- Governmental collaboration
- Changing behaviors and social norms
- Climate change

Table 3.7 reflects the action plan developed by participants at and following the second subregional workshop in order to address the priority focus areas. It is possible and expected that actions not reflected here may emerge as important steps needed to be taken in subsequent years. This list, therefore, is a reflection of what was being considered in late 2023. They have been organized according to the Metro Area Water Supply Advisory Committee's 2022 proposed framework to achieve progress on regional goals (**Figure 3.9**).

Figure 3.9: The framework for action to achieve MAWSAC goals includes four general steps. Actions identified to address Southeast Metro subregion focus areas generally fall across the framework steps.

Actions to support success

Table 3.7. Subregional water supply stakeholders proposed several actions to work on over the next 10 years (and in some cases, 25 years) to set the subregion up for long-term success in the priority focus areas discussed in this chapter.

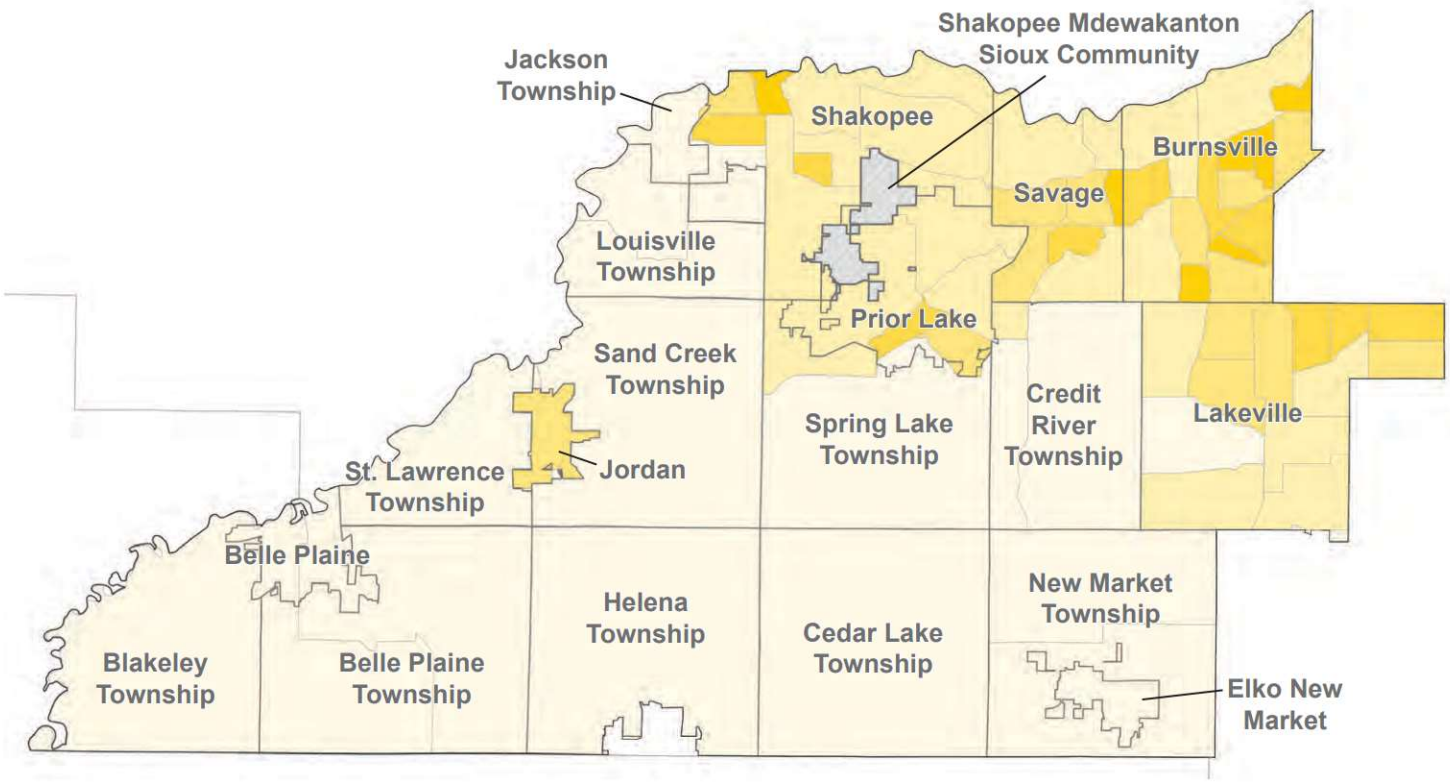
The action plan includes possible roles for leads, Met Council, subregional groups, and local entities. This action plan is intended as a high-level, long-term, collaborative planning tool. The details may change as collaboration gets underway and on resource availability.

ACTION	RELATED FOCUS AREAS	CONNECTED REGIONAL WATER POLICY PLAN POLICY	10 YEAR PLAN 2025-2030	10 YEAR PLAN 2030-2035	25-YEAR PLAN 2035-2040	25-YEAR PLAN 2040-2045	25-YEAR PLAN 2045-2050	POSSIBLE INVOLVED PARTIES POSSIBLE LEAD(S)
COLLABORATION AND CAPACITY BUILDING								
Develop marketing resources for water supply field to create awareness with diverse	Workforce	Water Sector Workforce			x	x	x	
Enhance connections/partnerships between employers and educators to support youth outreach, scholarships, and college coursework to promote interest and build expertise in the water supply/water utility field and understanding about the true value of water	Workforce; Asset Management	Water Sector Workforce			x	x	x	
Highlight region to prospective employees/graduates of related programs	Workforce	Water Sector Workforce			x	x	x	
Address/accommodate education/training/transportation needs to enable workforce	Workforce	Water Sector Workforce			x	x	X	
	Workforce	Water Sector Workforce			x	x	X	
Advocate with elected councils for funding and legislative actions	Asset Management	Conservation & Sustainability						
Collaborate across departments on asset management (water utility, planning, finance, and	Asset Management	Conservation & Sustainability						
Build support from other groups to be team players and convince city councils to support	Asset Management	Conservation & Sustainability						
Provide education about contaminants of concern by geographic location, with action steps	Contamination	Pollution Prevention						
Convene work groups to determine what types of re-use are feasible (small scale versus large	Water Quantity	Reuse						
Increase understanding, education for school-aged children regarding the value of water	Water Quantity	Conservation & Sustainability						
SYSTEM ASSESSMENT								
Use new technologies for asset management, including accurate GIS data and systems that produce high quality outputs based on high quality inputs	Asset Management	Monitoring/ Data/ Assessment	x					Public works
Secure funding for improved and dynamic metro groundwater model	Water Quantity	Monitoring/ Data/ Assessment	x	x				Met Council with DNR
	Land Use and Development	Monitoring/ Data/ Assessment	x	x				DNR, Cities, Met Council
Coordinate with area labs to inventory the different analyses available at each and make it easier to pickup/drop-off water samples	Contamination	Monitoring/ Data/ Assessment	x					Met Council with local support from cities
Conduct a technical review of biosolid applications and impacts to groundwater	Contamination	Pollution Prevention	x					Met Council, MPCA

ACTION	RELATED FOCUS AREAS	CONNECTED REGIONAL WATER POLICY PLAN POLICY	10 YEAR PLAN 2025 2030	10 YEAR PLAN 2030 2035	25-YEAR PLAN 2035-2040	25-YEAR PLAN 2040-2045	25-YEAR PLAN 2045-2050	POSSIBLE INVOLVED PARTIES POSSIBLE LEAD(S)
MITIGATION MEASURE EVALUATION								
Seek funding from LCCMR to study effective water conservation messaging/campaign, document success stories (what is the best bang for the buck?), and make recommendations for targeted, crafted outreach	Water Quantity	Conservation & Sustainability						U of MN, Locals with DNR, Met
Make recommendations and advocate for local businesses to sell drought-resistant grass seed and sod, to get away from a culture of thinking that green grass equals status	Water Quantity	Conservation & Sustainability, Climate Change Resilience						
Promote crop choices and best management practices that are more sustainable, such as timing fertilizer applications (don't apply when plants won't use them)	Ag Systems Change	Pollution Prevention						Farmers, townships, SWCD, MDA
Increase funding for drainage water (tile) management of nitrogen and phosphorus	Ag Systems Change	Pollution Prevention						
Outreach to change mindsets to embrace science-backed approaches to lower water use and chemical applications (example: irrigation management – low plow heads, good transition	Ag Systems Change	Conservation & Sustainability, Pollution Prevention						MDA, County, SWCD, U of MN, all
Use Met Council owned lands as demo projects of sustainable agriculture	Ag Systems Change	Pollution Prevention, Conservation & Sustainability						Met Council, MDA, U of MN, SWCD
Develop regional low-salt design guidance (less chloride, de-icing)	Contamination	Pollution Prevention						
Provide guidance and standard messaging on treatment design/development for emerging contaminants such as PFAS	Contamination	Pollution Prevention						
Develop and communicate clear criteria on water permitting limits, to inform water supply-related decisions about new industries or changes in industry technology (data center mining,	Land Use and Development	Conservation & Sustainability						
Provide technical and financial support for privately-owned well testing and treatment	Contamination	Pollution Prevention						
PLANNING AND IMPLEMENTATION								
Streamline and revamp water supply plans to make them more of a useful document	Water Quantity	Conservation & Sustainability						DNR, Cities, Public water suppliers
Include a description of the water needs of different land use types in local comprehensive plan updates	Land Use and Development	Conservation & Sustainability, Water-centered Growth & Development		x				
Recommend and support changes to statutes and rules regarding Home Owners Association requirements related to irrigation and landscaping	Land Use and Development	Conservation & Sustainability	x	x				Cities (lobbying), DNR, Extension?

