IMAGINE 2050
water policy plan

Water Policy Plan

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Table of Contents

Figures and Tables

Introduction

The Water Policy Plan is a policy plan within Imagine 2050, the Metropolitan Council's current regional development guide. The aim of this plan is to guide the region toward a present and future where water is clean and plentiful, the benefits of water and water services are maximized and equitable, and risks and negative outcomes are eliminated or minimized. The region positions itself to meet the evolving needs of current and future generations by ensuring water use is sustainable, ecosystems and public health are protected, and our natural and engineered water systems are adaptable and resilient.


Water Policy Plan

The Water Policy Plan is a guide for managing all types of water - wastewater, water supply, stormwater, and natural surface waters and groundwater. By taking an integrated approach to water planning and management, the plan helps to ensure a clean and plentiful water future. It includes policies, strategies, and actions for the Met Council and the region's 181 cities and townships, 33 watershed management organizations, and seven counties.

High-quality water and water services are necessary for public and ecosystem health, social and cultural cohesion, and a prosperous economy. The Twin Cities metropolitan region benefits when water and water services are protected, restored where degraded, and enhanced wherever possible. Planning for water and water services helps to ensure these benefits for current generations and for all who will live, work, and play in this region in the future. Securing clean, safe, and plentiful water for residents and a thriving economy – while protecting the region's diverse water sources and surrounding environments – requires coordinated, holistic, interdisciplinary, and ongoing effort.

Minnesota is known for its abundant clean waters, which can lead to the misconception that it always will be. If people have ever been without water or only have had access to unsafe water, they may not trust that water can be safe for use. Complacency, distrust, or a willingness to sacrifice long-term sustainability for short-term gains can increase the risks to, and potential for, negative outcomes for water, the ecosystem services it supports, and the services provided by water utilities.

The diversity of water and water needs across the region's many landscapes means that water is being used, managed, regulated, and planned for at many different scales: from individual homes to businesses and industries, to cities and watersheds, and to the region and state. As water enters and moves through the region, it doesn't naturally adhere to political boundaries. The diversity of landscapes and the complexity of engineered water systems requires collaboration between communities, the public, political bodies, and technical experts to address challenges. It also requires integrated planning, holistic thinking, and adaptive approaches so that current and future generations have:

- Robust, reliable, and trusted water utilities and infrastructure
- Safe and abundant water sources for supplies
- High-quality, resilient water features that support recreation, community and individual well-being, thriving economies, cultural activities, and ecosystems

Water services refers to the breadth of benefits provided by clean and abundant water in the natural and built environment, including those derived from water service providers like water supply or wastewater utilities. Benefits may be felt directly or indirectly by society and fall into four categories:

Regulating: Environmental quality, carbon sequestration, disease and flood control…

Provisioning: Water supply, energy, sustenance, and food production…

Supporting: Fundamental ecosystem processes, habitat, and biodiversity…

Cultural: Recreation, tourism, community and spiritual connection, mental and physical well-being…

Regional development guide connection to water

The Met Council's Water Policy Plan is contained within the regional development guide, Imagine 2050. Water connects us and links the frameworks that guide land use, infrastructure development, environmental protection, transportation planning, and economic development. The guide shapes the Met Council's values and objectives, and therefore the Twin Cities region. Coordination and alignment between regional and local planning processes are essential for sustainable regional development that preserves and enhances water and water services now and into the future.

Imagine 2050 has the following vision statement:

"A PROSPEROUS, EQUITABLE, AND RESILIENT REGION WITH ABUNDANT OPPORTUNITIES FOR ALL TO LIVE, WORK, PLAY, AND THRIVE."

By prioritizing water planning and coordination, regional development initiatives can contribute to building healthier and more resilient communities.

The 2050 Water Policy Plan aligns with the regional development guide and the core Met Council values of equity, leadership, accountability, and stewardship. Each core value can be connected to the water plan as follows:

Equity: The Water Policy Plan prioritizes equitable access to clean water and water services, especially for historically marginalized populations. Equitable water work involves initiatives such as investing in overburdened communities, addressing historical harms beyond mitigation, creating accessible information and communications, and including the diverse perspectives of community members in regional water planning and management decisions. The water plan is rooted in the Met Council's equity and environmental justice frameworks.

Leadership: The Water Policy Plan encourages proactive approaches to water planning and management, such as promoting sustainable water use practices and conservation activities, implementing green infrastructure projects, mitigating and adapting to climate change, and fostering public and private partnerships to address water quality and quantity issues. Leadership in the context of water policy involves engaging diverse stakeholders to collaboratively address water challenges.

Accountability: The Water Policy Plan will align with the regional development guide to create metrics that our policies can be measured against. These metrics will measure progress and reveal successes and areas needing improvement. Regular monitoring and evaluation of water management practices will hold us accountable to our goals and help to identify and address disparities in access to water resources and services. Additionally, the plan will be adaptable to changing conditions, allowing for adjustments and revisions based on future conditions, feedback, and lessons learned from implementation.

Stewardship: Stewardship principles guide decisions about the sustainable use and management of water resources. This involves considering the long-term impacts of water policies and practices on both the environment and people. The plan prioritizes conservation efforts, such as promoting efficient water and energy use, resource recovery, and protecting natural habitats, while also addressing the impacts of climate change on water availability and quality.

By incorporating these core values into the Water Policy Plan, the Met Council can ensure that its approach to water management reflects the needs and priorities of the region, fosters inclusive decision-making processes, and promotes sustainable operations and development for the benefit of current and future generations.

To align the Met Council's Water Policy Plan with the regional goals, it is essential to integrate water management strategies that contribute to achieving each objective. The regional goals and water management strategies are outlined below:

Our region is equitable and inclusive

- Involve historically marginalized and overburdened communities in decision-making processes related to water management.
- Ensure equitable access to clean water services across the region, while specifically considering the needs and service for historically marginalized and overburdened communities.
- Investigate and support programs to address affordability and accessibility of water services, especially in underserved areas.

Our communities are healthy and safe

- Operate the regional wastewater collection and treatment system to protect public and ecosystem health.
- Prioritize water quality management through monitoring and information sharing to ensure safe drinking water and protection against waterborne diseases.
- Develop strategies to manage water-related hazards such as flooding and contamination to enhance community safety and resilience.

Our region is dynamic and resilient

- Incorporate sustainable water management practices to address challenges such as water scarcity and infrastructure resilience.
- Promote water conservation efforts to ensure water availability for future generations, considering issues of access and affordability.
- Implement innovative, cost-effective solutions in water treatment to maximize the benefits from our drinking water supply and regional wastewater collection and treatment system.
- Facilitate collaboration between communities and water agencies to understand the sustainable limits of groundwater and surface water sources to meet future demands within subregions of the metro area.

We lead on addressing climate change

- Develop adaptation strategies to ensure water systems and infrastructure are resilient to climate impacts, such as changing precipitation patterns and extreme weather events.
- Implement measures to reduce greenhouse gas emissions associated with water supply distribution and wastewater treatment and collection processes.

We protect and restore natural systems

- Prioritize the protection and restoration of natural water systems, such as wetlands and watersheds, to safeguard habitat and enhance ecosystem resilience.
- Incorporate green infrastructure practices into water management strategies to improve water quality and support biodiversity.

By integrating these strategies into the Water Policy Plan, the Met Council can contribute to creating a more equitable, healthy, dynamic, and resilient region while leading efforts to address climate change and protect natural systems. This holistic approach ensures that water management aligns with the overarching goals endorsed by the Met Council, fostering sustainable development and improving the quality of life for all residents.

The Water Policy Plan and the regional development guide share a common vision of sustainable development, underpinned by values of environmental stewardship, social equity, and economic vibrance. Their goals intersect in promoting responsible land use practices, protecting water resources, and enhancing community resilience. By recognizing the diverse values of water and its importance for ecosystem, economic, community, and individual well-being, this plan can guide coordinated action toward a more sustainable and equitable future for the region.

Regional water context

Water has always held great significance to the people of the region. The name Minnesota comes from the name the Dakota people gave this land, Mni Sóta Makoce – meaning "The Land of Mist." [1] From the continental ice sheets that shaped the land forming lakes, rivers, and wetlands nearly 16,000 years ago, to the Indigenous cultures that have flourished living alongside those water features, to the present day's thriving and diverse communities, water has defined the people and places of our region.

Sustaining plentiful and clean water

Plentiful, high-quality water is a foundational pillar of public and ecosystem health and thriving economies. The seven-county metro area includes nearly 3,000 square miles of diverse landscapes, from highly developed cities to large rural agricultural areas. Equally diverse are the water needs of the more than 3 million people, over half of Minnesota's population, who reside here. These landscapes include almost 1,000 lakes, hundreds of miles of rivers and streams, and thousands of acres of wetlands (Figure 1.1). Below ground there are surficial sand, gravel, and major bedrock aquifers that provide nearly 70% of the region's water supply (Figure 1.2).

Water is supplied to homes, businesses, and industries by more than 100 municipal community public water supply systems and tens of thousands of private and nonmunicipal public wells. Stormwater is conveyed through thousands of miles of stormwater infrastructure that allows it to safely replenish the water table and groundwater system. Used water is treated by individual subsurface sewage treatment systems, municipal wastewater facilities, private communal wastewater systems, and the regional water resource recovery system, which includes nine water resource recovery facilities serving 111 communities. The treated water from these facilities is then safely returned to the environment or reused to improve the sustainability of the region's water sources.

Water Resource Recovery Facility

Our wastewater treatment plants do so much more than treat wastewater; they produce clean water, recover nutrients for second uses, and tap renewable energy to reduce fossil fuel use.

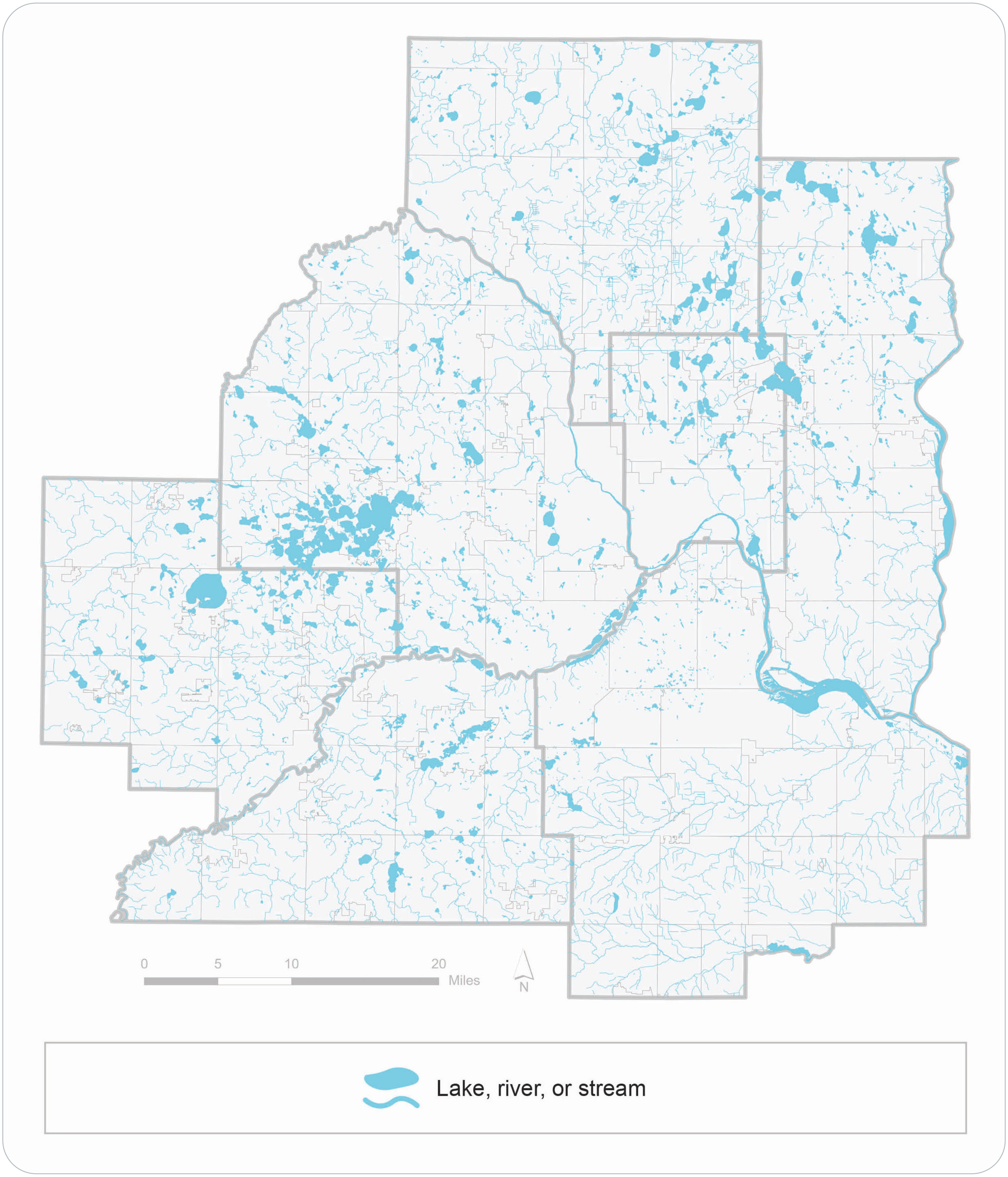
Our change in name from wastewater treatment plants to water resource recovery facilities reflects that our work is more than only wastewater treatment.

As water moves through this landscape, it provides residents with sustenance, spiritual solace, recreational enjoyment, the ability to transport goods, and the potential for industrial power. This same water also supports biodiversity and natural systems that are resilient and provide a high quality of life.

The region's water naturally cycles to and through surface water features and an extensive groundwater system. While often regulated and managed separately, groundwater and surface water are an integrated system that works to support ecosystem health and the needs of people. The natural system is continually influenced by the built environment consisting of developed landscapes that include engineered water systems (stormwater conveyance, water supply utilities, subsurface sewage treatment systems, and wastewater systems and utilities). No part of this natural and developed water landscape is without human influence or intervention, and issues or solutions in any part of the system are likely to have connected impacts on the whole.

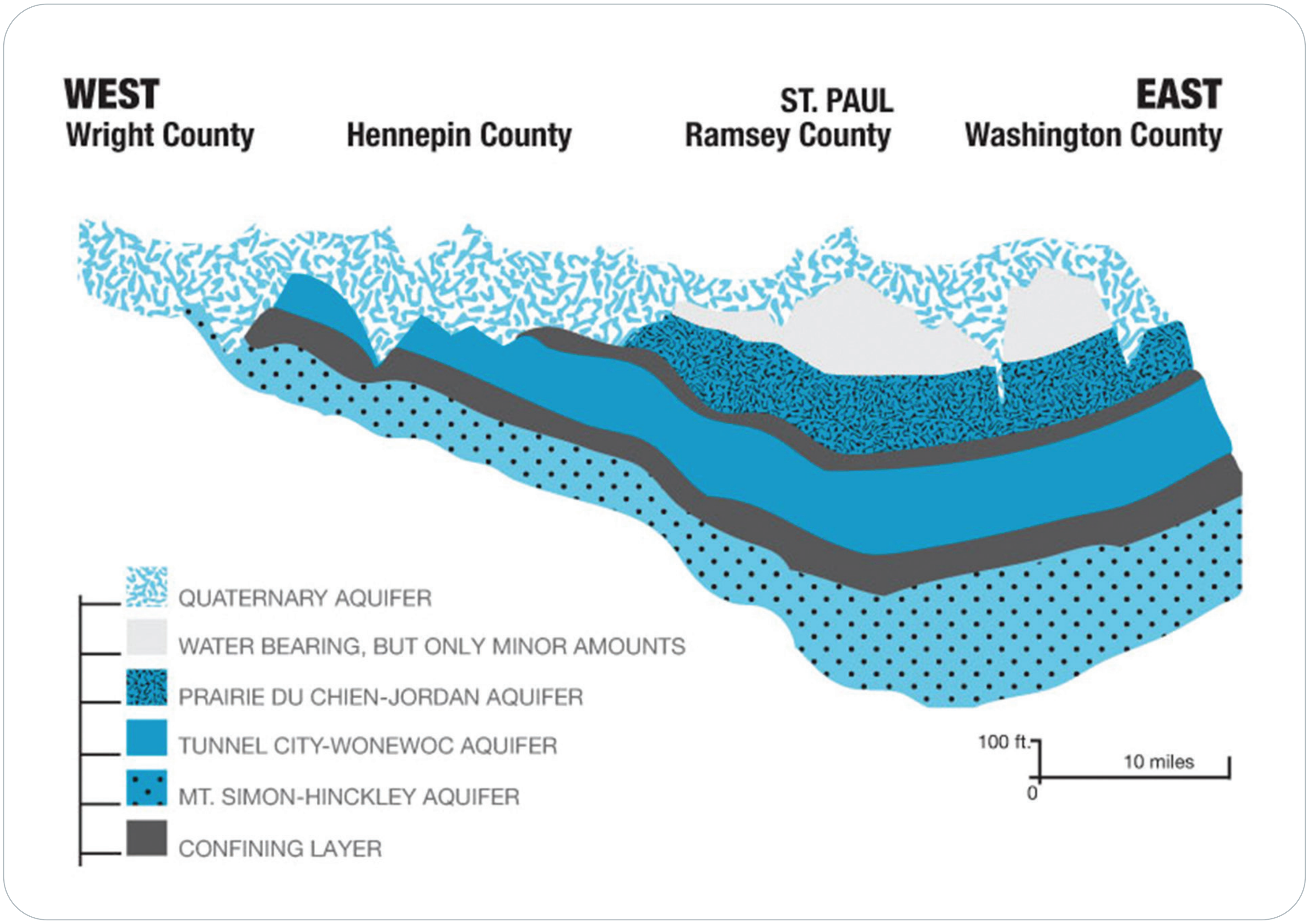
Community growth and development cannot occur without sustainable water and water services. The region's waters (ground and surface water) are sustainable when managed to not harm ecosystems, degrade water quality, and to ensure their availability for current and future generations - safeguarding economic, environmental, and social well-being. If stormwater, water supply, and wastewater infrastructure that treats and moves water throughout the region is put at risk, the essential services provided by these engineered water systems cannot be sustainable. Sustaining natural waters and the services that provide clean and plentiful water is essential for public and ecosystem health, and to ensure a high quality of life for present and

Figure 1.1: Regional rivers, lakes, and streams



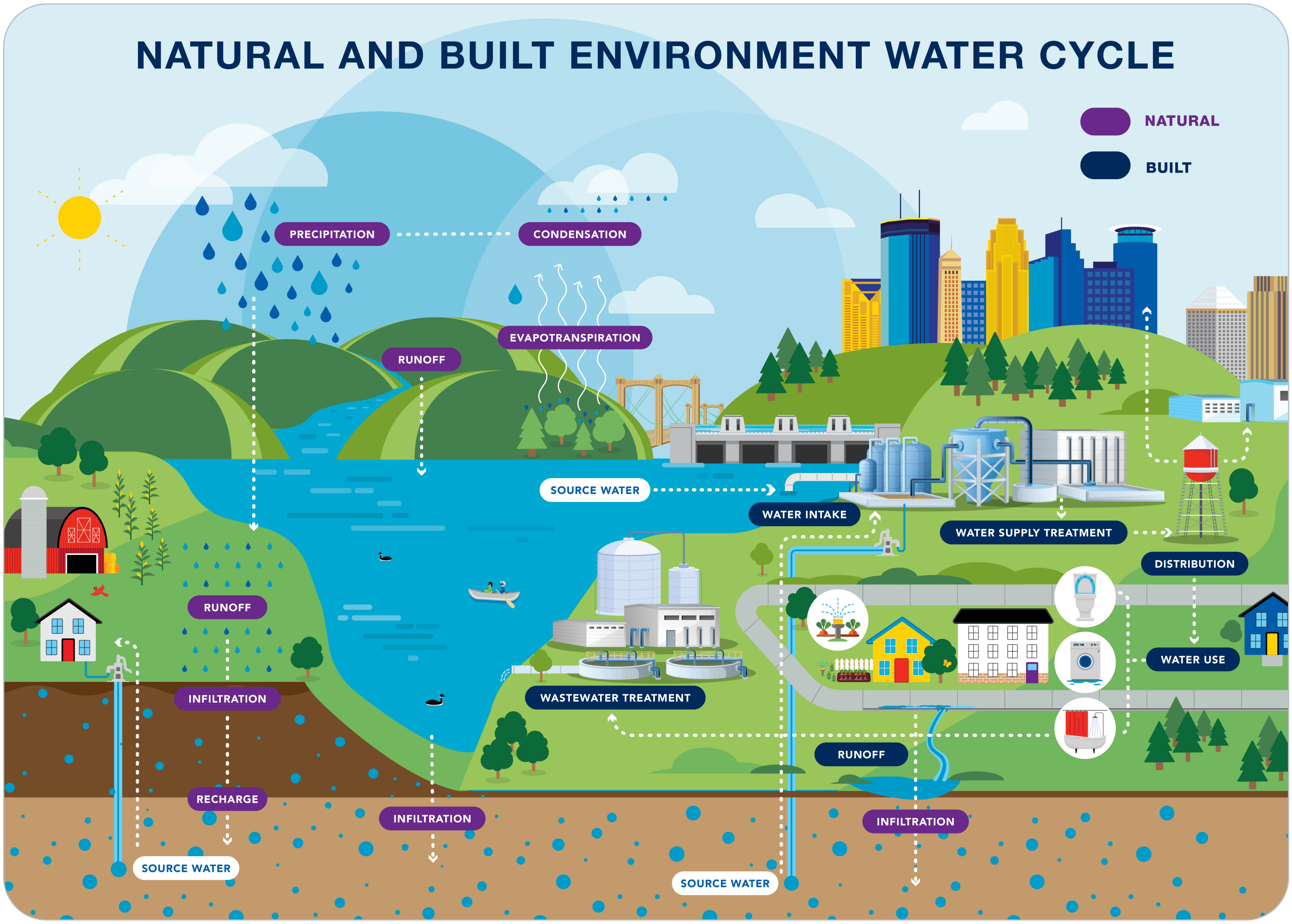
Data source: Minnesota DNR

Figure 1.2: Regionally significant aquifers



Graphic source: Met Council

Figure 1.3: Water movement through the natural and built environment



Graphic source: Met Council

Benefits of regional water planning

Water naturally flows along topographic and geologic boundaries and is defined by its physical and chemical properties and hydrologic conditions, as illustrated in Figure 1.3. However, when we define water, we tend to think of the water nearest to us, or that we interact with the most. Rarely do we think of the journey water has taken to get to us or what happens after we interact with it.

It's also rare that we consider how water moves through our communities and eventually flows out of the region. This movement of water into and out of the region can take as little as a few days, as in the case of stormwater, or as much as several thousand years, in the case of groundwater that's pumped from deep bedrock aquifers for water supply, treated post-use, and returned to the environment.

All residents, businesses, and communities have a responsibility to protect and conserve water as it moves through the region. We must consider how land and water are used, how the region's landscapes are developed and redeveloped, and how water needs and challenges vary from place to place. We need to identify and remedy past decisions that have polluted waters, harmed ecosystems, made water and water systems less resilient to climate change impacts, and increased the costs of water services and management. This stewardship requires integrated holistic approaches and collaborative planning between communities, watersheds, and water regulators.

The Met Council is the regional wastewater service provider, we plan for development and integrated water planning, and we make regional policy. We are well situated to help the region find solutions to complex challenges and meet the water needs of current and future generations. We partner with communities to address the long-term sustainability of water resources and water utilities by:

- Providing integrated water planning and sustainable wastewater management to the region.
- Facilitating collaborative planning activities throughout the region.
- Building partnerships with communities, local governments, watersheds, technical experts, and state and federal agencies, inside and outside of the region.
- Supporting sound local and regional decision making with data, information, tools, and grants.
- Monitoring the quality and quantity of the region's water resources.

Key water sustainability challenges

Many factors influence the abundance and quality of water in the region. Over the coming years and decades, new stressors and risks will emerge and current challenges will evolve, putting new pressures and limitations on the region's waters and multifaceted water systems. The Met Council and its partners have identified a few overarching themes that will impact the region's waters throughout the life of this plan. These include:

- Growth and development patterns and associated land use impacts.
- Adapting to and mitigating climate change.
- Water contamination, pollution prevention and source water protection.
- Addressing inequitable water outcomes that limit access, use, public and ecosystem health, or other benefits of clean and plentiful water.
- Developing an adaptable water sector workforce able to steward water services and systems.

Growth, development, and land use connections

What happens on land (use/development) directly impacts water quantity and quality. Additionally, the number and density of people living and working in the region, as well as the businesses and industries operating in the region, influences how, how much, where, and what water is used. The connection between the built and natural environment must be considered in short- and long-term planning so that the region's water needs can be met now, while not compromising the ability of future generations to meet their needs as they see fit.

The Met Council strives to foster and maintain a growing economy that benefits all who live, work, and recreate in the region. Sustainable and plentiful high-quality surface and groundwater sources provide a firm foundation for future economic growth, livability, and high quality of life. Likewise, a thriving economy must not come at the expense of, and must be in balance with, the needs of the natural environment, where water is sourced from and returned to after use.

The Met Council forecasts future population conditions in the region and sets regional land use policies through community designations, which group cities and townships based on urban or rural character and historical development patterns. Community designations help jurisdictions implement the regional vision by setting expectations for development density and the character of development throughout the region. For example, the Met Council defines maximum residential development densities to help avoid premature development, protect natural systems, and ensure regional service needs can be met until additional regional growth requires accommodation.

The region's communities have diverse needs and challenges due to many factors, including their varied natural and urbanized landscapes. Water planning in the region must reflect these diverse needs and landscapes so that complex water issues are properly contextualized and addressed. As the region develops and redevelops, approaches that have resulted in current water issues need to be addressed and solutions must account for historical injustices and community character.

The metro region land area is roughly 50% rural and 50% urban/suburban community designations. Understanding and addressing rural water as opposed to urban challenges and protecting rural landscapes is crucial for achieving regional sustainability. Rural areas are critical for natural system protection, groundwater recharge, and agricultural production, but can negatively impact waterbodies and drinking water sources when not properly planned for or managed. In some areas, contamination from agricultural and industrial practices has impacted aquifers and ecosystems in the metro area.

Similarly, excessive appropriation and use of groundwater sources in rural areas for commercial, agricultural, residential, or other purposes can impact groundwater levels and connected surface waters. However, integrated and collaborative planning, best management practices, remediation efforts, and modern approaches like water reuse are all helping to ensure the needs of rural communities and environments are met, and that the rural character of the metro continues to thrive into the future.

Rural communities face significant obstacles in maintaining wastewater services due to limited financial resources and a challenging population distribution. Fewer people and businesses make meeting the costs of water utility services more challenging. Aging infrastructure and underperformance can further exacerbate concerns and cause systems to become noncompliant, posing environmental and public health risks. The Met Council must work with rural partners to balance stewardship of the environment and health of the population with preserving rural and agricultural land uses outside the long-term service area.

Rural water supply systems face similar challenges as rural wastewater services. Additionally, private well owners do not have the same water quality safeguards as those who get their water from a public system. Testing by counties and state agencies has documented growing problems with water quality in private wells, raising concerns about human health and costs for treatment. The Met Council must also work with partners to help rural communities address their source water protection and drinking water challenges.

Addressing urban and suburban water challenges is equally critical to achieve equitable and sustainable water outcomes. Seventy percent of the region's population lives in an urban or suburban community. Highly developed and developing communities also face unique water planning and management issues connected to their historical and ongoing development. Areas with limited natural landscapes, expansive impervious surfaces, and significant industrial and commercial areas contend with legacy surface water and groundwater pollution, a lack of natural recharge, and the costs of operating and maintaining complex stormwater, water supply, and wastewater systems.

For example, areas with highways and expansive road networks tend to have surface and groundwaters polluted with chloride, a contaminant that disrupts ecosystem function and is extremely difficult and expensive to remove from water. Urban and suburban communities are also home to natural areas that support surface and groundwater, provide habitat and protect biodiversity, are important recreation and community gathering spaces, and provide refuge from and resilience to climate change impacts. As urbanized areas are redeveloped and new suburban areas are developed, the Met Council will work with partners to provide regional wastewater and water planning and management services to protect, restore, and enhance public and ecosystem health.

The connectedness of the region's water and water systems also means that actions taken in one part of the metro can have lasting impacts in other parts. Land use changes affect water and water service needs. As the region develops, with associated increases in impervious surfaces (buildings, sidewalks, parking lots, etc.), it impacts the ways that water infiltrates and moves through the region. An increase in impervious surface results in a loss of groundwater recharge, which supports the functioning of healthy ecosystems and supplies drinking water to the region. Instead, it runs off, carrying pollution, and discharges into the nearest body of water through stormwater conveyances like storm sewers and constructed ditches. Constructing and installing best management practices and stormwater management technologies can help to direct water flows to mimic natural pathways.

Responding to climate change across water sectors

Climate change poses immediate and future challenges for the natural and built environment. Changes to the region's climate affect the condition of water, water needs and uses, infrastructure and utility services, and ecosystem services. In turn, the livability, prosperity, and sustainability of the region face additional risks and uncertainty. Public and ecosystem health, economic growth, and community and individual well-being are threatened when climate change negatively impacts water and water services. These impacts are socially and financially costly and intensify existing disparities for vulnerable people and overburdened communities.

The consequences of climate change will not be felt by all residents or communities simultaneously or in the same ways, potentially worsening current disparities around water services and resources. However, these multifaceted challenges create significant opportunities to develop policies and partnerships that address climate change and ensure the water needs of historically marginalized communities are met.

Limiting the most severe climate change impacts necessitates immediate and sustained action to reduce greenhouse gas emissions (mitigation) and to implement resilient climate design and management (adaptation). Achieving the scale of emissions reductions required for carbon neutrality will result in substantial transformations across every community and sector of the economy, bringing both challenges and opportunities.

Likewise, the region must invest in adaptation to new realities brought about by climate change including increased weather variability, intense precipitation events, prolonged droughts and heat waves, extended growing seasons, and warmer air temperatures. These climate realities have already imposed greater risk to and costs of the region's water and water utility services. They have altered ecosystems and water management and planning approaches. The region can expect the varied effects of changing climate to continue and become more severe in time, but by acknowledging, planning for, and adapting to new and evolving challenges the region can be prepared for and respond effectively, making the benefits of clean and abundant water resilient now and for the future.

Climate resilience occurs when communities and ecosystems are able to adapt to evolving and challenging climate conditions and mitigate and offset emissions, while ensuring the needs of people and the environment are met and able to recover rapidly and efficiently during periods of stress. The region's water and water services that support public and ecosystem health and a thriving economy are a foundational component of the region's climate resiliency. Every aspect of water planning, management, and service delivery must consider how climate change is impacting and will continue to impact the work and the lives of those who depend on it.

The region's water service providers, watersheds, regulators, and users need to adjust practices, behaviors, and develop coordinated approaches that address risks posed by climate change to water and water infrastructure. For instance, about 30% of the groundwater delivered to homes and businesses by water suppliers in the region is used outdoors primarily for lawn and landscape irrigation. During periods of high temperatures and drought these uses tend to increase, when water sources are likely to be stressed, potentially leading to excessive aquifer drawdown, well interference issues, and impacts to surface waters and surrounding ecosystems.

These high-demand periods also result in increased energy usage and additional water treatment, infrastructure, and associated costs to meet demands. However, by investing in and implementing efficient water use and conservation programs and practices, nonessential water use can be lessened or eliminated, with water sources and connected ecosystems becoming more resilient to climate stresses.

The Met Council produced the Climate Action Work Plan to address areas where we can act and reduce climate change impacts within the organization. The plan's vision is "to reduce our contributions to greenhouse gas emissions in the region and make our services and facilities resilient to the impacts of climate change." The Water Policy Plan supports the actions and goals of the Climate Action Work Plan. We are committed to reducing greenhouse gas emissions and increasing service resiliency in our wastewater operations and support services.

Through our long-term planning responsibilities, our wastewater and water resource planning sections can help the region adapt by providing technical support for communities to prepare, build resiliency, and grow sustainably. Recent updates to the national climate assessment point to ongoing and future impacts and the need for coordinated climate planning to enhance resiliency.[2] As Tribal Nations, the state, watersheds, counties, and communities around the region develop and implement climate adaptation and greenhouse gas mitigation plans, the Met Council can play a role in coordinating climate planning for the region to support cross-jurisdictional collaboration and holistic approaches that build regional resiliency.

Water contamination, pollution prevention and source water protection

Water contamination and its consequences impact public health, ecosystem function, and regional economic competitiveness. Over the past century, federal and state water protection laws significantly reduced the amount of pollution in rivers, lakes, and streams nationwide, especially since the passage of the Clean Water Act. However, the country has not met the ambitious Clean Water Act goal of all waters being "drinkable, swimmable, and fishable."

The region is challenged by multiple complex water quality issues. These include increased pollutant-loaded runoff, a growing list of water impairments, contaminated drinking water sources, and high costs for water treatment, utility operations, and infrastructure. The severity and type of contamination impacts how Minnesotans use and value the state's waters. The sources of contamination are both natural and caused by human activities. Uncertainty around emerging contaminants, regulatory changes, and climate change intensifies these issues, and complicates how to address water contamination. Holistic, proactive approaches and sound water policies are needed so that the region's waters can meet the region's needs.

Source water:
Water that is used for water supplies (drinking water, irrigation sources, etc.).

Recreational water:
Waters that are used for swimming, fishing, boating, and other recreational activities.

It is difficult to put a price on the value of clean water. Beyond the obvious benefit of maintaining life, the additional benefits of improving water quality include increased property values, protection of human health, aesthetic and cultural value, secure utility and ecosystem services, and sustainable water for future growth and development.

However, the costs to address polluted waters are continuing to grow, including the associated expenses for water utilities who treat water so that it is safe to drink and to reuse or return to the environment. These costs increase the financial burden for individuals and businesses and make the delivery of water utility services more challenging. Investing in proactively addressing water pollution before it happens is far less expensive than paying to address it after it occurs. One of the many benefits of integrated and long-term water planning is the ability to identify risks and opportunities and the tradeoffs necessary to ensure clean and plentiful water in the region.

In Minnesota, surface waters that do not meet state water quality standards are tracked on the Minnesota's Impaired Waters List by the Minnesota Pollution Control Agency. Usually, waterbodies are added due to persistent pollution, increased monitoring, or new, emerging contaminants. Minnesota's ability to test and monitor across the state for a wide variety of contaminants allows waterbodies that are impaired to be identified and listed, leading to opportunities for increased investment. However, because restoration activities take time to enact and produce measurable outcomes, waterbodies are being listed faster than they are removed. Waterbodies are being removed from the Impaired Waters List, but progress takes time.

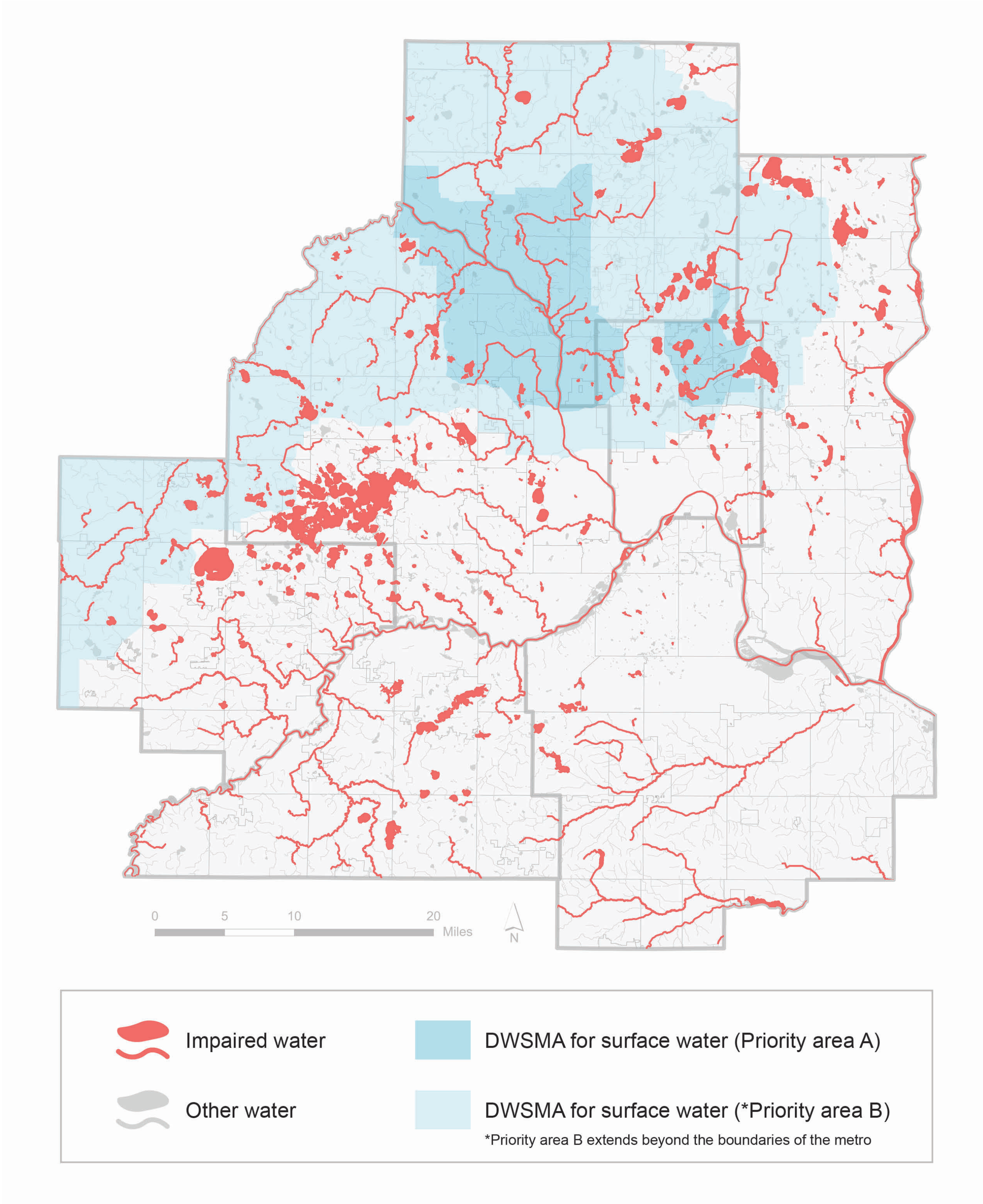
Currently, there are 802 water quality impairments in 451 river sections, lakes, or stream reaches in the metro region (Figure 1.4) with many waters having more than one impairment.[3] Management and regulation of water usage has advanced significantly in recent decades leading to improved preparedness and resilience, fewer conflicts, improved coordination, and a greater understanding of water sustainability.

The Met Council works with its partners towards the shared goal of safe, sustainable, and sufficient drinking water for the region. Source waters are the rivers, lakes, and aquifers that supply public drinking water systems and private wells. Source water protection is the suite of water quantity and quality actions and policies aimed to protect drinking water from pollution. Public water suppliers and the Minnesota Department of Health are responsible for providing safe drinking water, but they cannot protect drinking water supplies on their own.

Much of the land within Minnesota Department of Health-designated Drinking Water Supply Management Areas (DWSMAs) is privately owned, and many of these areas extend beyond the jurisdictions where they originate, adding complexity and associated land management challenges for source water protection challenges. Further, some challenges exist due to the nature of underlying geology or where commercial and industrial activities have historically taken place. The Minnesota Department of Health works with public water suppliers, local decision-makers, other state agencies, and partner organizations like the Met Council to plan and implement activities that protect drinking water sources.

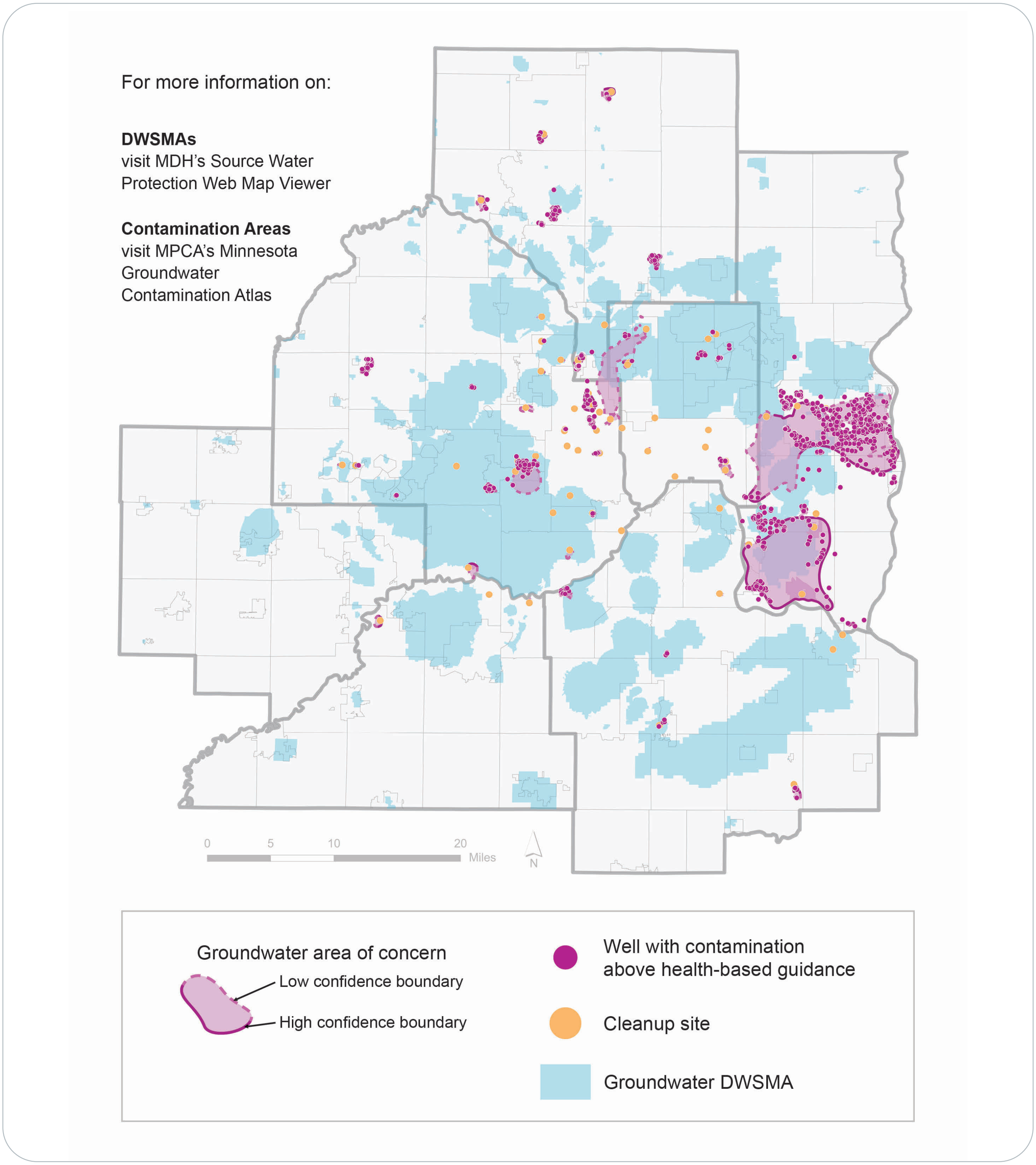
About a third of the metro area is currently covered by a Drinking Water Supply Management Area (Figures 1.4 and 1.5), although these areas are expected to change over time as the Minnesota Department of Health updates their delineation methods (particularly for surface water DWSMAs). Around three million people, over half of Minnesota's population, are currently supplied by water flowing through these areas. In addition, roughly 200,000 people get water from private wells, which do not have surrounding areas mapped for protection. Private well owners are responsible for following the health department's guidance to protect their supplies; however, they too have limited ability to address contamination risk beyond their properties. All land use decisions, large and small, can impact source waters, making collaboration between communities, agencies, water providers, and private groups necessary to achieve source water protection goals.

Figure 1.4: Surface water Drinking Water Supply Management Areas (DWSMAs) and impaired waters



Data source: 303d Impaired Waters List, Minnesota Pollution Control Agency; DWSMA information, Minnesota Department of Health. This information periodically changes, please contact the agencies for the most up to date information.

Figure 1.5: Contamination areas and groundwater Drinking Water Supply Management Areas



Data source: Contamination areas, Minnesota Pollution Control Agency; DWSMA information, Minnesota Department of Health. This information periodically changes, please contact the agencies for the most up to date information.

Numerous contaminants can impact water quality in various ways. Table 1.1, below, focuses on major contaminants or groups of contaminants that are of great concern to the region's waters. Some of these contaminants have been long known (nutrients and chloride) and some are of more recent concern (Per- and polyfluoroalkyl substances). Initial efforts to understand and address the contaminants identified in this section through monitoring, assessment, investigatory taskforces, or technical advisory groups has begun. But further work and innovative approaches are needed to fully remediate the impacts of these contaminants.

Table 1.1: Major contaminants or groups of contaminants that are of regional concern

Water type	Example contaminants	Concerns
Groundwater	• Chloride • E. coli bacteria • Elevated levels of manganese or selenium • Nitrate • Per- and polyfluoroalkyl substances (PFAS) • Dioxane • Trichloroethylene (TCE) • Radium • Arsenic	• Negative health impacts • Corrosion of infrastructure • Taste, color, and smell • Discoloration of clothing, appliances
Surface water	• Chloride • E. coli bacteria • Gas/oils • Nutrients (phosphorus & nitrate) • PFAS • Temperature • Radium • Sediment (TSS) • Mercury	• Human and animal sickness/death from contact, inhalation, or ingestion of waters • Toxicity to wildlife, fish, and plants • Eutrophication (too many nutrients) • Fish kills • Harmful algal blooms • Plant and animal community shifts • Aquatic invasive species • (for example, curly pond leaf, zebra mussels, spiny water flea)
Wastewater	• Chloride • PFAS • Pharmaceuticals • Microplastics	• Corrosion of infrastructure • Health impacts to wildlife, fish and plants • Accumulation of contaminants in animal tissue • Drug resistant bacteria

Contaminants of emerging concern have become a priority for public water suppliers, water resource professionals, and the public. Emerging contaminants are human-made, chemical compounds detected at low levels in water that can have a detrimental impact on public health and aquatic life. Microplastics, pharmaceuticals, and PFAS are all examples of emerging contaminants that are impacting natural waters, water supplies, wastewater, and the regulatory environment. New emerging contaminants are being identified as public health risks, and water professionals are learning more about how chemicals impact human health and the environment. There will always be “unknown unknown” contaminants, and the region needs to be prepared, adaptable, and have the resources it needs to address new challenges quickly and efficiently as they arise.