ACTION	RELATED FOCUS AREAS	CONNECTED REGIONAL WATER POLICY PLAN POLICY	10 YEAR PLAN 2025 2030	10 YEAR PLAN 2030 2035	25-YEAR PLAN 2035-2040	25-YEAR PLAN 2040-2045	25-YEAR PLAN 2045-2050	POSSIBLE INVOLVED PARTIES POSSIBLE LEAD(S)
Develop opportunities for urban agriculture and access to fresh food, such as zoning guidance for urban farms	Ag Systems Change	Water-centered Growth & Development						Met Council, U of MN, NRCS
Utilize existing tax credit programs to further incentivize conservation	Ag Systems Change	Conservation & Sustainability	x					Met Council
Address funding thinking about the utility (can they afford to build needed infrastructure?) to the customer (to defray cost). Consider the true “cost of water”	Affordability	Conservation & Sustainability						

Southwest Metro subregional water supply action plan



Water supply planning context and current conditions

Everything that happens on land impacts water, and water is all connected. Water is medicine, water is food, water is survival.

The Southwest Metro subregion spans Scott County bounded by Dakota County in the east and the Minnesota River to the north and west. This area includes the Shakopee Mdewakanton Sioux Community as well as growing suburban and rural communities. Water sustainability, as well as the increasing costs and demand pressures of ever-increasing growth, are challenges here as they are in many communities across the metro. Density in this part of the metro generally follows development and growth patterns, with most people being located in the north and east part of the county.

Communities in the Southwest Metro subregion rely on a variety of drinking water sources. The majority of communities in this subregion do not have municipal community public water supply systems. In those communities, residents operate privately-owned wells to get their drinking water. In rural centers and denser, more suburban areas of the subregion, communities operate municipal community public water supply systems that provide water services to residents and businesses. Communities with these municipal supplies primarily have groundwater as their source. In the north and east parts of the subregion, they can access the Prairie du Chien and Jordan aquifers. In the south and west parts, they may rely on the Tunnel City-Wonewoc and deeper aquifers.

Savage receives some of its water from Burnsville, which gets water from a combination of groundwater and surface water sources. The Shakopee Mdewakanton Sioux Community and Prior

Lake have a long-standing collaboration and interconnected water supply system. Additionally, 15 of 21 of the communities in the Southwest Metro subregion overlap with or are adjacent to land that has been identified as a Drinking Water Supply Management Area.

Overall water use peaked in the mid-to-late-2000s. Since then, communities have continued to grow, but overall water use has been slightly less. Increases in efficiency and wetter summers have likely led to this demand reduction. However, recent droughts and growth have led to a significant increase in water use. Increased impervious land cover, contaminants of emerging concern, groundwater/surface water interaction, and other quality concerns are also prevalent in the region.

With the region as a whole expected to grow by more than 650,000 people between 2020 and 2050, the Southwest Metro subregion will also see growth. Preliminary estimates, which are being evaluated with community input through spring of 2024, suggest that approximately 84,000 more people, 43,000 more households, and 53,000 new jobs will be added to the subregion by 2050 compared to 2020.

As the Southwest Metro subregion continues to grow, more people will rely on municipal community public water supplies for their water needs. To deliver service to more homes and businesses, communities may need new infrastructure like additional wells and new service lines. Expansion of water supply systems comes with costs and is not without financial, social, or environmental risk.

Municipalities and rural landowners all rely on sufficient, reliable, and safe water supply for health and prosperity. Safe water supply is also necessary to the function of unique community ecosystems in the southwest metro, like Boiling Springs and the Savage Fen. As growth continues and climate change amplifies water quality and quantity risks, it is important to plan and collaborate to ensure there is sufficient, reliable, and safe water supply for people, the economy, and the function of local ecosystems—now and for future generations.

The Southwest Metro chapter of the Water Supply Planning Atlas contains more details in the description of current challenges.

Stakeholder-defined vision of success for water supply planning in the Southwest Metro subregion
Water supply planning for the Southwest Metro subregion is successful if it achieves the shared goal of sustainable water supplies.

The Southwest Metro subregion will have a sustainable water supply when:

- Water supplies (sources and infrastructure) are resilient to unknown impacts.
- High-value water resources are protected from impacts of groundwater withdrawals and contamination (examples: Boiling Springs, Savage Fen, wetlands that support wild rice, and others).
- There is continued clean and plentiful water for communities and visitors.
- Aquifers are recharged and replenish supplies faster than they are withdrawn; groundwater supplies are able to withstand the effects of climate change and population growth.
- Growth is supported by investments in efficient expansion within capacity limits and that don't reduce funding to preserve existing infrastructure.

To successfully achieve a sustainable water supply for the Southwest Metro subregion:

- All the voices are heard as community plans are made and implemented – so that the full range of diverse water supply needs are met. For example, Tribes are affected by all decisions. Always have Tribes at the table for planning and public comment.
- Water supply sustainability is managed and assessed at the aquifer level. Community planners know what water supply capacity exists locally and area-wide to support growth and related water demand, including information about water supply quality threats and projects for the future.
- Tools and data are available (like monitoring networks and models), and people are confident in the information they provide to support education and decision-making.
- Local water plan objectives and implementation strategies are aligned (for example, stormwater versus wellhead protection), and neighbors are aware of each other's plans and those plans are compatible.
- Policies and organizational cultures support public water suppliers and communities to collaborate and share resources.
- There is strong public support for sustainable water supplies, based on everyone's (private well owners' and municipal customers') understanding of where their water comes from and goes and its connection to food and other community needs.
- Wasteful and harmful water uses are reduced.
- Communities, specifically the Shakopee Mdewakanton Sioux Community, have the ability to self-govern.
- Plans extend for 7 generations (~150 years).
- Climate variability is considered when permitting.
- Water rates reflect the true value of the resource.
- Nonpotable water is used for industrial purposes wherever possible and released cleaner than it started.
- Water regulations are enforced for conservation and efficiency measures, water allocation priorities during emergency, water quality, and source water protection.

Issues and opportunities

Achieving the identified success will require addressing barriers as well as advancing opportunities across the full water supply picture.

Several issues and barriers make planning for a sustainable water supply challenging in the Southwest Metro subregion. These include:

- There is still uncertainty and gaps in information for factors like climate, geology in buried bedrock valleys, and emerging contaminants, etc. Gaps in monitoring networks exist, so effectively guiding decision-making for resources like Savage Fen, Eagle Creek and Boiling Springs is challenging.

- There is an ongoing need to address large water supply users, including commercial pumping interests – both those who have been in the area a long time and new large water users who are looking to move to the area (for example, agricultural irrigators and bottled water businesses).
- The current business model for water supply service is broken; it isn't equipped to handle current and emerging water supply challenges and solutions. For example, water supply and wastewater are disconnected.
- Agency and legislative work is needed to reduce siloed decision-making, address regulatory barriers to new approaches, and support communities' abilities to enact local controls that support sustainable water supplies. Currently, no one entity oversees groundwater sustainability at the aquifer level in the Southwest Metro. Some reasons for this may include perceptions that this may result in additional levels of government and expensive changes to infrastructure that provide little area-wide benefit.
- Ongoing resources (money, staff) are needed for this work at the state, regional and local levels for efforts like shifting to more ambitious water efficiency and getting local information back from planning processes. Groups that may be affected financially by programs
- Rural privately-owned domestic well users need more support to ensure safe and adequate supplies.
- Current and future land uses are associated with increased water use and water quality risks. This includes urban and suburban growth, agricultural irrigation and fertilizer, manufacturing and industry (examples include Amazon, Shutterfly, and others near the Minnesota River). In some cases, contaminants may be present and released without regulation.
- Lakes, rivers, and groundwater are connected and impacted by industrial, power plant, and mining use.
- Multi-year droughts like we are currently experiencing continue to put demand on water supplies.
- Financial resources have not been secured for the full range of water supply planning work that has been identified. In addition, some groups may be affected financially by water supply planning programs legislation, or regulations. Addressing financial needs will require collaboration among agricultural businesses and their specific associations, commercial and industrial businesses, and politicians at all levels of government.

Many things are already in place and working well for water supply planning and plan implementation in the Southwest Metro subregion. These programs, practices and other strategies should continue to be supported and improved. Examples include:

- Metropolitan Council and partners utilizing the 'One Water' approach in regional planning.
- Where data and tools are available, they add good value. This includes existing groundwater and surface water monitoring networks (sites and data infrastructure), regional groundwater model information, and forecasts of groundwater levels for presentations.

- Existing collaboration is working well. Examples include updating county groundwater plans, agreements in place among agencies and communities, communities working together to talk about water quality and supply requirements, regional water policy and technical committees, and communities cooperating on projects, plans, and sharing resources and water.
- Existing sustainable water projects and programs are successful. Examples include projects that optimize pumping to manage aquifer drawdown, reuse water for irrigation, install more efficient fixtures, detect lead, and improve water quality through prairie restoration.
- Connections between local/subregional/regional planning that has led to grants and funding and partnerships.
- Communities and their neighbors in the Southwest Metro subregion have well trained staff and state of the art infrastructure.
- Currently, many communities (such as the Shakopee Mdewakanton Sioux Community) are independently able to provide safe, clean water.
- Where employee retention is strong (such as the Shakopee Mdewakanton Sioux Community) it helps with community water values adoption.
- Conservation groups in the southwest metro are also helping protect water supplies in their own ways, such as Ducks Unlimited, Pheasants Forever, Arbor Day Foundation among others.

Additional work is also needed, particularly to address the issues and barriers discussed above. Examples:

- Gaps in data need to be filled, particularly for domestic residential wells and for unique resources like Savage Fen, Eagle Creek, and Boiling Springs.
- Partnerships between local water supply leaders and state organizations like Clean Water Council and the Minnesota Department for Employment and Economic Development should be strengthened and leveraged.
- Collaboration on regional model updates and outreach should start up again and be continuously supported.
- Water planning and management should be approached from an aquifer scale. Policy is needed to protect surface water and groundwater. Regional water policy and technical committees should focus more on water supply and hydrology challenges.
- Support better approaches to water appropriation permitting. For example, allow better matches between source water quality to water use, and consider cumulative impacts.
- Strengthen local planning and local plan implementation tools to link energy and water planning and support more sustainable water conservation/efficiency practices (including at Homeowners Associations, for example).
- More information is needed about what is the most sustainable way to treat, produce, and distribute water.

- Communities in the Southwest Metro subregion should communicate with the Shakopee Mdewakanton Sioux Community and hire American Indian staff.
- Improve the feasibility/business case of using reclaimed wastewater.

Prioritized focus areas and draft action plan

To achieve the shared description of water supply planning success in the Southwest Metro subregion by 2050, considering the known issues and opportunities, work should be focused in six general areas: partnerships, education and engagement, enhancing data and tools, evaluating and managing water supply system capacity, efficiency, and plan alignment. These subregionally identified focus areas also relate to the Metro Area Water Supply Advisory Committee's proposed framework to achieve progress on regional goals (**Figure 3.10**).

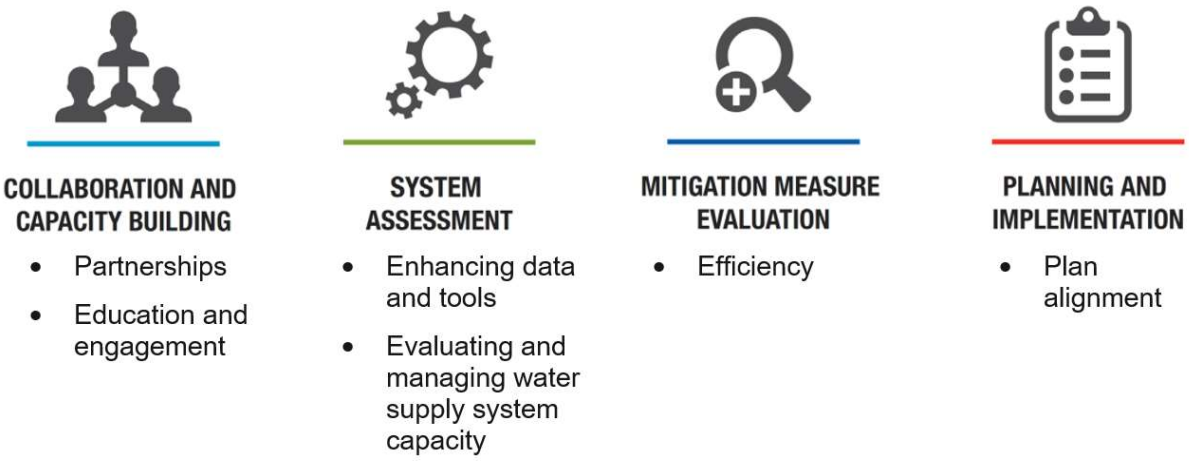


Figure 3.10: The framework for action to achieve MAWSAC goals includes four general steps. Southwest Metro subregion focus areas generally fall across the framework steps.

Partnerships

If work focusing on partnerships is successful, in 10 years there will be ongoing regional communication and cooperation among the communities, conservationists, watersheds and businesses of the Southwest Metro subregion on all efforts related to securing the future water supply. No community in the will be an outlier in terms of its approach to water conservation or water supply planning. Water supply planning and conservation efforts will be coordinated and tap into the knowledge and experience of the Indigenous community.

Some barriers that may need resources in order to address them include:

- Cities shy away from Met Council trying to regionalize water supply, but there may be value to that
- Political will/desire
- Perceived loss of control – what if partnerships fail?
- Needs to be a reason for the partnership (mandated?)
- There has to be value in the partnership
- Punishes growing communities
- Know the true value of water – building up a "war chest" of funding does not work
- Tiered rates theoretically address this (value of water)

- Metro Cities board involvement
- Western education isn't hands-on or conversational; should tap into indigenous people as educators who know history from a young age; they may lack academic credentials but will share personal knowledge

Several entities will have roles to play in this work:

- All water users (residents, Homeowners associations, industrial, recreation)
- Growing communities with concerns that they may be unfairly impacted
- Metro Cities board
- SCALE
- Met Council can continue to support water efficiency grant program
- Can the Met Council directly administer the water efficiency grant program?
- Conservationists, watersheds, and businesses to support legislative initiatives for sustainable water supply
- Legislators to consider and support water quality standard legislation that provides the path to a sustainable water supply

Education and engagement

If work focusing on education and engagement is successful, new water supply management-related technology will be understood and wanted – trusted – by citizens and their local governments. This work will tap into the knowledge and experience of the Indigenous community. People will also understand, seek out, and implement opportunities to reduce water through landscape practices.

In 10 years, government staff and citizens should have access to and take part in more water supply education. Educational resources should tap into real world metro region examples (like White Bear Lake) and should with start young audiences. This will lead to changing expectations and habits.

Some barriers that may need resources in order to address them include:

- Groundwater is hard to visualize
- Water use for commercial profit
- Not enough commonly available educational resources
- No formal education requirements regarding groundwater
- Need for materials
- Publicly available information about water quality
- The development of predictive water models

Some barriers that may need resources in order to address them include:

- The Minnesota Legislature often opposes funding requests for monitoring. How to provide political cover for legislators, Council members?
- Agricultural lobbyists (corn, soy, irrigators associations) may oppose
- Staffing levels, attrition, and lost knowledge
- Funding limitations for:
    - Drilling monitoring wells, upgrading to telemetry, auto data loggers
    - Staffing
    - Continuing ongoing work
    - Modeling; more data is needed on the purpose of models (inputs)

Several entities will have roles to play in this work:

- Minnesota Department of Natural Resources Ecological and Water Resources Division will need to ensure staffing is available [to install and maintain monitoring stations and collect, analyze, and provide access to data].
- High-level decision makers and the science community
- Water supply system operators will be interested
- The general public needs to be able to trust the data
- High water-use businesses and industries
- Met Council should continue to contract for good groundwater models

Evaluating and managing water supply system capacity
If work focusing on evaluating and managing water supply system capacity is successful, we will understand the most significant impacts to our water supply are, how they impact rural versus urban areas, the best areas for privately-owned wells, and if a shift to shared resources and a regional supply makes sense (is it an economically sustainable model for areas with municipal sewer and water services?) As part of this work, we will finally figure out how to successfully retain, monitor, and infiltrate water on the landscape land to supply the aquifers. This supply will provide for and maintain a capacity and quality of water that is self-sustaining for future generations. Water supplies will be able to withstand the effects of climate change and population growth.