Equitable water services, planning, and management

The Met Council holds that accessible, affordable, sufficient, and safe water for personal and domestic use is a human right. This right has been identified by the United Nations, recognized in international law, and by some U.S. states and local laws and policies. Likewise, water should be plentiful and clean to support healthy ecosystems and the life that depends on them, including the needs of humans. While some environmental location-based factors influence water quality and availability, the major drivers of water and water service disparities are historic and ongoing social, cultural, economic, and political inequities.

Across the United States, public policymaking has a long history of disproportionately favoring certain communities at the expense of others. Resources have been directed away from low-income, immigrant, and communities of color and toward affluent, predominantly white areas. Both financial and legal practices such as redlining and racial covenants limited the social and economic mobility of and opportunities for Black, Indigenous and persons of color (BIPOC). Discriminatory zoning laws and urban renewal policies have bolstered white affluence as families moved to suburban and higher-income neighborhoods while further constricting BIPOC families’ housing options.

Planners at all levels of government have exacerbated inequality by continually identifying low-income neighborhoods for the siting of industrial development, creating environments where pollution has been concentrated and public health has suffered. These practices have impacted water quality, availability, and accessibility, contributing to a lack of trust in water services. Communities that are presently overburdened are disproportionately impacted when new issues arise, including the effects that climate change has on water and water services.

The Met Council and other partner organizations in Minnesota are members of the U.S. Water Alliance, a national, water-focused nonprofit, which has identified key issues to address to achieve equitable water outcomes. Issue areas to address fall under three foundational pillars of water equity for water utilities:

1. Ensure all people have access to clean, safe, and affordable water service

2. Maximize the community and economic benefits of water investments

3. Foster community resilience in the face of a changing climate

In Imagine 2050, equity is identified and incorporated as a key value and objective of current and future planning and policymaking. The Met Council has developed an equity framework that guides us and the region towards an equitable future through the development of policies and actions that are community-centered, reparative, and contextualized to ensure solutions are addressing systemic inequity. We have also developed an environmental justice framework that is grounded within the equity framework. Environmental justice is the right for all residents to live in a clean, safe environment that contributes to a healthy quality of life. The environmental justice framework prioritizes:

1. People-centered, data-driven decision making (contextualized)
2. Engagement with overburdened communities (community-centered)
3. Solutions that benefit communities beyond harm mitigation (reparative)

The work of the Met Council's Environment Services division plays a critical role in achieving environmental justice and equitable outcomes for the people of the region by listening to community concerns, centering environmental justice in our own planning and operations, and providing resources and guidance to local organizations.

Environmental justice and equity concerns regarding water include:

- Access to, and impairment of, waters for fishing and recreation.
- Access to, and affordability of, clean drinking water.
- Climate preparedness and resiliency of water infrastructure and utility services and associated costs for overburdened residents and communities.
- Pollution impacts on nearby communities.
- Affordability of wastewater treatment fees.
- Affordability of treatment technologies to address private drinking water contamination.

Water sector workforce development

Nationally, and in our region, the water sector faces a critical shortage of skilled workers across various disciplines, including engineering, management, and technical operations. This shortage threatens the sustainability and efficiency of water resource management, jeopardizing public health, environmental conservation, and economic development. The challenge lies in developing a robust and diverse workforce equipped with the necessary expertise, innovation, and leadership to address emerging challenges such as aging infrastructure, climate change impacts, and evolving regulatory requirements.

Demand for skilled professionals in the water sector continues to grow due to a smaller pipeline of workers, evolving technologies, aging infrastructure, and emerging environmental challenges. Furthermore, the lack of diversity in the workforce poses a significant threat to innovation, creativity, and effective problem-solving.

Environmental Services was fortunate for decades to have a strong talent pipeline. However, as in the water workforce nationally, the water workforce in Minnesota is homogenous and aging. On the national level, nearly 85% of the water workforce is male, more than two-thirds of the workforce is white, and the average age of most water employees is above the national average for all workers. Unfortunately, our workforce is even less racially diverse than the national figure and the overall Twin Cities regional population.

Furthermore, at this moment, 20% of the Met Council's water workforce is eligible for retirement. People of color are leaving the organization at a faster rate than their white peers. The percentage of women employed in the organization has trended downward for the past four years, currently sitting at 21% (near its lowest point since visible in data made available).[4] Declining enrollment in the past decade and the closing of one of the local wastewater treatment education programs, along with fewer people going into labor roles, has led to a smaller pool of applicants.

The water sector faces challenges in fostering diversity, equity, and inclusion within its workforce and workplaces. Despite efforts to promote equal opportunity and representation, disparities persist in recruitment, retention, and advancement opportunities across various demographics. Women, racial and ethnic minorities, individuals with disabilities, and other historically marginalized groups remain underrepresented in key roles within the water industry, hindering the sector's ability to harness the full potential of a diverse workforce.

Inequitable access to education, training, and career advancement pathways further aggravates these disparities, perpetuating systemic barriers to entry and progression for underrepresented groups. Additionally, cultural biases, discriminatory practices, and lack of inclusive policies in some water organizations contribute to an unwelcoming work environment for diverse employees, resulting in high turnover rates and diminished productivity.

A comprehensive policy framework that addresses the root causes of inequity and promotes diversity, equity, and inclusion throughout the water workforce should encompass:

- Targeted recruitment strategies
- Inclusive hiring practices
- Equitable access to training and development opportunities
- Culturally competent leadership
- Supportive workplace policies that foster a culture of belonging for all employees

By proactively addressing these challenges, the water sector can build a more resilient, innovative, and sustainable workforce and future talent pipeline that reflects the diversity of the communities it serves and ensures equitable access to clean and safe water for all.

Roles, principles, and plan objectives

The State of Minnesota has distributed water governance across multiple state and federal agencies, Tribal governments, the Met Council, watershed management organizations, soil and water conservation districts, water supply utilities, and city and township governments. Clearly defined roles and responsibilities for each organization help to build collaboration and trust that are vital for integrated water planning and management since water flows across political boundaries.

Met Council's water role

The Met Council's role related to water planning and protection is shaped by our statutory responsibilities as the regional policymaking body, land use planning agency, and provider of other essential services in the seven-county Twin Cities metro region. It is also shaped by federal and state water protection requirements led primarily by state agencies.

The Met Council is the regional wastewater system operator. We are also the wastewater, surface water, and water supply planning agency. We strive to ensure sustainable water resources through intentional planning and operations. Our water resource recovery facilities consistently meet National Pollutant Discharge Elimination System permit requirements. Our wastewater, surface water, and water supply planning functions work to promote sustainable water resources while addressing pollution and other factors that impact those resources. Clean water for drinking and recreation, and a robust wastewater treatment system, are all important parts of the region's livability and prosperity. We work with our partners, use our regional influence, and perform our statutory responsibilities to protect and preserve our water.

While we are responsible for essential regional services such as regional water planning and wastewater treatment, local governments focus on planning for their communities, including source water protection, surface water management, and municipal water supply and wastewater planning. Together, we work as a team to ensure clean water for the region.

Water sustainability is the responsible management of water resources (ground and surface water) to not harm ecosystems, degrade water quality, and to ensure their availability for current and future generations while ensuring a balance between economic, environmental, and social-well-being.

Partner

The Met Council's water-related roles include partnering with a wide range of entities, planning for water sustainability, and providing regional services. The policies, plans and related implementation actions in this document reflect those roles.

We recognize that one-size-fits-all approaches cannot address the full spectrum of water challenges across all areas of the region. The diversity of landscapes, land uses, watersheds, and local needs require community-centered co-creation, with focus on those most affected. Partnering can take various forms, whether it is offering technical assistance, convening organizations, communities, and individuals into regional conversations, or offering grant opportunities.

The implementation actions offered here represent a suite of example strategies that local governments could identify within their own plans to locally address regional policies. Over the 10-year lifespan of the Water Policy Plan, as new understandings are gained, these strategies may change or evolve. This allows for regional and local water needs and planning to align.

The Met Council commits to working with its partners to achieve our vision of clean water for future generations. Partnerships move the region towards a common vision in water sustainability, climate resilience, and equitable water outcomes. This collective effort and commitment to building partnerships and trust allows the Met Council to find sound innovative solutions to complex water challenges.

Plan

The Met Council's Environmental Services division collaboratively develops regional policies and plans to protect, enhance, restore, and sustainably manage the region's water resources. We have three primary water planning focuses supported by state and federal statutes. These water planning topics become an integral part of the local comprehensive plans as described in Minnesota Statute §473.

- **Wastewater:** The Met Council prepares a comprehensive Wastewater System Plan that is a vision for both 20-year and post-20-year time frames as to how, where, and when regional wastewater service will be provided. It provides asset information, capital projects and budgets, regulatory strategies, and long-term service needs that guide how we provide wastewater service. The regional wastewater collection and treatment system is one of the four regional systems defined in Minnesota statute (Minn. Stat. §473.146).
- **Water management:** State and federal law requires the Met Council to adopt a water resources plan and federal requirements for a regional management plan to address pollution from point sources, such as treatment plant discharges, and nonpoint sources, such as stormwater runoff (Minn. Stat. §473.157; 33 U.S.C. §1288).

- **Water supply planning:** The Met Council is required to create plans to address regional water supply needs, including the Metropolitan Area Water Supply Plan; develop and maintain technical information related to water supply issues and concerns; provide assistance to communities in the development of their local water supply plans; and identify approaches for emerging water supply issues (Minn. Stat. §473.1565).

As a part of our statutory authority, the Met Council is required to review and comment on local comprehensive sewer, surface water management, and water supply plans to ensure that they are in conformance, consistent, and compatible with the regional plan. More details about local plan requirements, guidance, and the Met Council's plan review process are included in the Local Comprehensive Plan Requirements section.

Provide

Environmental Services provides essential surface water, water supply, and wastewater planning services to the entire region. This includes technical assistance, tool development, novel research, water monitoring, and plan guidance throughout local water and wastewater plan creation and implementation. We also provide regional wastewater collection and treatment services to 111 communities through our nine water resources recovery facilities within the metro region.

Resource Recovery is the process of recovering materials or energy from a potential waste stream and recycling them for a second use or into the environment. Some methods include reclaimed water for reuse or wastewater treatment producing clean water.

Partner roles and relationships

Organizations must work across silos to create the conditions for water and water service sustainability. The Met Council's water planning and management work depends on partnerships with governmental and nongovernmental organizations including Tribal, national, regional, and local organizations and experts, local communities and watersheds, and residents.

Indigenous peoples are and will always be stewards of the land and water. They continue to play a vital role in protecting and guiding our region. The metro region is home to two land-holding Tribal governments: the Prairie Island Indian Community and the Shakopee Mdewakanton Sioux Community. The region is home to Indigenous residents relocated here with connections to over 100 Tribal affiliations and additionally holds cultural and spiritual significance to all 11 federally recognized Tribal nations within Minnesota along with Dakota Tribal nations with reservation lands outside of the state. The Met Council commits to respecting and prioritizing relationships to the land, waters, and living things, and to grow our understanding of Indigenous approaches, values, and practices.

Federal water agencies provide oversight and support to state and local governments by defining national water standards, collecting data on natural resources and wildlife, maintaining navigational channels and floodplain assessments, and stewarding public lands. Examples of federal agencies that operate within the metro region are the U.S. Environmental Protection Agency, U.S. Geological Survey, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, National Park Service, and the Federal Emergency Management Agency.

The Minnesota Legislature and state water agencies are also important partners in regional water planning and management. The legislature provides policy direction and, in some cases, prioritizes funding. State agencies as regulators have a role in incentivizing public and private sectors to improve water utility service. These roles and responsibilities are distributed across six state agencies (Table 1.2).

Table 1.2: State agencies' water governance roles and responsibilities

Environmental Burden	Role	Context and Impact on Environmental Justice
Pollution Control Agency	The Minnesota Pollution Control Agency is committed to ensuring that every Minnesotan has healthy air, sustainable lands, clean water, and a better climate.	• Monitors state water quality • Develops water quality standards • Regulates wastewater and stormwater facilities through permitting • Identifies strategies to address water pollution and to protect healthy waters
Department of Health	The Minnesota Department of Health exists to protect, maintain, and improve the health of all Minnesotans.	• Provides guidance and assistance for source water protection • Inspects and monitors public drinking water supplies for compliance with the federal and state standards and regulations, including the federal Safe Drinking Water Act • Develops and enforces standards for well construction and sealing • Investigates health exposure risk to contaminants of emerging concern
Department of Natural Resources	The Minnesota Department of Natural Resources works with Minnesotans to conserve and manage the state's natural resources, to provide outdoor recreation opportunities, and to provide for commercial uses of natural resources in a way that creates a sustainable quality of life.	• Operates the State Climatology Office • Management for dam safety • Monitors and inventories wildlife • Regulation and technical assistance for floodplain management • Permitting and assessment of water use • Assessment and assistance of groundwater availability and ecological impact • Prevention of aquatic invasive species • Conducts surface water hydrologic assessments

Environmental Burden	Role	Context and Impact on Environmental Justice
Department of Agriculture	The Minnesota Department of Agriculture enhances all Minnesotans' quality of life by equitably ensuring the integrity of our food supply, the health of our environment, and the strength and resilience of our agricultural economy.	• Regulates pesticide and fertilizer use • Monitors surface and groundwater for agricultural pollution • Operates the Minnesota Agricultural Water Quality Certification Program

Board of Water and Soil Resources	The Board of Water and Soil Resources improves and protects Minnesota's water and soil resources by working in partnership with local organizations and private landowners.	• Approves watershed management plans, soil and water conservation comprehensive plans, and county watershed management plans
		• Offers grants, technical assistance, and training to local entities for planning and implementation projects with landowners and conservation groups to:
		    • Prevent sediment and nutrients from entering our lakes, rivers, and streams
		    • Enhance fish and wildlife habitat
		    • Protect wetlands

Public Facilities Authority	The Minnesota Public Facilities Authority provides financing and technical assistance to help communities build public infrastructure that protects public health and the environment and promotes economic growth.	• Administers and oversees the financial management of revolving loan funds and other programs that help local units of government construct facilities for wastewater and drinking water infrastructure projects

Counties, conservation districts, watershed organizations, municipal water utilities, business, and owners of high-capacity nonmunicipal wells plan, partner, and implement water projects at the local scale (Table 1.3). These front-line organizations know and understand the concerns that directly affect residents and work to alleviate those issues.

Complex water challenges are addressed not only by government organizations. They require diverse perspectives and resources that can be provided by numerous other entities. For example, university researchers, water nonprofit and special interest organizations, and public-private partnerships all bring valued knowledge and experience to tackle regional water concerns.

Another group of vital voices is the residents of our region. Each of us has a distinctive relationship with water, from enjoying a glass of water, to boating, fishing, or swimming at our favorite water body. Additionally, some residents operate their own private water infrastructure (drinking water wells and subsurface sewage treatment systems) and have the personal and financial responsibility to ensure it is working properly. Water and how the region values it shapes our expectations and the way we plan and create water policy. There is no universal personal and cultural tie to our water experiences. Therefore, we commit to meaningful engagement, respectfully listen, and respond to the residents of our region to ensure we protect and enhance our waters. The Met Council looks to incorporate all these perspectives when addressing water challenges and opportunities, as water is foundational to us all.

Building and maintaining partnerships with a wide swath of organizations and individuals broadens our ability to achieve regional water goals. For example, we support collaborative water planning and implementation in partnership with conservation districts, watershed organizations, academic researchers, and communities by:

- Monitoring water quality in the region's lakes, rivers, and streams.
- Assessing surface water and groundwater conditions and trends.
- Providing technical guidance on water protection and management through research, advisory committees, plan review, and other activities.
- Planning for and protecting drinking water supply quantity and quality.
- Assisting communities through grants to implement water efficiency, stormwater, and inflow and infiltration (I/I) programs.

The Met Council and our regional partners are uniquely positioned to address water concerns and issues across the water sector. The Met Council has statutory water authorities across the water cycle – from regional surface water, water supply, and wastewater planning to wastewater collection and treatment. We have valued partnerships with water organizations within governmental and nongovernmental sectors. We push to frame our regional water opportunities holistically to incorporate and integrate good ideas across the water sector.

Table 1.3: Local water organizations

Local Water Organization	Example Water Responsibilities
Counties	• Develop and implement comprehensive plans in alignment with regional goals and priorities • May prepare and adopt groundwater and watershed management plans • Guide land use in townships that includes zoning, shoreland, and mining operations • Administer subsurface sewage treatment system tracking and inspection programs • Comply with the well and subsurface sewage treatment system code and local ordinances • May regulate construction, sealing, and maintenance of water supply wells
Soil and Water Conservation Districts	• May prepare and adopt county groundwater and watershed management plans (if the authority is delegated by the county) • Set priorities, address issues, and build local capacity for the protection and management of surface and groundwater • Monitor and assess water bodies for water quantity and quality
Watershed Organizations (Watershed Districts and Watershed Management Organizations)	• Develop and implement watershed management plans • Work with local governments on land use planning at watershed scale • Approve local surface water management plans created by cities within the watershed • Monitor and assess water bodies for water quantity and quality
City and Township Planning	• Develop comprehensive plans in alignment with regional policies • Create and enforce ordinances to guide land use, development zoning, and growth within city/township boundaries • Work with public works to ensure connection to municipal community public water systems • Comply with the well and subsurface sewage treatment system code and local ordinances
City or Municipal Public Water Utilities*	• Plan, develop and maintain local stormwater, drinking water, and wastewater infrastructure in compliance with water quality standards such as the Safe Drinking Water Act • Plan for capital improvements and asset renewal/replacement • Set rates to support treatment, delivery, and conveyance systems for drinking and wastewater • Ensure emergency procedures are in place • If larger city, maintain Municipal Separate Storm Sewer System (MS4) permit compliance
Noncommunity Water Infrastructure Systems (Manufactured home parks, places of worship, schools, correctional facilities, etc.)	• Develop, maintain, and use wells for domestic and commercial purposes • Emergency water supply planning • Maintain and operate subsurface sewage treatment system • Comply with the well and subsurface sewage treatment system code and local ordinances • Water quality testing and treatment technology is the individual operator's responsibility

** Water utility governance is unique to each community in the region. Some operate municipal water supply, stormwater management, and wastewater conveyance as one entity. Others may have separate providers.*

The Met Council welcomes new perspectives in developing shared regional understanding of how water systems work and intertwine. Our water challenges compel us to create novel approaches with innovation and collaboration. Every day, we work to make Environmental Services' vision of "Clean water for future generations" a lasting promise to the region.

Local comprehensive plan roles and requirements

Under state law, each county, city, and township in the seven-county metro region is required to review, and if necessary, amend its local comprehensive plan every 10 years to ensure that the local plan – and local fiscal devices and official controls – are not in conflict with the Met Council's regional policies and metropolitan system plans (Minn. Stat. §473.864). Following the adoption of the 2050 Water Policy Plan with the Imagine 2050 regional development guide and the issuance of system statements, local communities have three years to amend their local comprehensive plans. The Met Council's requirements for the surface water, water supply, and wastewater comprehensive plan submittals are in Appendix A.

Local comprehensive plans are reviewed by the Met Council based on three primary criteria:

- Conformance with metropolitan system plans
- Consistency with Met Council policies
- Compatibility with adjacent and affected governmental units

When a plan meets these criteria, the Met Council authorizes it to be put into effect. If a plan does not meet the review standards, we can require the jurisdiction to modify its plan to reflect the regional system plans.

Conformance: Conformance is achieved if the local plan:

- Is consistent with the metropolitan system plans.
- Integrates existing or planned metropolitan public facilities.
- Addresses land use policies, plans for forecasted growth, meets density standards set by the regional development guide and maximizes the efficiency and effectiveness of the regional system.

Consistency: Consistency is achieved if the local plan:

- Addresses the community role for land use policies contained in Imagine 2050.
- Addresses the linkage of local land uses and the metropolitan wastewater system plan.
- Includes an implementation plan describing public programs, fiscal devices, and other specific actions that implement the comprehensive plan and ensure conformance with regional system plans.
- Addresses official controls and includes a capital improvement program (sewers, water supply, parks, transportation, and open space) that accommodates planned growth and development.

Compatibility: Compatibility with adjacent and affected governmental units is achieved if the local plan:

- Adequately documents that it has addressed the concern(s) of all adjacent and affected jurisdictions based on comments or concerns from these entities.

When regional and local water plans align and water roles and responsibilities are clear, water planning organizations can act in concert to collaboratively achieve sustainable and equitable water outcomes for the region.

Principles and objectives

To achieve the intent of this plan, “To guide the region towards a future where water is clean and plentiful, the benefits of water and water services are maximized and felt equitably, and risks and negative outcomes are eliminated or minimized,” we developed four core principles and four plan objectives.

Plan principles

The principles ensure that we think broadly about water challenges and opportunities without making the effort unnecessarily complex. Additionally, we must measure the success of this plan through metrics to hold ourselves accountable. We are open to adapting our approach if we do not achieve our desired outcomes. The principles are detailed below:

- **Watershed approach:** The State of Minnesota has adopted a watershed-based management strategy, fostering heightened collaboration and a shared perspective for planning and executing water improvement activities. This method transcends county or city boundaries and follows topographic and hydrologic boundaries. This emphasizes partnerships among state agencies, Tribal Nations, local governments, and various stakeholders that share a connection with a common water body.
- **“One Water” integrated water management:** The metro region is perceived to be water-rich, and that water holds immense value. Integrated water management, also known as "One Water," addresses water as it moves from water supply, through wastewater systems, and into surface waters. The ultimate goal of integrated water management is sustainable, high-quality water in the region.
- **Use existing systems:** The metro region has a robust water planning and wastewater operations system with many actors – community water and wastewater utilities, watershed management organizations, and regional, county, state, Tribal Nations, and federal agencies. Coordination and collaboration between these groups is necessary to protect our water.
- **Metric-based policies:** It is hard to quantify policy success without accountability. We will provide policy options with associated metrics and measurable outcomes where possible, to demonstrate the effectiveness of our water policies and actions.

Plan objectives

The Water Policy Plan has four objectives focused on climate, investments, health, and equity. They are vital areas to guide the region towards achieving our goal of sustainable waters by protecting, restoring, and enhancing regional waters and water services for public and ecosystem health. The connections between the natural water cycle and the built or engineered environment are evident.

Additionally, the physical connections between surface and groundwater, stormwater, drinking water sources and supply systems, and wastewater treatment result in water quantity and quality connections that are complex, and require holistic, integrated planning and management approaches. The Met Council strives to integrate regional water planning efforts and operation of the regional wastewater system to help the region have waters that are clean, safe for use, and plentiful.

The policies and actions associated with these objectives direct and guide the Met Council and our partners to employ approaches that collectively result in sustainable water uses, water and water services that are resilient to risk, and benefit a growing and a thriving economy. These approaches include convening partners, utilizing new tools and technologies, water conservation and protection efforts, and water planning and technical assistance. The Met Council commits to working with and supporting our regional water partners to meet the needs of current and future generations.

CLIMATE: The region's waters and water services are protected from and made resilient to the ongoing and future effects of climate change.

The region's surface water and groundwater, water infrastructure, and utilities are experiencing the impacts of climate change. Observations show that the frequency and intensity of storm events has shifted, winters are warming, growing seasons are extending, and more extreme heat and drought events are projected to occur over the coming years and decades. These and other changes create risks to public and ecosystem health, while magnifying past and future water and water service challenges. In partnership with Tribal Nations, the State of Minnesota, local communities, and our regional water planning and management partners, the Met Council supports work that helps the region to mitigate greenhouse gas emissions, limit risks and adapt to climate change impacts, and be resilient when new and evolving challenges threaten water and water services and a high quality of life in the region.

INVESTMENTS: Water protection, planning, management, and infrastructure investments are optimized to ensure public and ecosystem health are fully protected now and for future generations.

Water professionals provide critical operations and planning services and put significant investment into water infrastructure for stormwater, wastewater, and local water supply across the region. We work to optimize the existing investments and thoughtfully and responsibly plan future programs and infrastructure to sustain and serve our growing region. The funding for this work and water planning must be supported now and into the future. We will continue to work to secure funds and grants for our efforts as well as to support local communities in those pursuits. We have a responsibility to the region to protect our region's waters with community input to identify needed expansions or additional service needs.

HEALTH: Natural waters, source waters, water services, and infrastructure are managed, restored, and enhanced to protect public and ecosystem health that ensures a high quality of life in the region.

Through our breadth of services, we will continue to protect public and ecosystem health for the region and those downstream. The protection of these critical resources will allow our region to be successful, support growth, and improve the health and well-being of all living things. Examples of how we work to protect public and ecosystem health include wastewater treatment, water quality monitoring, source water protection, and technical assistance.

EQUITY: The benefits of clean and abundant water and water services are defined by local needs and environmental context, are accessible, and are justly shared by all residents and communities.

The Met Council and our partners work across the region to provide access to safe and affordable water for drinking, recreation, cultural, industrial, and other social uses. Not all communities have the same water needs, environmental conditions, or cultural connection with water. The Met Council will be inclusive of community perspectives in our efforts to identify water service and benefit gaps, co-create solutions, and provide resources for the work necessary for an equitable water future.


IMAGINE 2050

SECTION 1: WATER POLICIES

The region faces many complex water challenges. However, these challenges can be addressed with concerted and collective action. The region must also take proactive actions to ensure that the next generations are not burdened by the water challenges of today and that they are able to address new challenges as they arise.

The Water Policy Plan contains policies that recognize water issues are connected across water sectors and that partnership is required because issues and solutions in one sector are likely to influence the others. Regional water polices are intentionally crafted to apply across multiple water areas, wherever feasible, based on the Met Council's roles and responsibilities and the roles of our many partners in the region. By aligning the regional Water Policy Plan and its component water supply and wastewater system plans with local needs and water planning efforts, communities, Tribal Nations, and agency partners can be aligned on actions to protect current and future water needs. The Water Policy Plan contains 12 policies, each containing desired outcomes, and example actions that support the policies and outcomes. The actions are work the Met Council is currently performing or will be performing in the future based on needs identified through research and stakeholder engagement with our partners.

Policy 1: Integrated Water

Water planning, management, and operations are collaborative and holistically address the natural and built water cycle.

The Water Policy Plan is an integrated plan that supports the Met Council's core mission to operate and manage the regional wastewater collection and treatment system, and plan for wastewater services, water supply, and water resources management for the region. Water organizations within the metro region need to work together to address issues that transcend water organization boundaries to prepare water management plans. These plans must promote the enhancement and restoration of regional waters (lakes, rivers, streams, wetlands, and groundwater) and allow for economic prosperity including affordable and sufficient water to meet the needs of residents, institutions, businesses, industries, and agricultural producers.

Desired outcomes:

- Federal, Tribal, state, regional, and local water plans and policies align to support sustainable and equitable water outcomes.
- Water planning and management decisions consider the needs, challenges, risks, and impacts of planning decisions for both natural surface and groundwaters, as well as water moving through the built environment.
- Water organizations work collaboratively across geographical, political, social, and cultural boundaries to achieve water sustainability.
- Water planning and management roles and responsibilities within the region are clarified and any identified gaps collaboratively addressed.
- The Met Council coordinates among its divisions and across the integrated water cycle to maximize the benefits of clean and plentiful water from regional investments.
- Surface water and groundwater in the region are protected and restored to meet the needs of current and future residents, communities, ecosystems, and economies.

Actions:

Partner

a. Convene and facilitate discussions and cross-water-sector solutions that support sustainable waters and delve into regional water issues that transcend community or watershed organization boundaries.

b. Collaborate with federal, Tribal, state, and local partners on studies that develop information and approaches that enhance the sustainability of water services of the Met Council and local providers.

c. The Met Council will take a leadership role in coordinating between Tribal staff and relevant state agencies' staff including Tribal Liaisons.

d. Support regional outreach and educational opportunities with organizations that advance integrated water planning and management through consistent messaging regarding pressing water concerns.

e. Partner with communities, water agencies, technical experts and residents to identify risks, gaps, associated vulnerabilities, and develop solutions for our regional water concerns.

f. Partner with economic development entities on projects with regionally beneficial economic, social, and environmental outcomes.

Plan

g. Provide local surface water, water supply, and wastewater plan timing, requirements, and guidance to align state, regional, and local efforts in water planning, management, and development decisions.

h. Ensure that local water plans and related environmental planning documents are developed collaboratively and consider the natural and built water cycle, through the Met Council's plan review authority and function.

i. Prioritize protection and enhancement efforts for regional waters listed in the Priority Waters List.

Provide

j. Provide technical information to watershed organizations, city planners, and local water providers on practices to use and incorporate into their operations or planning efforts that protect water quality and quantity.

k. Advocate for federal, state, and regional financial assistance to local governments, water suppliers, and other partners on water issues and water management activities.

l. Advocate for legislative initiatives that advance progress on challenges and opportunities identified by partners that align with regional water policies and priorities (examples: reuse, bonding to develop shared water supply systems, wellhead protection or water quality rule changes).

Policy 2: Water-Centered Growth and Development

The effects of land use and population changes on water and water service providers are identified, potential negative outcomes addressed, and past harms will be evaluated and mitigated. The benefits of clean and plentiful water are integrated with, protected by, and restored through development and redevelopment decisions so the region can grow equitably and sustainably.

As the region grows, development and redevelopment change how land is used, influencing both the need for, use of, and risks to water and water service sustainability. Growth increases the need for additional water, water infrastructure, and water utility services. Increasing demands on water sources and water utilities, along with other potential stressors like climate change, have associated economic, environmental, and social costs that can lead to water sustainability challenges.

For growth in the region to be sustainable, the use of and risks to water and water utility services must be considered when planning for and making decisions about how the region grows, develops, and redevelops. This requires the region to identify and understand the limitations of current water and utility systems, project needs and drivers of future change, and pursue opportunities to protect, restore, and enhance water and water services.

How water is used and the potential risks to the quality and quantity of water sources and services are connected to the ways metro area landscapes are used and managed. For instance, the potential for and types of water pollution vary across urban and rural landscapes. Much of the commercial and industrial use of water is concentrated in more urban areas, while agricultural land and water use is found in rural parts of the region. Similarly, highly developed areas tend to have smaller and fewer natural areas than less developed landscapes, with associated differences in ecosystem health, recreational opportunities, and access to nature.

The Met Council's water planning functions take into consideration the varied and unique interactions between land use and water quality, growth patterns and industry, and the long-term efforts to maintain plentiful and healthy water. The Met Council provides guidance, tools, technical support, and coordinated planning that supports and connects state, regional, and local action.

As water and water service needs vary across the region, so do local and regional actions. The diversity of land uses and the complexity of water systems means that one-size-fits-all solutions are rarely effective. By accounting for and incorporating water and water service needs into growth, development, and redevelopment planning, the Met Council and the region's communities can identify holistic solutions that align growth, development, and redevelopment activities with sustainable water outcomes.

Desired outcomes:

- Natural waters, water supply, and wastewater systems and services are accounted for and addressed in new development and redevelopment planning.
- Growth is prioritized where existing infrastructure can accommodate it and where additional water supply sources are most feasible, to improve resiliency.
- Growth is limited as much as possible to areas that can sustain reliable water supply and water services.
- The quality and quantity of source and recreational waters is protected and restored.
- Recharge areas are identified, protected, and enhanced through land restoration and new systems that promote infiltration.
- The Met Council and local partners implement engineered systems and new technologies that enhance the rate of groundwater replenishment where feasible and appropriate for public health.
- Current land use and future land use changes reduce and prevent negative water outcomes, enhance the benefits of clean and abundant water in all communities, and ensure land use changes do not further disadvantage communities that already bear a large burden of negative environmental outcomes.
- Development and redevelopment plans consider natural waters and water system sustainability, including potential impacts to public and ecosystem health, as critical parts of land use decisions, planning protocols, and procedures.
- Public water suppliers, land use planners, and developers have tools, funding, and authority to work together – supported by aligned agency directions – to guide and support development in ways that balance communities' economic needs while protecting the quantity and quality of sources waters that are vital to the region's communities.
- The Met Council works with its regional partners and technical experts to develop guidance and example ordinances that protect the region's water.

Actions:

Partner

a. Partner with state, Tribal, local, and watershed planners and water utility staff to build a shared understanding and identify strategies that address risks to public and ecosystem health.

b. Foster preservation of areas that help to protect surface water and groundwater quality and quantity through stakeholder engagement, technical assistance, outreach to local governments, and plan review.

c. Encourage participation in the agriculture certification program and practices that improve soil health like regenerative agriculture through the Met Council-monitored Agricultural Preserves Program and partnerships with the Minnesota Department of Agriculture, and local soil and water conservation districts.

d. Work with communities, watersheds, soil and water conservation districts, agricultural landowners and businesses, and agency partners to identify, promote, and assess best management practices, including nature-based stormwater management.

e. Partner with local and regional experts to identify needs and develop tools that help to improve public understanding around contamination, well testing and maintenance, source water protection, and publicly available resources.

f. Assist communities and watersheds in their application of regional treatment of stormwater to reduce design and maintenance costs while increasing the utilization of developable land.

g. Encourage local efforts that result in restored social and cultural connections through human-water interaction.

h. Partner with state, Tribal, and local water stakeholders to develop water supply constraint and availability criteria, to inform future regional growth projections and long-range planning.

Plan

i. Support the development and coordinated review of local comprehensive plans, comprehensive sewer plans, local surface water management plans, water supply elements of comprehensive plans, source water/wellhead protection, county groundwater, and other environmental documents and plans with partner agencies and communities.

j. Support and use the latest research to improve and update stormwater infiltration requirements and recommendations around practices, particularly in vulnerable Drinking Water Supply Management Areas.

k. Partner with state agencies and local governments to establish water supply constraints to inform the management of growth and development across the region.

l. Support, guide, and inform partners' implementation plans that promote the use of nature-based, green infrastructure solutions, including on Met Council properties.

Provide

m. Analyze the impact of land practices on water quality and quantity, including risks for source water areas, and the benefits of reducing impervious surfaces.

n. Identify and develop tools and resources to promote land use practices and development decisions that enhance water quality and quantity for communities and watersheds across the region.

o. Identify and develop tools and resources to better understand pressures on and interconnection of the region's rivers, lakes, streams, and aquifers to help regional, local, and watershed planners and water utility staff make informed water management decisions.

p. Offer grants or other funding opportunities that protect and enhance water quality, quantity, or other water benefits throughout the region.

Policy 3: Water Equity

Access to and the benefits of safe, plentiful, and affordable water, including sustainable water utility and ecosystem services, are shared among all residents and communities by addressing inequities with community-centered solutions that go beyond harm reduction.

The Met Council recognizes that water inequities exist in the region, and we will continue to grow our understanding of these challenges throughout the life of this policy plan. Conversation and co-creation with residents and overburdened communities add context to and guide our policies and approaches, address past and ongoing harms, and work toward remedying injustices. The Met Council is committed to identifying and addressing water equity gaps and concerns within our organization including our role in past harms, building trust with residents and overburdened communities, and supporting our planning and utility service partners to do the same.

Desired outcomes:

- All residents have access to safe and affordable water for drinking, recreation, cultural, social, spiritual, or communal uses.
- The public and ecosystem health benefits of clean, safe surface and drinking waters are fully achieved in all communities in the region.
- Water utility and ecosystem services gaps are prioritized and addressed in overburdened communities.
- Historically marginalized and overburdened populations are centered in water planning and management conversations and decisions.
- Improvements to the regional wastewater conveyance and treatment systems enhance regional aesthetics and amenities as directed by communities.

Actions:

Partner

a. Address environmental justice issues by working with overburdened communities and regional partner organizations.

b. Engage with residents, prioritizing overburdened communities, and other local and regional partners to understand local perspectives and identify water utility and ecosystem services and benefit gaps in water planning and the delivery of regional water-utility-related improvements.

c. Build trust with Tribal Nations and Tribal communities by amplifying and honoring Indigenous values, perspectives, and experiences to collaborate on solutions that ensure sustainable and equitable water outcomes for the region.

d. Environmental Services will partner with other Met Council divisions on overlapping equity efforts to produce equitable water outcomes.

Plan

e. Infrastructure investments and resource protection are prioritized to promote equitable public and ecosystem health outcomes and provide solutions to systemic issues that benefit communities beyond harm mitigation.

f. Local comprehensive plan updates are supported by broad community engagement to ensure community water values are reflected in long-range plans.

g. Address water inequities within our work, including plan review, the design and operations of wastewater facilities, and the planning for and management of water and water services in the region.

Provide

h. Met Council staff will convene communities and residents who have water equity and environmental justice concerns. We will work together to address policies and practices that cause injustices, strengthen our relationships, and build trust in our organization and the water services we and our partner organizations provide.

i. Identify the diverse water experiences and values across the region to understand how overburdened communities and residents are impacted by the work of the Met Council and other water organizations to inform water planning, policies, and work approaches.

j. Develop information and tools for the region that inform and support equitable water outcomes.

k. Incorporate environmental justice and water equity considerations into funding and grant applications to address past barriers faced by historically disproportionately burdened groups.

Policy 4: Climate Change Mitigation, Adaptation, and Resilience

The effects of climate change on natural waters, water infrastructure, and water service providers are proactively identified, assessed, mitigated, and adapted for to enhance community and environmental resiliency.

Climate change poses significant risks to the water the region relies on for public and ecosystem health and economic productivity. Various acute and chronic changes to weather patterns including extreme storm events, drought, flooding, warming temperatures, extended growing seasons, and others impact the ability of water service providers, like the regional wastewater utility and community water suppliers, to provide their essential services to the region. Climate impacts can threaten the reliability of water infrastructure and service delivery, and the predictability of the regulatory environment, resulting in increased costs for water utilities and those they serve. Other public water service providers, businesses and industries with water appropriation permits, and individuals with private water supplies and wastewater treatment infrastructure may also be impacted.

Likewise, climate change affects natural waters and water sources that put ecosystem and public health and associated societal and economic benefits at risk. To ensure the health and abundance of the region's waters, as well as the robustness of water services, the region must proactively address the current risks and impacts of climate change and plan for known and unknown impacts in the future. This means that the factors that drive climate change – like greenhouse gas emissions – are mitigated, and that the region can adapt to new and evolving conditions. Doing so helps to limit negative outcomes and increases the resiliency of communities and the water and water services the region relies on.

Desired outcomes:

- Actions are taken locally and regionally to lessen greenhouse gas emissions, adapt to changing climate conditions, and equitably address climate impacts across all water planning and management sectors.
- The region's water service providers and managers are prepared for and able to adapt to climate impacts to water sources and water infrastructure.
- The tools and resources needed to plan for and respond to climate impacts across water sectors to develop and enhance the region's resilience to current and future climate challenges are developed and in place.
- Met Council and local actions align with the Minnesota Climate Action Framework.

- Climate risks and their potential to impact the benefits of clean and plentiful water and water services are assessed across water sectors, in the built and natural environment.
- State and regional climate objectives are integrated into wastewater and water supply operations and water and watershed planning, across local and regional scales.
- Increased hazard mitigation and improved emergency preparedness.

Actions:

Partner

a. Collaboratively partner with water planning and water management organizations to address the effects of climate change on water, water utilities, and water services.

b. Partner with and support academic institutions and other organizations to conduct research to generate metro area-specific climate change information, identify potential risks and benefits, develop new technologies and approaches to address challenges, and better understand future climate scenarios based on current science and models.

c. Support the research and development of new technologies or other innovative approaches to reduce emissions throughout water utility operations.

Plan

d. Assess climate vulnerabilities and risks within regional wastewater facilities and operations to prepare for and adapt to current and future climate impacts.

e. Develop guidelines that inform the design and placement of regional wastewater infrastructure based on the latest scientific and engineering knowledge to address climate change risks and maximize longevity.

f. Support low-impact design, renewable options for wastewater and drinking water, and the integration of nature-based solutions into regional development.

g. Work with state agencies and local governments to prepare for evolving climate conditions, droughts, floods, and extreme weather events, through the Minnesota Drought Task Force, the Minnesota State Drought Plan, and other coordination activities.

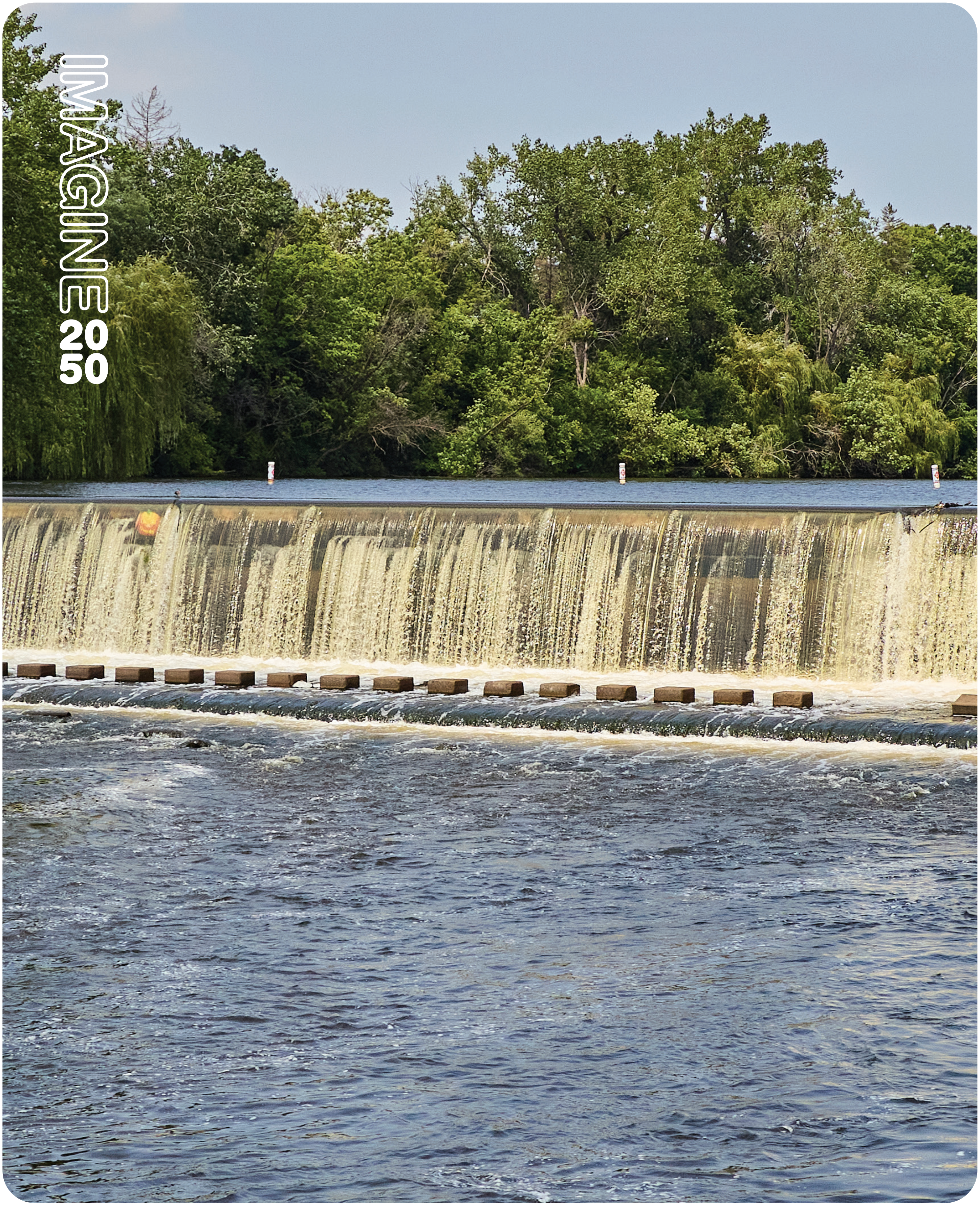
h. Assess the risks to water services and benefits from climate change, and develop mitigation and adaptation plans and planning guidance for the region.

Provide

i. Manage and renovate facilities and land holdings to reduce impervious surfaces, integrate green infrastructure and nature-based solutions within our stormwater management systems, install native plantings where possible, and be a regional leader in climate-focused land management.

j. Assess vulnerabilities, risks, and climate preparedness across the natural environment, built water environment, and water utilities to identify challenges, gaps, and opportunities to ensure the present and future water needs of the region are met.

k. Develop and share tools, information, guidance, and educational materials around climate mitigation, adaptation, and community resilience for the local and regional audiences.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Policy 5: Conservation and Sustainability

The Met Council and its regional partners work together to ensure the region's water is conserved and used efficiently to optimize current water infrastructure and treatment investments, safeguard the sustainability of water sources, and ensure the reliability of water utility services.

The current and long-term viability of natural waters, water infrastructure investments, and the services provided by water utilities depend on the wise use and conservation of water. The sustainability of water, water utilities, and water infrastructure starts with practices that conserve sources, protect infrastructure investments, and use water efficiently. When we use water efficiently, we are using only what is needed, limiting the need for additional water infrastructure, treatment, and associated energy use and costs. We are also optimizing and, in some cases, extending the life of current investments in water services and infrastructure, helping to ensure that the water and water systems we rely on are available to meet future needs.

Conservation behaviors and efficiency practices help to ensure water sources are available and more resilient during periods of stress like an extended period of drought or contamination event. Through these best management practices, the region can ensure water and water services are sustained, water conflicts are eliminated, and the current and future water needs of the region are met.

All water supply and wastewater systems should have sufficient funding to provide affordable services that meet the needs of communities. Efficient water use and conservation practices help to lower treatment and infrastructure investment costs for water utilities. Limiting these costs helps the region to sustainably operate and maintain its water utilities. It also helps individuals, businesses, and industries to lower costs and contribute to the stewardship of the region's water. All communities should share in the economic, social, and environmental benefits of investment in water systems, and those investments should be maximized wherever possible.

Desired outcomes:

- The water needs of all cities, townships, residents, and ecosystems across the metro region are met now and into the future.
- Efficient use and water conservation practices are prioritized and invested in at the local and regional level to help optimize all water infrastructure investments.
- The Met Council explores and supports community efforts to adopt technologies that increase the efficient use of water and reduce energy consumption.

- Communities can act quickly, thoughtfully, and equitably to address aging infrastructure, contamination, changing groundwater conditions, changing water demand, and financial challenges.
- Communities and water agencies understand the sustainable limits of groundwater and surface water sources.
- Agency priorities, management, and regulatory strategies are aligned and support local plans for land use and related water demand that is consistent with the available design capacity for water infrastructure.