In 10 years:

- Consensus among local governments in the county as to what our system capacity is, including potential impacts to townships with reliance on wells over the long term.
- Reduced consumption
- Reuse (stormwater is the most practical)
- Recharge
- Plain language communication
- Smart salting to reduce chloride levels in water for future reuse
- Active working plan in place for the goal of Water for All, with some regulation related to ag land tiling discharge and city stormwater discharge to nearby ravine and waterways with possibility for more holding ponds and water retainage

Some barriers that may need resources in order to address them include:

- Lack of information specific to the county leading to lack of consensus
- Hydrogeology is more of an art form, less linear
- Inconsistent enforcement of regulation
- Ability to get data from privately-owned wells
- Available supply
- Supply needs differ from city to city: growing versus build-out, redevelopment. Where there are differences, how do we explain that locally?

Participants noted that everyone will have roles to play in this work:

Efficiency
If work focusing on efficiency is successful, public water supply systems will see fewer extremes between winter and summer use because of a change in the perception of traditional green lawn being better than other ecological landscapes.

In 10 years:

- Building and development codes are designed to prioritize efficiency rather than just allow or permit.
- Resources are available for communities to maintain green infrastructure.
- Better yard and lawn management is widespread (smart irrigation controllers).
- It's easy for landowners to take advantage of funding and technical resources.
- There are increased opportunities for water reuse (to reduce pressure on existing sources).
- Prairie and natural areas are restored and protected.
- Conservation measures are promoted, specifically measures to curtail summer demands. How can we make a bigger dent on reduction and by approaching larger water users to look at reuse potential, etc.?
- Develop a program to approach homeowners associations and commercial property owners and look at their irrigation demands. This might make a bigger dent as we have more control versus individual users.

Some barriers that may need resources in order to address them include:

- Technology needs to be affordable for all users and dependable so the public has trust in it.
- Efficiency programs are scattered and constantly changing.
- Current ordinances, building codes and lack of requirement at the local government level.
- Need to be able to retrofit on a large scale – access to reuse facilities – not just new development.
- Conservation may encourage additional use elsewhere.

Several entities will have roles to play in this work:

- Producers who depend on rates
- Local leaders
- Elected officials

Plan alignment
If work focusing on plan alignment is successful, in 10 years:

- There will be funding for groundwater planning.
- There will be useful plans.
- Comprehensive plans that are approved or accepted across state agencies especially for grants and funding such as city local water plans (submitted to Met Council and DNR) being accepted by the Board of Water and Soil Resources for Clean Water Fund Grants.
- Prairie and natural areas are restored and protected.

Some barriers that may need resources in order to address them include:

- Public culture and expectations
- Multiple regulations and agencies' barriers to reuse (irrigation, stormwater management)
- Contaminants of emerging concern (CECs)
- Accommodate infiltration/flood protection land use needs

Several entities will have roles to play in this work:

- Cities
- Counties
- Watersheds
- Homeowners associations

Actions to support success

The following pages reflect an action plan drafted by participants in a subregional water supply planning workshop series. It is possible and expected that actions not reflected here may emerge as important steps needed to be taken in subsequent years. This list, therefore, is a reflection of what was being considered in late 2023. They have been organized according to the Metro Area Water Supply Advisory Committee's 2022 proposed framework to achieve progress on regional goals.

Table 3.8. Subregional water supply stakeholders proposed several actions to work on over the next 10 years (and in some cases, 25 years) to set the subregion up for long-term success in the priority focus areas discussed in this chapter.

The action plan includes possible roles for leads, Met Council, subregional groups, and local entities. This action plan is intended as a high-level, long-term, collaborative planning tool. The details may change as collaboration gets underway and on resource availability.

ACTION	RELATED FOCUS AREAS	RELATED WATER POLICY PLAN POLICY	10 YEAR PLAN		25-YEAR PLAN			POSSIBLE INVOLVED PARTIES
			2025 2030	2030 2035	2035-2040	2040-2045	2045-2050	
COLLABORATION AND CAPACITY BUILDING								
Reach out more to the Indigenous community – human connection is important and relevant	All	All						Municipalities
Scope actions by thinking more broadly by aquifer as opposed to political boundaries	Partnerships	Conservation & Sustainability, Pollution Prevention, Integrated Water						All
Update and/or develop new agreements for coordinated water supply planning and implementation	Partnerships, Plan Alignment	Conservation & Sustainability, Pollution Prevention, Integrated Water, Water-centered Growth & Development	x					Regional users
Develop and use coordinated tools for tracking water supply planning and implementation partnerships	Partnerships	All	x					Metropolitan Council
Create educational and training materials that can be adapted for various communities, audiences	Education/ Engagement	All						Met Council, Indigenous communities
Provide local public education opportunities to understand, support, and implement water management technologies	Education/ Engagement	Conservation & Sustainability, Pollution Prevention						MDH, DNR, MGS, Indigenous communities
Collaborate (workshops, meetings) to agree on and communicate about what data is needed and what is useful for water supply-related planning and implementation	Data and Tools, Education/ Engagement	Monitoring/ Data/ Assessment						Water providers, regulators, Indigenous communities
Create a change in social norms that extreme weather is the new normal within a year; Met Council policy needs to incorporate this	Education/ engagement, Plan Alignment	Climate Change Resilience						

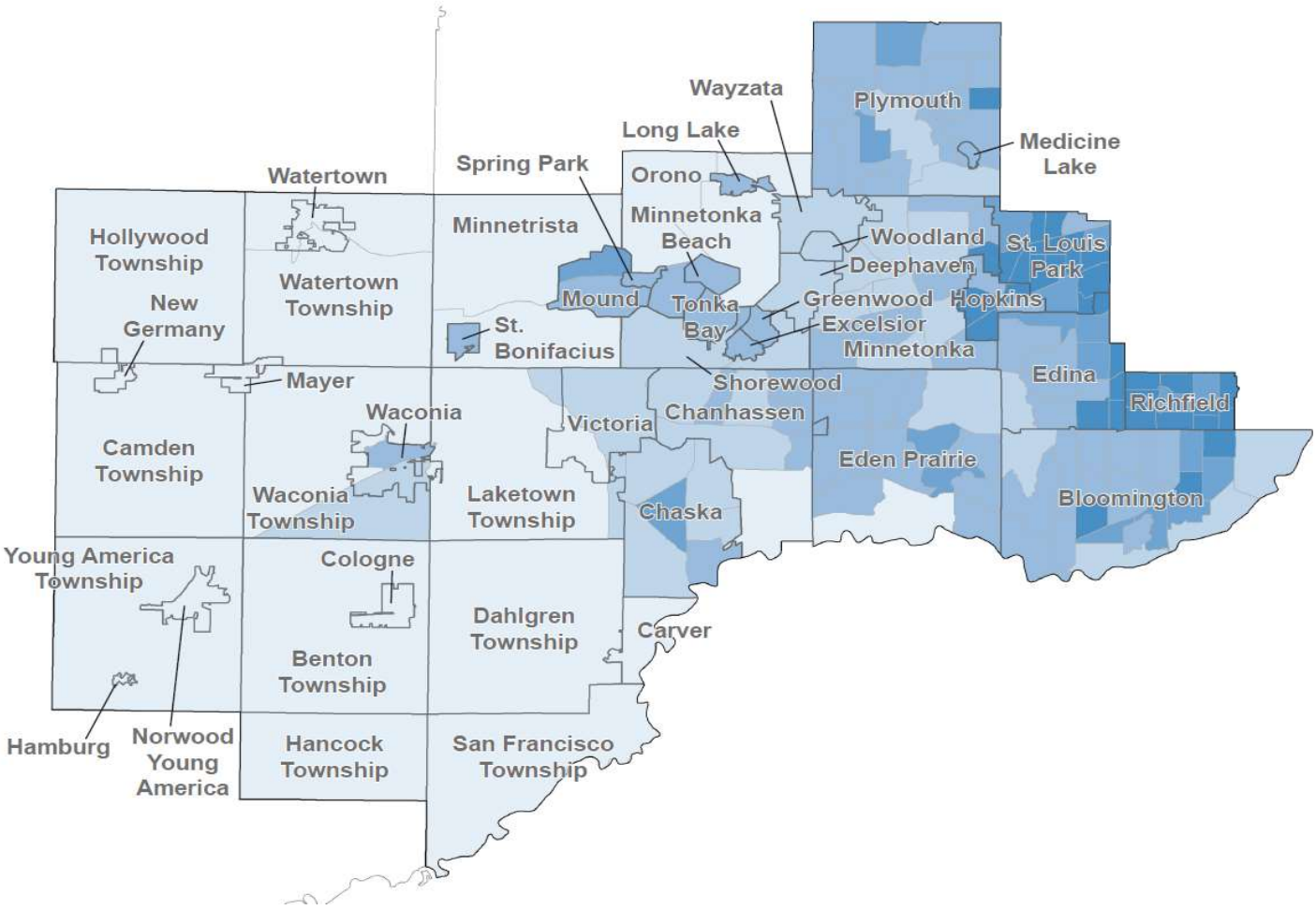
ACTION	RELATED FOCUS AREAS	RELATED WATER POLICY PLAN POLICY	10 YEAR PLAN 2025 2030	10 YEAR PLAN 2030 2035	25-YEAR PLAN 2035-2040	25-YEAR PLAN 2040-2045	25-YEAR PLAN 2045-2050	POSSIBLE INVOLVED PARTIES
		Pollution Prevention						MDA, MPCA, DNR
SYSTEM ASSESSMENT								
Establish a data portal, such as the Minnesota Geospatial Commons and/or a cooperative groundwater monitoring website, to consolidate data and information in a clearinghouse or data repository	Data and Tools, Education/ Engagement	Monitoring/ Data/ Assessment						
Submit required information into one location and government, so agencies are able to spit out what they need or reduce duplicative	Data and Tools, Partnerships	Monitoring/ Data/ Assessment						
Secure funding and technical support for studies and reports, including funding drilling monitoring wells, staffing, upgrading telemetry/data loggers, modeling	Data and Tools	Monitoring/ Data/ Assessment						
Improve large-scale groundwater modeling to help systems understand supply	Data and Tools	Monitoring/ Data/ Assessment						
Drill monitoring wells to fill gaps where information is needed and useful (including at unique features like fens, springs, and trout	Data and Tools	Monitoring/ Data/ Assessment						
Develop and implement data standards to connect monitoring datasets to support a total water balance analysis (stream, lake, groundwater, weather)	Data and Tools	Monitoring/ Data/ Assessment						
Maintain or increase Met Council monitoring program (and fix billing	Data and tools	Monitoring/ Data/ Assessment						
Evaluate monitoring data to ensure its credibility	Data and Tools	Monitoring/ Data/ Assessment						
Work with Met Council and MDH to better understand arsenic	Data and Tools	Pollution Prevention						
Update the Scott County geologic atlas	Water System Capacity	Conservation & Sustainability						
Work to leverage and make funds available to make necessary upgrades and improvements to systems, including lead replacement	Water System Capacity	Conservation & Sustainability, Pollution Prevention						
MITIGATION MEASURE EVALUATION								
Research the connection of wastewater treatment plant discharge versus aquifer recharge	Water System Capacity	Reuse, Integrated Water						Metropolitan Council

ACTION	RELATED FOCUS AREAS	RELATED WATER POLICY PLAN POLICY	10 YEAR PLAN 2025 2030	10 YEAR PLAN 2030 2035	25-YEAR PLAN 2035-2040	25-YEAR PLAN 2040-2045	25-YEAR PLAN 2045-2050	POSSIBLE INVOLVED PARTIES
PLANNING AND IMPLEMENTATION								
Extend plans to 7 generations (~150 years)	Plan Alignment, Water System Capacity	Conservation & Sustainability						
Identify stable funding for long-term planning and implementation; create more mechanisms for proactive versus reactive funding	Water System Capacity	Conservation & Sustainability		x				Multiple partners
Update the Scott County Groundwater Plan to align with regional plans, leverage resources, and serve as a guide for local planning	Water System Capacity	Conservation & Sustainability		x				Scott County
Support grant funding for and local implementation of water efficiency programs, especially for cities and counties to replace turf with prairie/native plants	Efficiency, Partnerships	Conservation & Sustainability						Met Council
Support building and development codes that prioritize water efficiency, such as ordinances to permit stormwater reuse for irrigation	Efficiency, Partnerships	Conservation & Sustainability		x				Municipalities
Update plans for developing fringe areas taking into account water supply as much as land use (and not just structural systems)	Efficiency, Partnerships, Plan Alignment	Water-centered Growth & Development						Local governments along the edge of urban expansion
Update plans for developing fringe/urban expansion in a way that regional stormwater reuse is planned and developed just before/ahead of land use development	Efficiency, Partnerships, Plan Alignment	Water-centered Growth & Development, Reuse						Local governments maybe WD/WMOs
Continue work between agencies to streamline plans	Collaboration	Integrated Water						Met Council
Collaborate with wellhead protection plans	Collaboration	Integrated Water, Pollution Prevention						Counties
Align plans and messaging around water conservation	Efficiency, Plan Alignment	Conservation & Sustainability						Communities, public
Collect data that supports issue of plan alignment	Plan Alignment	Monitoring/ Data/ Assessment						
Address land use practices and stormwater pond managemento restore and protect prairie and natural areas and water supply sources	Plan Alignment	Integrated Water,						
Deal with PFAS in a coordinated way	Plan Alignment	Pollution Prevention						

ACTION	RELATED FOCUS AREAS	RELATED WATER POLICY PLAN POLICY	10 YEAR PLAN		25-YEAR PLAN			POSSIBLE INVOLVED PARTIES
			2025 2030	2030 2035	2035-2040	2040-2045	2045-2050	
Identify and implement changes to water plans and agency funding sources to allow plans to be accepted by multiple agencies for funding	Plan Alignment	Integrated Water						
Implement high water use industry zones near wastewater treatment plants to create water reuse loops at the industrial scales during the 2050 comprehensive plan process	Water System Capacity, Efficiency, Plan Alignment	Reuse, Water-centered Growth and Development						
Increase regional water supply and quality management at the regional/aquifer level, not as a “pipe system” but as a cycle/framework	Plan alignment, Water System Capacity	Conservation & Sustainability, Integrated Water, Pollution Prevention						
Plan for need to upsize current water treatment plants by identifying costs required to upsize to handle emerging contaminants	Water System Capacity	Conservation & Sustainability, Pollution Prevention						MDH and suppliers
Where feasible, implement a water reuse system as a demo project in one or more cities in the subregion and provide information and education as a case study.	Water System Capacity, Education/ Engagement, Efficiency	Reuse						Local
Promote natural/alternative drought resistant lawns through education and outreach in partnership with the University of Minnesota. Include information on how much water lawns need.	Education/ Engagement, Partnerships, Efficiency	Reuse, Climate Change Resilience	x	x	x	x	x	Watersheds, Met Council, Cities
Work to make implementing stormwater reuse for irrigating a viable option. Continue to promote rain barrels to the public for irrigation purposes.	Water System Capacity, Education/ Engagement, Efficiency	Reuse	x					Watershed districts
Implement high water use industry zones near wastewater treatment plants to create water reuse loops at the industrial scales during the 2050 comprehensive plan process.	Plan Alignment, Water System Capacity, Efficiency	Reuse, Water-centered Growth & Development						
Create and implement model ordinances to permit stormwater reuse for irrigation	Efficiency	Conservation & Sustainability	x					Local water suppliers
Implement ordinances for common sense outdoor water use (ex. No water between 10 am – 6 pm).	Efficiency	Conservation & Sustainability	x					Local water suppliers

ACTION	RELATED FOCUS AREAS	RELATED WATER POLICY PLAN POLICY	10 YEAR PLAN		25-YEAR PLAN			POSSIBLE INVOLVED PARTIES
			2025 2030	2030 2035	2035-2040	2040-2045	2045-2050	
Construction/storage of surface water withdrawal systems to protect groundwater use	Water System Capacity	Conservation & Sustainability			x	x	x	State agencies, local water suppliers
Promote and implement actions to further protect water supply from runoff, including working with watershed districts, developers, and state agencies.	Education/ Engagement, Partnerships	Pollution Prevention, Integrated Water						Local water suppliers
Provide education about contaminants of concern by geographic location, with action steps	Education/ Engagement	Pollution Prevention	x	X				Met Council, local governments, MDH
Coordinate with area labs to inventory the different analyses available at each and make it easier to pickup/drop-off water samples	Data and Tools	Pollution Prevention	x					Met Council with local support from cities
Conduct a technical review of biosolid applications and impacts to groundwater	Data and Tools	Pollution Prevention	x					Met Council, MPCA
Develop regional low-salt design guidance (less chloride, de-icing)	Education/ Engagement	Pollution Prevention	x	x				Met Council, MPCA
Provide guidance on treatment design/development for emerging contaminants such as PFAS	Education/ Engagement	Pollution Prevention		x				MDA, MPCA

West Metro subregional water supply action plan



Water supply context and current conditions

Everything that happens on land impacts water, and water is all connected. Communities in the West Metro subregion rely on sufficient, reliable, and safe water supply for health and prosperity – now and for future generations; it is a fundamental human right.