Actions:

Partner

a. Partner with local organizations to best understand and address water conservation and efficiency practices through research, data assessment, tool development, and convening conversations that support investments and behavior change.

b. Partner and support efforts, including developing informational resources, that encourage residents, businesses, local government units, homeowner associations, and water utilities to incorporate new technology and behaviors, as a means of achieving water sustainability and energy efficiency in the region.

c. Promote engagement of water users around water conservation to reduce water demand and support reliability and protection of our water supply.

d. Work with water supply service providers and agency partners to prioritize work with significant water users that may reduce water use, promote conservation, and implement reuse where applicable.

e. Work with soil and water conservation districts, watersheds, or other local organizations that have established relationships and are a trusted source of information within the agricultural community.

Plan

f. Create and develop funding requests with partners for education campaigns, water infrastructure projects and feasibility studies that benefit multiple communities.

g. Plan and invest to use water efficiently and regeneratively at Met Council-owned properties and facilities, where feasible.

h. Work with agency partners and universities to map recharge areas and groundwater-dependent ecosystems and their groundwater-sheds to assess their vulnerability to increased pumping and opportunities to protect recharge.

i. Support water supply and wastewater system emergency preparedness planning in collaboration with state agencies and local governments.

j. Support local water supply planning to identify long-range water demand and commit to approaches that reduce per capita demand to help manage infrastructure capacity.

Provide

k. Implement water conservation and efficiency technology and activities in the operation of the regional wastewater collection and treatment system.

l. Install drought-resilient, native landscaping on Met Council properties to reduce the need for irrigation and turfgrass management, where feasible.

m. Support programs targeting water and energy conservation practices and implementation of efficient water and energy use like the Minnesota Technical Assistance Program (MnTAP) to assist local businesses, residents, and communities.

n. Support efforts to direct residents, homeowner associations, and developers to prioritize alternatives to using drinking water supplies for lawn watering, such as installing low-maintenance turf, no-mow, or native landscapes that reduce outdoor water use, and support research and studies to identify other effective alternatives for the region.

o. Explore connections with the agricultural community to understand how farming practices impact water quantity and quality, support efforts to decrease groundwater use for irrigation, and implement best management practices to minimize water quality degradation.

p. Continue to offer grants to support water conservation and efficient water use practices and appliances.

Policy 6: Water Reuse

The Met Council works with partners to reduce barriers, pursue opportunities, and support efforts to reuse stormwater and wastewater, while balancing public and ecosystem health and financial viability

The region has already begun to explore and implement ways to lessen its reliance on our water resources by reusing treated stormwater and wastewater for nonpotable purposes. Stormwater reuse is the practice of harvesting stormwater runoff to meet nonpotable water demands (for example, irrigation, toilet flushing, etc.). Wastewater reuse is the practice of treating wastewater effluent to a level that allows for potable or nonpotable use before releasing it back into the water cycle. This highly treated wastewater, called reclaimed water, must meet water quality guidelines established by the Minnesota Pollution Control Agency before it can be used. Reuse can be a cost-effective and water-smart solution for industrial or growing areas, or when there may be barriers to accessing groundwater for nonpotable uses.

Changes in climate and continued growth in the region have increased demands on and added stress to water supply systems, ecosystems, and valued water resources. Water reuse can offset the demands being placed on surface waters and groundwater. The metro region may not have an immediate need to implement reuse for drinking water sources as in the arid southwestern U.S., but we are seeing clear impacts on our surface water and groundwater quality and quantity, and associated ecosystem impacts. These impacts may continue or become more advanced in the future as populations grow and climate change influences become more severe. Therefore, alongside the implementation of reuse for nonpotable purposes, we need to begin proactively considering the reuse of water for potable purposes in the region to be prepared for future scenarios where those investments are needed.

The state and other partners in the region are also exploring engineered systems, like advanced aquifer recharge, to replenish and sustain water sources. Continuing to support and explore these systems and techniques is valuable, as there is great potential to reduce impacts to water sources, ecosystems, and water utilities, while addressing fundamental water sustainability issues in the region. However, techniques like advanced aquifer recharge face many technical, economic, and regulatory obstacles that have so far made their implementation a significant challenge.

The Met Council supports furthering the implementation and use of stormwater and wastewater reuse across the region. Requests have been and will continue to be made to use reclaimed water from Met Council water resource recovery facilities for various purposes. In response to past requests, the Met Council convened a task force to determine a cost-sharing approach to wastewater reuse. That approach is shared in Appendix D and continues to stand as the Met Council’s financial commitment to future reclaimed water projects.

Desired outcomes:

- Water reuse projects are implemented across the region by our partners and are supported by the Met Council through financial and technical support.
- State guidelines on stormwater reuse are clarified and barriers to implement stormwater reuse are reduced.
- Stormwater reuse guidelines for the state and region balance the needs of implementors, state agencies, public health, and financial cost, while furthering sustainable waters.
- Reclaimed wastewater reuse is implemented at Met Council facilities and a regular part of our operations.

Actions:

Partner

a. Work with agency partners to better define agency roles and responsibilities for reuse and reduce barriers for reuse in Minnesota.

b. Advocate for and participate in interagency collaboration to understand the effectiveness of water reuse and infiltration as a stormwater management practice, while considering flooding, drought, and a range of potential climate futures.

c. Collaborate with partners to determine direction on whether further guidance and/or regulation is needed for the various stormwater reuse practices being installed in the metro region. Work with partners and agencies to better understand the risks and cost-effectiveness associated with all types of reuse before decisions are made about guidance or regulation.

d. Work with and support local partners on their water reuse projects and provide guidance and resources to help partners plan and implement those projects benefitting water resources and ecosystem restoration.

e. Support research on the benefits, costs, and feasibility of using reclaimed water for high-volume industrial, agricultural, or commercial purposes and for groundwater injection.

Plan

f. Identify and evaluate the economic and technical feasibility of best practices that enhance groundwater recharge and make the best use of reclaimed water and stormwater while protecting source water quality.

g. Identify and plan for long-range regional investments in reclaimed water use that protect source water quality and quantity.

h. Identify criteria for viable reclaimed water projects including, but not limited to, reducing effluent contaminant concentrations to match the water quality need associated with the intended reuse.

i. Pursue sources of external funding to complement Met Council funding of reclaimed water projects, including Clean Water Legacy Funds, state bond funds, and reuse grants.

j. Encourage local efforts to plan for multi-development stormwater capture and reuse in developing areas.

Provide

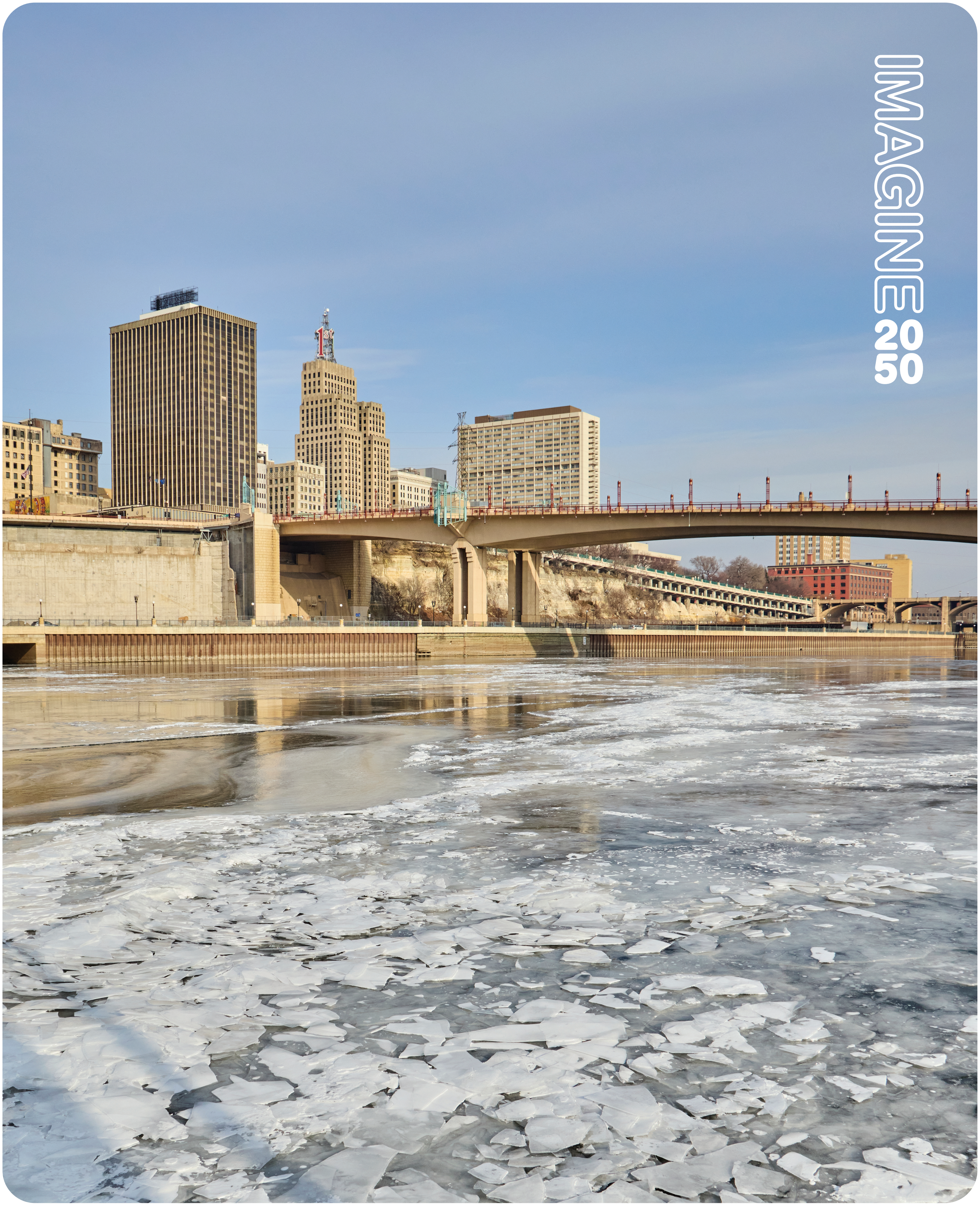
k. Promote and invest in stormwater and wastewater reuse, both internally and regionally, as viable alternatives to augment nonpotable water uses to support regional growth when feasible.

l. Use reclaimed water to meet nonpotable water needs within Met Council water resource recovery facilities where economically feasible.

m. Support our partners in their water reuse goals and projects through technical assistance such as information, educational resources, example ordinance language, potential grant or financial support, and other implementation support.

n. Report on all wastewater reuse study and project activities at the Met Council's annual budget outreach meetings.

o. Follow the cost-sharing and project implementation recommendations of the 2017 Task Force (in Appendix D) when cost-sharing for any wastewater reuse projects with the Met Council.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Policy 7: Pollution Prevention and Contaminant Management

The quality of the region's surface, groundwater, and drinking water supplies is protected and restored through proactive and collaborative action. Planning and management for source water protection, stormwater, wastewater, and water resources prioritizes public and ecosystem health and equitable outcomes.

Polluted water impacts every aspect of the water use cycle, from the quality of water for recreation, to drinking water availability and treatment, to wastewater treatment requirements, to aquatic life, and to public and ecosystem health. The Met Council is committed to partnering with others to address contamination and improve water quality.

Today, water professionals across the region are working to address environmental pollution due to nitrogen, phosphorus, chlorides, per- and polyfluoroalkyl substances (PFAS), sulfates, manganese, selenium, and arsenic. Tomorrow may bring something new, either another contaminant of concern or new or modified standards or regulatory limits. The Met Council acknowledges the challenges and timelines that water utilities and their partners face in implementing changes to federal rules around drinking water and wastewater. High water quality and pollutant reduction is only successful if the region works together towards clean water resources.

Within the Met Council's wastewater treatment processes, we will mitigate these threats to the best of our technological ability. Our goal is to cost effectively meet current and new regulatory standards. A team of operators, chemists, engineers, mechanics, water resources scientists, and others support our water resource recovery facilities in meeting their federal clean water discharge permits. Treatment methods and technological improvements are addressed and implemented as new and modified regulatory limits arise. Constant monitoring and communication with other state and federal agencies support us in our goals and our record of compliance.

New and changing limits have the potential to increase operational expenses and require new technology installation or additional treatment infrastructure for the Met Council, local water suppliers, watershed managers, and others.

Preventing water from being contaminated, also described as source reduction or source water protection, is an effective and less expensive way to keep waters clean. Activities like smart salting during wintertime, cleaning catch basins of debris, and addressing PFAS at the source are only some examples of the many ways to keep our water resources healthy.

Desired outcomes:

- Protection, restoration, and improvement of water quality is holistically pursued and achieved.
- The Met Council partners, engages, and provides expertise in the research and regulatory work for contaminants of concern with other public agencies.
- The Met Council stays abreast of new and evolving emerging contaminants, contaminant issues, and responds to changing regulatory requirements.
- The connections between water quality (physical and chemical), public and ecosystem health, and equitable water outcomes are addressed in planning and management decisions.
- Efforts to protect and improve water quality are addressed collaboratively by local governments, state agencies, regional partners, Tribal Nations, and individual residents.
- Communities have the resources they need to provide a safe water supply. A shared process is developed that allows communities, water utilities, and regulators to respond in a more coordinated and effective way to both contaminants of emerging concern and existing contamination.
- Pollution in stormwater is reduced with the widespread use of best management practices and green infrastructure.
- Public and environmental health is protected, and all residents, communities, Tribal Nations, and agency partners have the support, technical and financial, needed to address evolving and emerging contaminants.

Actions:

Partner

a. Assist stakeholder groups, state agencies, local utility organizations, researchers, and regional water professionals in the development of any newly required water quality standards.

b. Address current and emerging contaminants with the support and partnership of stakeholder groups, state agencies, local utility organizations, researchers, and regional water professionals.

c. Partner with other state agencies in determination and review of state water plans, permits and regulatory limits through convening assistance and technical support.

d. Continue working with state agency partners in the development and revisions of the Minnesota Nutrient Reduction Strategy and other state water plans.

e. Support research and wastewater treatment activities that address PFAS, chlorides, and other contaminants specific to wastewater treatment, both internally and with external partners.

f. Partner with and regulate industrial customers to help reduce environmental impacts while encouraging economic development.

g. Partner with industry to discuss and address regional industrial customer concerns like fats, oils, grease, and others.

h. Support source reduction of pollutants (chlorides, PFAS, nitrogen, and others) to urban and rural waters.

i. Partner with local public works and city planners through the development of technical assistance, research, and potential funding to ensure stormwater infrastructure helps protect and enhance receiving waterbody quality.

j. Partner with communities and watershed districts to support low-salt practices and obtain grants supporting low-salt design.

k. Support research and coordination with Minnesota Pollution Control Agency on centralized water softening to reduce chlorides.

Plan

l. Consider social, environmental, and economic impacts when planning for and operating under future water quality regulations.

m. Acknowledge vulnerable source water protection areas and/or pollution sensitivity of shallow and deep groundwater for targeting implementation programs in local comprehensive plans.

n. Engage in pollutant trading or offset opportunities of pollution when the cost and long-term benefits are favorable compared to upgrading wastewater treatment.

o. Continue to evolve the Priority Waters List to incorporate new water quality information as it becomes available.

p. Support source-reduction efforts to reduce treatment costs at water resource recovery facilities.

Provide

q. The Industrial Waste and Pollution Prevention section of the Met Council determines and reviews permit limits for industrial customers.

r. Develop risk-based priorities for accelerated actions for PFAS source reduction, like focused source reduction at water resource recovery facilities using land application programs.

s. Invest in our water resource recovery facilities to meet regulatory standards using appropriate, cost efficient, and currently tested technologies.


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Policy 8: Water Monitoring, Data, and Assessment

Natural waters and engineered water systems (stormwater, water supply, wastewater, and reuse systems) in the region are proactively monitored, high quality data is collected and shared, and conditions (past, present, and future) are collaboratively assessed to support regional water objectives.

Data is critical to make informed decisions. Among other reasons, data helps us understand surface water and groundwater conditions, see trends and patterns in water quality, identify water vulnerabilities and risks, and support water supply partners in providing water for their population. Many organizations in the region have a role in collecting and understanding this information from the federal and Tribal levels to local government. Coordinating this work can maximize our collective effort to gain information about our waters.

Through monitoring the water quality of the region's lakes, rivers and streams, monitoring wastewater effluent to support public health, maintaining the Priority Waters List, and other efforts, we value the impact data can have on improving water to support human and environmental health. We will continue to provide and interpret the data to help the region meet its water quality, sustainability, and human health and aquatic life goals.

Desired outcomes:

- The region understands the status of its waters, both quantity and quality.
- The Met Council and regional partners coordinate to monitor the region's surface water, groundwater, and wastewater to assess current conditions, trends, vulnerabilities and risks, and support regulatory compliance.
- Water resource managers, community planners, and regional leaders understand how groundwater and surface water interact and how those interactions impact water sustainability.
- Studies and efforts to measure progress towards achieving sustainable and equitable water goals are supported.
- Data is shared among water organizations and other interested groups.
- The Met Council, in partnership with other organizations, uses its resources to support efforts to provide public and ecosystem health insights to reduce negative health risks as the need arises.

Actions:

Partner

a. Partner, assist, and support communities, Tribal Nations, and other stakeholders with the monitoring and assessment of regional priority waters and groundwaters for known and emerging contaminants.

b. Work with communities, Tribal Nations, and other stakeholders to provide and improve communication and educational materials on known and emerging contaminants.

c. Collaboratively research, gather, assess, and use data and information on the quality and quantity of water to improve understanding of the connections between surface and groundwaters.

d. Partner with local planners and state agencies to compile and update information about water infrastructure.

e. Partner with public health agencies to remain aware of opportunities to assist in wastewater monitoring and data collection in the interest of public health insights when the need arises and funding is available.

f. Facilitate collaborative discussions, monitoring, and data sharing throughout the region regarding source water availability, water use, and projected demand.

Plan

g. Explore and identify data sources to support the understanding of water value and use to support the Priority Waters List and its use by our stakeholders.

h. Support community efforts to identify and evaluate the economic and technical feasibility of water supply approaches and best practices that promote water conservation, enhance groundwater recharge, and make the best use of groundwater, surface water, reclaimed wastewater, and stormwater.

Provide

i. Provide monitoring data to our partners through our regional database that contains easily accessible water quality, quantity, and other water-related information collected through the Met Council's monitoring programs.

j. Identify and assess current and long-term groundwater and surface water conditions, uses, use behaviors, community needs, historical trends, drivers (influencers) of change, risks and system limitations, and estimated future conditions.

k. Continue long-range planning and technical studies to understand regional and subregional water concerns and to measure progress towards achieving sustainable and equitable water goals.

Policy 9: Regional Wastewater Service Area

The Met Council will plan for and provide wastewater service corresponding to designated land uses to protect water for public health, recreation, habitat, and environmental health.

The region needs high-quality, affordable, and sustainable wastewater collection and treatment services to prosper and grow. The Met Council collects and treats wastewater for nearly three million people in the region, as well as for institutions, businesses, and industries. Our water resource recovery facilities and the regional wastewater system serve the urban and suburban core of the region. Rural areas with their own wastewater infrastructure make significant investments to serve their communities. Both the Met Council and those rural communities plan and work to best utilize those investments.

While supporting efficient development, wastewater service will be extended as necessary to facilitate development in communities if the community's request for regional service is aligned with the regional Wastewater System Plan, the community's comprehensive plan, and comprehensive sewer plan, and adheres to other Met Council policies. We know what we do on the land impacts our water resources, so we work closely with our communities to plan for growth that is efficient and utilizes the infrastructure and investments already in place.

It will be important to continue thoughtful partnership and planning for regional wastewater services for both urban and rural areas as the population and industry grows in the region and as we see changes to our environment from climate change.

Desired outcomes:

- Wastewater services are provided to support orderly and economical development and redevelopment of the region.
- Long-range planning of regional wastewater service supports source water protection, equitable water outcomes, water and ecosystem protection, public health, sustainable growth and development, and infrastructure investments that are aligned with community comprehensive plans.

Actions:

Wastewater Service for the Urban Service Area

Partner

a. Utility corridors will be preserved when it is necessary to expand facilities or locate new facilities needed to implement the Wastewater System Plan through early land acquisition and work with communities, Tribal Nations, and other stakeholders.

b. All communities, and any areas within communities, planned to be served and currently served by the regional wastewater system remain a part of the system to fully utilize the regional investments made to provide that service.

Plan

c. Requests for additional wastewater service must be submitted to the Met Council through the comprehensive plan and comprehensive sewer plan process.

d. Connection of private communal treatment systems or properties with subsurface sewage treatment systems to the regional wastewater system must be consistent with the Met Council's minimum sewered residential density requirements for each type of system.

e. The cost of connecting existing private communal treatment systems or subsurface sewage treatment systems to the regional wastewater system will not be borne by the Met Council.

The **Urban Service Area** has the highest level of investment in regional and local services, including regional wastewater services. These communities include a variety of residential neighborhoods, housing types, and densities, along with a varying mix of commercial and industrial areas. The Urban Service Area is divided into four community designations: Urban, Urban Edge, Suburban, and Suburban Edge.

The **Rural Service Area** represents a range of uses including cultivated farmland, vineyards, hobby farms, gravel mines, woodlands, small towns, scattered and clustered housing, open spaces, and significant expanses of the region's natural resources. Investments in regional services are limited in the Rural Service Area, except for in the regional parks system. The Rural Service Area recognizes the desire for rural and small-town residential choices and protects the vital agricultural lands and natural amenities of the area. The Rural Service Area is divided into four community designations: Agricultural Area, Diversified Rural Area, Rural Residential, and Rural Center.

f. Regional wastewater system improvements will be staged, when feasible, to reduce the financial risks associated with inherent uncertainty in growth forecasts.

g. Unsewered areas inside the Long-Term Wastewater Service Area will be preserved through guiding land use for future development that can be sewered economically.

h. Support existing regional sewer investments in developing and redeveloping areas by ensuring the type, size, minimum density requirements, and area of development be consistent with the original design capacity.

Provide

i. Provide wastewater service commensurate with the needs of the growing metro region in a sustainable manner.

j. Provide sufficient capacity in the wastewater system to meet the growth projections and long-term service area needs identified in approved local comprehensive sewer plans.

k. Extend wastewater service to suburban communities if the service area contains at least 1,000 developable acres and guides residential land use densities consistent with Met Council policy.

Wastewater Service for the Rural Service Area

Partner

l. Work with communities, Tribal Nations, and other stakeholders to preserve areas outside the Long-Term Wastewater Service Area for agricultural and rural uses, while protecting significant natural resources, supporting groundwater recharge, protecting source water quality, and allowing limited unsewered development.

Plan

m. Rural wastewater treatment plant acquisition requests and connections to the regional wastewater system outside the regional service area will not be allowed unless the community amends its comprehensive plan and comprehensive sewer plan to be consistent with requirements for regional sewer service. The Met Council may construct capacity to serve the long-term needs of the rural and agricultural planning areas but will not provide service until the comprehensive plan requirements are met.

n. The Met Council will acquire wastewater treatment plants owned by communities – based upon their request through the comprehensive plan and comprehensive sewer plan processes and after soliciting customer input and conducting a public hearing on the request – if the requested acquisition provides cost-effective service, accommodates assigned growth, protects public health and well-being, and currently meets or, with improvements by the community can meet, environmental and regulatory requirements.

Provide

o. Wastewater service to a Rural Service Area will be considered only when all the following criteria are met:

- The community accepts the Met Council's growth forecasts, as well as preserves at least 1,000 developed or developable acres for growth through the land use planning authority of the county or adjacent township(s) or through an orderly annexation agreement or similar mechanism to provide for staged, orderly growth in the surrounding area.
- The community has a water supply plan approved by the Minnesota Department of Natural Resources.
- The community has a watershed-approved local surface water plan.
- The community has adequate transportation access.
- The community lies within the Long-Term Wastewater Service Area.
- Cost-effective service can be provided and there are feasible and economical options for siting and permitting an expanded wastewater treatment plant or for extending interceptor service.
- The Met Council has sought customer input, has conducted appropriate financial analysis, and has conducted a public hearing on the community's wastewater service request.

p. Require that, if the most economical and beneficial wastewater service option is to construct a regional interceptor to serve the community, the Met Council will not acquire the community's wastewater treatment plant, and the community will be responsible for decommissioning its treatment plant.

Policy 10: Regional Wastewater Operations and Finance

The region's investments and operation of water resource recovery infrastructure and related assets are built, operated, maintained, and rehabilitated in a sustainable, efficient, and economical way, considering current and future challenges. Service fees and charges to operate the system are based on regional cost of services and rules adopted by the Met Council.

The Met Council conducts its regional wastewater system operations as sustainably as possible. Sustainable operations relate not only to wastewater treatment but also to increasing energy efficiency and using renewable energy sources, reducing air pollutant emissions, and reducing, reusing, and recycling solid waste. Our efforts to harvest energy from wastewater effluent, use biosolids as fertilizer, and use wastewater effluent for secondary uses show our increasing capacity to recover resources that provide additional benefits to our operations and region. Therefore, our wastewater treatment plants have been rebranded as water resource recovery facilities, to reflect that we do more than only treat wastewater.

The regional wastewater system is composed of more than 630 miles of interceptor sewer mains, 229 metering stations, 60 lift stations, and 9 water resource recovery facilities. Environmental Services, on average, invests more than $100 million per year to maintain, replace, and expand wastewater treatment infrastructure. It is critical to maintain and rehabilitate the system in a timely manner to defer the need for costly repairs or premature expansion. User fees cover the entire cost of wastewater operations as well as the cost to maintain, replace, and upgrade the physical infrastructure of the system. The Waste Discharge Rules guide our fee collection structure, which is based on what it costs to provide service. Those fees support economical development and help us meet our customer level of service.

Desired outcomes:

- Maintenance and rehabilitation efforts in wastewater infrastructure result in long-term use of existing systems, maximizing our investments, and safeguarding sustainable water.
- Water resource recovery infrastructure investments are cost-effective and support sustainability.
- Additional sewer capacity for communities is timed to be consistent with the Wastewater System Plan and a community’s approved comprehensive plan.
- Customer communities pay fees for wastewater services based on the regional cost of service adopted by the Met Council.

- Private wastewater treatment systems remain up to code and adhere to Minnesota Administrative Rules 7080 through 7083, reducing the potential for negative environmental impacts or premature expansion of the regional wastewater system.

Actions:

Partner

a. Work with communities with failing subsurface sewage treatment systems or other private wastewater treatment systems to connect to the regional wastewater system at the community's expense if in conformance with the Met Council's Wastewater System Plan, the community's comprehensive sewer plan, regional land use policy, and other Met Council policies.

b. Provide informational resources to communities and private residents if their subsurface sewage treatment systems and other private wastewater treatment systems fail. Communities that permit the construction and operation of those systems within their communities are responsible for ensuring that these systems are installed, maintained, managed, and regulated consistent with Minnesota Pollution Control Agency rules and Minnesota Administrative Rules 7080 through 7083.

c. Cost-sharing between the Met Council and a local governmental unit may be used when construction of regional wastewater facilities provides additional local benefits for an incremental increase in costs.

d. Advocate on behalf of Rural Area communities to seek technical and financial assistance to maintain continued local wastewater treatment services.

e. Continue efforts to simplify and improve the Sewer Availability Charge (SAC) program and its communication to customers.

f. Partner with Met Council Community Development to update the Publicly Assisted Housing/Conservation SAC fee reduction policy to better reflect publicly subsidized affordable housing developments.

g. Explore with our Community Development division and community stakeholders financial support or other resources to reduce the Publicly Assisted Housing/Conservation SAC fee cost for deeply affordable housing projects.

h. Provide industries with incentives to pretreat wastewater to reduce its concentration of contaminants or support water reuse opportunities.

i. Advocate for and support partnerships with industries to encourage wastewater reuse for both business growth and environmental benefit.

Plan

j. Preserve Met Council's regional wastewater system assets through effective operation, maintenance, programmatic assessment of condition and capacity, and capital investment.

k. All fees and charges necessary to equitably construct, operate and maintain the regional wastewater system shall be established by the Regional Administrator or Met Council members as described in the Waste Discharge Rules.

l. Seek customer input prior to and give at least 90-days' notice of any material changes in the design of charges.

m. Perform community-based displacement risk assessments when planning Met Council infrastructure improvements.

n. Within Met Council operations, maximize energy efficiency, energy recovery, and pursue renewable energy sources, such as solar power generation, thermal energy recovery, and new technologies as they become proven and economical.

o. Seek opportunities for improved processing, reuse, and energy generation from biosolids processing.

p. Interceptors and related facilities that are no longer needed to serve the regional wastewater system will be reconveyed, abandoned, or sold to the appropriate local governmental unit, pursuant to related statutes. The following conditions are required for the transfer to be considered:

    - An existing interceptor (or segment of it) is no longer necessary to the regional wastewater system when it serves:
        - Primarily as a local trunk sewer; or
        - As a local trunk sewer that ultimately conveys 200,000 gallons per day or less from an upstream community; or
        - A local trunk sewer that conveys only stormwater.
    - Unless,
        - The interceptor has been designed to provide wastewater service to all or substantially all the upstream community; or
        - The flow from the upstream community is greater than 50% of the total forecasted flow at any part within the interceptor.

Provide

q. Implement and enforce the Met Council's Waste Discharge Rules for the regional wastewater system.

r. Septage, biosolids, leachate, and other hauled liquid waste will be accepted at designated sites, provided that the waste can be efficiently and effectively processed and not adversely impact the conveyance and treatment system.

s. Sewer availability charges will be uniform within the urban area based on capacity-demand classes of customers and the SAC Procedure Manual. Sewer availability charges for a Rural Center will be based on the reserve capacity and debt service of facilities specific to the Rural Center.

t. Evaluate level of service for all customer types to address needed enhancements or availability of wastewater services like liquid and vactor (sanitary sewer debris collected by vacuum truck) waste disposal sites

Policy 11: Inflow and Infiltration

Inflow and infiltration is systematically addressed in the regional wastewater conveyance system to reclaim and ensure capacity, improve efficiency, and better utilize capital funds.

Inflow and infiltration is stormwater and groundwater that makes its way into sanitary sewer pipes, mixes with sanitary wastewater, and gets unnecessarily treated at water resource recovery facilities. Inflow is clear water that enters the wastewater system through rain leaders, sump pumps, or foundation drains that are illegally connected to sewer lines. The largest amount of inflow occurs during heavy rainstorms. Infiltration is groundwater that seeps into cracked or broken wastewater pipes.

Unaddressed inflow and infiltration can cause public and environmental health concerns, mainly through sewage backups resulting from limited system capacity. It can be costly to communities and utility rate payers through both increases in billed volume of water treated at the water resource recovery facility and additional investments to expand the system to accommodate capacity.

Inflow and infiltration from private property has been an under-investigated and under-supported area of mitigation. Mitigation efforts have not been as robust primarily due to a lack of dedicated and reliable funding sources to incentivize this work. Opportunities abound to address inequities in historically marginalized and overburdened communities due to the high costs of private inflow and infiltration remediation and risks of displacement when those concerns are not addressed.

Environmental Services continually works to maintain the capacity of the conveyance and treatment system to prevent unnecessary, costly expansions. Efforts like private and public inflow and infiltration mitigation, regular assessments and maintenance of wastewater infrastructure, and support of water conservation efforts are all successful ways to maximize the current conveyance and treatment capacity and reduce premature costs.

Climate change has the potential to impact these efforts to keep clear water out of the wastewater conveyance and treatment system. Changing precipitation patterns may stress the regional conveyance system and could lead to increasing issues with inflow and infiltration. Rising or fluctuating groundwater levels could inundate pipes that were originally above the groundwater table and potentially lead to interactions between inflow and infiltration and our groundwater resources. With the uncertainty of climate change impacts, it is critical to continue addressing inflow and infiltration to reclaim capacity in the conveyance and treatment system.

Desired outcomes:

- Ongoing inflow and infiltration mitigation work results in reclaimed capacity in the wastewater conveyance and treatment system.
- Capacity enhancements are not made to accommodate excess inflow and infiltration.
- Municipalities are supported in both public and private efforts to reduce inflow and infiltration.
- Funding is consistent and reliable for inflow and infiltration mitigation efforts.

Actions:

Partner

a. In partnership with communities, continue developing inflow and infiltration goals for all communities served by the regional wastewater system.

b. Partner with the state to make funds available for inflow and infiltration mitigation and promote statutes, rules, and regulations to encourage inflow and infiltration mitigation.

c. Continue to support, advocate, and coordinate with Metro Cities for state bond funding for municipal public system inflow and infiltration grants.

d. Continue to advocate and seek funding for communities working to reduce inflow and infiltration from private property sources.

e. Partner with our Housing and Livable Communities work areas in the Community Development division to develop criteria to prioritize private property inflow and infiltration grant funding to applicants that show a dedicated effort to prioritize low-income and historically overburdened households.

Plan

f. Limit expansion of wastewater service within communities where excessive inflow and infiltration jeopardizes the Met Council's ability to convey wastewater without an overflow or backup occurring or limits the capacity in the system to the point where the Met Council can't provide additional wastewater services. The Met Council will work with those communities on a case-by-case basis, based on the applicable regulatory requirements.

g. Coordinate private sewer lateral rehabilitation with other programs, projects, or construction that may provide an opportunity to address multiple infrastructure needs, for example, lead service pipe removal programs or street improvement programs.

Provide

h. Met Council facilities and interceptors will be maintained and rehabilitated to minimize inflow and infiltration.

i. Institute a demand charge for those communities that have not met their inflow and infiltration goal(s), if the community has not been implementing an effective inflow and infiltration reduction program as determined by the Met Council, or if regulations and/or regulatory permits require Met Council action to ensure regulatory compliance.

j. Use the demand charge to cover the cost of wastewater storage facilities and/or other improvements necessary to avoid overloading Met Council conveyance and treatment facilities and for use of capacity beyond the allowable amount of inflow and infiltration.


IMAGINE
2050

Policy 12: Water Sector Workforce Development

Ensure a diverse, stable, and well-equipped water sector workforce and talent pipeline to plan and manage water resources and maintain safe, efficient, and reliable water operations by addressing challenges in recruiting, training, and retaining employees.

Past water sector workforce recruitment and retention strategies are no longer effective. New strategies must include early awareness of water sector careers (K-12 outreach), low-barrier entry (internships, apprenticeships, changing hiring processes), inclusive workplaces with professional development opportunities, and proactive knowledge transfer mechanisms supporting succession planning.

Tailoring best practices within each unique workplace is key, as internal cultures, variations in position classification, and labor union contracts make it so that a one-size-fits-most approach is not possible. A comprehensive policy framework that addresses the root causes of inequity and promotes diversity, equity, and inclusion throughout the water workforce should encompass targeted recruitment strategies, inclusive hiring practices, equitable access to training and development opportunities, culturally competent leadership, and supportive workplace policies that foster a culture of belonging for all employees. By proactively addressing these challenges, the water sector can build a more resilient, innovative, and sustainable workforce and future talent pipeline that reflects the diversity of the communities it serves and ensures equitable access to clean and safe water for all while furthering the prosperity of the region.

Desired outcomes:

- A resilient and technologically competent water sector workforce.
- The water sector talent pipeline and workforce reflect the racial and gender identity diversity of the communities served.
- Water sector careers that pay a livable wage with clear paths for advancement.
- A regional portfolio of talent development opportunities and experiences that support performance excellence, emerging challenges, and opportunities in the industry.
- Cross-sector collaboration and partnerships that support workforce sustainability and development.

Actions:

Partner

a. Collaborate across the region to build awareness of water sector careers as one of the key elements within a public awareness campaign about maintaining clean water for future generations.

b. Collaborate with educational providers to develop K-12 student and teacher curriculum and support interest and skills needed for water sector careers.

c. Develop recruiting partnerships with educational institutions, labor unions, and community groups to increase visibility of water sector careers for historically marginalized communities.

d. Partner with professional water organizations, labor unions, educational institutions, and workforce development organizations to create water sector career skill development opportunities and strengthen the water sector workforce talent pipeline.

Plan

e. Recognize the needs of the changing workforce and make the applicable, evidence-based accommodations to the workplace.

f. Map existing workforce skills, identify gaps, and develop strategies to fill gaps.

g. Develop and activate workforce succession plans and tools that account for current and future staffing levels, knowledge transfer and cross training, and talent readiness.

Provide

h. Host a paid internship program in which students (high school and post-secondary) can apply their existing knowledge and skills while building new ones in the water sector.

i. Host registered apprenticeship programs to alleviate barriers of entry to water sector careers.

j. Expand on-the-job training and professional development opportunities within Environmental Services to up-skill the existing water sector workforce to meet changing demands and utilize emerging technologies.

k. Offer technical assistance to water sector employers to develop, implement, and expand recruitment, development, and retention approaches and programs.

l. Seek financial resources and partnerships to provide inter-organizational trainings focused on subregional challenges, to share lessons learned, and build strong working relationships.

2050

SECTION 2: WASTEWATER SYSTEM PLAN

The Wastewater System Plan fulfills the Met Council's statutory responsibility to provide information on policies for providing wastewater service and the capital budget for wastewater service (Minn. Stat. §473.852, subdivision 8). We do more than treat wastewater; our services also recover water, energy, and nutrient resources. Our efforts and operations have shifted from one-time use of water to pursuing and promoting resource recovery and reuse to support our growing and changing region. Our wastewater treatment plants have been renamed water resource recovery facilities to showcase these efforts.

The Wastewater System Plan provides an overview of existing facilities in the region, upcoming capital projects and associated budgets, long-term projections of service needs, and goals to protect our region's valuable water resources. It also addresses future anticipated challenges and actions.

The Met Council's Environmental Services division partners, plans, and provides a variety of environmental services in the seven-county metropolitan area, including wastewater planning, conveyance, treatment, and resource recovery. A portion of our region uses wastewater treatment services through our collection and resource recovery system, known as the Metropolitan Disposal System. The remaining areas depend on local municipal systems, private communal systems, or individual subsurface sewage treatment systems for service. The planning authority of the Met Council is described in Minnesota statutes and includes our wastewater collection and treatment planning and actions. We are authorized to set and adopt rules necessary to treat wastewater to federal standards.

Existing facilities

Regional wastewater conveyance and water resource recovery system

The Met Council provides wastewater collection, treatment, and resource recovery services to nearly 3 million people in 111 communities, which represents about 95% of the seven-county metro region's population. The regional wastewater system includes nine water resource recovery facilities (formerly referred to as wastewater treatment plants), and more than 60 lift stations and 640 miles of regional interceptors that convey flow from over 10,000 miles of local sewers.

The system collects and treats approximately 240 million gallons per day of wastewater from homes and businesses (see Table 2.1). The long-term service area map (Appendix B) shows the location of all regional interceptor sewers and water resource recovery facilities in the metro area as well as the 2050 and long-term (post-2050) wastewater service areas.

Communities pay for wastewater collection and treatment based on wastewater volume. Volume is measured by approximately 230 flow metering stations across the communities that use regional wastewater conveyance and treatment services. The flow meters are regularly calibrated and maintained to provide accurate measurements of wastewater flow rates and volumes from each community.

The Met Council works with approximately 900 industrial customers to properly dispose of their wastewater. Our Industrial Waste business unit monitors and regulates industrial discharge to the sewer system to ensure compliance with local, state, and federal regulations, and responds to sewer-related spills and community sewer problems. We also operate liquid and vactor (sanitary sewer debris collected by vacuum truck) waste receiving sites, where waste from private subsurface sewage treatment systems, community and/or cluster systems, biosolids from municipal wastewater plants, sand and grit from sewer cleaning activities, leachate from landfills, and other hauled industrial wastewater may be disposed. Waste haulers pay for the cost of service through wastewater fees established by the Met Council.

Through the planning and hard work of Environmental Services staff and local communities, we consistently meet the National Pollutant Discharge Elimination System (NPDES) permit requirements for wastewater treatment. Everyday, through intentional planning and operations, we provide efficient and effective wastewater treatment to ensure sustainable water resources for the region.

Table 2.1: Regional water resource recovery facilities

Facility	Avg. Design Flow (mgd)	Current Flow (mgd)	Location	Receiving Water	Liquid Treatment	Solids Processing
Blue Lake	32	26	Shakopee	Minnesota River	NH3, P	AD, drying, land, energy
Eagles Point	10	5.2	Cottage Grove	Mississippi River	NH3, P	To Metro, energy
East Bethel	0.1	0.05	East Bethel	Ground Water	TN, P	To Metro
Empire	24	11	Empire	Mississippi River	NH3, P	AD, land, energy
Hastings	2.3	1.5	Hastings	Mississippi River	NH3, P	To Metro
Metropolitan	251	176	Saint Paul	Mississippi River	NH3, P	Incineration, energy
Rogers	1.6	0.9	Rogers	Crow River	NH3, P	Stabilization pond, land
Saint Croix Valley	4.5	3.1	Oak Park Heights	St. Croix River	NH3, P	To Metro
Seneca	34	21	Eagan	Minnesota River	NH3, P	Incineration
Total	**360**	**240**				
***Planned Water Resource Recovery Facilities**						
Crow River	3	N/A	Rogers	Crow River	TBD	To Metro
Hastings	2.6	N/A	Hastings	TBD	TBD	To Metro

NH3 = ammonia removal; P = phosphorus removal; TN = total nitrogen removal; AD = anaerobic digestion; land = application to agricultural land (nutrient recovery); energy = energy recovery

** Initial phase capacity*

The Crow River Water Resource Recovery Facility will replace the existing Rogers Water Resource Recovery Facility. The City of Rogers initiated the acquisition process of the Rogers Wastewater Treatment Plant with a request for regional service. The Rogers facility will be decommissioned after the start-up of the Crow River facility, scheduled for 2030. After decommissioning of the Rogers facility, any portion of the site property not necessary to provide service per the Met Council's Wastewater System Plan will be reconveyed to the community.

The City of Hastings has identified short- and long-term service level needs that will require regional capacity investments. Met Council, in coordination with the City, will time improvements to accommodate growth and/or maintain the plant's compliance with regulatory requirements.

Non-Met Council wastewater treatment plants

Fourteen municipalities in the metro region own and operate wastewater treatment plants (Table 2.2). Any Met Council acquisition of a rural wastewater treatment plant would comply with the Regional Wastewater Service

Area Policy in the Water Policy Plan and would be funded through rural sewer availability charges (SAC) as described in the SAC Procedure Manual. Current rural wastewater treatment plants being considered for acquisition are as follows:

1. **New Germany:** The Met Council and the city entered into a wastewater treatment plant acquisition agreement in 2010 that was amended in 2015. The amended agreement outlines the conditions for the Met Council's acquisition of the city's wastewater treatment plant. For the acquisition process to commence, the city will need to provide a written request to convey ownership to the Met Council no later than Dec. 31, 2030. After that date, the Met Council has the option to reconsider acquisition of the facility and extend the notice period to Dec. 31, 2040. The city has expressed its desire to maintain its own wastewater service and has pursued state funding for the necessary capital improvements to address future capacity and regulatory needs. The city has not officially requested the acquisition of its wastewater treatment plant.

Table 2.2: Municipal wastewater treatment plants in the metropolitan area

City or Township	Design capacity[1] mgd average (wet weather)	Design capacity[1] mgd average (dry weather)	Receiving water	Permitted effluent limits[2]
Afton	0.051	N/A	Groundwater	BOD, TSS, NH3
Belle Plaine	0.840	0.400	Minnesota River	BOD, FC, pH, TP, TSS
Bethel	0.038	0.031	Groundwater	BOD, TSS
Cologne	0.325	0.185	Ditch to Lake Benton	BOD, Cl-, FC, pH, TP, TSS
Greenfield	0.200	0.150	Crow River	BOD, FC, pH, TP, TSS
Hamburg	0.063	N/A	Ditch to Bevens Creek (to Minnesota River)	TP, BOD, TSS
Hampton	0.101	N/A	Ditch to South Branch Vermillion River	BOD, FC, pH, TP, TSS
Jordan	1.289	0.580	Sand Creek (to Minnesota River)	BOD, NH3, TP, TSS, Cl-
Mayer	0.435	0.320	South Fork Crow River	BOD, FC, Hg, NH3, DO, TP, TSS
New Germany	0.520	N/A	Ditch to South Fork Crow River	BOD, FC, pH, TP, TSS
Norwood Young America	0.908	0.517	Ditch to Bevens Creek (to Minnesota River)	TP, Cl-, BOD, TSS
St. Francis	0.814	0.647	Seelye Brook	BOD, Cl-, TRC, FC, Hg, NH3, pH, DO, TP, TSS. Reuse: E. Coli, Turbidity
Vermillion	0.054	N/A	Ditch to Vermillion River	BOD, TRC, FC, DO, pH, TP, TSS
Watertown	1.262	0.362	Crow River, South Fork Crow River	BOD, Cl-, TRC, FC, NH3, pH, TP, TSS

[1]Flow as stated in NPDES permits

[2]NPDES effluent limits: BOD = Biochemical Oxygen Demand; NH3 = Ammonia; TP = Total Phosphorus; TSS = Total Suspended Solids; FC = Fecal Coliform; Hg = Mercury; DO = Dissolved Oxygen; Cl- = Chloride; TRC = Total Residual Chlorine

Wastewater flow projections

Sewered population and employment forecasts, and the associated average wastewater flow projections, are shown in Table 2.3 and Table 2.4 by water resource recovery facility service area. (Forecasts and projections by community are found in Tables F.1-F.11 in Appendix F.) The forecasts are based on wastewater generation rates of 60 gallons per day (gpd) per person and 15 gpd per employee. The generation rates are lower than the actual measured flow to reflect the use and implementation of water conservation efforts, water-efficient fixtures and appliances, and inflow and infiltration mitigation. Current actual average daily flow, calculated from the region's metered wastewater flow, is approximately 70 gallons per capita per day.

Sanitary sewers are designed to handle daily and seasonal variations in wastewater flow. Flow variation factor tables are used to design sewers to accommodate those daily variations and allow for a reasonable volume of flow. Table G.1 in Appendix G contains flow variation factors for sanitary sewers (local and regional) that have been designed for an average residential, commercial, and industrial flow of 100 gallons per person per day.

Table G.2 in Appendix G contains peaking factors used for inflow and infiltration design. These factors are adjusted from the flow variation factors in Table G.1.in response to lower regional flow. Lower flow means the system has more capacity than it was originally designed for. The adjusted factors allow for greater capacity to be given for inflow and infiltration from communities. The Met Council may revisit those peaking factors as regional flow changes.