The West Metro subregion spans a large area of the metro, stretching from the near western suburbs bordering Minneapolis and the communities around Lake Minnetonka to the more rural areas of western Hennepin and Carver counties. Water resource and supply system challenges exist in all communities and are as diverse as the areas the West subregion spans.

The majority of communities in western Hennepin and southern Carver counties do not have public water supply systems. In those communities, residents and businesses operate privately-owned wells to get their drinking water. In rural centers and denser, more suburban areas of the subregion, communities operate municipal community public water supply systems that utilize groundwater aquifers. Most communities with these municipal water supply systems have access to the Prairie du Chien and Jordan aquifers, but those sources dwindle as you move west through the subregion.

Minneapolis provides surface water to some bordering suburban communities to serve specific neighborhoods or supplement local groundwater supplies.

This subregion is also home to a number of natural features that serve important social, cultural, and economic functions, including the Minnesota and Crow Rivers, Lake Minnetonka, Minnehaha Creek, and other streams and wetlands. Many of these features are connected to groundwater aquifers and supported by upwelling groundwater. A secure water supply is also necessary for the function of these local ecosystems.

Additionally, 38 of the 44 communities in the West Metro subregion overlap with or are adjacent to land that has been identified as a Drinking Water Supply Management Area. In some cases, the overlapping nature of these management areas has presented both a challenge and opportunity for collaboration across community boundaries.

Overall water use peaked in the mid-to-late-2000s. Since then, communities have continued to grow, but overall water use has been slightly less. Increases in efficiency and wetter summers have likely led to this demand reduction. However, recent droughts and growth have led to a significant increase in water use. The water supply industry is likely to continue to encounter new impairments and other outside risks to a sustainable water supply, including those posed by climate change.

With the region as a whole expected to grow by more than 600,000 people by 2050, the West Metro subregion will continue to see growth. Preliminary estimates suggest that approximately 150,000 more people, 72,000 more households, and 122,000 new jobs will be added to the area. As the West Metro subregion continues to grow, more people will rely on municipal community public water supplies for their water needs. To deliver service to more homes and businesses, communities may need new infrastructure like additional wells and new service lines. Expansion of water supply systems comes with costs and is not without financial, social, or environmental risk.

As growth in the West Metro subregion occurs under a climate continuing to change, alongside continual emergence of new impairments and risks, it is important to plan and collaborate to ensure there is sufficient, reliable, and safe water supply for people, the economy, and the function of local ecosystems.

The West Metro chapter of the Water Supply Planning Atlas contains more details.

Stakeholder-defined vision of success for water supply planning in the West Metro subregion
Water supply planning in the West Metro subregion is successful if it achieves these shared goals:

- The quality and quantity of source waters is protected
- Water is conserved and used efficiently
- Water supplies support public health and safety for everyone
- Responsible growth is supported by reliable and adequate local supplies

The following are needed to successfully achieve those goals in the West Metro subregion:

- Public trust and buy-in from Minnesota's water agencies in planning, implementation and enforcement
- Shared, aligned policies and goals across communities and between local, regional, and state organizations

- Consistency across systems, including public communications
- Understanding that every city is different in its needs and how implementation happens

Issues and opportunities

In the West Metro subregion, several issues and related opportunities exist related to water supply planning. For example:

- To address the challenge of cost and affordability, there may be opportunities to expand funding sources, explore how development can help pay for the water supply to support it, and to leverage new technologies.
- To address the challenge of PFAS, there are evolving treatment opportunities that could be explored.
- To address the challenge of public buy-in, there are opportunities for daily contact with communities and for strong emergency response.
- To address the challenge of making meaning of science at a system scale, there are opportunities to provide technical assistance, plan across community boundaries, leverage industry standards, and lower barriers to test water.
- To address the challenge of stewardship of expensive infrastructure, there are opportunities for asset management, ISO 55000, IAM, and securing reliable funding.
- Opportunity to investigate new funding sources, approaches to water rates.

Prioritized focus areas and action plan

The following pages reflect an action plan drafted by participants in a subregional water supply planning workshop series. It is possible and expected that actions not reflected here may emerge as important steps needed to be taken in subsequent years. This list, therefore, is a reflection of what was being considered in late 2023. The list has been roughly organized according to the Metro Area Water Supply Advisory Committee's 2022 proposed framework to achieve progress on regional goals (**Figure 3.11**).

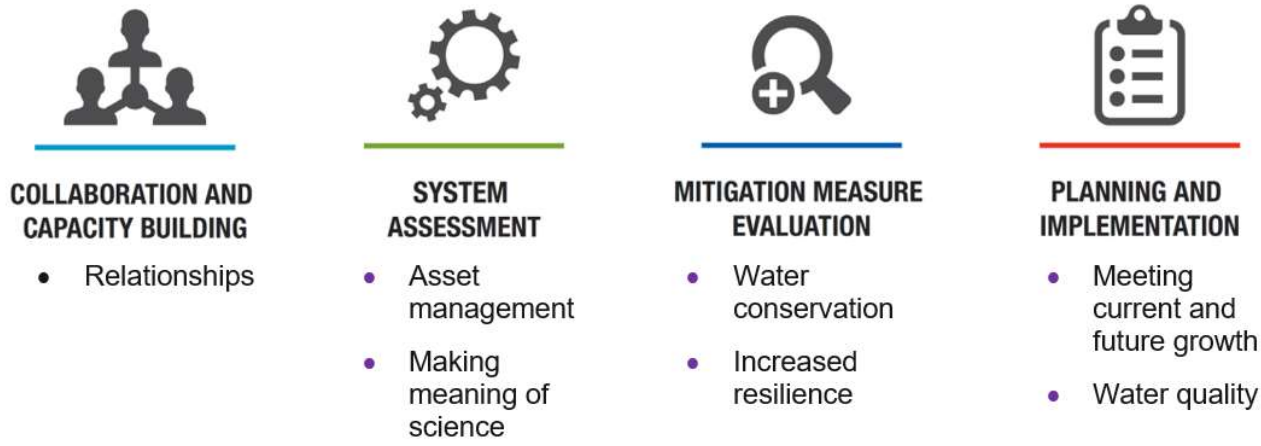


Figure 3.11: The framework for action to achieve MAWSAC goals includes four general steps. West Metro subregion focus areas generally fall across the framework steps.

Relationships among water supply managers and planners
Without a unified comprehensive plan and water supply plan that realistically includes the often unforeseen or incompletely described water supply needs, communities will ultimately face challenges or conflicts in priorities between public works and community development goals.

If work in this area is successful, in 10 years:

- Water supply stakeholders share a collaborative and mutual goal towards sustainability and water quality. There are clearly defined roles for agencies (DNR, MPCA, MDH, Met Council).
- There is a better tie between water supply and growth/land use chapters of comprehensive plans.
- There is a central program/software/website for suppliers to enter information and allow agencies to pull the information that they need (instead of suppliers submitting the same information to 2-5 agencies)

Asset management and stewardship by public water systems
The life cycle of water infrastructure is multi-generational, and successful management depends on workforce culture and business practices that are long-term focused. Asset management is a high priority for public water suppliers in the West Metro subregion, because asset management and how growth plays out limit new infrastructure.