Table 2.3 Sewered population and employment forecasts

Water Resource Recovery Facility	2020 Population	2030 Population	2040 Population	2050 Population
Blue Lake	319,200	443,400	177,700	251,600
Crow River / Rogers	10,700	39,600	9,300	22,700
Eagles Point	85,000	119,600	16,300	29,000
East Bethel	580	3,200	140	2,000
Empire	169,400	218,200	38,900	69,400
Hastings	22,100	26,400	6,900	8,900
Metropolitan	1,999,600	2,345,900	1,070,700	1,368,800
Saint Croix Valley	27,100	31,700	16,600	22,900
Seneca	267,600	318,400	166,700	228,900
Total	**2,901,300**	**3,546,300**	**1,503,200**	**2,004,200**

Table 2.4: Water resource recovery facility flow projections (million gallons per day)

Water Resource Recovery Facility	2020 Flow (mgd)	2030 Flow (mgd)	2040 Flow (mgd)	2050 Flow (mgd)
Blue Lake	26	29.72	31.52	34.31
Crow River / Rogers	0 / 0.9	1.18 / 0	1.36 / 0	2.82 / 0
Eagles Point	5.2	6.30	6.81	7.54
East Bethel	0.05	0.12	0.17	0.23
Empire	11	12.67	13.42	14.59
Hastings	1.5	1.61	1.69	1.80
Metropolitan	176	180.62	184.31	188.96
Saint Croix Valley	3.1	3.20	3.28	3.39
Seneca	21	22.52	23.19	24.51
Total	**245**	**257.94**	**265.74**	**278.15**

Long-term wastewater service

Concept plan

The Wastewater System Plan is the 20-year and post-20-year vision for how, where, and when regional wastewater service will be provided. Local comprehensive sewer plans, created by the communities the Met Council serves, are reviewed for conformance with the regional Wastewater System Plan, consistency with Met Council policies, and compatibility with neighboring communities' comprehensive plans. Per statute, the Wastewater System Plan is required to identify the major wastewater system investments needed to accommodate the forecasted growth in the region and the costs associated with the necessary capital improvements to provide service as planned.

The Met Council develops a long-term wastewater service area map (Appendix B), which is illustrative of areas that could be served by our water resource recovery facilities (existing and future), based on known regulatory requirements and treatment technologies. Areas are defined based on the:

- Capacity of each water resource recovery site
- Capacity of existing interceptors.
- Potential surface area that could be served by the facility, including those areas currently served.
- Potential new water resource recovery facilities and service area revisions.
- Wastewater generation rates based on location, proximity to transit and major highways, and physical features of area.

The area effectively available for future development excludes major parks, cemeteries, lakes, rivers, wetlands, and transportation uses (railroad, right of ways, highways, roads, etc.).

The Metropolitan Urban Service Area (MUSA) is a means to differentiate between urban and rural land to deliver efficient regional services, including wastewater service. It represents the areas that already have regional wastewater service or are planned to receive service within the planning horizon. The Met Council monitors available land and density of development while working with communities to refine those areas to accommodate regional and local growth projections. The MUSA boundary is modified as necessary to include areas that will receive regional service that weren't originally included in a community's planned growth.

The Met Council expands the regional wastewater system as needed to facilitate development in communities consistent with their approved comprehensive sewer plans. Communities must address the staging of sewered development within their boundaries through 2050. They must also address protection, through land-use guiding, of the remaining long-term service areas for future sewered development in their local comprehensive sewer plans, surface water management plans, and water supply plans.

Integrated water planning is necessary to support a growing region as regional growth needs both water supply and wastewater treatment. The long-term service area map assumes that water supply is adequate to provide service for growth. The Met Council's Metro Area Water Supply Plan is another tool for communities when considering long-term planning. It is included in the Water Policy Plan and identifies water supply considerations unique to each subregion of the seven-county metro region. It identifies specific topics and projects that are of importance for each of the subregions that will be useful in long-term planning. Communities are required to consider water supply in their local Water Supply Plans when planning for future growth and development and requests for wastewater service. The consideration of water supply with wastewater service growth is critical for integrated planning as the needs of each community and subregion vary.

The Met Council will make decisions for system growth and service improvements based on whether they provide a regional benefit to the system. From the wastewater perspective, an action or decision is a regional benefit if it supports regional growth, benefits more than one community, is cost effective, and enhances knowledge and experience that can be used to further our mission and goals.

Providing long-term service to the region includes not only system expansion but also work to maintain capacity. Rehabilitation and maintenance of existing assets are ways to maintain capacity, which is done through an asset condition assessment program. The asset condition is assessed while considering risks and consequences of no action. Projects are prioritized based on their potential to impact public health or impact the level of service if the maintenance or rehabilitation were delayed. Those areas with the highest ratings are included in our Capital Program for project work. The assessment cycle and process ensure the assets needing the quickest attention are addressed, which results in an ever-evolving list of projects.

Another component of providing long-term service is understanding the current and future capacity of the interceptor conveyance system. We do capacity analyses ad-hoc as project needs arise, but we also improve and apply hydraulic models and other planning tools to systematically assess capacity throughout the system.

Capital Program

The Capital Program provides capital investments to preserve and rehabilitate existing wastewater infrastructure, meet more stringent water and air quality regulations, and expand the system capacity to meet regional growth needs. The Capital Program consists of two components:

- Authorized Capital Program
- Capital Improvement Plan

The Authorized Capital Program provides multi-year authorization to spend on program costs where funding has been secured and the Met Council has given final approval to proceed. The Capital Improvement Plan is a six-year capital investment plan, without final approval to proceed. It identifies programs and projects that preserve assets, provide capacity for growth, or improve the safety, efficiency, or quality of existing services. The plan is guided by the 2050 Water Policy Plan, the Wastewater System Plan, and the Environmental

Services Customer Level of Service (Appendix C), which sets expectations for organizational performance, communication, project coordination, and economic outcomes.

The three objectives of the Capital Program are:

- **Asset preservation:** Preserve the existing regional wastewater infrastructure investments through rehabilitation and replacements.
- **System expansion:** Expand the system capacity through water resource recovery facility and interceptor expansions and interceptor extensions to meet the needs of a growing region.
- **Quality improvements:** Improve the quality of service by responding to more stringent regulations, improving safety, pursuing wastewater reuse and evaluating opportunities for internal and external reuse, increasing system reliability, and conserving and generating energy.

Table 2.5 presents a general description of projected capital improvement needs for the water resource recovery facilities and interceptor system for 2025 to 2050. Table 2.6 presents the estimated present value of the regional wastewater system.

A large component of the Capital Program focuses on preserving our valuable regional wastewater assets. In the next planning cycle, the focus will likely shift to a higher investment in system expansion, as new water resource recovery facilities and interceptors are constructed.

The average projected capital investment by type of infrastructure is approximately 75% interceptors and 25% water resource recovery facilities through the 2050 planning cycle. Investment by objective is approximately 60% for asset preservation, 20% for system expansion, and 20% for quality improvement. These costs exclude costs associated with potential future regulatory requirements.

Capital improvements for the regional wastewater system are primarily financed by Met Council wastewater bonds and Minnesota Public Facilities Authority loans. Bonds and loans are repaid using municipal wastewater and service availability charges (MWC and SAC).

Table 2.5: Long-Term Capital Improvement Program (millions of dollars)

IInterceptor System Project Name	Purpose	2024-2030	2031-2040	2041-2050
Project Name	R, G	170	510	570
North Area Interceptor Improvements	R, G	240	620	910
South Area Interceptor Improvements	R, G	150	230	340
Saint Paul Interceptor Rehabilitation	R	30	80	110
Minneapolis Interceptor System Improvements	R	108	280	410
Interceptor Rehabilitation	R	120	310	460
Joint Interceptor Rehabilitation	R	130	310	460
Brooklyn Park – Champlin Interceptor Renewal	R	1	--	--
Hopkins System Improvements	R	3	--	--
Lift Station Improvements	R	180	460	680
Meter Improvements	R	90	230	340
St. Bonifacius Lift Station and Forcemain Rehabilitation	R	10	--	--
Waconia Lift Station and Forcemain Rehabilitation	R	1	--	--
Brooklyn Park Lift Station 32	R	150	--	--
Savage Trunk Sewer Acquisition	G	30	--	--
Subtotal		**1,413**	**3,030**	**4,280**
Water Resource Recovery Facilities Project Name	**Purpose**	**2024-2030**	**2031-2040**	**2041-2050**
Metropolitan Rehabilitation & Facilities Improvements	R	45	--	--
Metropolitan Solids Improvements	R, G	235	--	--
Empire Facility Rehabilitation	R	--	90	--
Regional Facility Improvements	R, G, Q	75	100	100
Metropolitan Facility Asset Renewal	R	330	250	200
Wastewater Reclamation Facilities	R, G, Q	15	15	15
Blue Lake Facility Improvements	R, G, Q	180	155	130
Seneca Facility Rehabilitation	R	--	30	55
Future Hastings Facility	G	--	160	--
Future Crow River Facility	G	105	--	--
Future Northeast Facility	G	--	--	300
Subtotal		985	800	800
Total		**2,398**	**3,830**	**5,080**

G = Growth; Q = Quality Improvement; R = Rehabilitation/Replacement

Table 2.6: Estimated present value of regional wastewater system

Facility Component	Quantity	Estimated Present Value ($ Millions)*
Value ($ Millions)*	648 miles	4,600
Joint Interceptor	10 miles	600
Lift Stations	60	400
Meter Stations	230	100
Metropolitan Facility	1	1,800
Regional Facilities	8	1,700
Total System		**9,200**

**2024 (March) ENR Construction Cost Index = 13,532*

Long-term service considerations of existing water resource recovery facilities

Blue Lake. The previous Wastewater System Plan had wastewater service to Loretto, northwest Medina, and southwest Corcoran planned through the Blue Lake Water Resource Recovery Facility via Maple Plain and the downstream interceptor system. A study will be conducted to determine whether Loretto and surrounding areas will be served by the Blue Lake facility, as depicted in the previous Wastewater System Plan, or the new Crow River facility in Rogers. The study will also include consideration of a diversion of portions of the flow from Independence and Greenfield to the Crow River facility.

Crow River. The Met Council is constructing a new water resource recovery facility in western Rogers. This facility is anticipated to be fully operational and accepting flow in 2030. It will serve Rogers, eastern Corcoran, western Dayton, and northwest Maple Grove; provide long-term capacity relief for the Elm Creek Interceptor; and potentially those communities identified above. The Crow River facility is planned to have future (long-term) solids processing facilities.

Eagles Point. Solids processing facilities will be added in the future (long-term) such that hauling of Eagles Point wastewater solids to the Metropolitan facility will be discontinued.

East Bethel. Wastewater from the community of East Bethel is treated via membrane bioreactors and ultraviolet and hypochlorite disinfection before being discharged for subsurface infiltration. Currently, 70,000 gallons of water per day are reclaimed for infiltration. The facility has a capacity to reclaim up to 410,000 gallons of water per day.

Empire. This facility provides a land application biosolids program and implements energy recovery from biogas collection for heat and power at the plant. The resource recovery program will continue as planned.

Hastings. The Met Council is exploring the most feasible way to provide additional regional capacity investments for this area to meet the upcoming need for increased service. Additional capacity will not be provided via the existing water resource recovery facility. The improvements will serve Hastings and may also serve land areas currently in Marshan, Nininger, and Vermillion townships.

Metropolitan. The Met Council forecasts that the population within this service area will grow by over 350,000 new residents by 2050. The Met Council plans to construct a fourth incinerator to preserve existing wastewater treatment plant infrastructure and to serve regional growth. In 2025, the existing incinerators will be 20 years old and additional solids processing capacity is needed to take the existing incinerators down for extended periods of time to renew them. The fourth incinerator includes energy recovery, air pollution control, and related solids processing equipment. The existing incineration facilities will be rehabilitated after completion of the fourth incinerator.

St. Croix Valley. Previously, the Wastewater System Plan assumed a future facility expansion. The current regulatory trends indicate the likelihood of much more stringent future discharge permit limits. The additional facilities needed to meet these limits are likely to fully utilize the remaining capacity at this site. Consequently, no facility capacity expansion is planned, but it is recommended to perform a study investigating options to increase treatment services for the northeast area of the region.

Seneca. Service will be extended to the City of Credit River, which officially requested service in their 2020 Comprehensive Plan update. Service will ultimately be provided through acquisition of a trunk sewer and lift station owned by the City of Savage. Adequate capacity was already provided in the trunk sewer to serve Credit River. Acquisition of the necessary infrastructure from Savage will be completed prior to 2030.

Environmental Service Customer Level of Service

The Customer Level of Service and the Water Policy Plan are the foundation of the Capital Program. They guide how we serve our customers. The three pillars to the level of service are:

- Financial
- Public health, safety, and environmental protection
- Customer service

The Customer Level of Service defines how we engage with communities, serve communities through infrastructure and site improvements, and how we are financially responsive to the needs of our region, among other guiding criteria.

The Met Council works daily to improve project communication to provide the level of service we have committed to the region. New procedures include scheduling communication and outreach efforts outside the traditional workday to reach a broader audience. It is also now the standard to provide information and resources in multiple languages. We subscribe to a service which provides access to interpreters who speak more than 240 different languages, and are available 24 hours a day, seven days a week. This facilitates communication with persons with limited English proficiency or who use American Sign Language. It gives us the ability to communicate with these residents on project information and allows them to ask questions in their preferred language.

Potential future service considerations

To support long-term sewered development of the region, Environmental Services assesses areas for future service attention. Accommodating growth includes both sufficient treatment systems as well as improvements or increased capacity of conveyance systems. The areas or enhancements to the regional collection system to support growth areas as anticipated are identified below.

Carver County. The potential wastewater generation for the long-term service area of the Blue Lake facility could exceed the build-out capacity of the plant site sometime after 2050. One option to address this possibility is a service area revision that diverts wastewater from western communities to a new regional water resource recovery facility in Carver County. This new facility would be located so that it could serve development along the corridor between Chaska and Cologne. The Met Council and Carver County have a memorandum of understanding whereby the County preserves low density in its agricultural area, consistent with the region's potential need for additional area for sewered development.

Scott County. The Scott County 2030 comprehensive plan, prepared in coordination with the regional Wastewater System Plan, designates portions of western Scott County for potential long-term sewered development. The Met Council is planning to acquire a site for a water resource recovery facility to provide service to western Scott County and potentially provide capacity relief for the Blue Lake facility.

Dakota County. Portions of rural Dakota County are within the long-term wastewater service area and may be served by a future water resource recovery facility. This designation of being in the long-term wastewater service area will support interim low-density development to enable future economical sewered development and preserve land for continued agricultural uses.

Northeast Area. The long-term northeast wastewater service area has the potential to generate wastewater flows that slightly exceed the capacity of the interceptors serving this area. Rather than constructing an extensive capacity relief interceptor system, a potential alternative is to construct a water resource recovery facility with groundwater recharge and wastewater reuse. Studies investigating this potential flow diversion and reuse facility were performed around 2010-2015. This study will be revisited to investigate options for wastewater treatment and potential resource recovery technologies for this area. Other considerations for the Northeast Area include:

- White Bear Lake. A working group has been established to develop a comprehensive plan to ensure communities in the White Bear Lake area have access to sufficient safe drinking water to allow for municipal growth while simultaneously ensuring the sustainability of surface water and groundwater resources to supply the future needs. The recommendations from this working group may influence how wastewater service is provided for this area.

- Eastern Hugo. Eastern Hugo currently is not connected to regional wastewater treatment services. Studies are under way to determine the relationships among groundwater withdrawal for municipal water supply, groundwater recharge, and lake levels, and then develop a water sustainability plan for the northeast part of the region. This area could be connected to a new Northeast Area water resource recovery facility if that is the proposed option for wastewater service for this area.

Corcoran. Corcoran is a rapidly growing community requesting wastewater service. We recommend a study to evaluate the long-term service needs of this area and whether wastewater flow from Corcoran should be conveyed to the Metro or Crow River facility.

Interceptor Capacity Augmentation. Hydraulic modeling is one way to understand and plan for future capacity needs. Modeling is a tool used to make decisions about next priorities and capacity enhancements. Areas that are either known to have capacity enhancement needs or are marked for future hydraulic modeling and capacity analysis include the northeast and northwest areas of the metro, Interceptor 1-MN-310 in Minneapolis, Interceptor 1-MN-345 in South Minneapolis, Edina, Farmington, and Credit River.

Table 2.7 summarizes the planned capacity of the regional water resource recovery facilities.

Table 2.7: Planned water resource recovery facility capacity (million gallons per day)

Water Resource Recovery Facility	Current Capacity	Current Flow	Planned Capacity 2050	Planned Capacity Long-Term
Blue Lake	32	27	40	50
Future Carver County	-	-	-	10
Crow River	-	0.93	3	16.9
Eagles Point	10	4.4	10	20
East Bethel	0.4	0.07	1.2	2
Empire	24	10	24	50
Hastings*	2.3	1.6	4	10
Metropolitan	251	180	251	280
Future Northeast	-	-	3	3
Seneca	34	24	34	40
St. Croix Valley	4.5	3.0	4.5	4.5
Future Scott County	-	-	-	25
Total	**358**	**251**	**375**	**511**
Service Population	**-**	**2,900,000**	**3,600,000**	**6,100,000**

Climate Change

The Met Council's Climate Vulnerability Assessment[5] is a tool that helps us plan for and respond to the effects of climate change. It has identified warm winters, extreme rainfall, heat waves, drought, and intense storms as the region's top climate hazards. Each of those hazards may impact wastewater operations in different ways.

Environmental Services is already working to prepare for changes or impacts that may result from climate change. A few of our efforts include adding permanent backup power at our facilities to prepare for potential power outages, protecting our infrastructure from flooding, and reassessing our odor control to handle changes in odor frequency that could come from warmer temperatures. Increased climate resiliency protects our investments, customers, and environment, and increases the reliability of our services.

We follow and support the goals and actions set forth by the Met Council's Strategic Plan, Imagine 2050 (the regional development guide), the internally focused Climate Action Work Plan, and the Minnesota Climate Action Framework. We are committed to innovate, adjust, and respond to changing conditions. We are unifying our efforts to reduce our contributions to greenhouse gas emissions and make our facilities climate–resilient.

System capacity and regional growth

Our region's population is anticipated to exceed 3.8 million residents in the next 20 years. Through comprehensive planning with local communities, efficient and economical wastewater treatment, inflow and infiltration mitigation, and water conservation efforts, Environmental Services has been able to accommodate the regional growth without new major infrastructure investments.

Through inflow and infiltration mitigation work alone, it is estimated that $1 billion in capital investments for system expansion has been deferred.

As the service area grows and the population increases, we face decisions about how we can best serve our customers. Options include upsizing the conveyance system or building new water resource recovery facilities. Two system growth models are commonly discussed: a centralized or decentralized system.

A centralized system has fewer treatment facilities with wastewater traveling farther for treatment. Alternatively, a decentralized system typically consists of multiple smaller, satellite facilities across the service area. Under a decentralized system model, it may be more cost effective to install new treatment and discharge technologies that could be a direct benefit to that part of the region, opening more opportunities for wastewater reuse or groundwater infiltration for the service area of that plant. A centralized system may more efficiently utilize the existing investments.

As our region's population and industry grows, both inside and outside the urban core, we continually review and assess how we are serving the region and what, if any, changes need to be made to provide the level of service we commit to. Our services not only include wastewater treatment; they also include vactor (sanitary sewer debris collected by vacuum truck) and liquid waste receiving sites, monitoring wastewater for health-related indices, and beneficial reuse of solids for soil enrichment. We continually assess the needs of all our customers and work towards improving how we meet their needs, especially as new technologies and regulations emerge.

Resource recovery

Wastewater reuse

Wastewater reuse is the practice of treating wastewater from a wastewater treatment plant to a higher standard for beneficial use before releasing it back into the water cycle. The highly treated wastewater, called reclaimed water, must meet water quality guidelines established by the Minnesota Pollution Control Agency (MPCA) before it can be used. The agency's reuse guidelines for reclaimed water are protective of public health by minimizing human exposure to pathogens and microorganisms that could cause illness.

The Met Council promotes wastewater reuse as a means of making the region's waters more sustainable. As the Twin Cities region continues to grow and prosper, creative solutions will be needed in some portions of the metro area to address limited sustainable water supplies and impacts to surface water features from our water consumption. The region's wastewater is a potential untapped resource that could be employed to serve nonpotable uses such as industrial processes and preserve high quality groundwater for domestic and other high value uses.

In 2018, the Met Council adopted a policy for wastewater reuse, including cost-sharing criteria, to address requests from external parties for Environmental Services to provide reclaimed water. A task force established policies to balance the need for sustainable water solutions with our customers' desire for fair and equitable use of wastewater fees. The Met Council is supportive of expanding wastewater reuse within our operations and across the region, and will work with interested parties to see if a partnership can be formed to benefit both the partner and the region.

Internal use of reclaimed water

The Met Council continues to look for ways to reuse treated wastewater where economically feasible and appropriate. Barriers, both internally and externally, exist that make reuse challenging in certain cases.

At our water resource recovery facilities, reclaimed water provides multiple benefits. The Eagles Point facility recovers heat from the reclaimed water for in-facility use. The Metro and Seneca facilities use reclaimed water for cooling water in the solids incineration process. Other reclaimed water uses across the facilities include tank cleaning and cooling water to keep pumps from overheating.

We are investigating a project to increase the amount of reclaimed water utilized in daily operations at the Metro facility. This reclaimed water will take the place of the treated effluent and groundwater used now for many plant activities. Using reclaimed water would provide a higher level of worker health protection than wastewater effluent and would reduce groundwater use.

Industrial Reuse

Environmental Services continues to receive inquiries and interest in reuse of our reclaimed water for industrial purposes. We have explored conceptual models and a regulatory framework for providing this service, given the demand for this alternative water source for industrial processes. MPCA guidance on wastewater reuse guides treatment standards for industrial and other nonpotable uses for reclaimed water.


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The Met Council is committed to working with community partners to make reclaimed water available for industrial and other nonpotable uses where it is technically feasible, economical, and equitable to do so. Our policies on wastewater reuse, drafted together with our regional partners, guide us to provide wastewater reuse on a cost-of-service basis to external parties. Therefore, the capital, operational, and societal costs of treatment and distribution of reclaimed water would be paid by the end user of the water. Where there is a benefit to the regional wastewater system, the Met Council will explore a limited cost share in these systems, in accordance with our policies.

Infiltration and Groundwater Recharge

In addition to the use of reclaimed water as a water supply for secondary uses, groundwater recharge and infiltration have been suggested for wastewater effluent, as potential means to support water conservation in the region. Groundwater recharge and infiltration supplement the groundwater tables and aquifers and promote water sustainability for the future. Both possibilities would need to be thoroughly researched with the appropriate analysis for water quality and risk of negatively impacting water supplies and public health. These activities will need to be approved of by state agencies, and the permitting rules and regulations set, before implementation would be considered.

Solids and biosolids

Two valuable resources are produced from wastewater treatment: solids and biosolids. Solids produced in the early stages of wastewater treatment are incinerated at the Metro and Seneca facilities. Heat energy is recovered from the incineration process and converted to electricity and steam for in-plant uses. This energy recovery saves money for our rate payers while decreasing our need for purchased energy. We are also evaluating ash from incineration for use as a phosphorus fertilizer. Solids obtained later in the wastewater treatment process are anaerobically digested to produce biosolids. Those biosolids are a nutrient rich fertilizer provided to our local farmers and community partners. Biogas, a byproduct of biosolids production, is used for heat generation and in-plant uses.

Not all our facilities currently benefit from resource recovery from solids and biosolids. We are aiming for a regionalized approach to solids waste management by expanding our solids and biosolids processing across our facilities, so the benefits of those recovered resources are shared and used across our region by all our customers.

Energy

Energy use is a major expense for Environmental Services – costing approximately $15 million per year. It is also our leading source of carbon emissions. Managing our energy use helps us keep costs to ratepayers fair and reasonable and reduces our contribution to climate change.

We manage our energy use and costs by pursuing energy efficiency in our treatment processes and buildings, investing in renewable energy resources, and recovering energy from our treatment processes. We continually work to improve our energy efficiency as we design and install energy efficiency technologies and equipment in our resource recovery processes. Environmental Services supports the use of renewable energy in the region by hosting solar energy projects on Met Council-owned property and subscribing to community solar gardens. We are working toward purchasing 100% of our electricity from renewable energy sources – like wind and solar – by 2040.

Wastewater treatment is a rich energy source – from the heat coming off raw and treated wastewater to the stored energy in biosolids. We recognize the benefit for us and the region of recovering and converting these energy resources to reduce our reliance on fossil fuel energy resources and the associated carbon pollution. Harvesting thermal energy from wastewater effluent as it leaves the water resource recovery facility is one opportunity that may arise in the future. There is an additional cost associated with this for the capture piping and delivery system that would need to be considered when evaluating the technology. Environmental Services supports implementation of reuse and resource recovery activities where feasible and appropriate.

Regulatory scenarios for wastewater treatment

The MPCA develops regulatory limits and standards for contaminants. These standards are enacted to protect aquatic life, human health, and air quality. The Met Council monitors for new and changing regulatory limits to meet permit requirements.

New and changing contaminant regulatory limits and treatment technologies often result in additional, and significant, capital costs and operating expenses for the Met Council. We are proud of our compliance records and respond to changing limits and technologies as needed to cost-effectively meet regulatory standards. In certain cases, the most effective way to reduce the amount of a contaminant in wastewater and the environment is to reduce the sources of the contaminant.

Phosphorus. The Minnesota Nutrient Reduction Strategy set a statewide goal to, by 2040, reduce phosphorus levels in the Mississippi River basin by 45% from the average phosphorus levels from the 1980 to 1996 time frame. In support of that goal, since 2010, the Met Council has achieved an estimated 70% reduction in permitted total phosphorus levels at our facilities. All of our water resource recovery facilities consistently meet a total phosphorus limit of 1 mg/L. We have invested $750 million to date in capital improvements and estimate $25 million annually in operation and maintenance costs to treat phosphorus.

Blue Lake will be the first Met Council Water Resource Recovery Facility to incorporate tertiary filtration to achieve a 0.3 mg/L total phosphorus concentration. Tertiary filtration and chemical addition facilities are needed to meet 0.3 mg/L total phosphorus concentration, the cost of which is estimated to be $95 million.

Nitrogen. The MPCA published the Wastewater Nitrogen Reduction and Implementation Strategy in April 2024. The strategy requires wastewater treatment facility designs to include treatment systems to reduce nitrogen effluent limits to protect drinking water, human health, and aquatic life. Environmental Services will be addressing the regulatory requirements after rulemaking and will make the necessary improvements. We will need to make upgrades to the wastewater treatment system to meet the regulatory requirements, which could be costly.

We estimate $1.6 billion in capital costs for our water resource recovery facilities to treat total nitrogen to a 10 mg/L standard. The cost of each facility upgrade is highly dependent on whether that facility is sized to nitrify (convert ammonia to nitrate) year-round. Some facilities that are designed to nitrify year-round would require a 20% to 30% expansion in secondary treatment. The Metro WRRF, which does not nitrify year-round, would require a 70% increase in aeration tank volume (11 aeration tanks) and a 40% increase in final clarifiers (10 final clarifiers).

PFAS, PFOS, PFOA. More than 9,000 different human-made per- and polyfluoroalkyl compounds (PFAS, PFOS, PFOA) exist today. Known PFOS-impacted areas near our operations include the lower portion of Pool 2 of the Mississippi River, the Pigs Eye Dump (where PFAS waste products were dumped), and Lake St. Croix (which has also been impacted by landfills in the East Metro area).

Three water resource recovery facility outfalls, at Metro, Empire, and Eagles Point, have had MPCA-established site-specific water quality criteria for PFOS and PFOA since 2013. Prior to 2020, treated effluent from those facilities did not cause the receiving water body, Pool 2 of the Mississippi River, to have reasonable potential to exceed specific water quality criteria for that area, and no permit limits were assigned to those water resource recovery facilities. In 2017, the Empire facility was also required to have a PFAS reduction plan in its NPDES/SDS permit. In 2020, the PFOS site-specific water quality criteria was significantly lowered and in 2023 five additional PFAS site-specific water quality criteria were added to Pool 2.

Our water resource recovery facilities and other wastewater treatment plants are not sources of PFAS, PFOS, or PFOAs. Our plants receive these contaminants in wastewater discharged from businesses and homes. Source reduction is the most cost-effective way to remove these contaminants for the region. Our water resource recovery facilities that do not currently discharge into waters subject to a water quality criterion or standard are following Minnesota's PFAS Wastewater Monitoring Plan. That approach could change, as the Minnesota Pollution Control Agency has announced it is planning to adopt a statewide PFOS water quality standard for human health in the future. PFAS regulation is rapidly evolving and there is the potential for all Environmental Services water resource recovery facilities to be subject to PFAS permit limits or other regulation in the future.

The Met Council finalized a pollutant management plan for PFAS in partnership with the Minnesota Pollution Control Agency in 2024. The plan's goal is to identify and reduce PFAS in the environment. Initial efforts will include source identification and reduction within the Blue Lake Water Resource Recovery Facility service area and will be continued in the remaining water resource recovery facility service areas. Sampling for both industrial customers and residential areas will be conducted to help prioritize source reduction efforts and learn the amount of PFAS coming from households.

Minnesota's PFOS site-specific water quality criteria are among the lowest in the nation. This water quality criteria change creates the possibility of permit limits or other regulation at the Metro, Empire, Eagles Point, and St. Croix Valley water resource recovery facilities.

EPA announced final National Primary Drinking Water Regulation (NPDWR) for six PFAS compounds in April 2024. The Environmental Protection Agency (EPA) also announced a draft aquatic life water quality criterion for PFOS and PFOA, which all our water resource recovery facilities currently meet.

Biosolids. Met Council water resource recovery facilities produce over 100,000 dry tons of biosolids per year. The Blue Lake and Empire facilities have the technology to anaerobically digest solids that settle from the treatment process to use on farm fields as fertilizer. We have a Land Application Program where biosolids are shared with local farmers and community partners for in-field use. At Empire, as much biosolids that can be land applied, based on request and nutrient needs of the land application sites, are land applied in the fall. Biosolid use can improve soil health, improve drought tolerance, promote plant growth, and reduce the need for commercial fertilizers. The program follows quality standards and best management practices set by the EPA and MPCA. Biosolids produced at Blue Lake are very high quality, so they are distributed as pelletized biosolids.

The EPA is developing a risk-analysis process for PFAS in biosolids. The MPCA has just proposed a biosolids strategy that will be implemented until the EPA issues risk-based limits for PFAS in biosolids. This strategy includes sampling for PFAS in biosolids and acting based on the sampling results. This could result in additional requirements by fall 2025, such as reducing the rate of biosolids land-applied, calculating the cumulative loading rate of PFAS at each site, or prohibiting land applications of the sampled biosolids entirely. If regulation is proposed and adopted, we will pivot and adjust our operations and activities accordingly to maintain regulatory compliance and protect public health and the environment.

Sulfate. Wild rice is an important part of the ecosystem in many Minnesota lakes and streams. Wild rice is also a cultural resource to many people, particularly members of Minnesota's Dakota and Ojibwe Tribal communities, and is an important economic resource to those who harvest and market it. In 1973, Minnesota adopted a sulfate standard to protect wild rice based on studies showing that wild rice was found primarily in low sulfate waters. A new water quality standard for sulfate will be implemented during the update process for our NPDES/SDS permits. This will likely affect all Met Council water resource recovery facilities except for St. Croix Valley and East Bethel facilities.

Substantial impacts and substantial departures from the Metropolitan Wastewater System Plan

Imagine 2050 and the regional system plans comprise the Met Council's regional development guide, which is the region's plan to ensure orderly and economical development and redevelopment of the region. Local comprehensive plans and plan amendments that have substantial impacts on – or contain substantial departures from – the regional wastewater system plan affect how the Met Council constructs, operates, and maintains the regional wastewater system; they can result in system inefficiencies if the nonconforming plans are allowed to be implemented.

Substantial impacts or departures from the regional wastewater system plan may result from either overutilization or underutilization. Overutilization occurs when local development will use more regional capacity than currently available or planned. Underutilization occurs when low-density development uses less than currently available or planned regional capacity. Underutilization is likely to require added infrastructure elsewhere in the region to accommodate household growth that would be reasonably expected in the local governmental unit.

As permitted by Minnesota Statutes section 473.175, subdivision 1, the Met Council may require a local governmental unit to modify any comprehensive plan or part thereof that is inconsistent with the metropolitan system plan if the Met Council concludes that the local plan is more likely than not to have either a substantial impact on, or to contain a substantial departure from, the Met Council's adopted policy plans and capital budgets for regional wastewater service. Inconsistencies will provide the Met Council with grounds for requiring modifications to the local comprehensive plan.

A substantial system impact occurs under various scenarios, including when any of the following happens:

- The regional wastewater system was not designed to provide wastewater service for the proposed sewer service area.
- The projected flow from the sewer service area is greater than planned.
- The timing for the proposed growth is prior to implementation of a planned improvement to, and greater than what can be accommodated by, the regional wastewater system.
- The peak wet-weather flows from the local government unit exceeds its designed capacity within the regional wastewater system, and thus there is inadequate capacity to accommodate the planned growth for the local government unit or tributary local governmental units.

A substantial departure occurs under either of these conditions:

- A local governmental unit proposes sewer service land use densities that are lower than Met Council density standards, which are the basis for regional infrastructure planning purposes.
- When a local governmental unit proposes densities that exceed Met Council policy for unsewered areas that are within the long-term regional wastewater service area, thus precluding future economical sewered development.

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SECTION 3: METRO AREA WATER SUPPLY PLAN

Providing guidance for regional and local community 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 manmade 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.

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.

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 it is an appropriate role for the Met 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.

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.

Focusing funding for regional and local water supply work

Since 2010, the primary source of funding for the Met Council's regional water supply planning and support for local implementation has been Minnesota's Clean Water Fund, which is currently available until 2034. 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 following water supply-related planning activities are historically funded through limited Met Council funds:

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

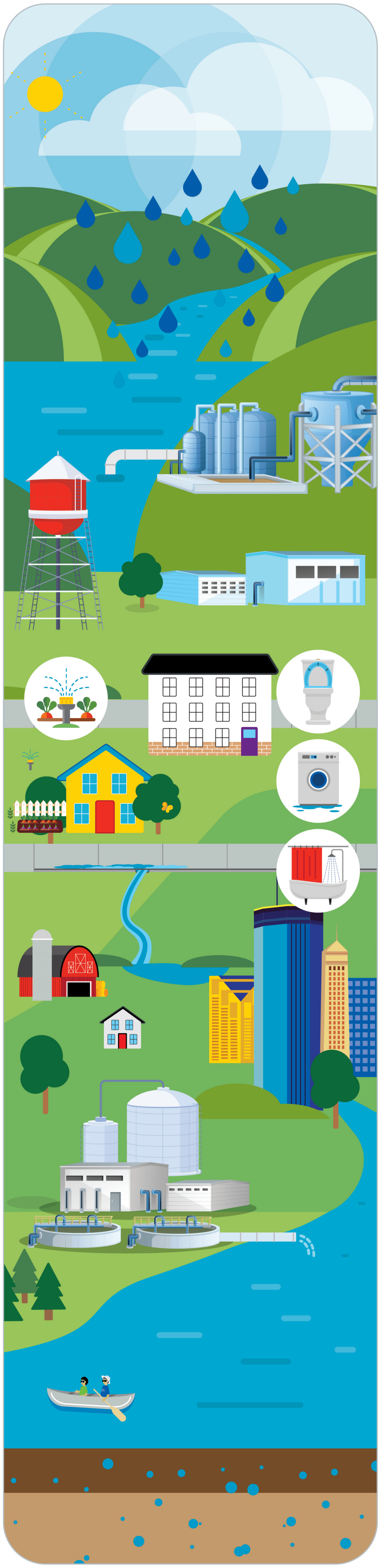
4. Coordination and development of the Metro Area Water Supply Plan

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 (Table 3.2 on page 135 and subregional water supply action plans).

Additional funding sources will be pursued by Met Council, local governmental units, and partners in order to implement water supply planning activities contained in this plan.

Connecting water supply planning 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.



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 nonpotable 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

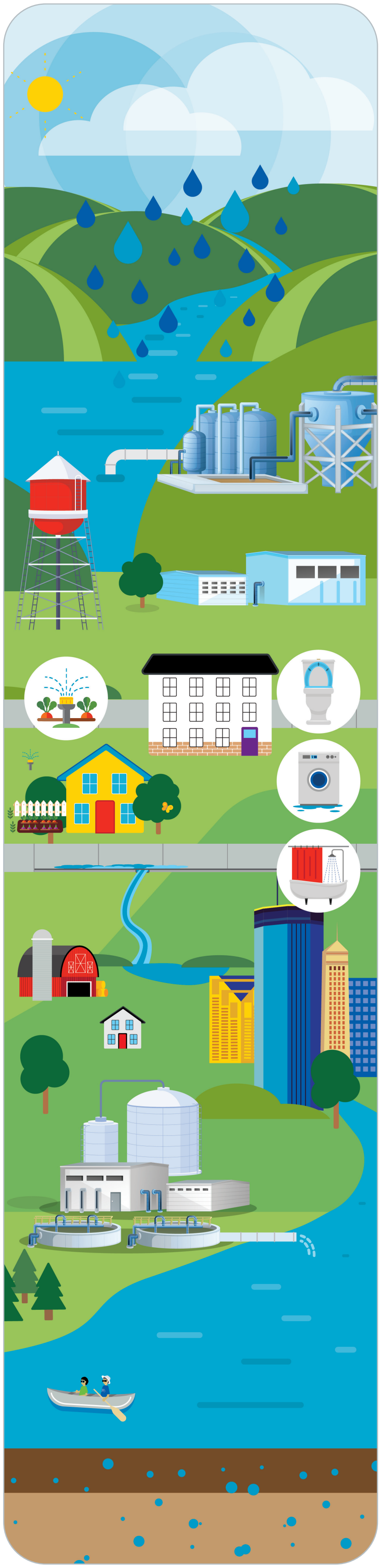
Clean water is essential for everyone. People and businesses in our communities use large amounts of water for commercial, industrial, and residential purposes. As customers, they fund the infrastructure needed to supply this water and also pay for the disposal of used water.

Wastewater and water resource recovery infrastructure

Over 10,000 miles of local infrastructure collects 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 for disaster preparedness.

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

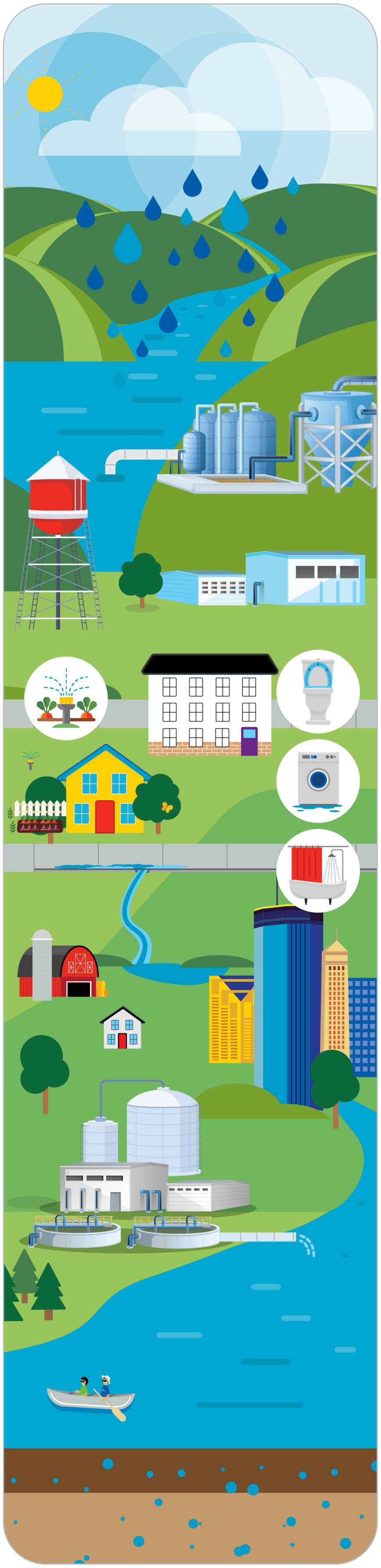
By 2050, about 650,000 more people and 500,000 new jobs will be in the region compared to 2020. If we keep using water as we do now, this growth will raise water demand, stressing current infrastructure and sources. Planners must carefully weigh the impact of new demands, especially from businesses and 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 the local and regional wastewater systems, impacting investments in capacity, treatment, and maintenance. Aging infrastructure, decreased revenue, contamination, and changing regulations and 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, improving stormwater management, and supporting disaster preparedness and emergency response planning can also help to better manage water demand and protect our water sources and public health.

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 focus 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

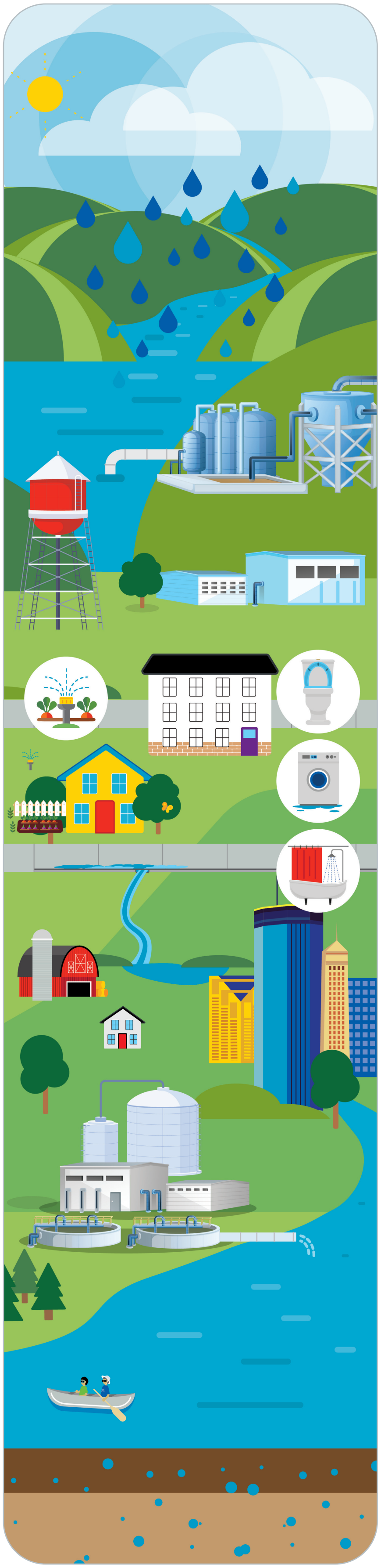
Ongoing education and engagement, supported by state and local controls and incentives, provide an opportunity to encourage water-efficient practices (indoor and outdoor) and build support for sustainable investments in water supply and source water protection.

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 incentivize 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 ratepayers 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

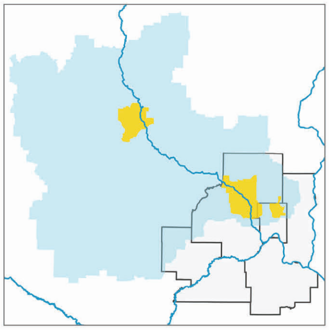
Approaches reflect how water supply planning conditions vary across the region

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 this 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

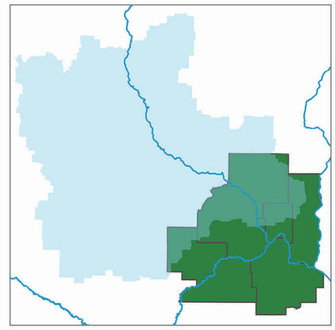
While the Twin Cities metro region is relatively water rich, not all sources of water are equally available, and each comes with its own management considerations. Figure 3.1 illustrates the geographic extent of the region's primary water supply sources and summarizes some of the benefits and challenges of each source.

Figure 3.1: Twin Cities region's non power water sources. The region generally relies on the Mississippi River and four primary aquifers for non power purposes, and each source has different management considerations



Legend

- Priority A Source Water Protection areas (for surface water sources)
- Priority B Source Water Protection areas (for surface water sources)
- Extent of aquifer in metro region

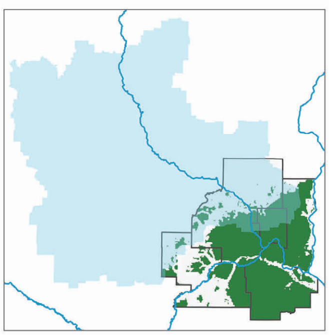


Mississippi River

- Use of surface water conserves groundwater for drought years
- Relatively low energy to pump water to treatment facilities
- Relatively soft water does not require home softening
- Large volumes available continually, quickly recharged by regional precipitation and base groundwater flows
- Water quality requires relatively high level of treatment
- Quality impacted by watershed practices outside the region (blue)
- Vulnerable to contamination. Accute contamination is of particular concern in Priority A Source Water Protection areas (yellow), although high dilution factors are present.
- Usually the first supply source to be impacted during drought
- Currently not geographically available to some growing communities

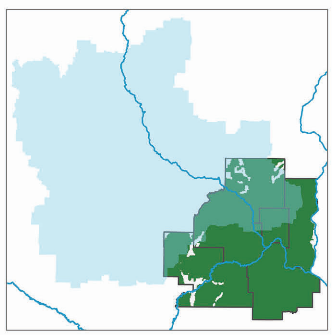
Glacial aquifers

- First aquifer to be recharged
- Challenging to identify the location of the most productive sand and gravel layers, although glacial sediments are present across the region
- Vulnerable to contamination
- Water quantity and quality varies



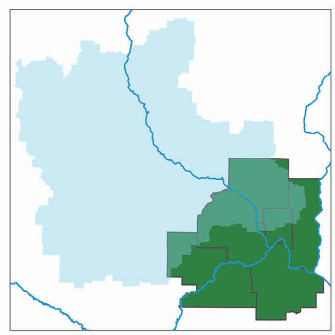
Prairie du Chien-Jordan aquifer

- Generally the most productive aquifer in the region
- Not geographically present in 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

- Geographically present in most communities
- 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

- Geographically present in most communities
- 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 man-made contamination

Data sources: Source water protection information from the Minnesota Department of Health, and aquifer extent from the Met Council Groundwater Digest

Every community in the Twin Cities region gets at least part of its water supply from groundwater sources, through municipal and/or privately owned wells. However, a large portion of the region – almost a million people – also relies on surface water. Currently, the priority protection areas for municipal public water supply intakes on the Mississippi River (shown in yellow in Figure 3.1) are located partially or wholly within the communities of: Andover, Anoka, Arden Hills, Blaine, Brooklyn Center, Brooklyn Park, Centerville, Champlin, Columbia Heights, Coon Rapids, Crystal, Dayton, Fridley, Gem Lake, Ham Lake, Hilltop, Lino Lakes, Little Canada, Maple Grove, Minneapolis, Mounds View, New Brighton, New Hope, North Oaks, Osseo, Plymouth, Ramsey, Robbinsdale, Rogers, St. Anthony, Shoreview, Spring Lake Park, Vadnais Heights, White Bear Lake, and White Bear Township.