If work in this area is successful, in 10 years:

- A state-side asset management program or policy helps identify critical water supply infrastructure that has high risk needs.
- Local water suppliers have less need for peak capacity infrastructure, because people conserve more (demand planning and demand control).
- We know what we have, what condition it is in, and what needs to be done next to keep the system running long into the future.
- Policies and procedures are in place serving as a formal asset management plan.

Making meaning of science
A shared understanding of water supply conditions, based on data collected at all levels, supports policies and regional planning that results in the protection of the resource and the public.

If work in this area is successful, in 10 years:

- There is a metro-wide dashboard/database managed by Met Council to directly inform regulatory reports (for example, Minnesota Pollution Control Agency's Wastewater Infrastructure Needs Survey, Minnesota Department of Natural Resources' water appropriation permits, Minnesota Department of Health, Homeland Security, Federal Emergency Management Agency's emergency response plans, etc.).
- People with a wide variety of perspectives and expertise work together to collect and share data (different geographies; state, regional and local levels; practitioners and public).
- Objective, reliable, and understandable data is collected (quantity, sustainability, resilience, meets local needs, public safety, stewardship).
- Information collected is usable.
- This data guides and informs policy for resource management, development and land use .
- There is communication and sharing of the data (accessibility, uniform database).

Water conservation
Water is a finite resource, and efficient use can help minimize the need for new investment in water supply infrastructure and protect natural resources which can be impacted by water levels.

If this strategy is successful, in 10 years:

- There will be regional watering restrictions.
- Per capita water use will be reduced.
- Existing permit pumping limits will be consistently enforced.
- Use of grey water will increase.

Increased resiliency to the effects of extreme weather, drought, flooding
The combination of extreme weather conditions and water demand (primarily from groundwater sources) requires coordination of ordinances, education, and enforcement to ensure adequate water supply during these times.

If work in this area is successful, in 10 years:

- Groundwater withdrawals for non-potable use are minimized.
- In 10 years, there are less identified contaminants in the water supply.
- There is more reuse.
- There are fewer instances of water use restrictions than today.
- There may be increased surface water use/storage.
- There is less irrigation across the board.

Meeting demand for current needs and future growth
Strong partnerships are needed to create and support a consistent and streamlined approach to meeting growth demand objectives, recognizing any limits on water availability and based on a foundation of local water quality health.

If work in this area is successful, in 10 years:

- The planning process will be improved by starting with a focus on local water health, then getting input from regulators, then working on planning/land use, then development. A consistent and streamlined approach to meeting growth demand objectives, based on a foundation of healthy water supply, will be created.
- Cities will not have to be the heavy hand, because residents will make better choices.
- There will be a better educated population.

Water quality
Protecting water from contamination from existing and emerging contaminants protects public health and keeps costs low. Note: This includes agricultural contamination in surface waters, groundwater, and privately-owned wells – water used for drinking, recreation, and other purposes.

If work in this area is successful, in 10 years:

- MDH, MPCA, DNR, and MDH are making progress to correct issues with contaminated groundwater and surface water.

- The scale of water quality treatment for groundwater and surface water is expanded to include small treatment plants and privately-owned well users (particularly to address contaminants of emerging concern).
- Contaminants don't continue to get worse.
- Water suppliers are able to meet federal and state guidelines and regulations.
- The public trusts that water suppliers are distributing good quality water.
- Nitrate applications are limited to reduce nitrate pollution.

The following resources are included in action plans for the priority focus areas above:

FINANCIAL SUPPORT FOR WATER SUPPLY SYSTEMS

Funding should be a focus because proper funding for the management of a public water supply system is critical. A priority for funding should be how to fund changing regulations and emerging contaminants.

COMMUNICATION AND EDUCATION

Clean water is a finite resource, and everyone plays a role in protecting it. When people understand their water sources, how they impact it, and how their utilities work to keep it safe, they are more likely to trust their water suppliers. Utilities that consistently earn and maintain the public trust over time will more effectively respond to future needs such as unregulated contaminants, because the public will feel the utility is making good decisions in the public's interest.

Actions to support success

Specific actions steps have been identified for each of the focus areas. While they primarily focus on work needed over the next 10 years, some actions are expected to be ongoing over the next 25 years or more.

Table 3.9. Subregional water supply stakeholders proposed several actions to work on over the next 10 years (and in some cases, 25 years) to set the subregion up for long-term success in the priority focus areas discussed in this chapter.

The action plan includes possible roles for leads, Met Council, subregional groups, and local entities. This action plan is intended as a high-level, long-term, collaborative planning tool. The details may change as collaboration gets underway and on resource availability.

ACTION	RELATED FOCUS AREAS	RELATED WATER POLICY PLAN POLICY	10 YEAR PLAN		25-YEAR PLAN	POSSIBLE INVOLVED PARTIES		
			2025 2030	2030 2035	2035-2040	2040-2045	2045-2050	
COLLABORATION AND CAPACITY BUILDING								
Convene regular workshops/meeting with stakeholders to define mutual goals, info sharing, community building, and networking. Goals should include state-wide sustainability goals. Continue to hold meetings to discuss and check in on progress and info share. Have a dedicated facilitator to document meeting information, plan and coordinate meetings and establish meeting topics, etc.	Asset management & stewardship, Relationships Among Water Managers, Planners, Water Quality	Integrated Water, Conservation & Sustainability	x	x	x	x	x	Local, state, watersheds
Support workforce retention through succession planning and knowledge transfer	Asset management & stewardship	Water Sector Workforce, Conservation & Sustainability	x	x	x	x	x	
Build partnerships between local water supply utilities, regulatory agencies, and future growth entities (planning/land use, developers, etc.) so that land use planning and development is informed and based on water supply planning.	Meeting Demand for Current and Future, Relationships	Water-Centered Growth and Development, Integrated Water						Public utilities, agencies,
Coordinate funds and subregion to work with professional organizations and lobbyists to work with the legislature.	Conservation	Conservation & Sustainability	x					Met Council
Convene a focus group with representative from every regulatory agency and local governments to define data overlaps, gaps, and refinement. Provide resources to provide uniform data gathering and reporting including urban vs rural data collection, regional contact, and funding and support equipment, and increase lab testing capacity. Consider a west metro groundwater model of our shared aquifer and process to keep up to date. This could be a “stress test” model for drought conditions.	Make Meaning of Science, Water Quality	Monitoring/ Data/ Assessment, Integrated Water	x	x	x	x	x	Met Council and local governments
Work with the state so that before new water quality rules are made, tools/plans are made available including financial/plans/info. Labs need to be able to test new required levels.	Water Quality	Pollution Prevention						Local
Build up state-level capacity to enforce regulations	Water Quality	Pollution Prevention						MDA, MPCA, DNR

	ACTION	RELATED FOCUS AREAS	RELATED WATER POLICY PLAN POLICY	10 YEAR PLAN 2025 2030	10 YEAR PLAN 2030 2035	25-YEAR PLAN 2035-2040	POSSIBLE INVOLVED PARTIES 2040-2045	POSSIBLE INVOLVED PARTIES 2045-2050	
SYSTEM ASSESSMENT									
	Collaborate to create and/or improve asset management systems across the subregion to include the maintenance database and inventory, GIS model of systems, an accurate water model, or forecasting future needs and costs, to inform current condition of infrastructure, maintain infrastructure, and funding decisions. • Benchmark operations and maintenance (O&M) plans and activities, level of investment, and staffing levels	Asset management & stewardship	Conservation & Sustainability						
	Create data collection standards across state agencies that are easy to implement for local water suppliers.	Make Meaning of Science	Monitoring/ Data/ Assessment						
	Create a database clearinghouse that houses relevant data collected by state agencies, and provides management and analysis for all of metro. Agencies would be able to pull annual data from this clearinghouse versus cities submitting the same information to multiple agencies	Make Meaning of Science	Monitoring/ Data/ Assessment						
	Create a database of current conservation ordinances that are being implemented in the metro.	Conservation	Conservation & Sustainability , Monitoring/ Data/ Assessment						
	Improve large-scale groundwater modeling to help systems understand supply. Like 5 above: Consider a west metro groundwater model (process, ___ Twin) of our shared aquifer and process to keep up to date. This could be a “stress test” model for drought conditions.	Water Quality, Make Meaning of Science, Conservation, Data, Meeting Current and Future Need	Conservation & Sustainability , Monitoring/ Data/ Assessment						
MITIGATION MEASURE EVALUATION									
	Where feasible, implement a water reuse system as a demo project in a city(ies) in the subregion and provide information and education as a case study.	Meeting demand for current and future, Increased Resiliency, Conservation	Reuse						Local
14	Implement regional education programs to teach the community on the importance of reducing water use and water conservation including watering restrictions.	Meeting demand for current and future, Conservation	Conservation & Sustainability	x	x	x	x	x	Met Council, DNR, MDH