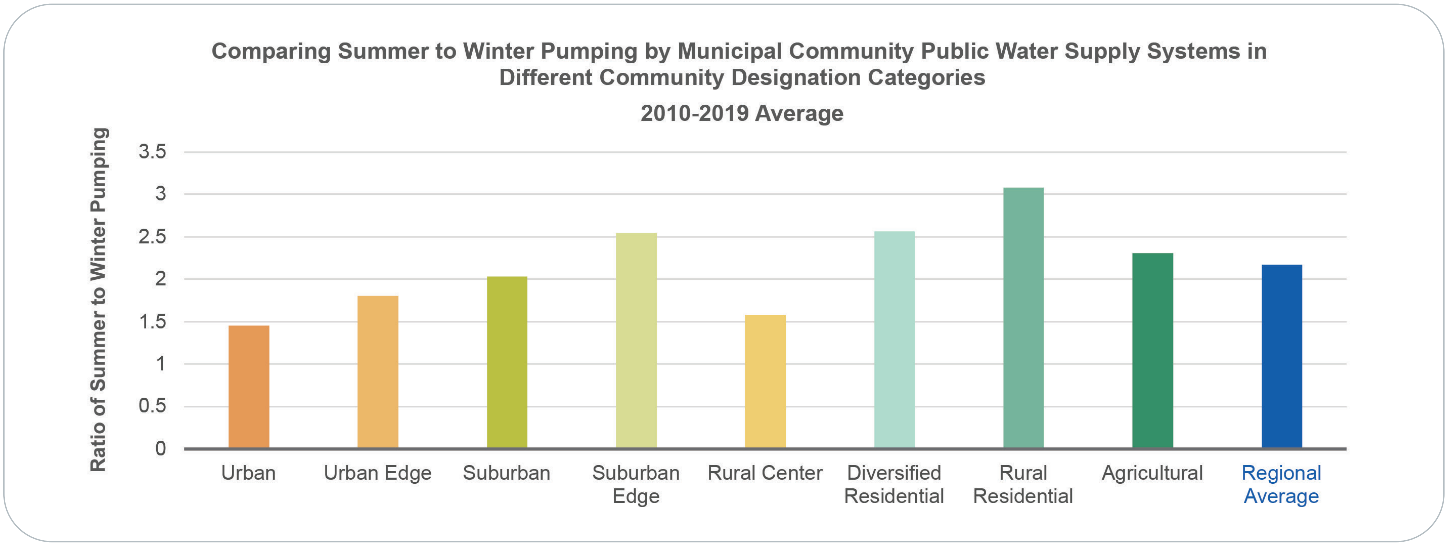
For the most up-to-date information about source water protection area delineations for groundwater and surface water sources, emergency response areas, and spill management areas, contact the Minnesota Department of Health.

Water use patterns differ by community development type

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. Regional land use policies and supporting strategies, including those that connect to water supply priorities, are framed around these community designations (Figure 3.3).

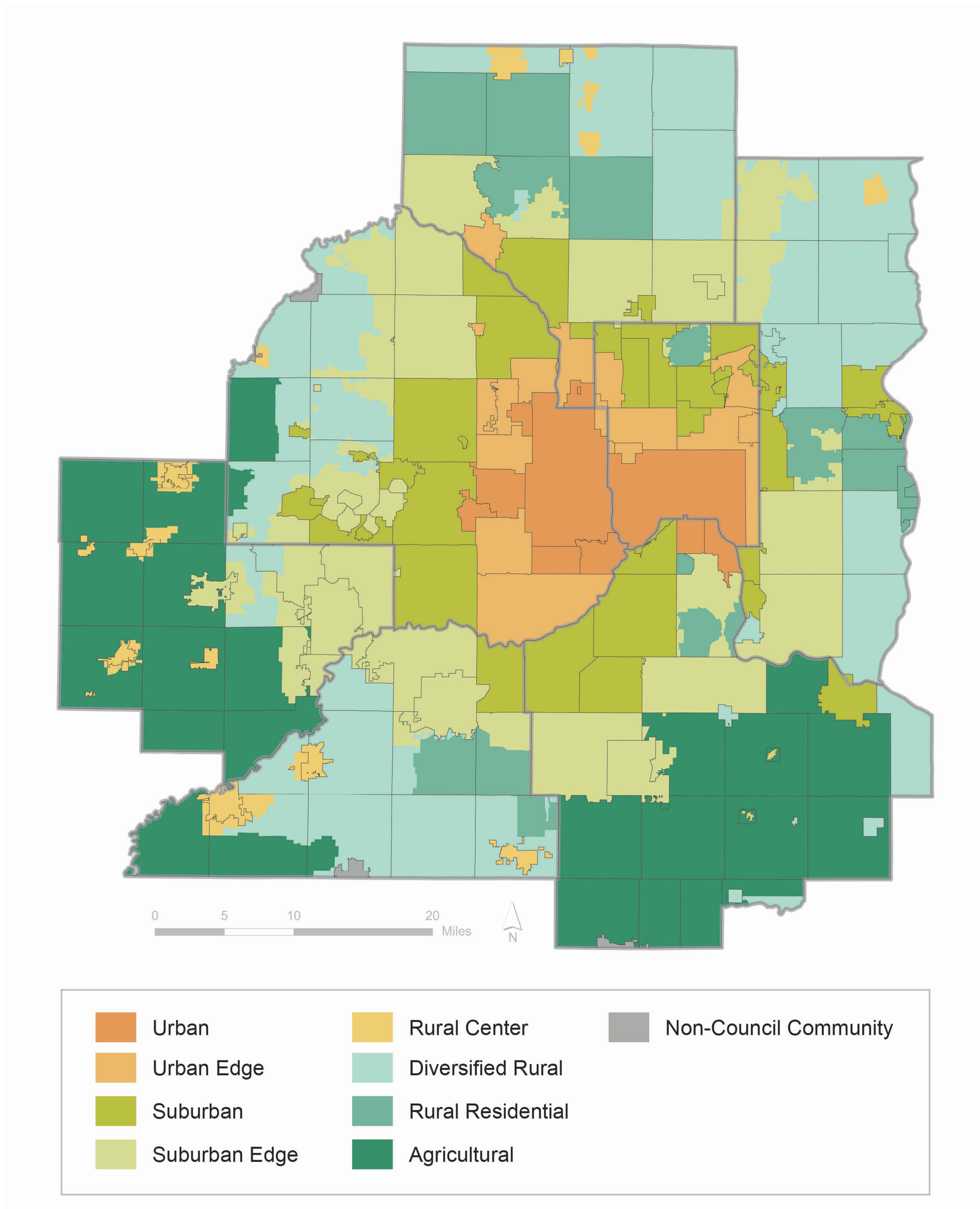
While community designations show similarities in land use, water-use patterns also vary among the different community designation types. Just one example of this is illustrated in Figure 3.2 – how summer versus winter water use varies by community designation. Local water supply-related plan updates should consider the community's water use patterns as local controls are developed or updated to support water efficiency, emergency response, source-water protection, and other activities.

Figure 3.2: Summer versus winter pumping from municipal community public water systems



Note: this graph does not include pumping by privately owned wells. Source: Minnesota Department of Natural Resources' water permitting and reporting system, MPARS.

Figure 3.3: Imagine 2050 community designations.



Data source: Met Council

Type of water supply systems

Water supply conditions can still vary widely within community designation types (Figure 3.3). 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, water supply planning requirements differ based on the type of water supply infrastructure serving the community. Some communities need to develop and implement local comprehensive plans, local water supply plans, and wellhead protection plans. Others develop local comprehensive plans and local water supply plans, but no wellhead protection plans. Still others only develop and implement local comprehensive plans. Table 3.1 summarizes some general categories of community water supply system types in the metro region, although each community has its own unique details. These categories are described in more detail below and in Figure 3.4. Appendix A provides more specific information about local water-supply-related plan requirements.

Table 3.1: Summary of community water supply system types in the Twin Cities metro region

	Community water supply system type	Approximate number of communities	Approximate 2020 population	Approximate 2020-2050 population change
1	Independent municipal community public water system with appropriation permit	84	1.5 million	+380,000
2	Municipal community public water system with appropriation permit, also supplying neighbor(s)	11	1 million	+190,000
3	Municipal community public water system with both appropriation permit and purchasing additional source water from neighbor(s)	7	200,000	+40,000
4	Privately owned wells, nonmunicipal public water systems, and/or nonmunicipal community public systems - no municipal community public water system	58	100,000	+7,000
5	Municipal community public water system purchasing all source water from neighbor(s)	9	90,000	+16,000
6	Neighbor provides municipal community public water system and source	12	90,000	+9,000
7	Jointly-owned municipal community public water supply system purchasing all source water from neighbor(s)	3	70,000	+7,000
8	Planning for independent municipal community public water system	2	6,000	+600

Table includes the approximate number of communities in each category, approximate 2020 population, and approximate 2020-2050 population change.

1. **Independent municipal community public water system with appropriation permit (Example: Andover).** People and businesses in these communities can access water through municipal community public water supply systems owned by their community. These communities have permits from the Minnesota Department of Natural Resources to pump water from local sources for their municipal community public supplies. 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.

2. **Municipal community public water system with appropriation permit, also supplying neighbor(s) (Example: Minneapolis).** People and businesses in these communities can access water through municipal community public water supply systems owned by their community. These communities have permits from the Minnesota Department of Natural Resources to pump water from local sources for their municipal community public supplies. Privately owned wells, nonmunicipal public water systems, and/or nonmunicipal community public water systems also provide water in these communities. In addition, these communities provide water to people and businesses in one or more neighboring communities. All of these communities have land that has been designated as a Drinking Water Supply Management Area.

3. **Municipal community public water system with both appropriation permit and purchasing additional source water from neighbor(s) (Example: Bloomington).** People and businesses in these communities can access water through municipal community public water supply systems that are owned by their community. These communities have permits to pump water from local sources for their municipal community public supplies. The community also receives (buys) water from a neighboring water supply utility. In addition, privately owned wells, nonmunicipal public water systems, and/or nonmunicipal community public water systems provide water in these communities. All of these communities have land that has been designated as a Drinking Water Supply Management Area.

4. **Privately owned wells, nonmunicipal public water systems, and/or nonmunicipal community public systems - no municipal community public water system (Example: Afton):** People and businesses in these communities can access water through privately owned wells or through nonmunicipal public water systems, and/or nonmunicipal community public water systems. Around 70% of these communities have land that has been designated as a Drinking Water Supply Management Area for one or more neighbors.

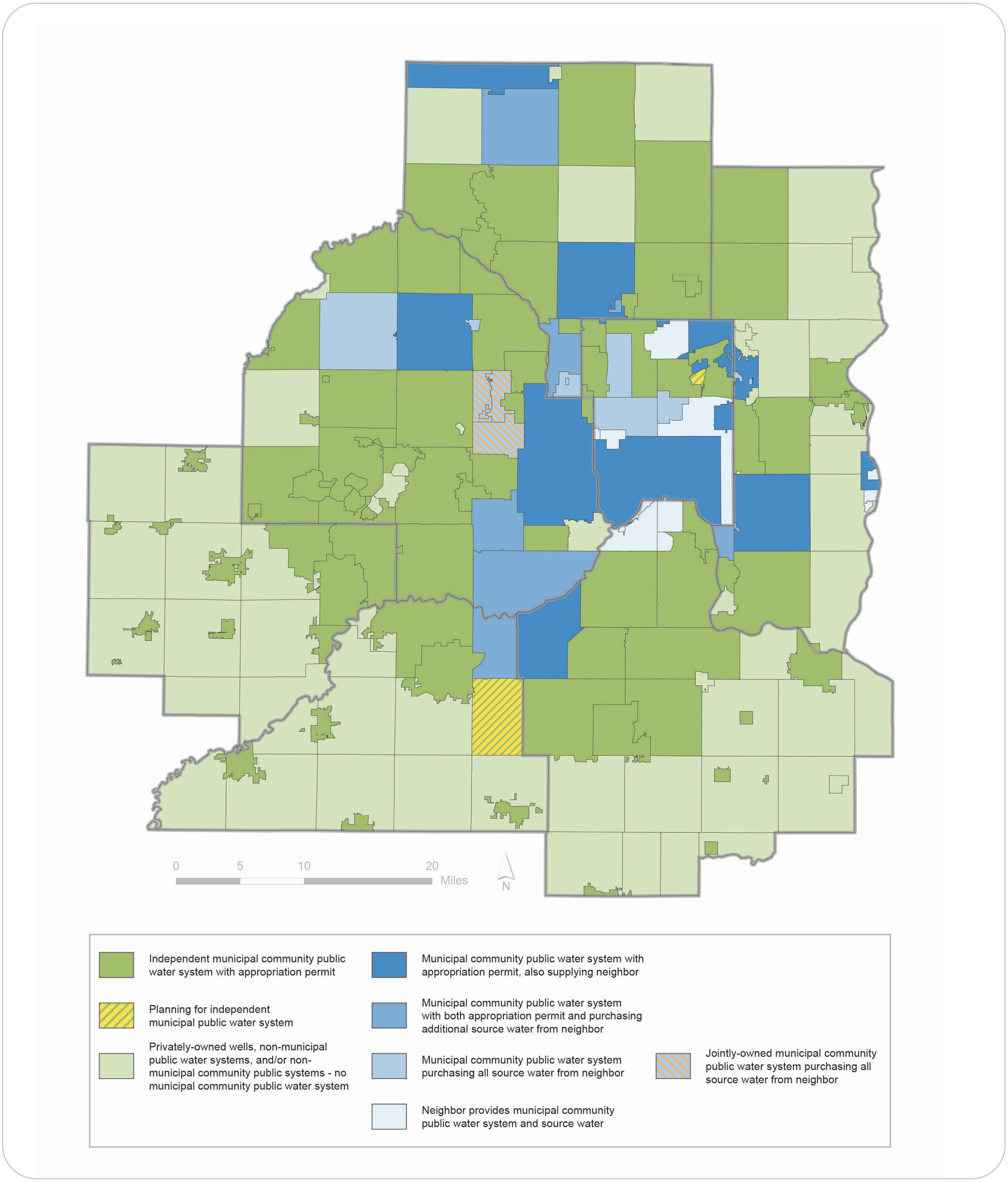
5. **Municipal community public water system purchasing all source water from neighbor(s) (Examples: Little Canada).** People and businesses in these communities can access water through municipal community public water supply systems that are owned by their community. These communities receive (buy) water from a neighboring water supply utility for all of their municipal community public 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 designated as a Drinking Water Supply Management Area for one or more neighbors.

6. **Neighbor provides municipal community public water system and source water (Examples: Falcon Heights, North Oaks):** People and businesses in parts or all of these communities can access water through municipal community public water supply systems that are owned by a neighboring public water supply system. These communities' sources of water are the responsibility of neighboring water supply utilities, 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. Most of these communities (85%) have land that's been designated as a Drinking Water Supply Management Area for one or more neighbors.

7. **Jointly owned municipal community public water supply system purchasing all source water from neighbor(s) (Example: Crystal).** People and businesses in parts or all of these communities can access water through municipal community public water supply systems that are jointly owned and operated by multiple communities. These communities receive (buy) water from a neighboring water supply utility for their shared public water supply system. These communities' sources of water are the shared responsibility of the jointly owned water supply utility. 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's been designated as a Drinking Water Supply Management Area for one or more neighbors.

8. **Planning for independent municipal community public water system (Credit River, Gem Lake).** People and businesses 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.

Figure 3.4: Governance of water supply systems in the metro area varies from community to community



Data sources: MDH, DNR, and community local water supply plans and comprehensive plans

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

Ensuring sustainable water supply for the 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.
  - 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 protects source waters and 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 times of water shortage following natural disasters or other types of 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 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.

What success looks like

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.

The following are descriptions of what success looks like, with related measures. As this plan is implemented, the Met Council and partners will develop and track more specific targets.

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.
    - Water suppliers have identified and evaluated alternative sources as part of infrastructure resilience assessments.
    - 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.
    - Increased availability of funding for public water suppliers and privately owned well users to treat water to ensure high-quality water, including safe drinking 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:

- Decision-makers consider water use as part of land use planning. For example, all communities have incorporated water efficiency and source water protection actions into their comprehensive plan updates and local implementation (development guidelines, etc.), 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:

   - Communities in the region understand where water-supply-related challenges from groundwater-surface water interaction take place.
   - Groundwater and surface water source interactions across the region are adequately monitored with the data managed, shared, and used to 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 safely 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, outdoor, and residential water use per person declines.
   - As a region, the total summer versus winter water-use ratio declines.
   - There is an increase in the number of water reuse installations and water efficiency improvements across all land use types (existing and new), leading to a corresponding decrease in drinking water use for nonessential purposes.
   - The percentage of acres of new and redevelopment that incorporate turf grass alternatives increases.

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 A.

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

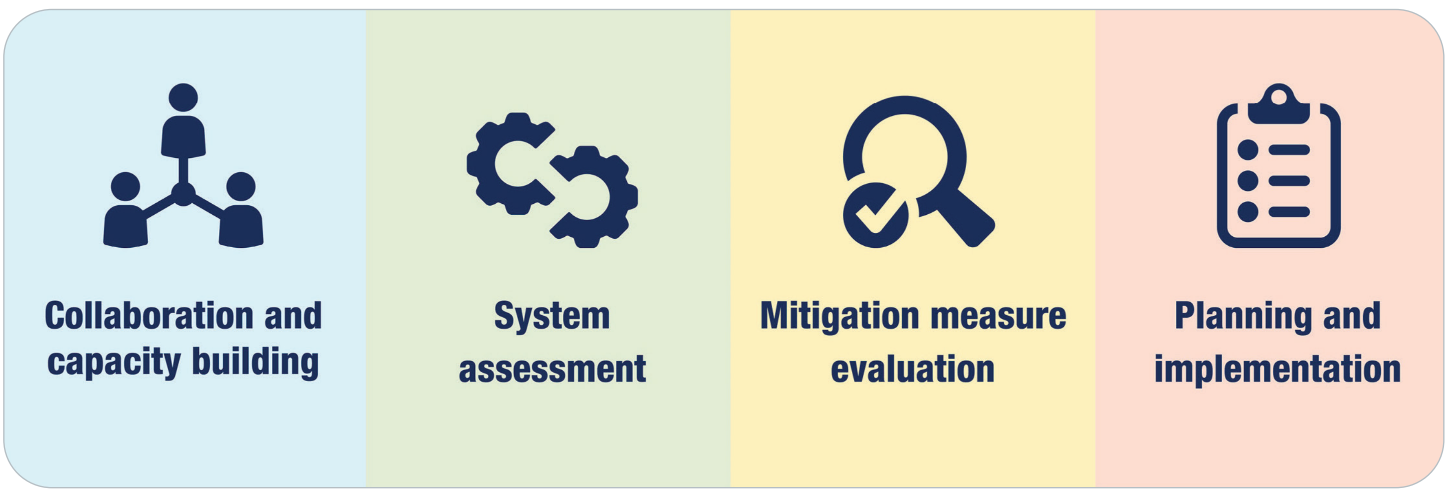
- All the voices are heard as community plans are made and implemented – so that the full range of diverse water supply needs are met.
- Public trust and understanding are enhanced, and a culture shift around water use has occurred.
- Collaborative and proactive approaches for engagement, planning, and 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.

In Table 3.2, the Met Council outlines organizational commitmentsto support goals related to regional water supply planning, namely collaboration, capacity building, system assessments, mitigation measures, valuation, and planning and implementation steps.

Key steps for action

A regional framework for action (Figure 3.5) organizes work in a way to help achieve the desired outcomes for the region's water supply. Some actions are most effective regionwide. 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 3.5: Metro region water supply framework for action.



This figure illustrates the framework necessary to achieve Metro Area Water Supply Advisory Committee goals.

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 3.6).

Figure 3.6: High-level schedule for different phases of water supply planning work

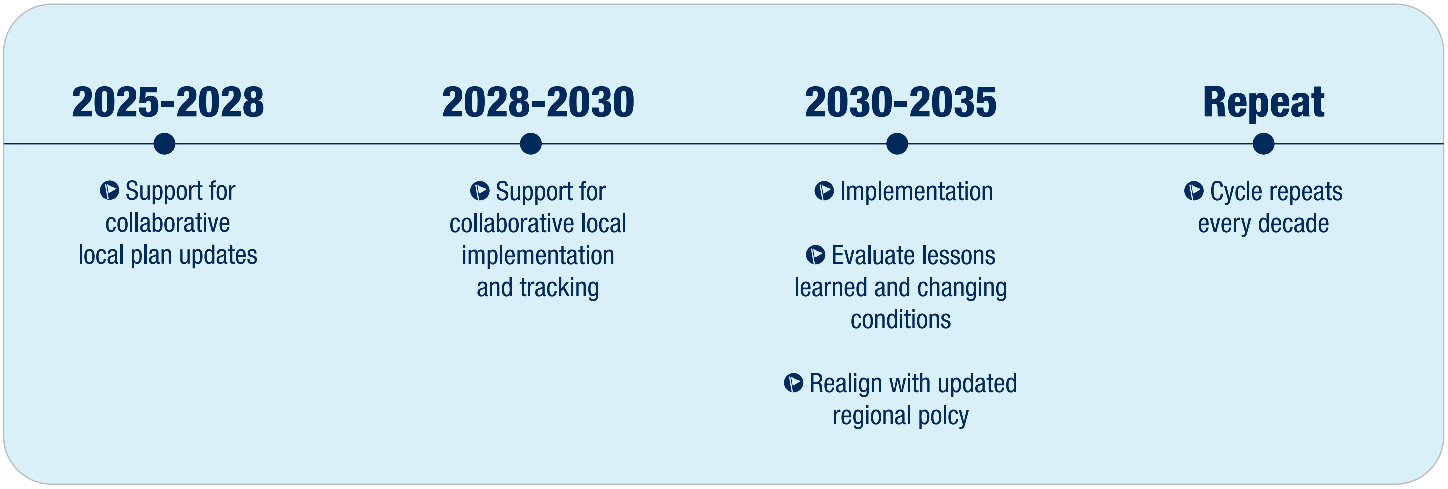


Table 3.2: Met Council commitments to regional water supply

	Regional water supply planning actions	Regional policy supporting this action
Collaboration and capacity building		
1	The 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
2	The 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
3	The 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 regionwide 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 different approaches to reuse reclaimed wastewater for different high-volume industrial, agricultural and/or other commercial purposes. • Assessing and comparing the benefits, costs, and feasibility of different approaches to reuse stormwater for nonpotable purposes while protecting public health.	Integrated water, reuse
4	The 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
5	The 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. Priorities include: • Legislative initiatives on the topic of enhanced funding for water supply systems with a limited customer base and emerging issues, to ensure safe and adequate water.	Integrated water, reuse

	Regional water supply planning actions	Regional policy supporting this action
6	The 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 widespread 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. • Building 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
7	The 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
System assessment		
8	The 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 both water supply and ecosystem health from groundwater-surface water interaction. • Exploring opportunities to leverage artificial intelligence to optimize water management, improve security, or for other purposes. • Other needs identified by subregional water supply groups (see subregional chapters of this plan).	Monitoring, data, and assessment; climate
9	The 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 and subregional groundwater modeling to inform priorities in action item 8 (above) and the identification of regional sustainability targets for development planning. • Other needs identified by subregional water supply groups (see subregional chapters of this plan).	Monitoring, data and assessment

	Regional water supply planning actions	Regional policy supporting this action
Mitigation measure evaluation		
10	The 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. • Working with the Minnesota Pollution Control Agency to evaluate the feasibility and effectiveness of a range of mitigation options for PFAS and/or other emerging contaminants.	Monitoring, data and assessment, conservation
Planning and implementation		
11	The 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
12	The Met Council will develop and provide technical assistance (guidance and incentives) to local partners to advance progress on implementation that supports municipal and nonmunicipal 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
13	The Met Council will collaborate with the state departments of natural resources and health to support local planning and implementation for municipal and nonmunicipal 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
14	The 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. Priorities include: • Leveraging existing Minnesota Department of Health efforts to support the repair and replacement of privately owned wells, including collaboration with Clean Water Council and others to promote resources for this work regionwide.	Conservation and sustainability
15	The 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

	Regional water supply planning actions	Regional policy supporting this action
16	The Met Council will develop, track, and report on regional and subregional indicators, targets, 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 10 years and would support required updates to the Legislature and Met Council.	Monitoring, data and assessment

IMAGINE 2050

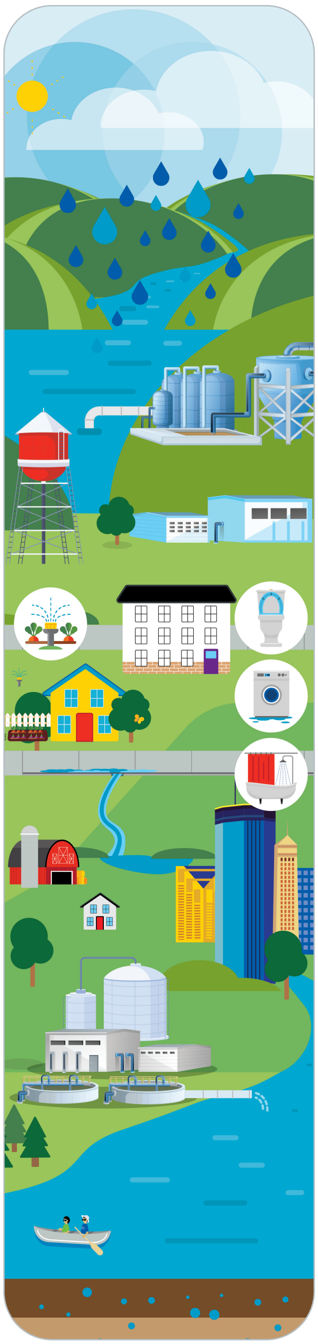
water policy plan

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.

Regional indicators

Regional indicators are region-level measures that help provide context and build our shared understanding of past and current conditions.



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 development and redevelopment 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 identified in regional and subregional action plans (examples: asset management planning, emergency response, efficiency programs, source water protection, and other needs)
- Established task forces with local stakeholders for the purpose of plan implementation
- Outreach and engagement materials available and used consistently across the region to increase awareness of sustainable water use, especially as the compounding effects of climate change contribute to fluctuating water availability. This is done in collaboration with organizations such as the Clean Water Council, Minnesota Ground Water Association, American Water Works – Minnesota Section, and others
- 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, the 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 the 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.

We took a subregional approach, reflected in the subregions identified in the Metropolitan Region Water Supply Planning Atlas as delineated in 2023. The subregions are neighboring communities connected by a combination of shared water challenges, hydrogeologic landscapes, and organically developed community water supply planning groups from previous planning cycles. As new information becomes available and community needs and relationship evolve, subregional boundaries may shift.

Process to develop subregional action plan content

From March 2023 through February 2024, Met Council staff embarked on a highly participatory engagement campaign to approach planning from a subregional perspective. We used the subregional boundaries established through the development of the Water Supply Planning Atlas (Figure 3.7). 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 Met Council.

We engaged with core teams of local leaders in each subregion 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, we hosted two to three workshops 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 nonmunicipal organizations. Perspectives included utility directors, watershed staff, community development planners, agency staff, nonprofits, large-volume water users, and more.

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 Met Council is committed to this continued engagement, as reflected in the regional commitments in the Metro Area Water Supply Plan and the rest of the 2050 Water Policy Plan.

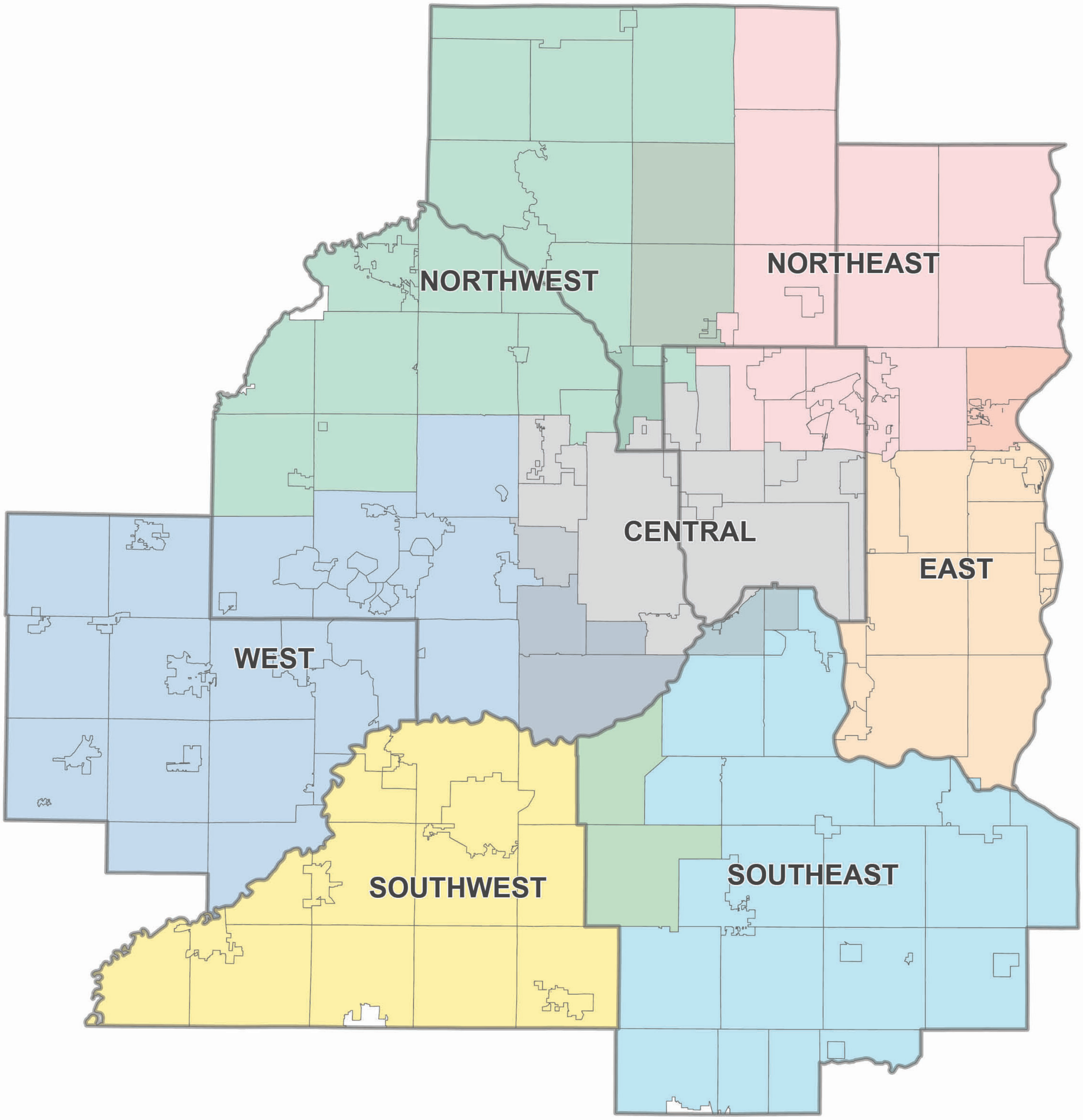
Purpose and use of subregional action plans

The subregional water supply planning areas are primarily for the purpose of supporting collaboration, relationship building, and resource sharing across jurisdictional boundaries. They are not intended to add another layer of planning or to restrict local land use planning authority; rather, they are intended to support outreach and collaboration around existing planning efforts.

The Met Council respects and supports the responsibility and authority of local water suppliers in managing water resources while recognizing the importance of a cohesive regional perspective, as local water supply decisions impact neighboring communities. The Met Council's role is to support regional water planning by delivering essential technical resources to guide sound decision-making and by offering planning assistance to local entities. As neither a water utility nor regulator, the Met Council's water supply planning follows the Metro Area Water Supply Plan, cooperative framework that strengthens local control and accountability, developed in partnership with local, regional, and state stakeholders.

The outcomes from subregional engagement workgroups — 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, with some minor revision during the process to adopt the Metro Area Water Supply Plan with the 2050 Water Policy Plan. 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 that subregional work groups take on themselves. These actions are expected to evolve over time as new issues and opportunities emerge.

Figure 3.7: Subregional water supply planning areas



Data source: Water Supply Planning Atlas by the Met Council

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 (Figure 3.8) 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, 26 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. Current estimates suggest that approximately 200,000 more people will be added to the area by 2050 compared to 2020.

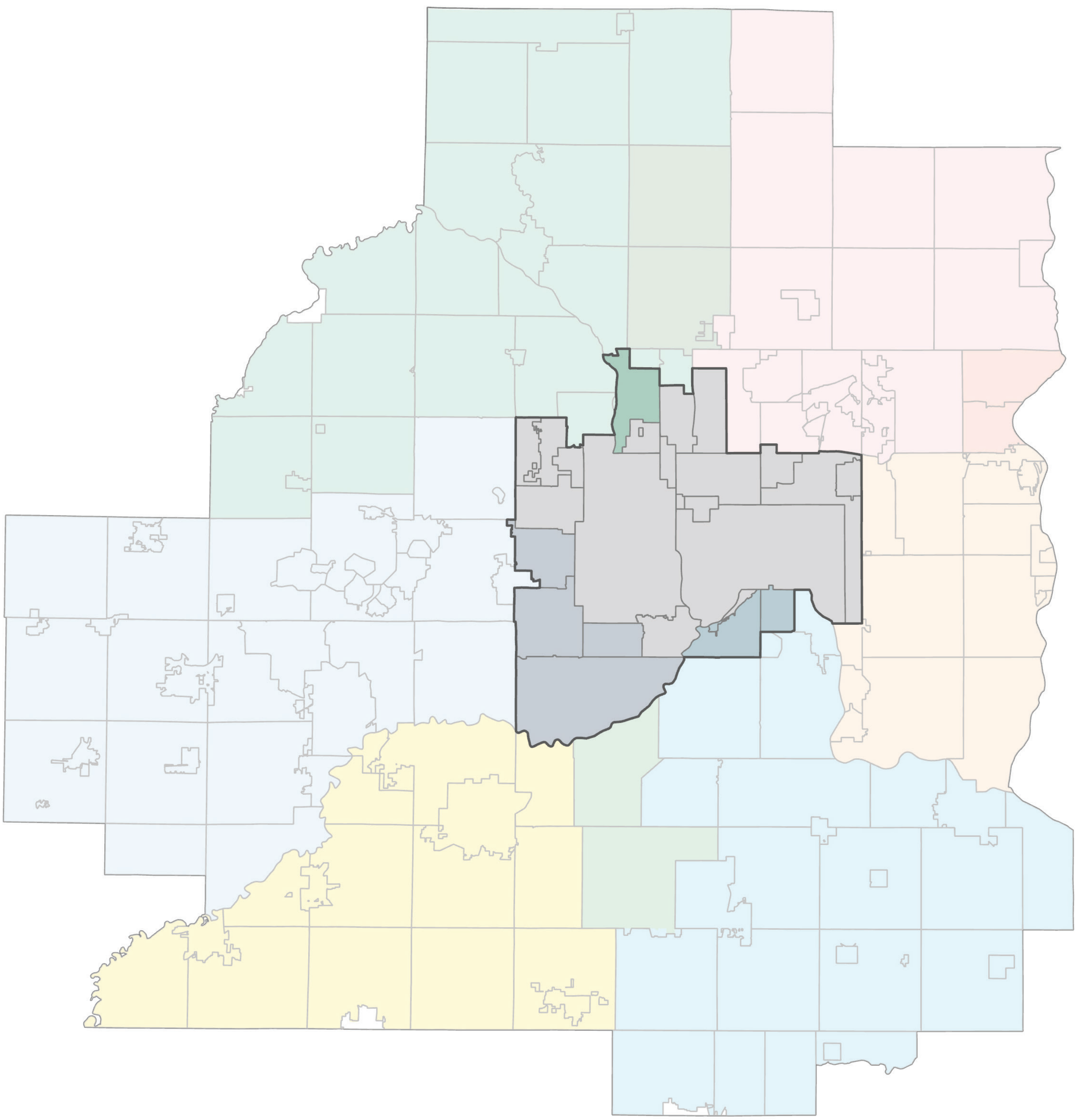
Over the past two decades, communities have continued to grow, but overall water use has generally declined since the late 1980s when water use peaked. However, density is likely to increase to accommodate estimated growth through development and redevelopment. To deliver service to more homes and businesses, 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

Figure 3.8: Central Metro Subregion water supply planning area



Communities depicted in a color other than gray overlap in multiple subregions. Data source: Water Supply Planning Atlas by the Met Council

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.
- Public engagement is improved.
- Public health is a focus.
    - Health guidance is provided for new contaminants.
    - Lead is eliminated in homes, including water service lines, private home plumbing, and lead paint.
- The subregional plan is useful to communities with public water systems and privately owned wells for planning purposes.
- A culture shift occurs around nonessential water use, such as lawn irrigation, that changes behaviors.
- Water rates are affordable for customers.
- People understand 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 of 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.
- A focus on infrastructure investment and sustainability.
- Engagement with and educate local elected officials on the importance of this work, and lobbying 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 affects water supply and sewer capacity, 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 is representative of the group needs.
- Regional growth is aligned to be more sustainable and water wise.
- Intercity wellhead protection plans and water supply plans are developed—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. The region needs 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

Workforce concerns need to be addressed, including staffing shortages, 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 accessible to the public, 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 so that the region can better 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 conservation and efficiency 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) 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 3.9).

Figure 3.9: Regional framework for action, with subregional detail

Collaboration and capacity building

- Education and Engagement
- Workforce

System assessment

- Water quality
- Data and tech

Mitigation measure evaluation

- Water conservation and efficiency

Planning and implementation

- Asset management and investment
- Affordability
- Planning

Actions to support success

In late 2023 and early 2024, Central Metro subregional stakeholders identified several potential actions to address each of their focus areas. Table 3.3 includes proposed actions, in the words of the subregional stakeholders who drafted them. While the focus is on work needed over the next 10 years, some actions are expected to be ongoing over the next 25 years or more.

This action plan is intended as a high-level, long-term, collaborative planning tool. A refined work plan is expected to develop as collaboration gets underway and depending on resource availability. It is possible and expected that new actions may emerge as important steps that need to be taken in subsequent years.

Many different people and organizations ae expected to be involved in the Central Metro subregional water supply work. Table 3.3 identifies a few examples that were identified by stakeholders in 2023 and 2024, but this list is incomplete.

The Met Council is committed to convene and support work planning and implementation for the Central Metro subregional water supply group (see the regional action plan in Table 3.2). Early work is expected to include revising and prioritizing actions and defining roles in more detail.

Table 3.3: Proposed Central Metro subregional water supply actions

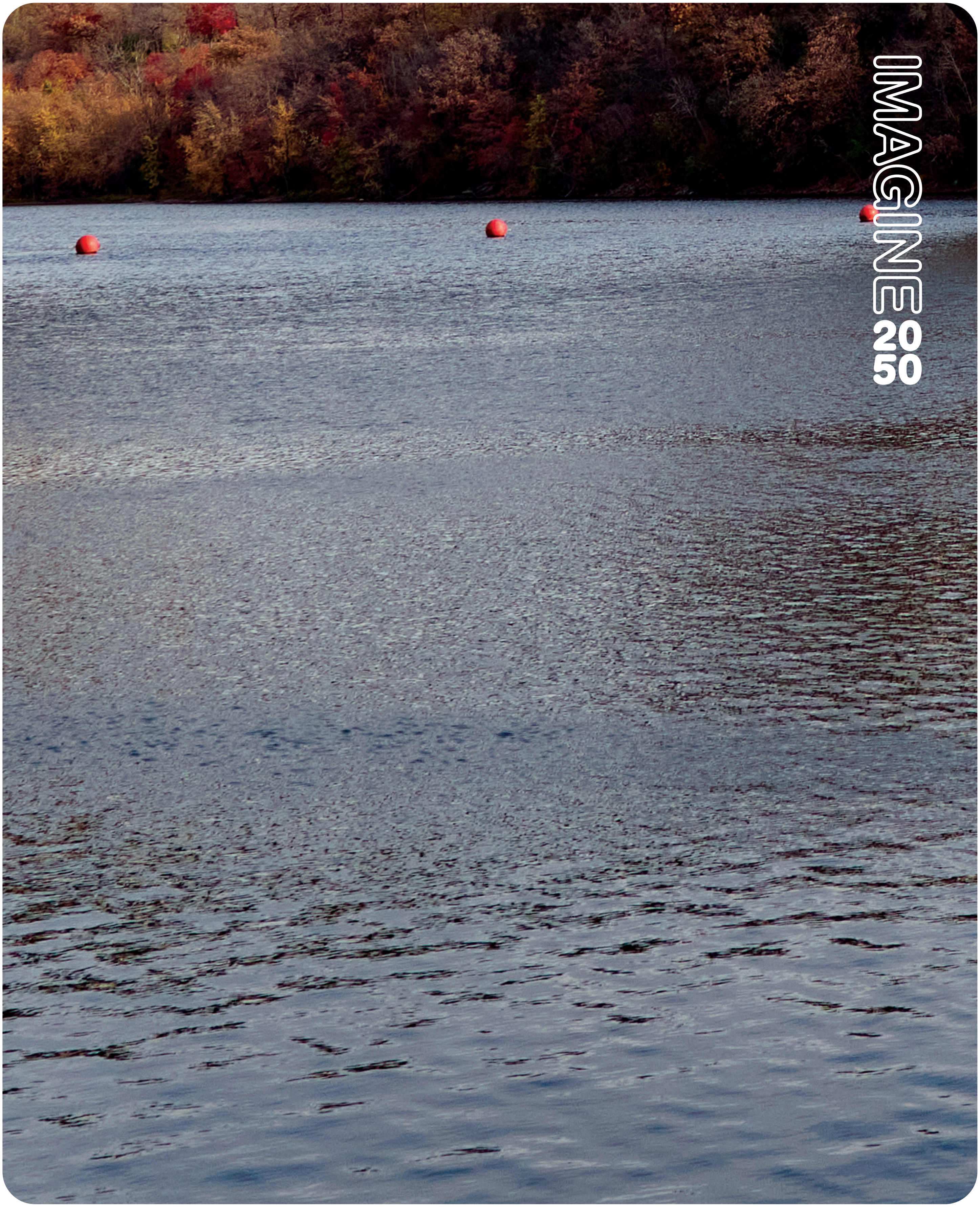
Proposed action		Subregional focus area	Water polcy plan policy	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	Example participants
COLLABORATION AND CAPACITY BUILDING									
1	Convene a communications committee with utility representatives that will explore different ways to connect and engage, including with diverse audiences and children.	Education & Engagement	Conservation & Sustainability, Integrated Water	X	X				Met Council and local governments
2	Perform outreach and engagement with the public through community groups, attending festivals, etc.	Education & Engagement	Conservation & Sustainability, Integrated Water						Met Council, local governments, state agencies, counties, community organizations
3	Education campaign to shift public perception that MN has unlimited supply of water.	Education, Planning	Conservation & Sustainability	X					Regional agencies
4	Education campaign on what affordability is and how to overcome barriers.	Education, Affordability	Conservation & Sustainability	X					
5	Create and implement education and engagement for diverse audiences around actions they can take to conserve water and why.	Education, Water Conservation & Efficiency	Conservation & Sustainability	X					K-12 schools, colleges, and state agencies
6	Grow partnerships with technical schools and Tribal colleges to increase education-based programs like WETT and WUTT (Water Utility Treatment and Technology program, from the American Public Works Association in relationship with Saint Paul College).	Education, Workforce	Water Sector Workforce						
7	Increase outreach to high schools, and the public about jobs in the field through outreach at job fairs, tech schools, and encouraging schools to offer trade classes.	Education, Workforce	Water Sector Workforce	X					Utilities and Met Council, Engineering associations, state agencies, and cities
8	Offer site visits to water treatment plants for community college students.	Education, Workforce	Water Sector Workforce						Cities and agencies with facilities
9	Utilize internships and similar programs to jumpstart careers in the industry at a younger age.	Workforce	Water Sector Workforce						Utilities

	Proposed action	Subregional focus area	Water polcy plan policy	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	Example participants
SYSTEM ASSESSMENT									
10	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
11	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
12	Research water treatment methods that have a high confidence to handle unknown, emerging contaminants, then identify and prioritize most-at-risk communities.	Agency commissioners	Pollution Prevention	X					MDH
13	Conduct proactive sampling and health studies for contaminants of emerging concern.	Water Quality	Pollution Prevention	X					MDH
14	Create a program for surveillance and testing of new contaminants in drinking water and wastewater.	Water Quality	Pollution Prevention	X					
15	Increase upstream water quality monitoring for surface water intakes.	Water Quality	Pollution Prevention		X				MDH, MPCA, Watersheds, USGS
16	Create policies and leverage of funding to reduce nonpoint-source pollution and contamination.	Water Quality	Pollution Prevention						MPCA, MDA, and Met Council
17	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
18	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									
19	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

Proposed action		Subregional focus area	Water polcy plan policy	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	Example participants
20	Work with state agencies to advocate for reuse and to limit the barriers to implementation.	Water Conservation & Efficiency	Reuse	X					
21	Create different actions and priorities for irrigation and personal/household use.	Water Conservation & Efficiency	Conservation & Sustainability	X	X				DNR
22	Pass ordinances to mandate low-flow appliances in new developments.	MDH	Conservation & Sustainability	X					Cities and state agencies
23	Met Council to continue providing water efficiency grants.	Water Conservation & Efficiency	Conservation & Sustainability	X	X				Met Council and MPCA
24	Pass ordinances to require native and drought-tolerant landscaping on new and re-development.	Water Conservation & Efficiency	Conservation & Sustainability	X					Cities and state agencies
PLANNING AND IMPLEMENTATION									
25	Collaborate on the development and completion of a multi-community wellhead protection plan update and implementation process.	Planning	Planning	X	X				Cities, MDH, watersheds
26	Work to leverage and make funds available to make necessary upgrades, improvements, and replacements.	Asset Management & Investment, Affordability	Conservation & Sustainability	X					Cities
27	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
28	Support asset replacement planning/ CIPs to project expenditures and likely rate changes.	Asset Management & Investment, Affordability	Conservation & Sustainability	X					City councils
29	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
30	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

Proposed action		Subregional focus area	Water polcy plan policy	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	Example participants
31	Work with the legislature to take pressure off of the metro area to grow by encouraging growth in regional centers: Mankato, Moorhead, Duluth, Rochester, Worthington, etc. This may include sharing information about the limitations of the metro region's water supplies with the State of Minnesota's economic development groups, to support strategic planning decisions.	Planning							State – Legislature planning
32	Met Council integrate water resource planning into local planning assistance decision-making.	Planning	Integrated Water	X					Met Council and DNR
33	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
34	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
35	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
36	Work with state and locals to strengthen protections for surface source water.	Water Quality, Planning	Pollution Prevention	X					MPCA and Met Council
37	Prioritize water treatment systems that need new or modified systems for funding.	Water Quality, Affordability, Asset Management	Pollution Prevention		X				MDH
38	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

Stakeholders proposed several actions to work on over the next 10 years and beyond, to set the subregion up for long-term success in their priority water supply focus areas. These actions are generally supported by regional water policy. In some cases, stakeholders provided guidance regarding timing and example participants.