	ACTION	RELATED FOCUS AREAS	RELATED WATER POLICY PLAN POLICY	10 YEAR PLAN 2025 2030	10 YEAR PLAN 2030 2035	25-YEAR PLAN 2035-2040	POSSIBLE INVOLVED PARTIES 2040-2045	POSSIBLE INVOLVED PARTIES 2045-2050	
	Promote natural/alternative drought resistant lawns through education and outreach in partnership with the University of Minnesota. Include information on how much water lawns need.	Increased Resiliency to Effects of Weather, Conservation	Conservation & Sustainability, Climate Change Resilience			x	x	x	
	Review, define, and map the current drought declaration process, authority of regional restrictions, and barriers/concerns on legal process. Depending on findings, work to change laws to better implement the restrictions.	Conservation	Conservation & Sustainability, Climate Change Resilience			x	x	x	
	Support research on water conservation and restrictions methods to learn which methods better conserve water.	Conservation	Conservation & Sustainability						
	Work to make implementing stormwater reuse for irrigating a viable option. Continue to promote rain barrels to the public for irrigation	Increased Resiliency to Effects of Weather, Conservation	Reuse						
	Provide regional/subregional educational programming on water quality at all levels	Water Quality	Pollution Prevention						
	PLANNING AND IMPLEMENTATION								
	Develop an asset management program and policy for strategic asset management planning to inform budget and set rates. To inform development of the program and policies, lean on leaders in the field (America Public Works Association) around standards and life cycle	Asset management & stewardship	Conservation & Sustainability	x	x	x	x	x	American Water Works Association
	Create a maintenance and inspection plan that utilizes the maintenance database and inventory.	Asset management & stewardship	Conservation & Sustainability	x	x	x	x	x	Local governments
22	Work to leverage and make funds available to make necessary upgrades and improvements to systems, including lead replacement.	Asset management & stewardship, Water Quality	Conservation & Sustainability, Pollution Prevention	x	x	x	x	x	Local governments
23	Implement high water use industry zones near wastewater treatment plants to create water reuse loops at the industrial scales during the 2050 comprehensive plan process.	Meeting demand for current and future, Increased Resiliency, Conservation	Reuse, Water-centered Growth & Development						

	ACTION	RELATED FOCUS AREAS	RELATED WATER POLICY PLAN POLICY	10 YEAR PLAN 2025 2030	10 YEAR PLAN 2030 2035	25-YEAR PLAN 2035-2040	POSSIBLE INVOLVED PARTIES 2040-2045	POSSIBLE INVOLVED PARTIES 2045-2050	POSSIBLE INVOLVED PARTIES
	Create and implement model ordinances to permit stormwater reuse for irrigation	Increased Resiliency to Effects of Weather	Reuse	x					Local water suppliers
	Implement ordinances for common sense outdoor water use (ex. No water between 10 am – 6 pm).	Increased Resiliency to Effects of Weather, Conservation	Conservation & Sustainability, Reuse	x					Local water suppliers
26	Construction/storage of surface water withdrawal systems to protect groundwater use	Increased Resiliency to Effects of Weather, Conservation, Meeting future needs	Conservation & Sustainability			x	x	x	State agencies, local water suppliers
27	Promote and implement actions to further protect water supply from runoff, including working with watershed districts, developers, and state agencies.	Increased Resiliency to Effects of Weather, Meeting Demands, Relationships	Pollution Prevention						Local water suppliers
28	Create a water conservation plan for the region with simple and effective actions.	Conservation	Conservation & Sustainability	x					DNR and cities
29	Work with the state to revise the State Drought Plan.	Conservation	Conservation & Sustainability, Climate Change Resilience		x				DNR
30	Develop and/or recommend consistent tiers between suppliers (example: tier 1 from 0-10,000; tier 2 from 10 000-40,000; tier 3 over 40,000)	Conservation	Conservation & Sustainability						

Water Supply elements of comprehensive plans and local water supply plans

Background

Minnesota Statutes 473.859 describes water supply-related content to be contained in local comprehensive plans. The comprehensive plan, including the local water supply plan if required, must be consistent with the Metropolitan Land Planning Act and Met Council's 2050 policy and system plans, and the local water supply plan must be consistent with requirements of Minnesota Statute 103G.291.

In general, comprehensive plans need to include a description of water use and water supply concerns in the community and an implementation program including local controls addressing water supply. Communities with municipal community public water supply systems must include a local water supply plan as part of the comprehensive plan.

Local water supply plans are reviewed by the Council as part of the local comprehensive plan review process defined in Minnesota Statutes 473.175, subdivision 1, after submitting them to adjacent and affected jurisdictions including counties that have adopted groundwater plans, and prior to their approval by the Minnesota Department of Natural Resources and adoption by the city or township.

If a community with a municipal community water supply system does not have a current local water supply plan as part of its 2028 comprehensive plan update, the comprehensive plan will be found incomplete for review. If a community with a municipal community water supply system a has a plan that does not meet the requirements for local water supply plans, the Council will likely find the plan to be inconsistent with Council policy.

Elements

Required water supply-related elements of comprehensive plans are identified in Minnesota Statutes 473.859 and Minnesota Statute 103G.291 and include:

Requirements for all communities

- Designate the existing and proposed location, intensity and extent of use of land and water (including lakes, wetlands, rivers, streams, natural drainage courses, and adjoining land areas that affect water natural resources) for agricultural, residential, commercial, industrial and other public and private purposes. If the community has a municipal public community water supply system, information about municipal public community uses may be included in the local water supply plan described below.
- Include an implementation program with a description of official controls addressing water supply and a schedule for the preparation, adoption, and administration of such controls. If the community has a municipal community public water supply system, this information may be included in the local water supply plan described below.

Requirements for communities with a municipal community public water supply system

- A local water supply plan, which addresses the requirements in Minnesota Statute 103G.291, subdivision 3 and Minnesota Statutes 473.859, subdivision 3, including:
    - Projected demands
    - Adequacy of the water supply system and planned improvements
    - Existing and future water sources
    - Natural resource impacts or limitations
    - Emergency preparedness, ideally aligned with current Minnesota rules 4720.5280
    - Water conservation

- Supply and demand reduction measures
- Allocation priorities that are consistent with Minnesota statutes section 103G.261
- Existing and future public water supply facilities':
  - Character
  - Location
  - Timing
  - Sequence
  - Function
  - Use
  - Capacity
  - Capital improvement plan

The following is a list of strongly suggested plan elements for all communities, in addition to those requirements:

- Identify how much water is currently and projected to be used in the community in 2030, 2040, and 2050 for each of the following uses: agricultural, residential, commercial, industrial, and other public and private uses. Water supply managers and planning/zoning/community development staff should collaboratively identify future drinking water needs and availability. New drinking water source locations in areas that are less susceptible to contaminant threats should be prioritized.
- Identify parts of the community supplied by privately-owned wells and nonmunicipal public water supply systems in the community and describe these areas in the context of pollution sensitivity. Particular attention should be given to the 200-foot radius around public water supply wells, which is called the Inner Well Management Zone.
- Identify the community's and any neighbors' Drinking Water Supply Management Areas (DWSMAs) in or adjacent to the community. This includes DWSMAs for nonmunicipal systems such as mobile home parks, as well.
- Describe the extent, vulnerability, and potential contaminants associated with current and planned land uses in DWMSAs. DWSMA maps should be included, including surface water drinking water supply management areas (DWSMA-SWs).
- Include a summary of stakeholder-identified land use issues, problems, and opportunities related to the aquifer(s) serving public water supply wells, the well water, and drinking water supply management areas in the community.
- Describe official controls and any changes to official controls that reduce vulnerability and improve community response capabilities, such as but not limited to:
  - Efficient water use
  - Emergency response
  - Protecting privately-owned wells and/or the conditions under which new privately-owned wells would be allowed.
  - Land use practices to protect drinking water and limit pathways that shortcut the natural geologic protection – Ideally, land uses and zoning which have significant contamination threats should not be co-located with high vulnerability DWSMAs. Land use decisions in areas along the Mississippi River upstream of the Minneapolis and St. Paul surface water source water protection areas should consider impacts to the quality of the Mississippi River.
  - Other water supply practices to address issues, problems, and opportunities identified by local stakeholders

Met Council shall prepare guidelines for the preparation of the water supply plans, per Minnesota Statutes 473.859.