IMAGINE 2050

East 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 in the East Metro subregion (Figure 3.10) 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 (DWSMA). 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 declined slightly. 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 private well users.

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. Current estimates suggest that approximately 55,000 more people 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.

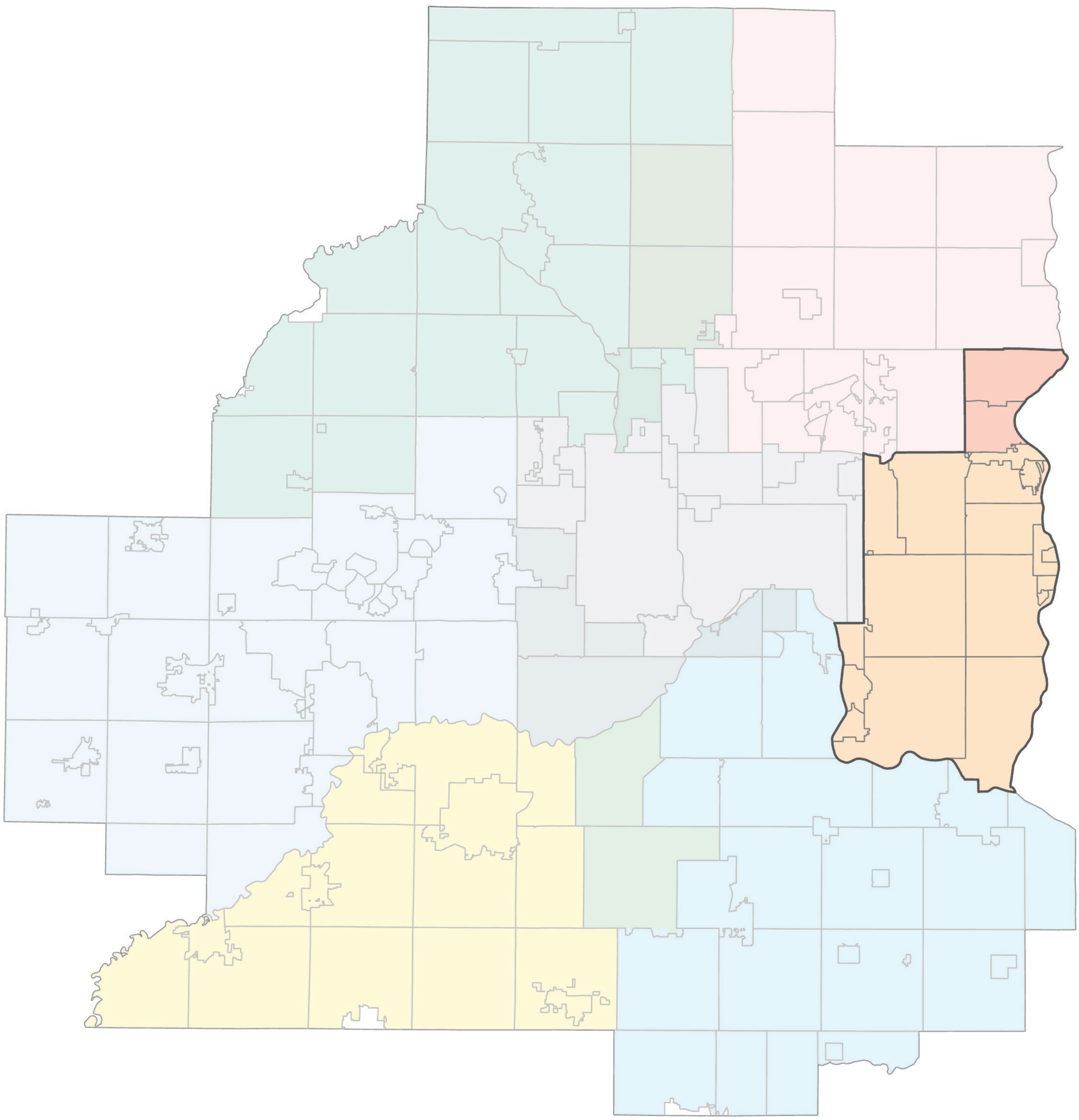
The East Metro chapter of the Water Supply Planning Atlas contains more details in the description of current conditions and challenges.

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.

Figure 3.10: East Metro Subregion water supply planning area.



Communities depicted in a color other than light orange overlap in multiple subregions. Data source: Water Supply Planning Atlas by the Met Council

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

- A mix of voluntary practices, regulation, and planning is 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 nonmunicipal Drinking Water Supply Management Areas within a jurisdiction
  - Incorporating all drinking water supply management areas (municipal and nonmunicipal) 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

- Surface water features are delisted.
- There is no groundwater contamination from agricultural practices.
- Sustainable agricultural practices do not compromise food availability.

Chloride

- No new chloride impairments are identified.
- 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.
- Metro communities adopt chloride-specific model ordinances.

Contaminants of emerging concern

- Public will be informed of existing emerging contaminants, their fate (persistence) 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 them.

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.
- Nonessential uses of PFAS are eliminated, following Minnesota's PFAS Blueprint developed by the Minnesota Pollution Control Agency.
- Region takes a pragmatic approach to applying risk reduction techniques.
- Funding is prioritized to mitigate risk to any degree.
- PFAS-free drinking water is available for all.
- The most harmful PFAS, as demonstrated by technology and studies, is managed.
- 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 are established.
- 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 is available through a centralized public well and water testing system that allows for centralized data.

Water balance

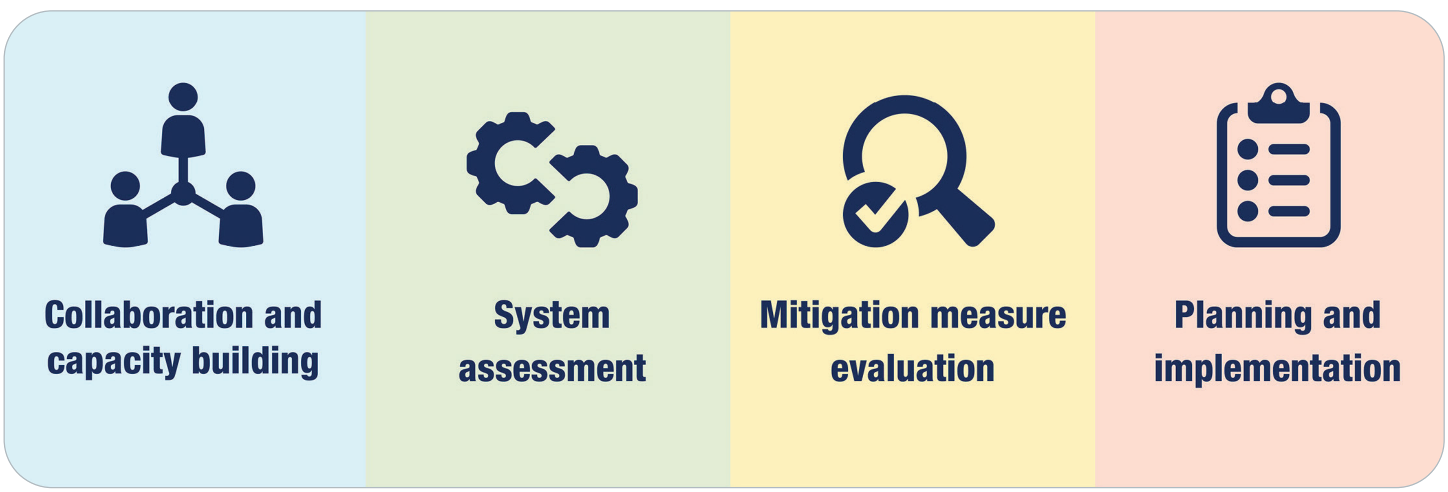
- Aquifer levels are stable and managed, and there is sustainable water use for aquifers, ecosystems (no surface water impacts), and future generations (seven generations, approximately 150 years).
- Sufficient land is available for all uses, including recharge and reserved land for uses needed in the future.
- Future flood storage is accomplished.
- Infiltration is implemented in the right locations.
- Reuse
    - More support is provided for reuse systems, including guidance for treatment and perhaps standards for residential reuse such as irrigation systems
    - Use of reuse water increases, as do more coordinated and more holistic efforts.
    - Existing reuse of water is better understood and increased in 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 that will need to be taken in subsequent years. This list, therefore, is a reflection of what was being considered in 2023-2024. Items have been 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: Regional framework for action



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

In late 2023 and early 2024, East Metro subregional stakeholders identified several potential actions to address each of their focus areas. Table 3.4 below includes proposed actions, in the words of the subregional stakeholders who drafted them. While the focus is on work needed over the next 10 years, some actions are expected to be ongoing over the next 25 years or more.

This action plan is intended as a high-level, long-term, collaborative planning tool. A refined work plan is expected to develop as collaboration gets underway and depending on resource availability. It is possible and expected that new actions may emerge as important steps that need to be taken in subsequent years.

Many different people and organizations are expected to be involved in the East Metro subregional water supply work. Table 3.4 identifies a few examples that were identified by stakeholders in 2023 and 2024, but this list is incomplete. For example, Washington County's Groundwater Plan includes several actions similar to those identified in Table 3.4, and the county will have an important role to play ensuring that efforts are not being duplicated, and that clear roles/potential partnerships are identified within the county's jurisdiction.

The Met Council is committed to convene and support work planning and implementation for the East Metro subregional water supply group (see the regional action plan in Table 3.2). Early work is expected to include revising and prioritizing actions and defining roles in more detail.

IMAGINE 2050
water policy plan

Table 3.4: Proposed East Metro subregional water supply actions

	Proposed action	Subregional focus area	Water polcy plan policy	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	Example participants
COLLABORATION AND CAPACITY BUILDING									
1.	Increase partnerships between public health, county agriculture staff, and trade organizations.	Agricultural Contaminants	Pollution Prevention	x					County ag engineers/ trade org/public health
2.	Increase understanding of what motivates individual and political change.	All	All	x	x				
3.	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
4.	Advocate for changes to increase lifespan and repairability of products, as well as require proof of no future harm.	CECs	Pollution Prevention						
5.	Increase ability for consumers to know what is in the products they are buying.	CECs	Pollution Prevention						
6.	Reproduce tools such as No Salt/Low Salt regionwide.	Chloride	Pollution Prevention						
7.	Lead on addressing water softening from a wastewater treatment perspective.	Chloride	Pollution Prevention						Met Council
8.	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
9.	Improve both horizontal and vertical communication and coordination between and within agencies.	Jurisdictional coordination	Integrated Water	x					
10.	Increase coordination within Met Council–transportation, planning, water, parks, etc.	Jurisdictional coordination	Integrated Water	x					Met Council
11.	Support watershed-led education within and across cities.	Jurisdictional coordination	Integrated water	x	x				

Proposed action		Subregional focus area	Water polcy plan policy	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	Example participants
12.	Increase coordination between wellhead and watershed management needs and efforts.	Jurisdictional coordination	Pollution Prevention						
13.	Develop sound policy options that take into account financial, social, and environmental needs.	Water balance	Conservation						
14.	Provide 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									
15.	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
16.	Increase available funding for staff engaged in research for CECs.	CECs	Pollution Prevention	x					
17.	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: - Toxicological info - Presence data - Laboratory capacity to identify CECs Use this info to inform policy and legislative decision-makers (in a timely/efficient manner).	CECs	Pollution Prevention						
18.	Conduct a trend analysis for detecting vulnerable water bodies and take action prior to impairment.	Chloride	Pollution Prevention						
19.	Compile a database from all sources of info on wells.	Private wells/ SSTS	Pollution Prevention						
20.	Establish permanent funding for privately owned well and septic system repair and replacement.	Private wells/ SSTS	Pollution Prevention						
21.	Develop a regional or statewide standard for flood storage beyond Atlas-14.	Water balance	Climate Change Resilience	x	x				

Proposed action		Subregional focus area	Water polcy plan policy	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	Example participants
22.	Adaptively manage for regional water levels based on data collection and evaluation.	Water balance	Conservation & Sustainability	x	x				
23.	Reevaluate and update fee structure.	Water balance	Conservation & Sustainability						Cities, water suppliers
MITIGATION MEASURE EVALUATION									
24.	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
25.	Research alternatives to chloride use.	Chloride	Pollution Prevention	x	x				Research community, road authorities
26.	Develop a tool to assess the cost/benefit for city water suppliers to provide centralized water softening.	Chloride	Pollution Prevention						
27.	Determine the appropriate level of treatment needed for various uses of reused water.	Water balance	Reuse	x					MDH
PLANNING AND IMPLEMENTATION									
28.	Support the passage of limited liability legislation.	Chloride	Pollution Prevention	x					
29.	Identify three or more priority locations for demonstration projects showing ways to reduce chloride application.	Chloride	Pollution Prevention	x					Local governments, watersheds
30.	Engage rural communities with strategies and a training program for gravel roads and dust suppressants.	Chloride	Pollution Prevention	x	x				MPCA
31.	Provide education, outreach, and training to private property managers to reduce their application of chloride.	Chloride	Pollution Prevention						
32.	Provide education on water softening for private systems.	Chloride	Pollution Prevention						
33.	Review and propose changes to wellhead protection state statute to improve cross-jurisdictional planning.	Jurisdictional coordination	Pollution Prevention						MDH, Met Council
34.	Eliminate nonessential PFAS uses.	CECs	Pollution Prevention		x				Legislature, industry
35.	Increase funding available to address PFAS contamination.	CECs	Pollution Prevention						Federal, State

Proposed action		Subregional focus area	Water polcy plan policy	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	Example participants
36.	Increase MDH source water protection grants to more accurately reflect the existing costs.		Pollution Prevention	x					MDH
37.	Advocate for legislative change to allow communities to charge rates which would help fund reuse and conservation investments.	Water balance	Conservation & Sustainability, Reuse						
38.	Advocate for expanded grant opportunities.	Water balance	Conservation & Sustainability						Met Council
39.	Encourage consideration of nonmunicipal water use (restaurants, apartments, mobile home parks, etc.) when developing comprehensive plans and making land use decisions.	Water balance	Conservation & Sustainability, Integrated Water						
40.	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						
41.	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						

Proposed action		Subregional focus area	Water polcy plan policy	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	Example participants
42.	Need to focus more effort and energy on new development. Currently, we put all the responsibility on individuals to change. Convert lawn to native vegetation, 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.	Water balance; Jurisdictional coordination	Conservation & Sustainability						
43.	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.	Water balance; Jurisdictional coordination	Conservation & Sustainability						

Subregional water supply stakeholders proposed several actions to work on over the next 10 years and beyond, to set the subregion up for long-term success in their priority water supply focus areas. These actions are generally supported by regional water policy. In some cases, stakeholders provided guidance regarding timing and example participants.

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 (Figure 3.12) 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, all 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.

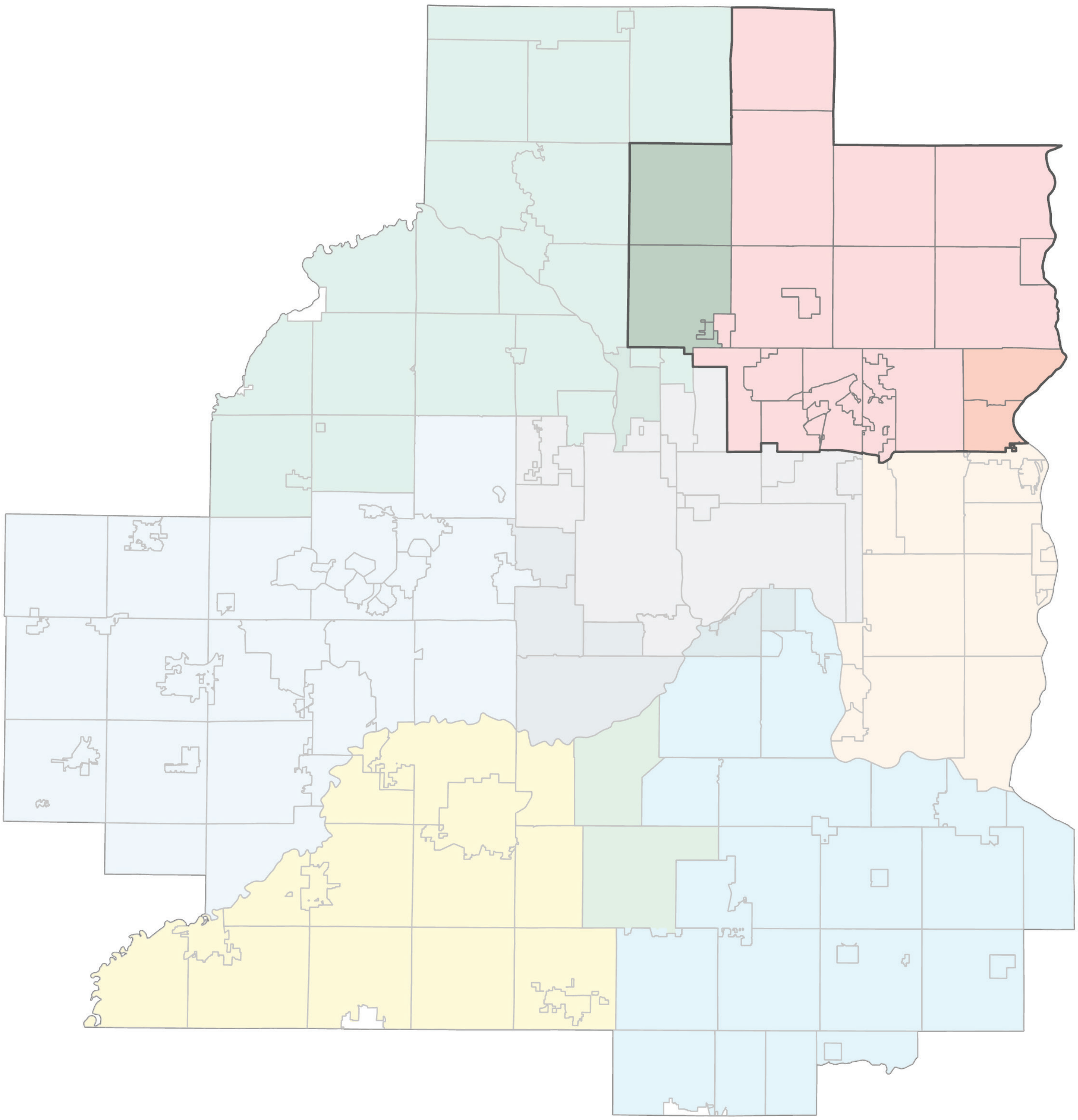
Overall water use peaked in the mid-to-late 2000s. Since then, communities have continued to grow, but overall water use has decreased slightly. Increases in efficiency and wetter summers have likely led to this demand reduction. However, recent droughts and growth have led to a significant increase 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. Current estimates suggest that approximately 60,000 more people 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.

Figure 3.12: Northeast Metro Subregion water supply planning area.



Communities depicted in a color other than pink overlap in multiple subregions. Data source: Water Supply Planning Atlas by the Met Council

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 versus public wells, 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 humanmade 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. A 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 has many benefits, including:

- 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

Pursuing an integrated approach to water supply management has benefits. 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 effort 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 nonresidential, 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 nonpotable 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 used 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.

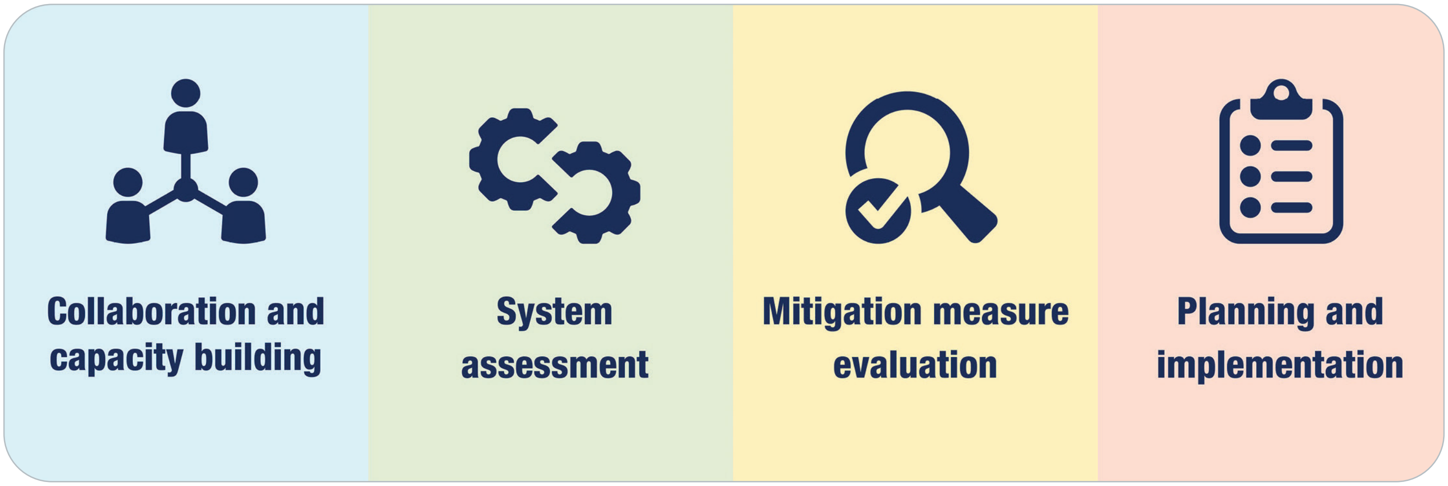
- Identified solution, acquired funding, started to implement projects
- Reliable clean water source, sustainable
- Make decision on whether we have to change – if we do, then solutions and move to projects

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 3.13).

Figure 3.13: The framework for regional action



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

In late 2023 and early 2024, Northeast Metro subregional stakeholders identified several potential actions to address each of their focus areas. Table 3.5 below includes proposed actions, in the words of the subregional stakeholders who drafted them. While the focus is on work needed over the next 10 years, some actions are expected to be ongoing over the next 25 years or more.

This action plan is intended as a high-level, long-term, collaborative planning tool. A refined work plan is expected to develop as collaboration gets underway and depending on resource availability. It is possible and expected that new actions may emerge as important steps that need to be taken in subsequent years.

Many different people and organizations are expected to be involved in the Northeast Metro subregional water supply work. Table 3.5 identifies a few examples that were identified by stakeholders in 2023 and 2024, but this list is incomplete. For example, Washington County's Groundwater Plan includes several actions similar to those identified in Table 3.5, and the county will have an important role to play ensuring that efforts are not being duplicated, and that clear roles/potential partnerships are identified within the county's jurisdiction.

The Met Council is committed to convene and support work planning and implementation for the Northeast Metro subregional water supply group (see the regional action plan in Table 3.2). Early work is expected to include revising and prioritizing actions and defining roles in more detail.

Table 3.5: Proposed Northeast Metro subregional water supply actions

	Proposed action	Subregional focus area	Water polcy plan policy	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	Example participants
COLLABORATION AND CAPACITY BUILDING									
1.	Increase collaboration among agencies for proactive engagement on issues.	Agency coordination	Integrated Water						
2.	Increase communication from agencies to local governments with the intent of reducing surprises.	Agency coordination							
3.	Coordinate data requests, reporting, and requirements for local governments among agencies.	Agency coordination	Monitoring/ Data/ Assessment						DNR, Metro Sewer/water use reporting
4.	Increase staff level coordination across agencies.	Agency coordination	Integrated Water						
5.	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
6.	Connect Homeowners Associations to educational programs.	Changing behaviors and social norms	Conservation & Sustainability, Pollution Prevention						DNR, Local public health, Met Council, MDH
7.	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	Local governments, DNR, schools
8.	Collaborate with schools for education and plantings.	Changing behaviors and social norms	Conservation & Sustainability, Pollution Prevention						
9.	Advocate at the legislature for metro and state-wide funding for treatment needs (public water supply and privately owned wells).	Contamination	Pollution Prevention						
10.	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

Proposed action		Subregional focus area	Water polcy plan policy	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	Example participants
11.	Establish memorandums of agreement between local governments to support collaboration.	Jurisdictional coordination							Local governments in certain areas
12.	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
13.	Share data between communities.	Jurisdictional coordination							
14.	Promote dual uses of recreation areas for recharge and reuse.	Recharge	Conservation & Sustainability, Reuse						DNR
SYSTEM ASSESSMENT									
15.	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
16.	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
17.	Create a regional contaminant database with tools and information for residents to better understand contaminants.	Contamination	Pollution Prevention						Met Council, MDH
18.	Increase funding available for testing and monitoring at the state level.	Contamination	Pollution Prevention						MDH, MDA, MPCA
19.	Identify funding and education for municipalities regarding reuse.	Climate change, Reuse	Reuse						
20.	Target funding to priority issues.	Funding							
21.	Determine needed chemistry for injection of water.	Recharge	Pollution Prevention						Met Council, Land use planners, City planners
22.	Define terminology such as “recharge,” “protection,” and “prevention” to ensure consistency and understanding.	Recharge	Conservation & Sustainability						MPCA, MGS, DNR

Proposed action	Subregional focus area	Water polcy plan policy	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	Example participants
23. Conduct a localized study to understand where injected recharge or designed infiltration make the most sense.	Recharge	Conservation & Sustainability						
24. Determine whether a change in source of water is needed.	Water availability	Conservation & Sustainability						MCES, DNR
MITIGATION MEASURE EVALUATION								
25. Use the best available technology to calculate permits (and provide grants to upgrade).	Conservation	Conservation & Sustainability						DNR
26. Identify the 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?
27. Establish criteria to be reviewed before installing infiltration best management practices.	Recharge	Integrated Water, Pollution Prevention						MPCA, MDH, watersheds
PLANNING AND IMPLEMENTATION								
28. Cities lead by example with installing alternative cover.	Changing behaviors and social norms	Conservation & Sustainability						Cities
29. 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
30. 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
31. Pass limited liability legislation complete with a secure funding source for outreach and education.	Changing behaviors and social norms	Pollution Prevention						
32. Generate revenue for water user education through conservation rates.	Changing behaviors and social norms	Conservation & Sustainability						

Proposed action		Subregional focus area	Water polcy plan policy	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	Example participants
33.	Develop a toolkit for technical and financial assistance for large-volume users.	Conservation	Conservation & Sustainability						
34.	Update DNR appropriations permits process to reflect conservation actions.	Conservation	Conservation & Sustainability						
35.	Pass legislation to increase appropriation fees to more adequately cover the cost of groundwater management.	Conservation	Conservation & Sustainability						
36.	Establish a grant program for public water suppliers to perform system audits and make repairs.	Conservation	Conservation & Sustainability						
37.	Engage in ambient groundwater monitoring.	Contamination	Pollution Prevention	x	x	x	x	x	MPCA
38.	Engage in ambient monitoring for drinking water.	Contamination	Pollution Prevention						MDH
39.	Establish supplemental funding for water systems to help manage changing rates.	Contamination	Pollution Prevention						Met Council, Legislature
40.	Provide education for privately owned well users on well maintenance, testing, and treatment.	Contamination	Pollution Prevention	x					MDH
41.	Provide funding for pretreatment upgrades to old and new plows to reduce chloride use.	Contamination	Pollution Prevention						State, cities, county
42.	Promote municipal water quality as safer and cheaper than purchased bottled water.	Contamination	Pollution Prevention						
43.	Develop a northeast metro subregional supply plan.	Integrated water management	Conservation & Sustainability, Integrated Water						
44.	Pass legislation to allow Minnesota to have groundwater injection control.	Recharge	Conservation & Sustainability						MPCA, DNR, Met Council, EPA
45.	Establish decentralized wastewater treatment and use treated discharge for recharge or reuse.	Recharge	Conservation & Sustainability, Reuse						

Proposed action	Subregional focus area	Water polcy plan policy	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	Example participants
46. Increase ability to use graywater for recharge.	Recharge	Reuse						
47. Explore options to maintain shallow groundwater levels during construction dewatering through nearby injection of pumped water.	Recharge	Conservation & Sustainability, Reuse						
48. Establish water reuse plans for cities.	Reuse	Reuse	x	x				Local governments, partnerships
49. For greywater, increase educational funding for municipalities/residents.	Climate change, Reuse	Reuse						
50. Create and implement model ordinances to safely permit stormwater reuse for irrigation.	Climate change, Reuse	Reuse						
51. Provide guidance and incentives for water reuse, including for less-potable uses.	Reuse	Reuse	x	x				MDH
52. Provide public education about water reuse.	Reuse	Reuse	x					UMN Extension
53. 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

Subregional water supply stakeholders proposed several actions to work on over the next 10 years and beyond, to set the subregion up for long-term success in their priority water supply focus areas. These actions are generally supported by regional water policy. In some cases, stakeholders provided guidance regarding timing and example participants.

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 (Figure 3.14) 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, all 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 declined slightly. 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. Current estimates suggest that approximately 140,000 more people 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.

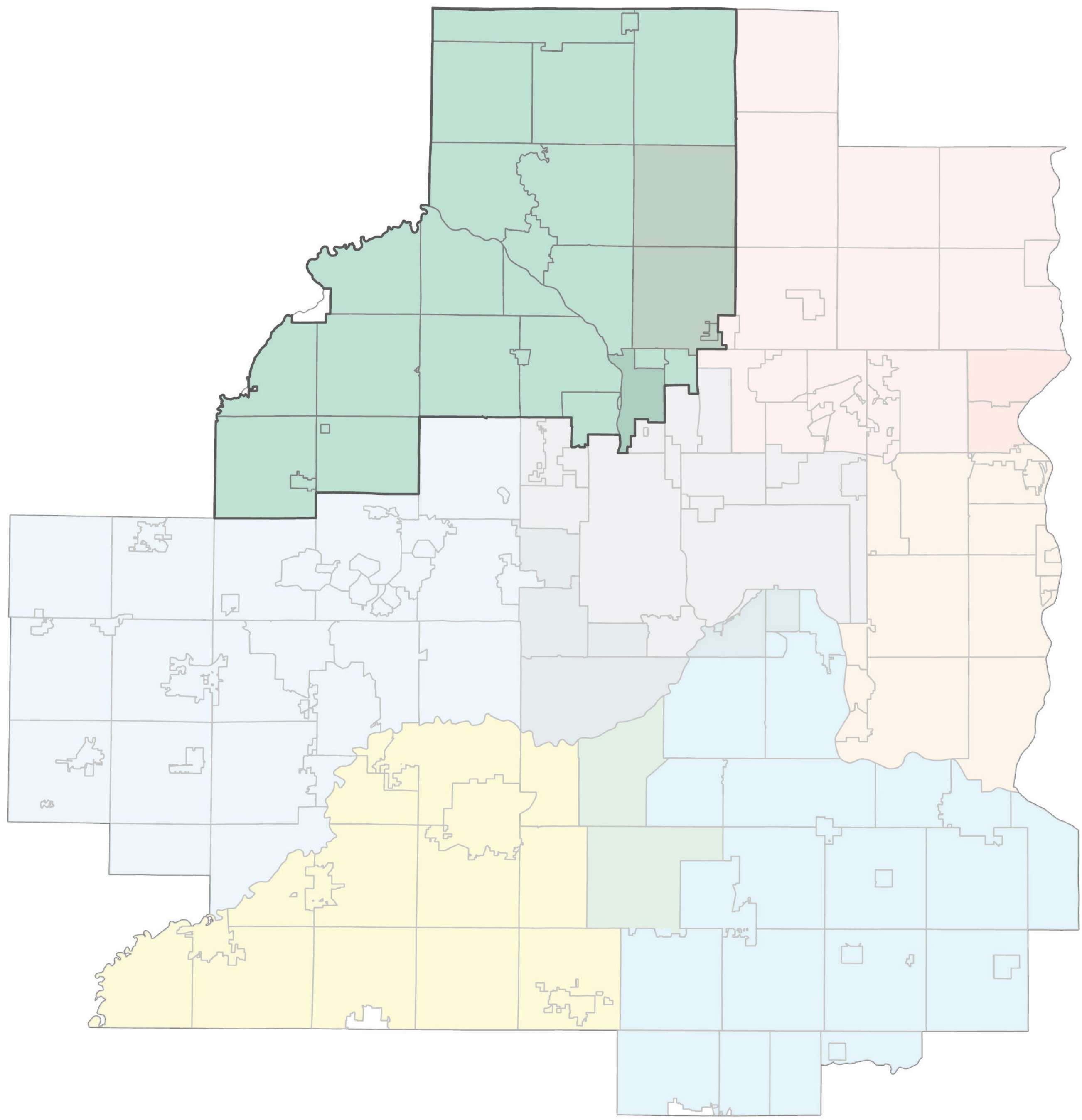
The Northwest Metro chapter of the Water Supply Planning Atlas contains more details in the description of current challenges.

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.

Figure 3.14: Northwest Metro Subregion water supply planning area



Communities depicted in a color other than green overlap in multiple subregions. Data source: Water Supply Planning Atlas by the Met Council

- 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 maintain 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.

Private well users

Education and water testing for users of privately owned wells 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 private 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 private wells)

- 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

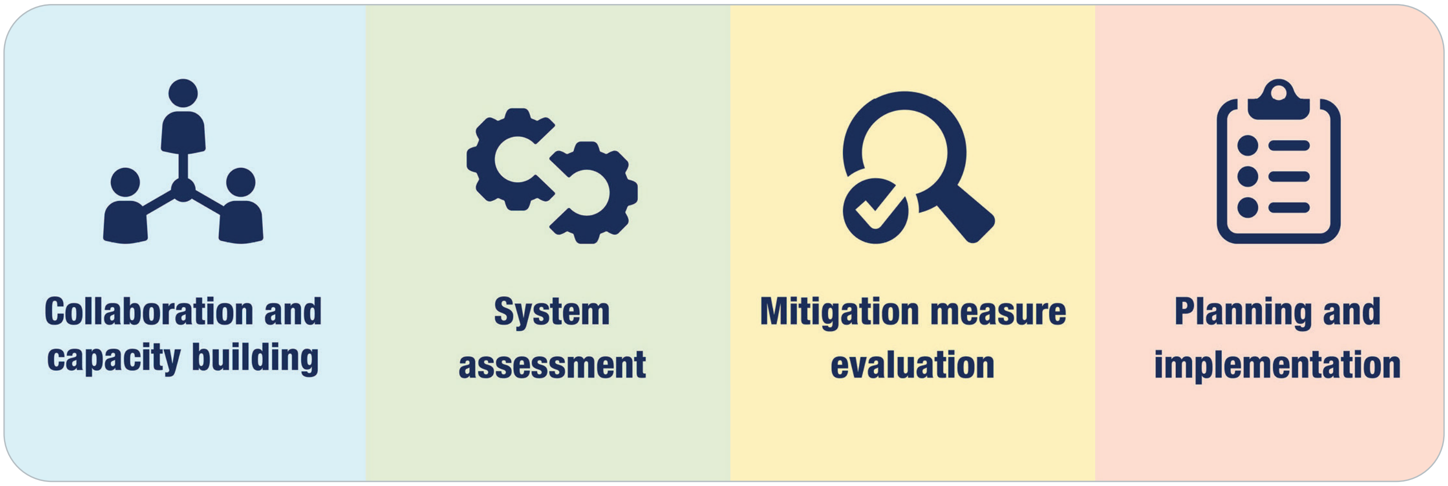
- Robust asset management/GIS system to capture institutional knowledge
- Consistent pipeline of staff entering the field of water supply, distribution, treatment, and storage
- High schools, technical colleges, and universities actively promoting public works
- Succession planning for those retiring
- 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. The actions have been organized according to the Metro Area Water Supply Advisory Committee's 2022 proposed framework to achieve progress on regional goals (Figure 3.15).

Figure 3.15: The framework for regional action



Northwest Metro focus areas generally fall across the framework steps.

Actions to support success

In late 2023 and early 2024, Northwest Metro subregional stakeholders identified several potential actions to address each of their focus areas. Table 3.6 below includes proposed actions, in the words of the subregional stakeholders who drafted them. While the focus is on work needed over the next 10 years, some actions are expected to be ongoing over the next 25 years or more.

This action plan is intended as a high-level, long-term, collaborative planning tool. A refined work plan is expected to develop as collaboration gets underway and depending on resource availability. It is possible and expected that new actions may emerge as important steps that need to be taken in subsequent years.

Many different people and organizations are expected to be involved in the Northwest Metro subregional water supply work. Table 3.6 identifies a few examples that were identified by stakeholders in 2023 and 2024, but this list is incomplete.

The Met Council is committed to convene and support work planning and implementation for the Northwest Metro subregional water supply group (see the regional action plan in Table 3.2). Early work is expected to include revising and prioritizing actions and defining roles in more detail.

Table 3.6: Proposed Northwest Metro subregional water supply actions

	Proposed action	Subregional focus area	Water polcy plan policy	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	Example participants
COLLABORATION AND CAPACITY BUILDING									
1.	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
2.	Encourage more mechanisms for proactive financing rather than reactive funding.	Collaboration, Asset Management	Conservation & Sustainability	x	x				MDH, MPCA, Legislature, local governments
3.	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
4.	Partner with organizations actively participating in STEM events.	Workforce	Water Sector Workforce	x	x				Met Council
SYSTEM ASSESSMENT									
5.	Model future needs for supply and distribution.	Asset Management	Conservation & Sustainability						
6.	Conduct an inventory of existing assets.	Asset Management	Conservation & Sustainability						
7.	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
8.	Define how current data is being used, and share for modeling purposes.	Water Quantity	Monitoring/ Data/ Assessment	x					DNR, Met Council, Cities (pumping data)

	Proposed action	Subregional focus area	Water polcy plan policy	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	Example participants
9.	Develop a comprehensive, dynamic model.	Water Quantity	Monitoring/ Data/ Assessment						Met Council/ DNR
10.	Increase affordability of accurate testing–particularly for PFAS.	Water Quality	Pollution Prevention	x	x				MDH
MITIGATION MEASURE EVALUATION									
11.	Forecast challenges for water supply systems, assess implications and infrastructure needs.	Asset Management	Conservation & Sustainability	x	x	x	x	x	Cities, Agencies
12.	Improve treatment technologies to address contamination discovered, with appropriate policy backing and funding.	Water Quality	Pollution Prevention		x				Private enterprise
13.	Continue ambient monitoring for early detection and monitoring of new contaminants.	Water Quality	Pollution Prevention						MDH, UMCR
PLANNING AND IMPLEMENTATION									
14.	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
15.	Support a bill for groundwater modeling funding to create a regional dynamic model for shared use.	Collaboration	Monitoring/ Data/ Assessment	x	x				
16.	Continue work between agencies to streamline plans.	Collaboration	Integrated Water	x	x	x	x	x	
17.	Continue to improve in best practices that support effective virtual and in-person engagement.	Collaboration		x	x	x	x	x	Agencies
18.	Standardize water conservation best practices across the region and state.	Water Quantity	Conservation & Sustainability		x				
19.	Explore feasibility and needs for injection wells for deeper aquifers.	Water Quantity	Conservation & Sustainability						
20.	Seek funding for solutions to combat contaminants.	Water Quality	Pollution Prevention						State/federal

Proposed action		Subregional focus area	Water polcy plan policy	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	Example participants
21.	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
22.	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
23.	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
24.	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

Subregional water supply stakeholders proposed several actions to work on over the next 10 years and beyond, to set the subregion up for long-term success in their priority water supply focus areas. These actions are generally supported by regional water policy. In some cases, stakeholders provided guidance regarding timing and example participants.

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 (Figure 3.16) 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.

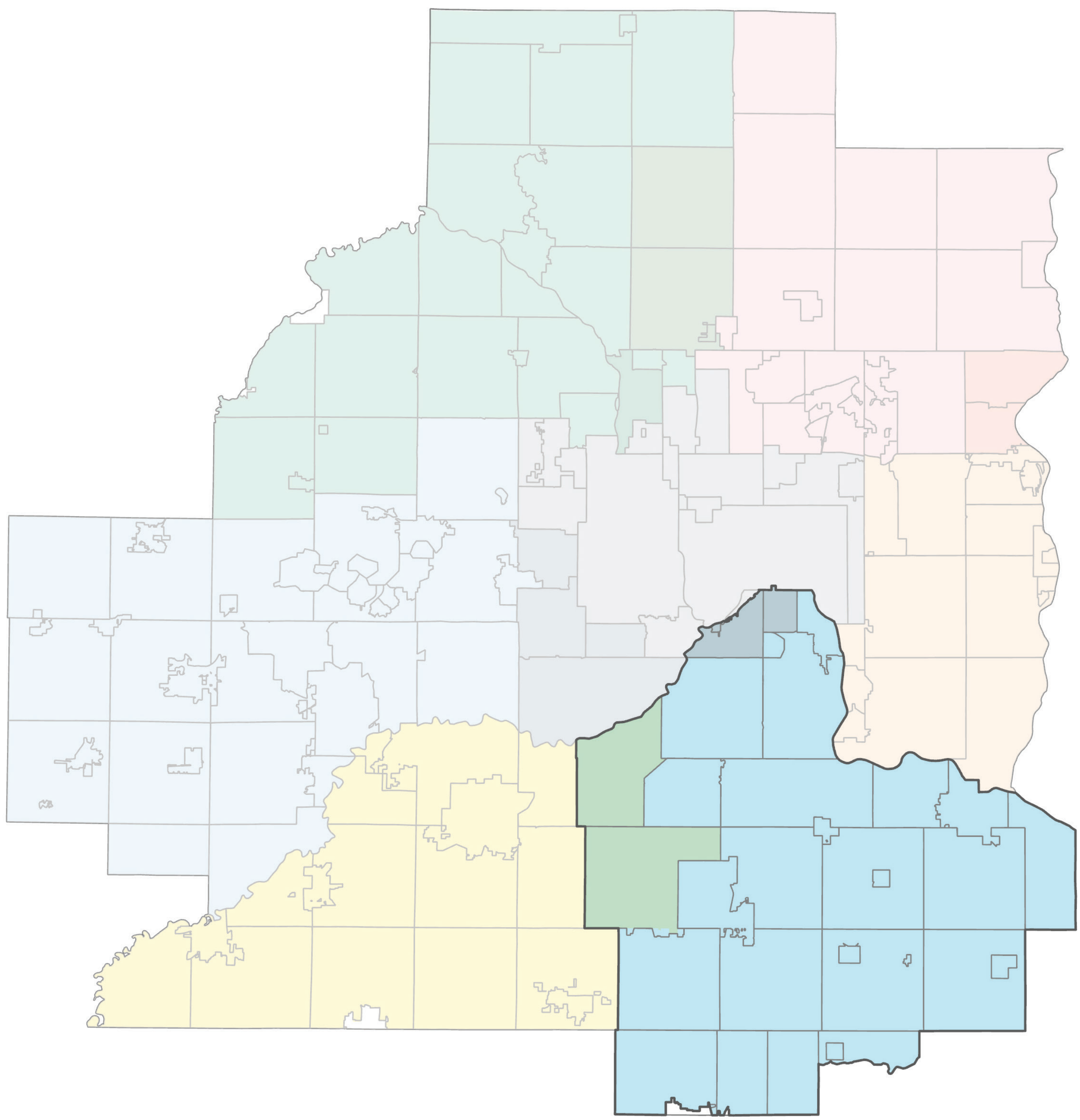
Overall water use peaked in the mid-to-late 2000s. Since then, communities have continued to grow, but overall water use has declined slightly. Increases in efficiency and wetter summers have likely led to this demand reduction. However, recent droughts and growth have led to a significant increase in 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. Current estimates suggest that approximately 80,000 more people 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.

Figure 3.16: Southeast Metro Subregion water supply planning area



Communities depicted in a color other than blue overlap in multiple subregions. Data source: Water Supply Planning Atlas by the Met Council

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.

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.

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.).

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).

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 users of private wells 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.

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.

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.

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.

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

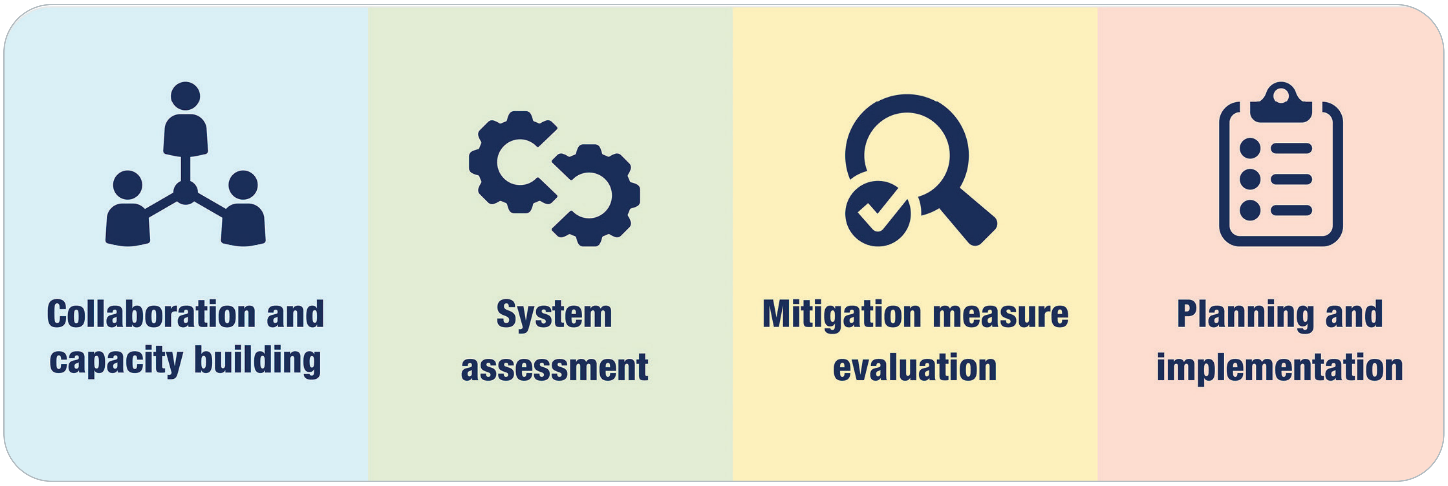
- Potable water leakage is reduced.
- Aging treatment plants/piping/pumping systems are replaced.
- The right maintenance is done at the right time.
- Planning and funding of replacements.
- Coordination between utility and surfacing (for example, conditions assessments).

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 3.17).

Figure 3.17: The framework for regional action



Actions identified to address Southeast Metro subregion focus areas generally fall across the framework steps.

Actions to support success

In late 2023 and early 2024, Southeast Metro subregional stakeholders identified several potential actions to address each of their focus areas. Table 3.7 below includes proposed actions, in the words of the subregional stakeholders who drafted them. While the focus is on work needed over the next 10 years, some actions are expected to be ongoing over the next 25 years or more.

This action plan is intended as a high-level, long-term, collaborative planning tool. A refined work plan is expected to develop as collaboration gets underway and depending on resource availability. It is possible and expected that new actions may emerge as important steps that need to be taken in subsequent years.

Many different people and organizations are expected to be involved in the Southeast Metro subregional water supply work. Table 3.7 identifies a few examples that were identified by stakeholders in 2023 and 2024, but this list is incomplete. For example, Dakota County's Groundwater Plan includes actions related to some identified in Table 3.7, and the county will have an important role to play ensuring that efforts are not being duplicated, and that clear roles/potential partnerships are identified within the county's jurisdiction.

The Met Council is committed to convene and support work planning and implementation for the Southeast Metro subregional water supply group (see the regional action plan in Table 3.2). Early work is expected to include revising and prioritizing actions and defining roles in more detail.

Table 3.7: Proposed Southeast Metro subregional water supply actions

Proposed action		Subregional focus area	Water polcy plan policy	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	Example participants
COLLABORATION AND CAPACITY BUILDING									
1.	Develop marketing resources for water supply field to create awareness with diverse audiences and address misconceptions/misunderstandings.	Workforce	Water Sector Workforce	x	x	x	x	x	Public works (water)
2.	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 start soon	x	x	x	x	Professional organizations, public works and cities, government agencies, schools (secondary, vocational, colleges), parents/society
3.	Highlight region to prospective employees/graduates of related programs.	Workforce	Water Sector Workforce	x	x	x	x	x	Met Council and agencies/ industry leaders
4.	Address/accommodate education/ training/transportation needs to enable workforce.	Workforce	Water Sector Workforce	x	x	x	x	X	Public works (water)
5.	Implement technology to assist work, enhance safety.	Workforce	Water Sector Workforce	x	x	x	x	X	Public works (water)
6.	Advocate with elected councils for funding and legislative actions.	Asset Management	Conservation & Sustainability	X					Public works (water)
7.	Collaborate across departments on asset management (water utility, planning, finance, and others).	Asset Management	Conservation & Sustainability	X					Public works (water)
8.	Build support from other groups to be team players and convince city councils to support asset management recommendations.	Asset Management	Conservation & Sustainability	x					Public works (water)
9.	Provide education about contaminants of concern by geographic location, with action steps.	Contamination	Pollution Prevention	x	X				Met Council, local governments, MDH
10.	Convene work groups to determine what types of reuse are feasible (small scale versus large scale, potable versus nonpotable).	Water Quantity	Reuse						Met Council

Proposed action	Subregional focus area	Water polcy plan policy	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	Example participants
11. Increase understanding, education for school-aged children regarding the value of water.	Water Quantity	Conservation & Sustainability						Schools, state agencies
SYSTEM ASSESSMENT								
12. 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
13. Secure funding for improved and dynamic metro groundwater model.	Water Quantity	Monitoring/ Data/ Assessment	x	x				Met Council with DNR
14. Research the capacity/sustainability of aquifers.	Land Use and Development	Monitoring/ Data/ Assessment	x	x				DNR, Cities, Met Council
15. 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
16. Conduct a technical review of biosolid applications and impacts to groundwater.	Contamination	Pollution Prevention	x					Met Council, MPCA
MITIGATION MEASURE EVALUATION								
17. 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	x	x				U of MN, Locals with DNR, Met Council
18. 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		x				U of MN Turfgrass, farmers
19. 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		x				Farmers, townships, SWCD, MDA

	Proposed action	Subregional focus area	Water polcy plan policy	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	Example participants
20.	Increase funding for drainage water (tile) management of nitrogen and phosphorus.	Ag Systems Change	Pollution Prevention	x	x				Met Council funding to watersheds, SWCDs
21.	Outreach to change mindsets to embrace science-backed approaches to lower water use and chemical applications (example: irrigation management – low flow heads, good transition implementation).	Ag Systems Change	Conservation & Sustainability, Pollution Prevention	x	x				MDA, County, SWCD, U of MN, all partners
22.	Use Met Council-owned lands as demo projects of sustainable agriculture.	Ag Systems Change	Pollution Prevention, Conservation & Sustainability	x					Met Council, MDA, U of MN, SWCD
23.	Develop regional low-salt design guidance (less chloride, deicing).	Contamination	Pollution Prevention	x	x				Met Council, MPCA
24.	Provide guidance and standard messaging on treatment design/ development for emerging contaminants such as PFAS.	Contamination	Pollution Prevention		x				MDA, MPCA
25.	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, water bottling, etc.).	Land Use and Development	Conservation & Sustainability	x	x				DNR, Cities
26.	Provide technical and financial support for privately owned well testing and treatment.	Contamination	Pollution Prevention	x	x				MDH
PLANNING AND IMPLEMENTATION									
27.	Streamline and revamp water supply plans to make them more of a useful document.	Water Quantity	Conservation & Sustainability						DNR, Cities, Public water suppliers
28.	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				

	Proposed action	Subregional focus area	Water polcy plan policy	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	Example participants
29.	Recommend and support changes to statutes and rules regarding Homeowners Association requirements related to irrigation and landscaping.	Land Use and Development	Conservation & Sustainability	x	x				Cities (lobbying), DNR, Extension?
30.	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
31.	Utilize existing tax credit programs to further incentivize conservation.	Ag Systems Change	Conservation & Sustainability	x					Met Council
32.	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						

Subregional water supply stakeholders proposed several actions to work on over the next 10 years and beyond, to set the subregion up for long-term success in their priority water supply focus areas. These actions are generally supported by regional water policy. In some cases, stakeholders provided guidance regarding timing and example participants.


IMAGINE
2050

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 (Figure 3.18) 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 longstanding collaboration and interconnected water supply system. Additionally, 16 of 20 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.

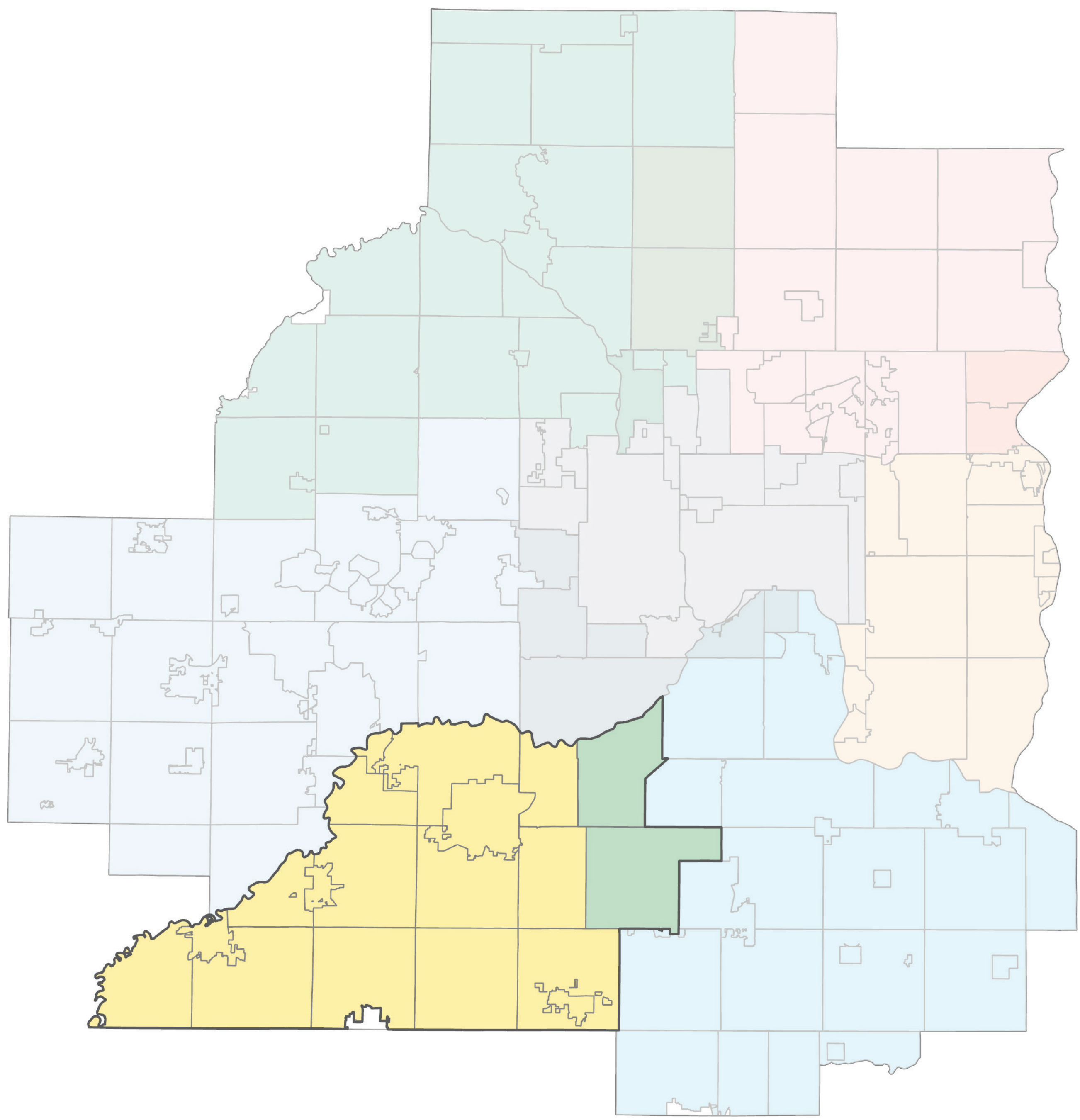
Overall water use peaked in the mid-to-late 2000s. Since then, communities have continued to grow, but overall water use has declined slightly. Increases in efficiency and wetter summers have likely led to this demand reduction. However, recent droughts and growth have led to a significant increase in 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. Current estimates suggest that approximately 80,000 more people 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

Figure 3.18: Southwest Metro Subregion water supply planning area



Communities depicted in a color other than yellow overlap in multiple subregions. Data source: Water Supply Planning Atlas by the Met Council 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.
- Current approaches to outreach and education isn't very hands-on or conversational. Tap into Indigenous people as educators who know history from a young age; they may lack academic credentials but will share personal knowledge.
- Partnering across jurisdictions can cause tension and reduce political desire to work together. Reasons for this can include supply needs differing from city to city, perceived loss of control (what if partnerships fail?), and lack of a strong reason for and value of partnerships. Cities shy away from Met Council trying to regionalize water supply, but there may be value to that.
- 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, bottled water businesses, and data centers).
- 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, there is the perception that 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.
- Users of rural privately owned domestic wells 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:

- Met 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, and Arbor Day Foundation, among others.

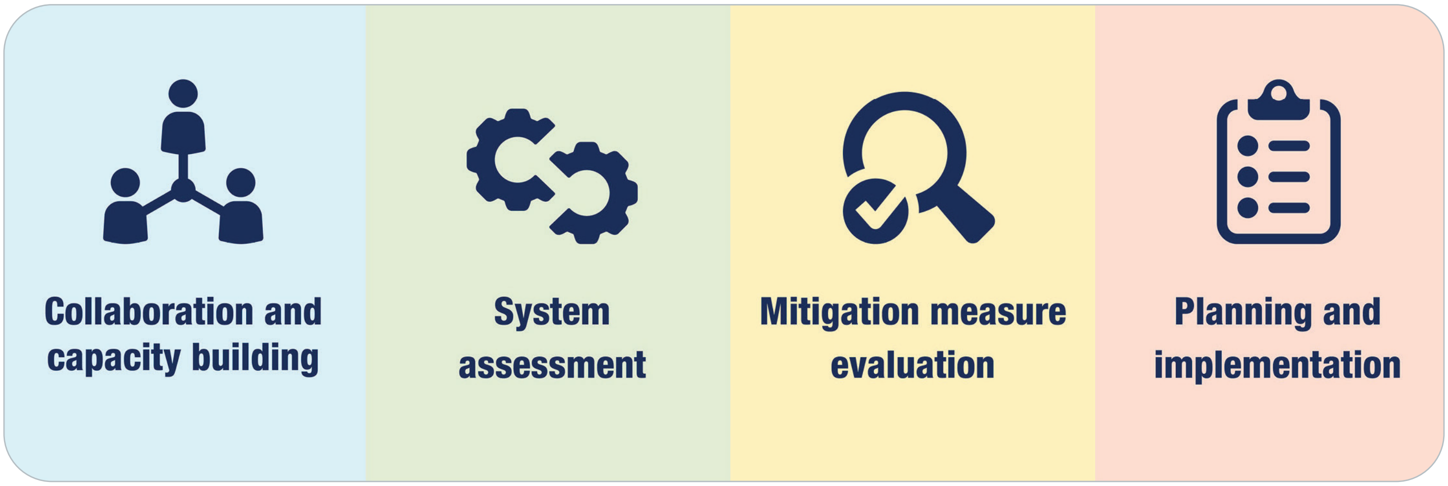
Additional work is also needed, particularly to address the issues and barriers discussed above. Examples:

- 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 3.19).

Figure 3.19: The framework for regional action



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 subregion 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.

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.

Evaluating and managing water supply system capacity

If work focusing on evaluating and managing water supply system capacity is successful, we will understand what 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

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.

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.

Actions to support success

In late 2023 and early 2024, Southwest Metro subregional stakeholders identified several potential actions to address each of their focus areas. Table 3.8 below includes proposed actions, in the words of the subregional stakeholders who drafted them. While the focus is on work needed over the next 10 years, some actions are expected to be ongoing over the next 25 years or more.

This action plan is intended as a high-level, long-term, collaborative planning tool. A refined work plan is expected to develop as collaboration gets underway and depending on resource availability. It is possible and expected that new actions may emerge as important steps that need to be taken in subsequent years.

Many different people and organizations are expected to be involved in the Southwest Metro subregional water supply work. Table 3.8 identifies a few examples that were identified by stakeholders in 2023 and 2024, but this list is incomplete. For example, as Scott County's Groundwater Plan is developed, the county will have an important role to play to ensure that efforts are not being duplicated and that clear roles are identified for potential partners within the county's jurisdiction.

The Met Council is committed to convene and support work planning and implementation for the Southwest Metro subregional water supply group (see the regional action plan in Table 3.2). Early work is expected to include revising and prioritizing actions and defining roles in more detail.

Table 3.8: Proposed Southwest Metro subregional water supply actions

Proposed action		Subregional focus area	Water polcy plan policy	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	Example participants
COLLABORATION AND CAPACITY BUILDING									
1.	Reach out more to the Indigenous community – human connection is important and relevant.	All	All						Municipalities
2.	Scope actions by thinking more broadly by aquifer as opposed to political boundaries.	Partnerships	Conservation & Sustainability, Pollution Prevention, Integrated Water						All water users and water management organization
3.	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
4.	Develop and use coordinated tools for tracking water supply planning and implementation partnerships.	Partnerships	All	x					Met Council
5.	Create educational and training materials that can be adapted for various communities, audiences.	Education/ Engagement	All						Met Council, Indigenous communities
6.	Provide local public education opportunities to understand, support, and implement water management technologies.	Education/ Engagement	Conservation & Sustainability, Pollution Prevention						MDH, DNR, MGS, Indigenous communities
7.	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
8.	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						

Proposed action	Subregional focus area	Water polcy plan policy	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	Example participants
9. Build up state-level capacity to enforce water quality regulations.		Pollution Prevention						MDA, MPCA, DNR
SYSTEM ASSESSMENT								
10. 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						DNR, MDH, MGS, USGS, other agencies working together
11. Submit required information into one location and government, so agencies are able to spit out what they need or reduce duplicative work.	Data and Tools, Partnerships	Monitoring/ Data/ Assessment						Agencies, locals
12. 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						Met Council
13. Improve large-scale groundwater modeling to help systems understand supply.	Data and Tools	Monitoring/ Data/ Assessment						DNR and cities
14. Drill monitoring wells to fill gaps where information is needed and useful (including at unique features like fens, springs, and trout streams).	Data and Tools	Monitoring/ Data/ Assessment	x	x				DNR Eco Waters
15. 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	x	x				Water agencies, cities and townships
16. Maintain or increase Met Council monitoring program (and fix billing issues).	Data and tools	Monitoring/ Data/ Assessment						
17. Evaluate monitoring data to ensure its credibility.	Data and Tools	Monitoring/ Data/ Assessment	x	x				DNR, Academics, MN Ground Water Association
18. Work with Met Council and MDH to better understand arsenic contamination.	Data and Tools	Pollution Prevention						

Proposed action		Subregional focus area	Water polcy plan policy	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	Example participants
19.	Update the Scott County geologic atlas.	Water System Capacity	Conservation & Sustainability	x					MGS, DNR, Scott County
20.	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						Local
MITIGATION MEASURE EVALUATION									
21.	Research the connection of wastewater treatment plant discharge versus aquifer recharge.	Water System Capacity	Reuse, Integrated Water						Met Council
PLANNING AND IMPLEMENTATION									
22.	Extend plans to seven generations (~150 years).	Plan Alignment, Water System Capacity	Conservation & Sustainability						
23.	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
24.	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
25.	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
26.	Support building and development codes that prioritize water efficiency, such as ordinances to permit stormwater reuse for irrigation.	Efficiency, Partnerships	Conservation & Sustainability	x					Municipalities
27.	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

Proposed action	Subregional focus area	Water polcy plan policy	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	Example participants
28. Update plans for developing fringe/ urban expansion in a way that regional stormwater reuse is planned and developed just before or ahead of land use development.	Efficiency, Partnerships, Plan Alignment	Water-centered Growth & Development, Reuse						Local governments maybe WD/ WMOs
29. Continue work between agencies to streamline plans.	Collaboration	Integrated Water						Met Council
30. Collaborate on wellhead protection planning and implementation.	Collaboration	Integrated Water, Pollution Prevention						Counties
31. Align plans and messaging around water conservation.	Efficiency, Plan Alignment	Conservation & Sustainability						Communities, public
32. Collect data that supports the issue of plan alignment.	Plan Alignment	Monitoring/ Data/ Assessment						
33. Address land use practices and stormwater pond management to restore and protect prairie and natural areas and water supply sources.	Plan Alignment	Integrated Water,						
34. Deal with PFAS in a coordinated way.	Plan Alignment	Pollution Prevention						
35. 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						
36. 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						
37. Increase regional water supply and quality management at the aquifer level, not as a “pipe system” but as a cycle/framework.	Plan alignment, Water System Capacity	Conservation & Sustainability, Integrated Water, Pollution Prevention						

	Proposed action	Subregional focus area	Water polcy plan policy	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	Example participants
38.	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
39.	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
40.	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
41.	Work to make implementing stormwater reuse for irrigation a viable option. Continue to promote rain barrels to the public for irrigation purposes.	Water System Capacity, Education/ Engagement, Efficiency	Reuse	x					Watershed districts
42.	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						
43.	Create and implement model ordinances to permit stormwater reuse for irrigation.	Efficiency	Conservation & Sustainability	x					Local water suppliers
44.	Implement ordinances for common sense outdoor water use (example: no watering between 10 am – 6 pm).	Efficiency	Conservation & Sustainability	x					Local water suppliers
45.	Construct surface water withdrawal and storage systems to protect groundwater use.	Water System Capacity	Conservation & Sustainability			x	x	x	State agencies, local water suppliers
46.	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

	Proposed action	Subregional focus area	Water polcy plan policy	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	Example participants
47.	Provide education about contaminants of concern by geographic location, with action steps.	Education/ Engagement	Pollution Prevention	x	X				Met Council, local governments, MDH
48.	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
49.	Conduct a technical review of biosolid applications and impacts to groundwater.	Data and Tools	Pollution Prevention	x					Met Council, MPCA
50.	Develop regional low-salt design guidance (less chloride, deicing).	Education/ Engagement	Pollution Prevention	x	x				Met Council, MPCA
51.	Provide guidance on treatment design/development for emerging contaminants such as PFAS.	Education/ Engagement	Pollution Prevention		x				MDA, MPCA

Subregional water supply stakeholders proposed several actions to work on over the next 10 years and beyond, to set the subregion up for long-term success in their priority water supply focus areas. These actions are generally supported by regional water policy. In some cases, stakeholders provided guidance regarding timing and example participants.


IMAGINE 2050

West 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 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 (Figure 3.20) 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.

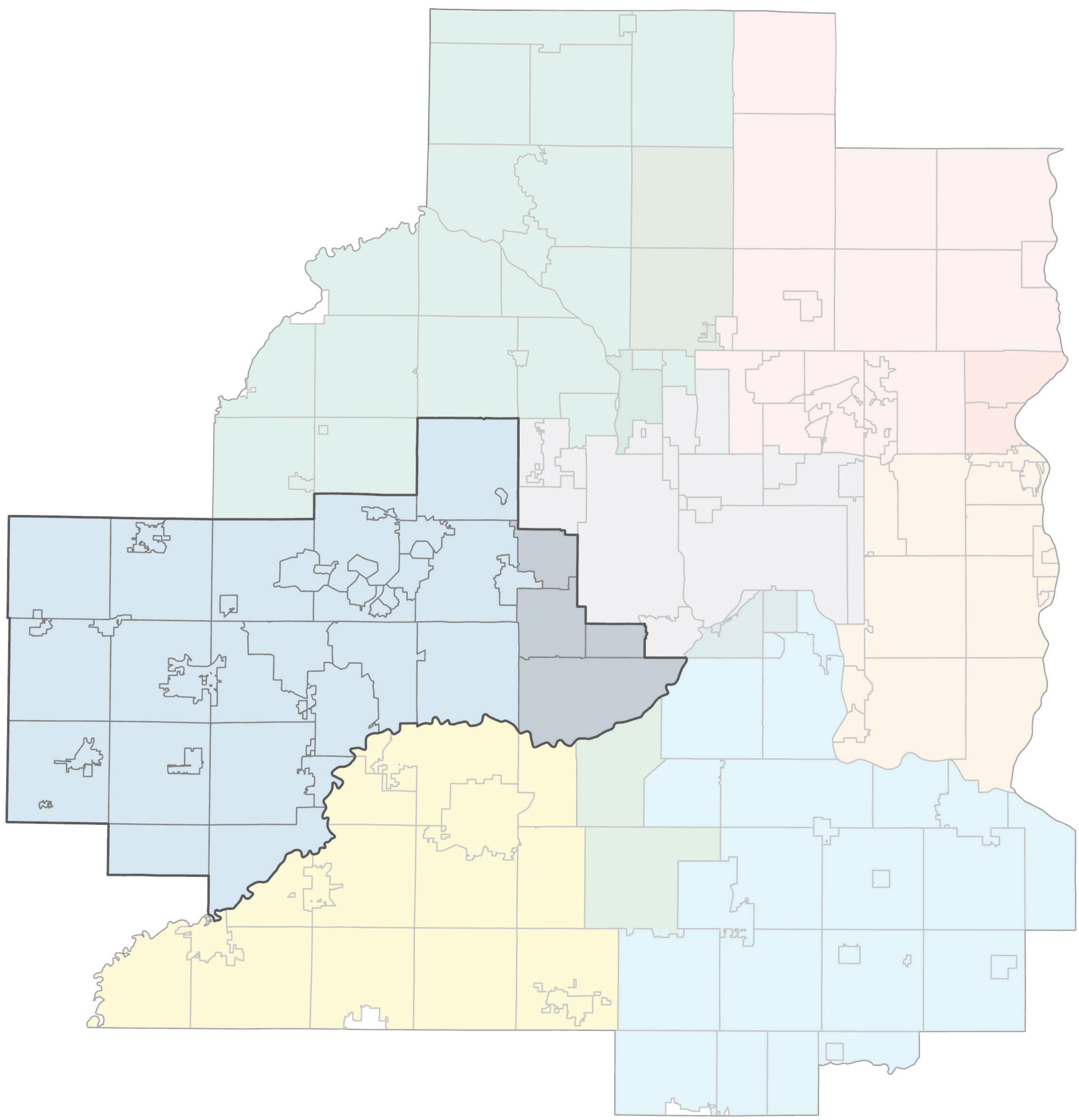
Additionally, 39 of the 44 communities in the West Metro subregion overlap with or are adjacent to land that has been identified as a Drinking Water Supply Management Area. In some cases, the overlapping nature of these management areas has presented both a challenge and opportunity for collaboration 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 decreased slightly. 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. Current estimates suggest that approximately 155,000 more people 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

Figure 3.20: West Metro Subregion water supply planning area.



Communities depicted in a color other than blue overlap in multiple subregions. Data source: Water Supply Planning Atlas by the Met Council 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:

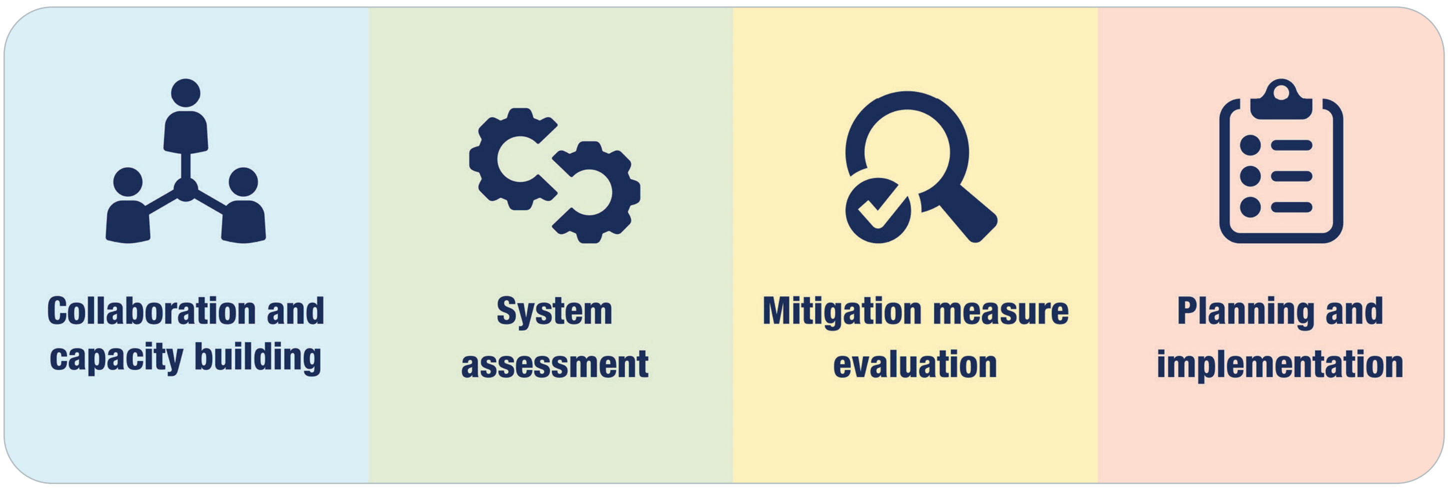
- To address the challenge of cost and affordability, there may be opportunities to expand funding sources, explore how development can help pay for the water supply to support it, and to leverage new technologies.
- To address the challenge of PFAS, there are evolving treatment opportunities that could 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 3.21).

Figure 3.21: The framework for regional action



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 multigenerational, 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:

- Triggers, outreach, and actions for drought response will be developed and implemented across the region, taking into consideration different water sources and users.
- Per capita water use will be reduced.
- Existing permit pumping limits will be consistently enforced.
- Use of grey water will increase.

- Communications about water restrictions will be improved so that suppliers and users understand them.

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 nonpotable use are minimized.
- Fewer contaminants are identified 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.
- 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 wells (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.

Communications 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 them, and how their utilities work to keep them 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. If communication and outreach is successful, cities will not have to be the heavy hand, because residents will make better choices.

Actions to support success

In late 2023 and early 2024, West Metro subregional stakeholders identified several potential actions to address each of their focus areas. Table 3.9 below includes proposed actions, in the words of the subregional stakeholders who drafted them. While the focus is on work needed over the next 10 years, some actions are expected to be ongoing over the next 25 years or more.

This action plan is intended as a high-level, long-term, collaborative planning tool. A refined work plan is expected to develop as collaboration gets underway and depending on resource availability. It is possible and expected that new actions may emerge as important steps that need to be taken in subsequent years.

Many different people and organizations are expected to be involved in the West Metro subregional water supply work. Table 3.9 identifies a few examples that were identified by stakeholders in 2023 and 2024, but this list is incomplete. For example, Carver County's Groundwater Plan includes several actions similar to those identified in Table 3.9, and the county will have an important role to play ensuring that efforts are not being duplicated, and that clear roles/potential partnerships are identified within the county's jurisdiction.

The Met Council is committed to convene and support work planning and implementation for the West Metro subregional water supply group (see the regional action plan in Table 3.2). Early work is expected to include revising and prioritizing actions and defining roles in more detail.

Table 3.9: Proposed West Metro subregional water supply actions

Proposed action		Subregional focus area	Water polcy plan policy	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	Example participants
COLLABORATION AND CAPACITY BUILDING									
1.	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
2.	Support workforce retention through succession planning and knowledge transfer.	Asset management & stewardship	Water Sector Workforce, Conservation & Sustainability	x	x	x	x	x	
3.	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,
4.	Coordinate funds and subregion to work with professional organizations and lobbyists to work with the legislature.	Conservation	Conservation & Sustainability	x					Met Council
5.	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 versus 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

Proposed action		Subregional focus area	Water polcy plan policy	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	Example participants
6.	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
7.	Build up state-level capacity to enforce regulations.	Water Quality	Pollution Prevention						MDA, MPCA, DNR
SYSTEM ASSESSMENT									
8.	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. Example:	Asset management & stewardship	Conservation & Sustainability	x					Local, West Metro Working Group, Met Council
9.	Create data collection standards across state agencies that are easy to implement for local water suppliers.	Make Meaning of Science	Monitoring/ Data/ Assessment	x					Met Council and MDH
10.	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	x					Local governments and Met Council
11.	Create a database of current conservation ordinances that are being implemented in the metro.	Conservation	Conservation & Sustainability, Monitoring/ Data/ Assessment	x					Met Council
12.	Improve large-scale groundwater modeling to help systems understand supply. Like 5 above: 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.	Water Quality, Make Meaning of Science, Conservation, Data, Meeting Current and Future Need	Conservation & Sustainability, Monitoring/ Data/ Assessment		x				DNR and cities

Proposed action		Subregional focus area	Water polcy plan policy	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	Example participants
MITIGATION MEASURE EVALUATION									
13.	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
15.	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	x	x	Watersheds, Met Council, cities
16.	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	x	x	Governor, DNR, Met Council?
17.	Support research on water conservation and restrictions methods to learn which methods better conserve water.	Conservation	Conservation & Sustainability	x					DNR
18.	Work to make implementing stormwater reuse for irrigating a viable option. Continue to promote rain barrels to the public for irrigation purposes.	Increased Resiliency to Effects of Weather, Conservation	Reuse	x					Watershed districts
19.	Provide regional/subregional educational programming on water quality at all levels	Water Quality	Pollution Prevention						

Proposed action		Subregional focus area	Water polcy plan policy	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	Example participants
PLANNING AND IMPLEMENTATION									
20.	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 evaluations.	Asset management & stewardship	Conservation & Sustainability	x	x	x	x	x	American Water Works Association
21.	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						
24.	Create and implement model ordinances to permit stormwater reuse for irrigation.	Increased Resiliency to Effects of Weather	Reuse	x					Local water suppliers
25.	Implement ordinances for common sense outdoor water use (example: no watering 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

	Proposed action	Subregional focus area	Water polcy plan policy	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	Example participants
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						
31.	Collaborate on the development and completion of a multi-community wellhead protection plan update and implementation process.	Planning	Planning	X	X				Cities, MDH, watersheds

Subregional water supply stakeholders proposed several actions to work on over the next 10 years and beyond, to set the subregion up for long-term success in their priority water supply focus areas. These actions are generally supported by regional water policy. In some cases, stakeholders provided guidance regarding timing and example participants.

2050

SECTION 4: WATER POLICY PLAN AMENDMENT PROCESS

Natural and built environments can change quickly, with associated effects on water and water utilities, particularly as the region considers the rapidly evolving and highly variable conditions associated with climate change. Likewise, as new research and regulatory conditions dictate, new technologies are developed, and new understanding is gained, water planners, managers, and service providers need to adapt and incorporate new knowledge into their work and operations.

Regional plans and policies must also be able to adapt to new conditions and learning. Therefore, the Met Council has a process in place to either amend or add policies, as needed. The Met Council will engage, consult, and collaborate with Tribal governments, federal and state agencies, local government units, watershed organizations, water utilities and service providers, and residents of the metro region in the amendment process.

The Met Council will amend the 2050 Water Policy Plan, including the Wastewater System Plan and the Metro Area Water Supply Plan, only for a substantial revision. A substantial revision is defined by the Met Council as (1) a proposed revision that is intended to or could have the effect of changing the direction or intent of adopted Met Council policy, (2) addition or deletion of a policy, or (3) addition or deletion of any Wastewater System Plan component or a Metro Area Water Supply Plan action plan element.

The policy amendment process is as follows:

1. To begin the amendment process, there must be some interest or issue in current policy that may warrant an amendment. An issue or gap within the current adopted policies must first be identified, with the associated water sustainability issue defined.

2. Once a policy issue or gap is identified, a task force may be assembled.

    a. The Met Council should authorize the establishment of a task force and charge the task force to investigate the question at hand. The task force should consist of a diverse set of stakeholders (community size, geographic coverage, history of interest or experience in the policy area, etc.).

    b. For water supply-related elements, the existing Metro Area Water Supply Advisory Committee (MAWSAC) and their Technical Advisory Committee (TAC) may fill this role.

    c. If the task force makes recommendations or suggests actions, those are to be presented to the Environment Committee for recommendation to be sent to the full Met Council for approval to be released for public hearing.

3. If policy changes are approved or adopted by the Met Council, the Met Council will authorize a public hearing regarding the proposed changes.

4. After a public hearing, the comments are brought to the Environment Committee and MAWSAC (in the case of the Metro Area Water Supply Plan) for review. The Environment Committee will review comments and any changes and send the revised plan section to the full Met Council for approval.

5. Next, the Met Council reviews the policy recommendations and public comment summary.

6. Assuming no adverse public comments and recommended approval of language by the Environment Committee and by MAWSAC (in the case of the Metro Area Water Supply Plan), the Met Council can adopt the changes to the policy in the Water Policy Plan.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Appendices

Appendix A

Glossary of Water Terms

Built environment: The developed landscapes that include engineered water systems (stormwater conveyance, water supply utilities, subsurface sewage treatment systems, and wastewater systems and utilities).

Contaminants of emerging concern (CECs): Substances and microorganisms, including manufactured or naturally occurring physical, chemical, biological, radiological, or nuclear materials, which are known or anticipated in the environment, that may pose newly identified or re-emerging risks to human health, aquatic life, or the environment.

Drinking Water Supply Management Areas (DWSMAs): Areas containing the wellhead protection area but outlined by clear boundaries, like roads or property lines. The DWSMA is managed in a wellhead protection plan, usually by a city.

Ecosystem services: Ecosystem services are the benefits that nature provides to human well-being: clean air and water, protection from natural disasters, fisheries, crop pollination and control of pests and disease, and outdoor places for recreation, solitude, and renewal.

Equity (defined by the Met Council): Historically excluded communities – especially Black communities, Indigenous communities, and communities of color – have measurable improved outcomes through an intentional and consistent practice of adapting policies, systems, services, and spending so that they contribute to the repair of both historic and ongoing injustice.

Inflow and infiltration: Stormwater and groundwater that makes its way into sanitary sewer pipes, mixes with sanitary wastewater, and gets unnecessarily treated at water resource recovery facilities. Inflow is clear water that enters the wastewater system through rain leaders, sump pumps, or foundation drains that are illegally connected to sewer lines. The largest amount of inflow occurs during heavy rainstorms. Infiltration is groundwater that seeps into cracked or broken wastewater pipes.

Local: Local units of government are cities, townships, counties, and special districts such as lake improvement, special service, soil and water conservation, watershed, school, and regional development commissions.

Local control: The authority of local governments to make decisions and regulations to manage their own affairs. For example, water supply is an area of local control driven by local needs and decisions.

Local controls: Policies, ordinances, programs, and incentives to encourage desired behaviors. Examples are stormwater infiltration guidance, water efficiency grants, and others.

Reclaimed water: Wastewater that has been treated to a higher standard for beneficial use.

Recreational water: Waters that are used for swimming, fishing, boating, and other activities for enjoyment, rest, and relaxation.

Regional benefit (wastewater): If an action or decision related to the regional wastewater system supports regional growth, benefits more than one community, is cost effective, and enhances knowledge and experience that can be used to further our mission and goals.

Resource recovery: The process of recovering materials or energy from a potential waste stream and recycling them for a second use or into the environment. Some methods include reclaimed water for reuse or wastewater treatment producing clean water.

Rural Service Area: Communities in the region that have a range of uses including cultivated farmland, vineyards, hobby farms, gravel mines, woodlands, small towns, scattered and clustered housing, open spaces, and significant expanses of the region's natural resources. Investments in regional services are limited in the Rural Service Area, except for in the regional parks system. The Rural Service Area recognizes the desire for rural and small-town residential choices and protects the vital agricultural lands and natural amenities of the area. The Rural Service Area is divided into four community designations: Agricultural Area, Diversified Rural Area, Rural Residential, and Rural Center.

Source water: The bodies of water that provide water to public water supplies and privately owned wells, including groundwater, lakes, and rivers.

Urban Service Area: Communities in the region with the highest level of investment in regional and local services, including regional wastewater services. These communities include a variety of residential neighborhoods, housing types, and densities, along with a varying mix of commercial and industrial areas. The Urban Service Area is divided into four community designations: Urban, Urban Edge, Suburban, and Suburban Edge.

Wastewater reuse: The practice of treating wastewater from a water resource recovery facility or wastewater treatment plant to a higher standard for beneficial use before releasing it back into the water cycle.

Water sustainability: The responsible management of water resources (ground and surface water) to not harm ecosystems, degrade water quality, and to ensure their availability for current and future generations while ensuring a balance between economic, environmental, and social well-being.

Water supply sustainability: Water use is sustainable when the use does not harm ecosystems, degrade water quality and quantity, or compromise the ability of future generations to meet their own needs. 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
  - Impacts to surface waters, including diversions of groundwater that affect them, to maintain flows and water levels
  - 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 the original long-term design capacity for water supply infrastructure, when that design capacity is based on sustainable sources.
- Water users are efficient in their day-to-day use and are prepared to forego nonessential water use during emergencies.
- Risk to infrastructure and public health is managed through ongoing assessment and investment.

Water benefits: The range of useful and advantageous outcomes experienced by nature, society, communities, and individuals related to water. Benefits may be social, cultural, economic, and health related. Benefits may be experienced over small or broad areas, over short or longer periods of time, and by single or multiple generations.

Water conservation: Any beneficial reduction in water losses, waste, or use.

Water resource recovery facility: Updated term for wastewater treatment plant.

Water services: The breadth of benefits provided by clean and abundant water in the natural and built environment; including those derived from water service providers like water supply or wastewater utilities. Benefits may be felt directly or indirectly by society and fall into the following categories: regulation, provision, support, and cultural.

IMAGINE 2050

water policy plan

Appendix B

Comprehensive plan submittal requirements

Local Surface Water Management Plan Elements

Background

Local water management plans are crucial in helping the region meet the challenge of cost-effective protection and management of water quality and quantity.

In 1995, the Metropolitan Land Planning Act was amended to require that each city and township's comprehensive plan include a local water management plan. Local water management plans need to be consistent with the requirements in Minnesota Stat. §103B.235, the Metropolitan Land Planning Act, and with Minnesota Rules Part 8410.0160.

In general, local water plans need to include a summary of the priorities and problems in the community; structural, nonstructural, and programmatic actions to take to address the priorities and problems; and clearly identified funding mechanisms to fix the problems.

Local water management plans are reviewed by the Met Council as part of the local comprehensive planning process at that same time as they are reviewed by the appropriate watershed organization(s). Met Council staff send comments to the appropriate watersheds for their use in approval of the plan. Once approved, the city or township needs to formally adopt the final plan and send a copy of the final plan to the Met Council.

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

Elements

Required elements of local water management plans are identified in Minnesota Rules Chapter 8410 Part 8410.061 and in Minnesota Statute §103B.235.

The following is a list of those requirements:

1. An executive summary that summarizes the highlights of the local water plan.

2. A summary of the appropriate water resource management-related agreements that have been entered into by the local community.

3. A description of the existing and proposed physical environment and land use. Data may be incorporated by reference for other required elements of this section as allowed by the watershed management organization (WMO). The community should be aware that not all WMO plans will contain

the level of detail needed for the community and, in those instances, the community will need to provide additional information. In addition, the following must be defined in the plan:

a. Drainage areas

b. Volumes, rates, and paths of stormwater runoff. (Runoff rates are recommended for a 24-hour precipitation event with a return frequency of 1 or 2 years. Communities with known flooding issues may want to require rate control for storms with other return frequencies such as 10-, 25- or 100-year events.)

c. An assessment of existing or potential water resource-related problems. At a minimum, the plan should include: A prioritized assessment of the problems related to water quality and quantity in the community.

4. A local implementation program/plan that includes prioritized nonstructural, programmatic, and structural solutions to priority problems identified as part of the assessment completed for number 4, above. Local official controls must be enacted within six months of the approval of the local water plan. The program/plan must:

   a. Include areas and elevations for stormwater storage adequate to meet performance standards or official controls established in the WMO plan(s).

   b. Define water quality protection methods adequate to meet performance standards or official controls. At a minimum, the plan should include:

      - Information on the types of best management practices to be used to improve stormwater quality and quantity. (A five-year establishment period is recommended for native plantings and bioengineering practices.)

      - The maintenance schedule for the best management practices. (The maintenance schedule in plans submitted by regulated Municipal Separate Storm Sewer System (MSA) communities must be consistent with BMP inspection and maintenance requirements of the MS4 Permit.)

   c. Clearly define the responsibilities of the community from that of the WMO(s) for carrying out the implementation components.

   d. Describe official controls and any changes to official controls. At a minimum, the plan should include:

      - An erosion and sediment control ordinance consistent with NPDES Construction Stormwater permit requirements and other applicable state requirements.

      - Identify ways to control runoff rates so that land-altering activities do not increase peak stormwater flow from the site for a 24-hour precipitation event with a return frequency of 1 or 2 years. Communities with known flooding issues may want to require rate control for storms with other return frequencies (10-year, 25-year or 100-year).

e. Include a table that briefly describes each component of the implementation program and clearly details the schedule, estimated cost, and funding sources for each component including annual budget totals.
f. Include a table for a capital improvement program that sets forth by year, details of each contemplated capital improvement that includes the schedule, estimated cost, and funding source.
g. A section titled "Amendments to Plan" that establishes the process by which amendments may be made.

The following is a list of suggested plan elements in addition to those requirements:

a. A list of the regional priority waters within their jurisdiction. If the water is monitored, please provide information about who is responsible, the monitoring frequency, and analytes of interest.
b. A list of any impaired waters within their jurisdiction as shown on the current Minnesota Pollution Control Agency (MPCA) 303d Impaired Waters list.
c. Identify and map source water protection areas and their corresponding vulnerabilities in the community.
d. If a Watershed Restoration and Protection Strategy (WRAPS) or TMDL study has been completed for the community, the community should include implementation strategies, including funding mechanisms, that will allow the community to carry out the recommendations and requirements from the WRAPS or TMDL specific to that community. More information on the MPCA's WRAPS and TMDL programs can be found on the MPCA's web site at www.pca.state.mn.us.

    - Communities with designated trout streams should identify actions in their plan to address the thermal pollution effects from development.
    - Communities with special waters, such as outstanding resource value waters, need to meet state requirements for development near these waters.

e. Consider use of NOAA Atlas 14, Volume 8 (Precipitation Frequency Atlas of the United States) or the most current version available to calculate precipitation amounts and stormwater runoff rates. (MPCA uses NOAA Atlas 14 in calculations to determine whether the 1" standard has been met.)
f. Consider adoption of the MPCA Minimal Impact Design Standards (MIDS) performance goals and flexible treatment options.
g. For communities that do not adopt MIDS, the plan should use stormwater practices that promote

infiltration/filtration and decrease impervious areas, such as with better site design and integrated stormwater management, where practical. (Communities must meet requirements of the MS4 permit if they are regulated. MS4 permits put preference on green infrastructure, including infiltration. Construction permits will govern this either way, and also requires use of green infrastructure when possible.)

h. A review of the previous plan's implementation table tasks. If they were not achieved, please evaluate the obstacles to success (lack of funding, conditions changed, etc.). This can help identify future directions and resource needs.

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 Met 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 has a plan that does not meet the requirements for local water supply plans, the Met Council will likely find the plan to be inconsistent with Met Council policy.

Elements

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

Requirements for all communities

- Designating the existing and proposed location, intensity, and extent of use of land (including land areas that affect water natural resources) and water for agricultural, residential, commercial, industrial, and other public and private purposes.

- An implementation program with a description of official controls addressing water supply and a schedule for the preparation, adoption, and administration of such controls.
- A local water supply plan, if the community is served by a municipal community public water supply system.

The local water supply plan fulfills the requirements of the first two bullets regarding municipal community water use.

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 §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 Wellhead 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 Saint Paul surface water intakes 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.

Comprehensive Sewer Plan Update Review Requirements

Background

Local governments are required to submit both a wastewater plan element to their comprehensive plan as well as a comprehensive sewer plan describing service needs from the Met Council.

Before any local government unit in the metro area can proceed with a sewer extension, the comprehensive sewer plan must be consistent with the Met Council's Wastewater System Plan and be approved by the Met Council.

The following comprehensive sewer plan content checklist covers information that will be used by the Met Council to:

1. Evaluate long-term regional system capacity needs and program future capital improvements to accommodate community growth.

2. Determine intercommunity sanitary sewer flow allocation adjustments by the Met Council where appropriate.

3. Identify potential or planned sanitary sewer capacity projects at locations that connect to the regional system.

4. Assist the Met Council in the development of hydraulic models for long-term capacity needs evaluation.

5. Evaluate the continued progress and effectiveness of local I/I mitigation efforts and provide information for the Met Council to advocate for continued financial assistance programs (grants/loans) for work on both the public and private property portions of the wastewater collection system.

6. Determine that the community's treatment system, or a private treatment system, either has adequate capacity to serve the forecasted growth, or has programmed improvements to add capacity to accommodate the forecasted growth.

7. Ensure that the community's treatment system, or private treatment system, is compliant with applicable permits, and to verify that those facilities are being maintained and operated appropriately and ensure there is sufficient capacity to accommodate the service level needs through the 20-year planning horizon.

8. Conduct trace analyses. Trace analysis is used in the event of local hazardous spill for emergency response purposes. Data is kept confidential and secure.

Elements

GIS Requirements – All Areas

1. Provide the following GIS sewer system data with the comprehensive sewer plan submittal (GIS shape files or geodatabase feature classes):

    a. Local sanitary lines.

    - Include pipe size, pipe material, year built, conveyance method (gravity and forcemain).

    b. Local sanitary structures (for example, manholes, lift stations, etc).

    c. Existing connections points to the MCES collection system.

    d. Future connection points to the MCES collection system (for new growth).

    e. Local sewershed service areas or districts by connection point.

    f. Intercommunity connection points.

    g. Proposed changes in government boundaries based on orderly annexation agreements.

    h. Location of all private and public wastewater treatment plants in the community.

    i. Individual subsurface sewage treatment systems (as mentioned in the Requirements for Areas Served by Subsurface Sewage Treatment Systems section).

Requirements for Areas Served by the Regional System (Urban Area)

1. Table that details adopted community sewered forecasts:

    a. 10-year increments to 2050

    - Households
    - Employment

    b. Forecasts shall be broken down by areas served by the Metropolitan Disposal System, locally owned and operated wastewater treatment systems, and communal and subsurface sewage treatment systems.

2. Copy of intercommunity service agreements entered into with an adjoining community, or a description of the intercommunity service agreements that confirms the Met Council's understanding that one community reimburse the other community for the municipal wastewater charges that it will incur by receiving flow from the adjacent community. If the Met Council is responsible for adjusting flow for each community for the purpose of calculating the Municipal Wastewater Charge, note that in the description of the intercommunity agreement. Include a map of service areas covered by the agreements.

3. Table or tables that provide the following local system information:

   a. Capacity and design flows for existing trunk sewers and lift stations.

      - For local sanitary sewer lines 12" and larger that connect to the Met Council system, provide the 2050 design flow and pipe capacity for each connecting trunk sewer and lift station. Include the percentage of total capacity of each pipe that will be used by 2050.

   b. Assignment of 2050 growth forecasts by Met Council interceptor facility.

      - Household and employment forecasts.

4. For new trunk sewer systems that require connection to the Metropolitan Disposal System:

   a. A table that details the proposed time schedule for the construction of the new trunk sewer system.

5. Define the community's goals, policies, and strategies for preventing and reducing excessive inflow and infiltration (I/I) in the local municipal (city) and private (private property) sanitary sewer systems.

   a. Include a summary of activities or programs intended to mitigate I/I from both public and private property sources.

6. Describe the requirements and standards in the community for minimizing I/I.

   a. Include a copy of the local ordinance or resolution that prohibits discharge from sump pumps, foundation drains, and/or rain leaders to the sanitary sewer system.

   b. Include a copy of the local ordinance or resolution requiring the disconnection of existing foundation drains, sump pumps, and roof leaders from the sanitary sewer system.

7. Describe the sources, extent, and significance of existing I/I in both the municipal and private sewer systems.

   a. Include a description of the existing sources of I/I in the municipal and private sewer infrastructure.

   b. Include a summary of the extent of the systems that contribute to I/I such as locations, quantities of piping or maintenance holes, quantity of service laterals, or other measures. If an analysis has not been completed, include a schedule and scope of future system analysis.

   c. Include a breakdown of residential housing stock age within the community into pre- and post-1970 era, and what percentage of pre-1970 era private services have been evaluated for I/I susceptibility and repair.

d. Include the measured or estimated amount of clearwater flow generated from the public municipal and private sewer systems.

e. Include a cost summary for remediating the I/I sources identified in the community. If previous I/I mitigation work has occurred in the community, include a summary of flow reductions and investments completed. If costs for mitigating I/I have not been analyzed, include the anticipated wastewater service rates or other costs attributed to I/I.

8. Describe the implementation plan for preventing and eliminating excessive I/I from entering both the municipal and private sewer systems.

   a. Include the strategy for implementing projects, activities, or programs planned to mitigate excessive I/I from entering the municipal and private sewer systems.

   b. Include a list of priorities for I/I mitigation projects based on flow reduction, budget, schedule, or other criteria.

   c. Include a schedule and the related financial mechanisms planned or needed to implement the I/I mitigation strategy.

9. Provide current community SSTS ordinances or description of community's SSTS management program compliant with current Minnesota Pollution Control Agency Rules Chapters 7080-7083.

Requirements for Areas Served by Local Wastewater Treatment Systems (Rural Centralized System)

1. Community sewered forecasts:

   a. 10-year increments to 2050

      - Households

      - Employment

2. Capacity of and existing flows to public treatment systems.

3. Map or maps showing the following information:

   a. Local wastewater service areas through 2050.

   b. Staging plan, if available.

   c. Proposed changes in governmental boundaries affecting the community, including any areas designated for orderly annexation.

4. Proposed timing and financing of any expanded or new wastewater treatment facilities.

5. Define the community's goals, policies, and strategies for preventing and reducing excessive inflow and infiltration (I/I) in the local sanitary sewer system, including a discussion of sump pumps and drain tile connected to the local sewer system.

6. A copy of facility planning reports for the upgrading of the local wastewater treatment plant.

7. Copies of the associated National Pollutant Discharge Elimination System (NPDES) or State Disposal System (SDS) permits.

8. Provide current community SSTS ordinance or description of community's SSTS management program compliant with current Minnesota Pollution Control Agency Rules Chapters 7080-7083.

Requirements for Areas Served by Private Communal Treatment Systems

1. Table that details adopted community forecasts served by each private communal system:

    a. 10-year increments to 2050

        - Households
        - Employment

2. Describe the management program for private communal treatment systems.

3. Copies of the associated National Pollutant Discharge Elimination System (NPDES) or State Disposal System (SDS) permits.

4. Map or maps showing the following information:

    a. Locations of private communal treatment systems including:

        - Treatment facilities
        - Subsurface systems

    b. Current and projected service areas for private communal treatment systems.

5. Conditions under which additional private communal treatment systems would be allowed:

    a. Allowable land uses and residential densities.

    b. Installation requirements.

    c. Management requirements.

    d. Local government responsibilities.

Requirements for Areas Served by Subsurface Sewage Treatment Systems (SSTS)

1. Indicate in the comprehensive sewer plan the number of individual SSTSs in operation serving residences and businesses in the community.

2. Map identifying location of individual SSTSs. Location of known nonconforming systems or known problems should be identified. A list of addresses for SSTSs is acceptable where mapping is unavailable.

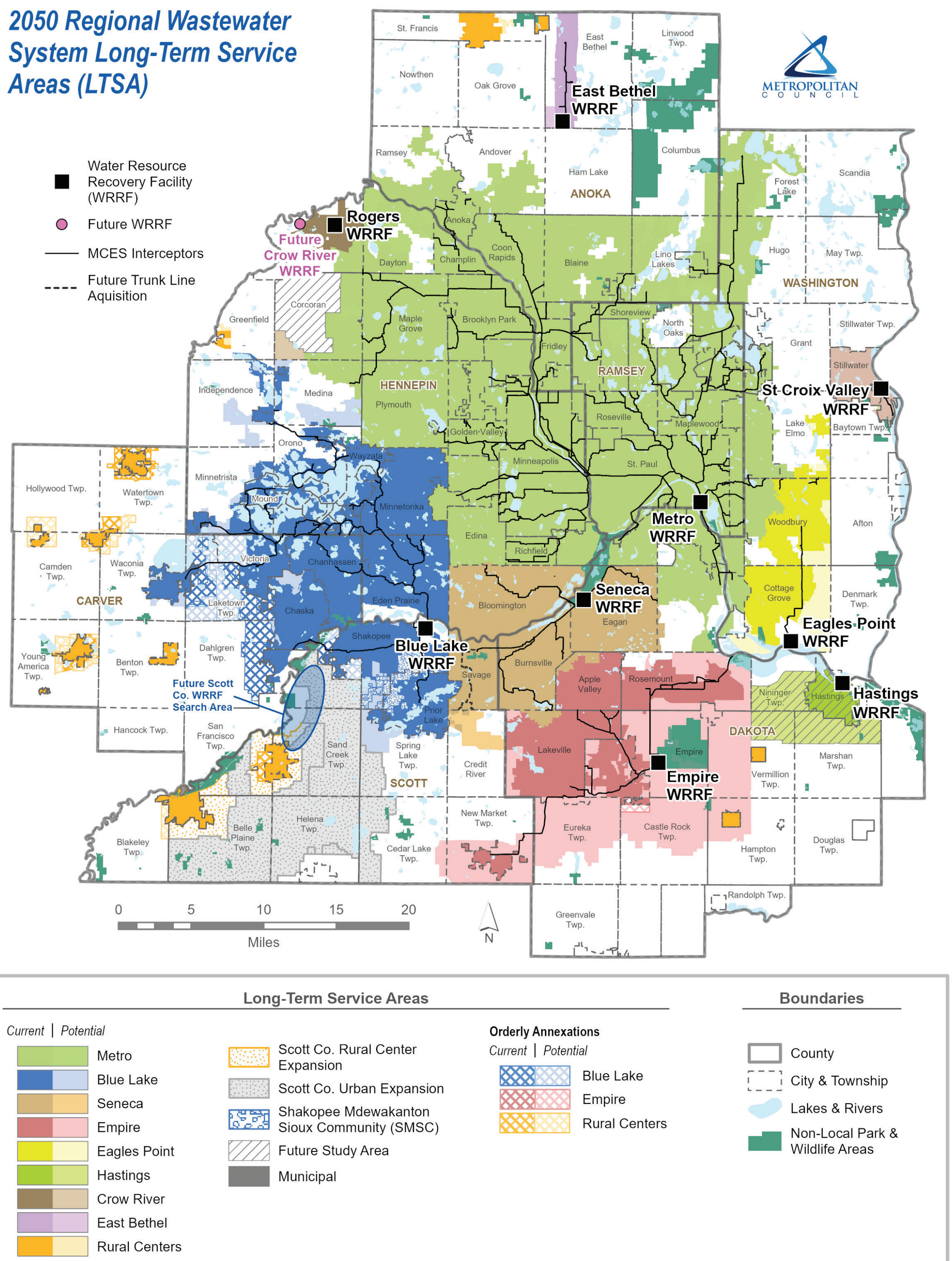
3. Describe the conditions under which new individual SSTSs would be allowed.

4. Provide description of community's SSTS management program compliant with current Minnesota Pollution Control Agency Rules Chapters 7080-7083.

5. Provide current community SSTS ordinance.

Appendix C

Long-term service area map



Appendix D

Environmental Services Customer Level of S ervice

FINANCIAL

CHARGES & FEES
Charges and fees should be predictable, justifiable, and provide good value for the region.

RETAIN AAA BOND RATING
Retain AAA Bond rating in order to provide the lowest cost debt financing possible.

OPTIMIZE BUDGET PLAN
MCES' 5-year budget plan should optimize capital, O&M programs to meet customer service goals.

PRESERVE ASSETS
The region's wastewater assets should be well maintained to preserve their value and performance.

BE FAIR AND TRANSPARENT
Allocation of all charges should be fair, equitable, and transparent to the customer.

HEALTH, SAFETY & ENVIRONMENT

COMPLY WITH PERMITS
Comply consistently with water, air, and other environmental permits.

MINIMIZE IMPACTS
Convey and treat wastewater safely with minimal backups, spills, and traffic impacts.

LEAD BY EXAMPLE
Be a leader on environmental sustainability, including water/energy conservation and water reuse.

CUSTOMER SERVICE

BE A GOOD NEIGHBOR
Mitigate community impacts related to odors, traffic, noise, and visual aesthetics.

MEET CAPACITY NEEDS
Provide conveyance and treatment capacity consistent with regional and local plans.

COMMUNICATE INFORMATION
Communicate with customers about financial info and capital projects & programs that impact them.

ENGAGE CUSTOMERS
Engage customers in a meaningful public process. Provide notice for changes in policies, rules, fees, projects, environmental performance & resolving competing Council policies/interests.

COLLABORATE WITH OTHERS
Optimize intergovernmental coordination in all MCES work that intersects with community work.

Appendix E

Wastewater Reuse Task Force

The 2017 Wastewater Reuse Task Force recommended the following actions regarding the Met Council's financial contribution to future wastewater reuse opportunities. These recommendations contain a regional cost-share structure based on the regional water resource recovery system benefit only. The task force recommendations are as follows:

The institutional arrangements and cost-of-service approach for wastewater reuse are important to the development of wastewater reuse in the region. In implementing wastewater reuse opportunities, the Met Council will use the following approaches:

- The Met Council shall use a cost-of-service, case-by-case approach to wastewater reuse in cooperation and partnership with local communities. The Met Council will evaluate the potential regional benefit of a potential wastewater reuse project and, if the Met Council's criteria are met, will determine an appropriate cost share, provided that the cumulative regional cost share shall not exceed 0.75% of the total annual municipal wastewater charges based on the impact of a 20-year debt service repayment period that the project(s) would create.
- Criteria to be used to evaluate whether there is a regional benefit to a potential wastewater reuse opportunity shall include: (1) the regional wastewater system was built to service long-term growth in a subregional service area in which (a) water managers now recognize concerns about sustainable water supply and the importance of meeting the needs of future generations while not harming ecosystems, degrading water, or reducing water levels beyond the reach of public water supplies and privately owned wells and (b) a growing demand for groundwater could mean it will be difficult to obtain a groundwater use permit from the Department of Natural Resources; and/or (2) the proposed reuse project reduces MCES' surface water discharge, delaying capital improvements to meet more stringent regulatory requirements.
- The Met Council shall hold a public hearing to obtain customer and public input prior to making a final determination on regional benefit and regional cost-share.
- Implementation of each wastewater reuse project shall be consistent with the comprehensive plan of the community in which the reclaimed water user is located.
- The Met Council shall enter into a joint powers agreement with the community in which the reclaimed water user is located to define the reclaimed water service institutional arrangements and to avoid competition with municipal public water suppliers.
- The Met Council shall enter into a long-term reclaimed water service agreement with each user, using a cost-of-service approach, including a potential regional cost-share where appropriate.
- The Met Council shall pursue sources of non-Met Council funding to complement Met Council funding of wastewater reuse projects, including Clean Water Legacy Funds, state bond funds, and reuse grants.

IMAGINE 2050

water policy plan

Appendix F

Sewered community forecasts and flow projections

Table F.1: Community forecasts of sewer population, households, and employment for Blue Lake Resource Recovery Facility

Community	2020 Pop.	2030 Pop.	2040 Pop.	2050 Pop.	2020 HH	2030 HH
Carver	4,900	9,600	11,200	14,900	1,600	3,200
Chanhassen	24,800	27,700	29,500	32,100	9,200	10,700
Chaska	27,200	31,200	33,200	36,700	10,200	11,800w
Deephaven	3,900	3,800	3,900	3,900	1,400	1,400
Eden Prairie	63,800	71,700	76,500	84,700	24,700	28,400
Excelsior	2,400	2,400	2,600	2,800	1,100	1,200
Greenfield	170	170	170	170	60	60
Greenwood	730	730	760	760	290	290
Hopkins (pt.)	240	250	260	260	110	120
Independence	700	1,200	1,600	1,700	240	400
Laketown Twp.	490	1,600	1,500	0	150	510
Long Lake	1,700	2,000	2,100	2,100	740	850
Loretto	650	690	720	740	270	280
Maple Plain	1,700	2,100	2,500	2,700	730	900
Medina (pt.)	1,100	1,100	1,300	1,600	360	400
Minnetonka	53,700	59,300	64,000	69,900	23,700	26,600
Minnetonka Beach	550	540	560	590	200	200
Minnetrista	6,300	8,100	9,300	10,500	2,100	2,700
Mound	9,400	9,500	9,500	9,700	4,200	4,300
Orono	5,800	6,700	7,900	8,900	2,200	2,500
Plymouth (pt.)	340	330	340	360	130	130
Prior Lake	26,400	27,900	30,200	33,700	10,000	10,700
Shakopee	41,600	49,900	54,200	61,300	14,000	17,800
Shorewood	7,800	8,100	8,300	8,400	2,900	3,000
Spring Park	1,700	1,800	1,900	2,100	1,000	1,100
St. Bonifacius	2,300	2,300	2,300	2,400	900	920
Tonka Bay	1,400	1,600	1,800	1,800	590	690
Victoria	10,100	14,400	17,000	20,700	3,400	5,000
Waconia	12,900	17,400	18,800	22,600	4,600	6,500

2040 HH	2050 HH	2020 Employ.	2030 Employ.	2040 Employ.	2050 Employ.
3,900	5,300	180	360	610	1,300
11,700	12,800	13,600	16,600	18,300	21,000
12,900	14,400	11,700	15,000	15,900	17,800
1,400	1,400	1,000	1,200	1,300	1,300
30,400	33,700	54,800	61,700	64,900	70,200
1,300	1,400	1,400	2,000	2,000	2,200
60	60	0	0	0	0
300	300	120	190	230	240
130	120	10	10	10	10
540	590	180	190	200	210
500	0	180	510	440	0
880	880	1,000	1,200	1,400	1,400
300	300	270	510	530	540
1,100	1,200	1,900	1,900	2,000	2,200
470	570	170	180	210	260
28,900	31,600	43,600	49,600	52,100	55,100
210	220	120	260	260	260
3,100	3,500	460	670	860	1,100
4,300	4,400	1,100	1,400	1,500	1,600
3,000	3,400	1,300	1,700	1,800	2,000
140	150	1,600	1,600	1,700	1,800
12,100	13,800	4,000	4,100	4,600	5,700
20,500	23,600	23,900	32,100	35,800	42,900
3,100	3,200	1,700	1,900	1,900	2,000
1,100	1,300	680	1,000	1,000	1,100
930	980	350	500	530	580
750	760	230	410	420	430
6,100	7,500	960	1,800	2,000	2,400
7,200	8,600	6,700	8,100	8,800	10,200

Community	2020 Pop.	2030 Pop.	2040 Pop.	2050 Pop.	2020 HH	2030 HH
Wayzata	4,400	4,700	5,300	5,500	2,200	2,400
Woodland	130	130	130	130	50	50
Blue Lake Facility Totals	**319,200**	**368,900**	**399,000**	**443,400**	**123,300**	**145,200**

Note: Pop. = Population; HH=Households; Employ.=Employment

Table F.2: Community forecasts of sewer population, households, and employment for Crow River/Rogers Resource Recovery Facility

Community	2020 Pop.	2030 Pop.	2040 Pop.	2050 Pop.	2020 HH	2030 HH
Rogers (pt.)	10,700	14,800	17,300	23,600	3,600	5,200
Dayton (pt.)	0	0	0	6,900	0	0
Corcoran (pt.)	0	0	0	7,900	0	0
Maple Grove (pt.)	0	0	0	1,200	0	0
Crow River/ Rogers Facility Totals	**10,700**	**14,800**	**17,300**	**39,600**	**3,600**	**5,200**

Note: Pop. = Population; HH=Households; Employ.=Employment

Table F.3: Community forecasts of sewer population, households, and employment for East Bethel Resource Recovery Facility

Community	2020 Pop.	2030 Pop.	2040 Pop.	2050 Pop.	2020 HH	2030 HH
Cottage Grove	36,500	43,600	45,800	50,500	12,300	15,200
Lake Elmo (pt.)	3,300	5,000	6,900	7,900	1,200	1,900
Woodbury (pt.)	45,200	51,700	55,500	61,200	16,400	19,600
Eagles Point Facility Totals	**85,000**	**100,300**	**108,200**	**119,600**	**29,900**	**36,700**

Note: Pop. = Population; HH=Households; Employ.=Employment

Table F.4: Community forecasts of sewer population, households, and employment for Eagles Point Resource Recovery Facility

Community	2020 Pop.	2030 Pop.	2040 Pop.	2050 Pop.	2020 HH	2030 HH
East Bethel Facility Totals	**580**	**1,600**	**2,300**	**3,200**	**210**	**600**

Note: Pop. = Population; HH=Households; Employ.=Employment

	2040 HH	2050 HH	2020 Employ.	2030 Employ.	2040 Employ.	2050 Employ.
	2,600	2,800	4,200	5,300	5,500	5,800
	50	50	0	0	0	0
	160,200	**178,700**	**177,700**	**212,100**	**226,800**	**251,600**

	2040 HH	2050 HH	2020 Employ.	2030 Employ.	2040 Employ.	2050 Employ.
	6,100	8,300	9,300	12,600	14,300	17,800
	0	2,500	0	0	0	3,100
	0	2,900	0	0	0	1,600
	0	470	0	0	0	150
	6,100	**14,200**	**9,300**	**12,600**	**14,300**	**22,700**

	2040 HH	2050 HH	2020 Employ.	2030 Employ.	2040 Employ.	2050 Employ.
	16,600	18,500	6,700	8,700	9,500	10,900
	2,600	3,100	990	1,500	1,700	2,100
	21,800	24,300	8,600	12,900	14,200	15,900
	41,000	**45,800**	**16,300**	**23,100**	**25,400**	**29,000**

	2040 HH	2050 HH	2020 Employ.	2030 Employ.	2040 Employ.	2050 Employ.
	870	**1,200**	**140**	**740**	**1,700**	**2,000**

Table F.5: Community forecasts of sewer population, households, and employment for Empire Resource Recovery Facility

Community	2020 Pop.	2030 Pop.	2040 Pop.	2050 Pop.	2020 HH	2030 HH
Apple Valley (pt.)	52,700	54,500	56,000	58,000	20,100	21,500
Elko New Market	4,600	6,200	8,200	10,500	1,500	2,000
Empire	2,500	3,100	3,400	3,800	810	1,000
Farmington	23,400	24,400	25,300	27,200	7,800	8,500
Lakeville (pt.)	62,200	72,400	76,800	81,300	20,800	25,500
Rosemount	24,000	29,900	31,600	37,400	8,400	10,800
Empire Facility Totals	**169,400**	**190,500**	**201,300**	**218,200**	**59,300**	**69,300**

Note: Pop. = Population; HH=Households; Employ.=Employment

Table F.6: Community forecasts of sewer population, households, and employment for Hastings Resource Recovery Facility

Community	2020 Pop.	2030 Pop.	2040 Pop.	2050 Pop.	2020 HH	2030 HH
Hastings Facility Totals	**22,100**	**23,400**	**24,600**	**26,400**	**9,100**	**9,800**

Note: Pop. = Population; HH=Households; Employ.=Employment

Table F.7: Community forecasts of sewer population, households, and employment for Metropolitan Resource Recovery Facility

Community	2020 Pop.	2030 Pop.	2040 Pop.	2050 Pop.	2020 HH	2030 HH
Andover	23,200	24,300	25,800	28,300	7,700	8,300
Anoka	17,800	18,400	19,400	21,200	7,500	7,900
Arden Hills	9,900	11,500	12,000	13,700	3,100	3,700
Birchwood Village	860	880	860	850	350	360
Blaine	68,800	78,300	83,200	89,700	24,700	28,400
Brooklyn Center	33,800	35,600	36,000	36,900	11,300	12,100
Brooklyn Park	86,500	89,300	94,000	103,500	28,700	30,300
Centerville	3,900	4,000	4,700	4,700	1,400	1,500
Champlin	23,900	25,300	25,400	25,700	8,900	9,400
Circle Pines	5,000	5,000	5,100	5,300	2,000	2,100
Columbia Heights	22,000	23,300	23,600	24,500	8,800	9,600

2040 HH	2050 HH	2020 Employ.	2030 Employ.	2040 Employ.	2050 Employ.
22,700	23,600	12,300	15,000	15,900	17,200
2,800	3,700	390	910	1,700	2,100
1,200	1,300	260	440	570	710
9,300	10,100	4,400	5,400	5,800	6,500
28,100	30,100	14,700	21,400	23,500	28,000
11,700	13,900	6,800	9,100	11,100	14,900
75,700	**82,600**	**38,900**	**52,100**	**58,600**	**69,400**

2040 HH	2050 HH	2020 Employ.	2030 Employ.	2040 Employ.	2050 Employ.
10,500	**11,300**	**6,900**	**8,100**	**8,500**	**8,900**

2040 HH	2050 HH	2020 Employ.	2030 Employ.	2040 Employ.	2050 Employ.
9,000	9,900	4,900	6,100	6,600	6,800
8,500	9,300	13,400	14,500	15,500	15,700
4,000	4,700	10,100	11,500	12,700	14,700
360	360	20	20	20	20
30,800	33,400	21,600	27,500	29,900	34,700
12,300	12,600	12,600	14,000	14,300	15,000
32,000	35,300	29,800	35,500	39,500	44,700
1,800	1,800	430	1,000	1,200	1,300
9,500	9,600	3,900	4,600	4,800	5,300
2,100	2,200	400	570	610	680
9,900	10,300	3,800	4,400	4,500	4,800

Community	2020 Pop.	2030 Pop.	2040 Pop.	2050 Pop.	2020 HH	2030 HH
Columbus	110	230	520	930	40	90
Coon Rapids	63,500	64,200	65,400	67,100	24,500	25,400
Corcoran (pt.)	1,300	4,500	7,800	2,500	450	1,600
Crystal	23,300	24,100	24,800	25,500	9,600	9,800
Dayton (pt.)	4,500	9,500	11,800	7,700	1,500	3,300
Edina (pt.)	52,800	57,800	61,200	66,100	21,800	24,800
Falcon Heights	5,400	5,700	5,700	5,900	2,200	2,400
Forest Lake	18,300	21,100	24,200	26,700	7,200	8,500
Fort Snelling	440	490	600	690	280	320
Fridley	29,600	31,200	31,100	32,300	11,700	12,700
Gem Lake	250	590	660	660	90	220
Golden Valley	22,500	23,400	24,700	26,500	10,000	10,400
Hilltop	960	1,100	1,100	1,000	390	420
Hopkins (pt.)	18,800	21,100	22,300	23,600	9,000	10,300
Hugo	12,900	16,800	18,800	21,800	4,900	6,500
Inver Grove Heights (pt.)	29,500	32,200	32,700	36,100	11,800	13,300
Lake Elmo (pt.)	1,200	3,600	4,300	5,300	410	1,300
Landfall	840	800	780	780	300	310
Lauderdale	2,300	2,300	2,300	2,400	1,200	1,200
Lexington	2,200	2,900	2,900	3,000	920	1,300
Lilydale	810	820	1,000	1,100	540	570
Lino Lakes	16,100	22,100	24,200	26,800	5,200	7,500
Little Canada	10,800	10,600	11,100	11,600	4,600	4,700
Mahtomedi	7,700	8,100	8,000	7,900	3,000	3,200
Maple Grove (pt.)	69,900	74,600	81,800	89,000	26,600	29,300
Maplewood	41,800	43,200	43,700	45,800	15,900	16,700
Medicine Lake	340	360	360	360	150	160
Medina (pt.)	3,700	5,600	6,400	6,900	1,200	1,900
Mendota	180	220	290	350	80	90
Mendota Heights	11,600	11,800	12,300	12,900	4,700	4,900
Minneapolis	430,000	451,400	484,800	514,200	187,700	203,100
Mounds View	13,200	13,200	13,700	14,800	5,200	5,300
New Brighton	23,500	24,100	24,100	25,100	9,500	9,900

	2040 HH	2050 HH	2020 Employ.	2030 Employ.	2040 Employ.	2050 Employ.
	200	370	600	1,300	1,500	1,700
	26,200	27,000	23,200	27,800	30,100	32,700
	2,800	890	180	1,300	1,600	280
	10,100	10,400	3,500	4,300	4,400	4,700
	4,300	2,800	1,000	2,000	2,800	940
	26,300	28,300	34,900	42,400	43,300	46,700
	2,500	2,600	4,600	5,300	5,400	5,700
	10,100	11,200	6,000	8,700	9,500	10,700
	430	510	21,300	26,700	26,800	27,500
	13,000	13,600	22,300	25,900	26,200	28,300
	250	250	360	470	500	570
	11,000	11,800	28,800	29,900	30,700	32,700
	420	420	700	620	660	690
	10,900	11,500	16,800	18,700	19,200	20,700
	7,500	8,800	2,400	3,200	3,800	3,900
	13,800	15,300	8,900	11,400	12,500	14,100
	1,700	2,000	1,300	2,000	2,200	2,600
	310	310	10	20	30	30
	1,200	1,300	640	830	830	890
	1,300	1,300	460	540	580	650
	720	730	360	450	490	530
	8,400	9,400	3,700	5,100	5,500	6,000
	5,000	5,300	5,400	6,700	7,000	7,400
	3,200	3,200	2,800	2,700	2,700	2,700
	32,400	35,300	31,800	39,000	41,300	46,500
	17,200	18,100	24,400	28,300	29,800	31,900
	160	160	40	60	70	70
	2,200	2,500	4,500	5,500	6,200	6,900
	130	160	60	220	250	300
	5,200	5,500	10,500	12,100	12,600	13,300
	218,000	231,200	294,500	323,600	332,100	352,900
	5,600	6,100	6,700	7,200	7,500	8,200
	10,100	10,600	9,400	10,400	10,500	11,000

Community	2020 Pop.	2030 Pop.	2040 Pop.	2050 Pop.	2020 HH	2030 HH
New Hope	22,000	22,200	22,500	23,100	9,000	9,200
Newport	3,600	4,300	5,400	6,000	1,400	1,800
North Oaks	1,800	1,900	1,900	1,900	690	700
North St. Paul	12,400	13,100	13,100	13,000	4,800	5,200
Oakdale	28,200	31,900	32,600	34,600	11,300	13,200
Osseo	2,700	2,700	3,100	3,200	1,300	1,300
Plymouth	80,400	81,400	85,700	91,300	31,800	33,100
Ramsey	15,500	19,600	22,800	26,400	5,400	7,000
Richfield	37,000	38,900	40,500	41,700	15,900	16,900
Robbinsdale	14,600	15,600	16,200	16,900	6,300	6,900
Rogers (pt.)	390	1,800	2,400	0	130	630
Roseville	36,300	35,900	36,100	37,500	15,600	16,000
Shoreview	26,900	28,400	29,100	29,600	11,200	12,200
South St. Paul	20,700	20,900	20,900	21,500	8,400	8,700
Spring Lake Park	7,200	7,500	7,500	7,500	3,000	3,100
St. Anthony	9,300	10,100	10,300	10,900	4,100	4,500
St. Louis Park	50,000	52,400	55,500	59,500	23,800	25,700
Saint Paul	311,300	313,900	324,600	338,200	120,500	125,400
St. Paul Park	5,400	5,600	6,500	7,500	2,000	2,200
Vadnais Heights	12,900	13,000	14,200	14,100	5,400	5,700
West St. Paul	20,600	21,300	22,100	23,300	9,000	9,800
White Bear Lake	24,800	24,500	26,100	26,700	10,400	10,500
White Bear Twp.	11,000	10,900	11,200	11,200	4,400	4,400
Willernie	520	520	510	510	220	230
Woodbury (pt.)	28,200	29,700	29,800	31,900	10,300	11,300
Metropolitan Facility Totals	**1,999,600**	**2,113,600**	**2,226,300**	**2,345,900**	**803,200**	**870,800**

Note: Pop. = Population; HH=Households; Employ.=Employment

	2040 HH	2050 HH	2020 Employ.	2030 Employ.	2040 Employ.	2050 Employ.
	9,300	9,500	10,500	11,400	11,600	12,200
	2,300	2,600	1,600	1,800	2,000	2,400
	700	700	1,200	1,400	1,500	1,500
	5,300	5,300	3,100	3,500	3,500	3,500
	13,900	14,900	9,900	11,400	12,100	12,100
	1,500	1,500	1,700	3,000	3,200	3,700
	35,100	37,500	50,400	55,800	58,900	64,200
	8,300	9,700	6,000	7,900	8,900	10,200
	17,600	18,100	15,700	17,500	18,000	18,500
	7,200	7,500	6,400	7,300	7,400	7,600
	840	0	360	590	800	0
	16,400	17,100	32,300	36,700	37,700	39,700
	12,700	13,000	9,500	12,200	12,500	13,100
	8,900	9,200	5,900	7,100	7,200	7,600
	3,200	3,200	2,500	3,600	3,900	4,400
	4,700	5,000	3,300	4,000	4,100	4,300
	27,200	29,100	33,400	39,900	40,100	41,800
	131,700	137,700	161,200	185,200	188,900	199,500
	2,600	3,000	1,200	1,500	1,900	2,400
	6,300	6,300	8,100	9,200	9,700	10,500
	10,400	11,000	7,300	8,500	8,700	8,900
	11,400	11,700	10,800	12,400	12,400	12,400
	4,600	4,600	2,600	3,100	3,300	3,300
	230	230	150	230	230	240
	11,700	12,700	12,500	15,100	16,000	17,600
	926,800	**979,400**	**1,070,700**	**1,234,800**	**1,282,800**	**1,368,800**

Table F.8: Community forecasts of sewer population, households, and employment for Seneca Resource Recovery Facility

Community	2020 Pop.	2030 Pop.	2040 Pop.	2050 Pop.	2020 HH	2030 HH
Apple Valley (pt.)	3,500	3,300	3,300	3,500	1,300	1,300
Bloomington	89,900	95,300	98,100	103,400	38,000	41,200
Burnsville	63,800	66,400	70,200	76,600	25,300	27,100
Credit River	0	1,300	1,600	2,700	0	440
Eagan	68,900	72,000	75,200	79,200	27,600	30,000
Edina (pt.)	680	2,800	3,600	4,100	280	1,200
Inver Grove Heights (pt.)	2,400	2,700	3,000	3,400	980	1,100
Lakeville (pt.)	6,200	7,000	7,500	7,700	2,100	2,400
Savage	32,200	33,900	34,800	37,700	11,100	12,300
Seneca Facility Totals	**267,600**	**284,700**	**297,400**	**318,400**	**106,700**	**117,100**

Note: Pop. = Population; HH=Households; Employ.=Employment

Table F.9: Community forecasts of sewer population, households, and employment for St. Croix Valley Resource Recovery Facility

Community	2020 Pop.	2030 Pop.	2040 Pop.	2050 Pop.	2020 HH	2030 HH
Bayport	3,800	4,100	4,000	4,000	990	1,100
Oak Park Heights	4,800	5,000	5,400	5,500	2,200	2,300
Stillwater	18,500	19,500	20,500	22,200	7,400	8,100
St. Croix Valley Facility Totals	**27,100**	**28,600**	**29,900**	**31,700**	**10,600**	**11,500**

Note: Pop. = Population; HH=Households; Employ.=Employment

Table F.10: Regional totals of community forecasts of sewer population, households, and employment

Community	2020 Pop.	2030 Pop.	2040 Pop.	2050 Pop.	2020 HH	2030 HH
Regional Totals	**2,901,300**	**3,126,500**	**3,306,300**	**3,546,300**	**1,146,000**	**1,266,300**

Note: Pop. = Population; HH=Households; Employ.=Employment

2040 HH	2050 HH	2020 Employ.	2030 Employ.	2040 Employ.	2050 Employ.
1,300	1,400	750	780	790	800
42,500	44,800	73,400	91,100	92,600	98,300
29,400	32,300	29,700	36,100	38,200	42,400
600	1,000	0	220	280	280
32,000	33,900	51,300	57,600	62,200	70,000
1,500	1,800	2,500	3,200	3,200	3,300
1,300	1,500	430	620	750	980
2,700	2,900	1,200	1,700	1,800	1,900
13,500	14,900	7,400	9,500	10,100	11,000
124,900	**134,400**	**166,700**	**200,900**	**209,900**	**228,900**

2040 HH	2050 HH	2020 Employ.	2030 Employ.	2040 Employ.	2050 Employ.
1,100	1,100	4,200	5,000	5,200	5,200
2,600	2,700	4,400	5,100	5,400	5,800
8,800	9,600	8,000	10,400	11,200	11,900
12,500	**13,400**	**16,600**	**20,400**	**21,800**	**22,900**

2040 HH	2050 HH	2020 Employ.	2030 Employ.	2040 Employ.	2050 Employ.
1,358,500	**1,461,000**	**1,503,200**	**1,764,800**	**1,849,700**	**2,004,200**

Table F.11: Community wastewater flow projections

Community	2020 Actual Flow (MGD)	2030 Flow (MGD)	2040 Flow (MGD)	2050 Flow (MGD)
Andover	1.35	1.44	1.54	1.69
Anoka	1.58	1.58	1.61	1.67
Apple Valley	3.28	3.41	3.52	3.67
Arden Hills	0.82	0.91	0.93	1.04
Bayport	0.53	0.55	0.53	0.51
Birchwood Village	0.06	0.06	0.06	0.05
Blaine	4.30	4.95	5.29	5.75
Bloomington	7.41	7.78	7.75	7.93
Brooklyn Center	2.54	2.60	2.55	2.54
Brooklyn Park	6.24	6.49	6.83	7.48
Burnsville	5.09	5.34	5.60	6.05
Carver	0.30	0.59	0.69	0.92
Centerville	0.24	0.26	0.31	0.31
Champlin	1.51	1.61	1.62	1.64
Chanhassen	2.54	2.75	2.89	3.08
Chaska	3.05	3.34	3.47	3.71
Circle Pines	0.28	0.27	0.27	0.27
Columbia Heights	1.26	1.31	1.29	1.31
Columbus	0.03	0.05	0.07	0.10
Coon Rapids	3.81	3.92	4.03	4.17
Corcoran	0.14	0.35	0.55	0.71
Cottage Grove	2.34	2.79	2.94	3.24
Credit River	0.00	0.08	0.10	0.17
Crystal	1.66	1.67	1.66	1.66
Dayton	0.28	0.60	0.75	0.93
Deephaven	0.46	0.45	0.44	0.42
Eagan	5.88	6.17	6.43	6.78
East Bethel	0.05	0.12	0.17	0.23
Eden Prairie	4.11	4.69	5.03	5.60
Edina	5.90	6.27	6.36	6.56
Elko New Market	0.26	0.37	0.50	0.65
Empire	0.16	0.20	0.22	0.24

Community	2020 Actual Flow (MGD)	2030 Flow (MGD)	2040 Flow (MGD)	2050 Flow (MGD)
Excelsior	0.18	0.19	0.20	0.20
Falcon Heights	0.56	0.57	0.56	0.56
Farmington	1.76	1.84	1.90	2.02
Forest Lake	1.52	1.73	1.93	2.09
Fridley	4.72	4.73	4.59	4.55
Gem Lake	0.04	0.07	0.07	0.07
Golden Valley	2.59	2.58	2.59	2.65
Greenfield	0.01	0.01	0.01	0.01
Greenwood	0.05	0.05	0.06	0.06
Hastings	1.51	1.61	1.69	1.80
Hilltop	0.09	0.10	0.10	0.10
Hopkins	1.59	1.71	1.75	1.80
Hugo	0.70	0.94	1.08	1.26
Independence	0.05	0.08	0.10	0.11
Inver Grove Heights	2.23	2.45	2.52	2.78
Lake Elmo	0.41	0.68	0.84	0.97
Laketown Township	0.05	0.12	0.12	0.00
Lakeville	4.66	5.42	5.75	6.11
Landfall	0.06	0.06	0.06	0.06
Lauderdale	0.14	0.14	0.14	0.14
Lexington	0.12	0.16	0.16	0.16
Lilydale	0.07	0.08	0.09	0.09
Lino Lakes	1.05	1.43	1.56	1.73
Little Canada	0.97	0.98	1.01	1.05
Long Lake	0.27	0.28	0.28	0.27
Loretto	0.04	0.05	0.05	0.05
Mahtomedi	0.48	0.51	0.50	0.50
Maple Grove	5.03	5.42	5.89	6.47
Maple Plain	0.23	0.24	0.26	0.27
Maplewood	3.95	3.97	3.90	3.94
Medicine Lake	0.04	0.04	0.04	0.03
Medina	0.40	0.53	0.60	0.66
Mendota	0.02	0.02	0.03	0.03

Community	2020 Actual Flow (MGD)	2030 Flow (MGD)	2040 Flow (MGD)	2050 Flow (MGD)
Mendota Heights	1.40	1.44	1.47	1.52
Minneapolis	48.91	49.26	49.94	50.58
Minnetonka	4.72	5.00	5.18	5.44
Minnetonka Beach	0.05	0.05	0.05	0.05
Minnetrista	0.35	0.47	0.54	0.61
Mound	0.84	0.83	0.80	0.79
Mounds View	1.06	1.03	1.03	1.08
New Brighton	1.81	1.81	1.76	1.77
New Hope	1.93	1.90	1.87	1.85
Newport	0.34	0.38	0.44	0.47
North Oaks	0.07	0.07	0.07	0.07
North St. Paul	1.02	1.04	1.01	0.97
Oak Park Heights	0.49	0.52	0.54	0.56
Oakdale	2.31	2.56	2.61	2.73
Orono	0.71	0.75	0.80	0.84
Osseo	0.18	0.20	0.22	0.23
Plymouth	6.75	6.89	7.20	7.62
Prior Lake	1.75	1.84	1.98	2.21
Ramsey	0.96	1.24	1.44	1.68
Richfield	2.32	2.39	2.42	2.43
Robbinsdale	0.92	0.96	0.97	0.99
Rogers	0.93	1.32	1.53	1.79
Rosemount	1.51	1.90	2.03	2.43
Roseville	2.91	2.86	2.80	2.83
Savage	2.07	2.20	2.27	2.45
Shakopee	2.57	3.19	3.51	4.04
Shoreview	2.08	2.21	2.25	2.29
Shorewood	1.05	1.07	1.08	1.09
South St. Paul	3.04	2.98	2.89	2.84
Spring Lake Park	0.55	0.57	0.56	0.55
Spring Park	0.23	0.24	0.24	0.26
St. Anthony	0.71	0.75	0.74	0.76
St. Bonifacius	0.26	0.26	0.26	0.27

Community	2020 Actual Flow (MGD)	2030 Flow (MGD)	2040 Flow (MGD)	2050 Flow (MGD)
St. Louis Park	4.22	4.33	4.40	4.54
Saint Paul	24.80	24.57	24.52	24.75
St. Paul Park	0.32	0.33	0.38	0.44
Stillwater	2.04	2.14	2.21	2.32
Tonka Bay	0.20	0.21	0.21	0.21
Vadnais Heights	1.16	1.18	1.26	1.27
Victoria	0.73	1.00	1.16	1.39
Waconia	1.00	1.29	1.39	1.63
Wayzata	0.51	0.54	0.58	0.60
West St. Paul	2.05	2.05	2.04	2.06
White Bear Lake	2.04	1.98	2.02	1.99
White Bear Township	0.97	0.97	0.99	0.99
Willernie	0.05	0.05	0.05	0.04
Woodbury	4.79	5.37	5.64	6.16
Woodland	0.01	0.01	0.01	0.01

Appendix G

Wastewater Flow Variation Factor

Table G.1: Environmental Services flow variation factors for sewer design

Average Flow (MGD)	Peak Hourly Flow Factor
0.00 – 0.11	4.0
0.12 – 0.18	3.9
0.19 – 0.23	3.8
0.24 – 0.29	3.7
0.30 – 0.39	3.6
0.40 – 0.49	3.5
0.50 – 0.64	3.4
0.65 – 0.79	3.3
0.80 – 0.99	3.2
1.00 – 1.19	3.1
1.20 – 1.49	3.0
1.50 – 1.89	2.9
1.90 – 2.29	2.8
2.30 – 2.89	2.7
2.90 – 3.49	2.6
3.50 – 4.19	2.5
4.20 – 5.09	2.4
5.10 – 6.39	2.3
6.40 – 7.99	2.2
8.00 – 10.39	2.1
10.40 – 13.49	2.0
13.50 – 17.99	1.9
18.00 – 29.99	1.8

Table G.2: Wastewater peaking factors for determining inflow and infiltration goals

Average Flow (MGD)	Peak Hourly Flow Factor
over 30.00	1.7
< 0.10	4.5
0.11 - 0.20	4.4
0.21 - 0.30	4.3
0.31 - 0.40	4.2
0.41 - 0.50	4.1
0.51 - 0.60	4.0
0.61 - 0.70	3.9
0.71 - 0.80	3.8
0.81 - 1.00	3.7
1.01 - 1.20	3.6
1.21 - 1.50	3.5
1.51 - 2.00	3.4
2.01 - 2.50	3.3
2.51 - 3.00	3.2
3.01 - 3.50	3.1
3.51 - 4.00	3.0
4.01 - 4.50	2.9
4.51 - 5.00	2.8
5.01 - 6.00	2.7
6.01 - 8.00	2.6
8.01 - 10.00	2.5
10.01 - 12.00	2.4
12.01 - 16.00	2.3
16.01 - 20.00	2.2
20.01 - 30.00	2.1
> 30.00	2.0

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Appendix H

Community and regional water demand projections

A key part of planning for regional water supply is knowing how much water has been used in the past, how much is being used now, and how much will be needed in the future. The Met Council has developed a method to project water demand for communities in the Twin Cities metropolitan area for the years 2030, 2040, and 2050. This method includes projections for both municipal community public water supply systems and for privately owned high-capacity wells.

The approach is explained below along with Version 1 of the results for the municipal community public water supply systems (Tables F.6, F.7, F.8). Currently, the results show water demand projections for every municipal community public water supply system in the metro region. Work is underway to project water demand for privately owned high-capacity wells, which are permitted by the Minnesota Department of Natural Resources (DNR) and pump more than 10,000 gallons per day on average or more than one million gallons of groundwater per year.

How water use projections support regional and local water supply planning

The Met Council has projected water use for the updated Metro Area Water Supply Plan. This information helps water supply planners get a sense of how much and where water will be used in the future. These projections also help provide data for technical studies, like regional groundwater models and other water supply analyses, to predict potential resource limits and evaluate different approaches for future water management.

Future water use was estimated for the years 2030, 2040, and 2050. By projecting water demand for these years, water supply planning aligns with the broader regional development guide, Imagine 2050, which includes population forecasts for 2030, 2040, and 2050.

The water demand projections are intended to:

1. Assist Met Council planners and policy makers, state agencies, and community planners to plan for future growth and address regional issues. These projections can help us understand where future water demand might bump up against or exceed capacity, or where there is sufficient capacity to support growth.

2. Provide subregional and regional water demand data for Met Council's groundwater modeling projects, surface water analyses, and other studies.

3. Provide guidance for communities as they develop content for the water supply section of their comprehensive plan to project water utility revenue, plan for water infrastructure improvements, and request DNR appropriation permit amendments as needed to serve growth.

Overview of the projection method

The total water use in the metro region is the sum of water pumped by each municipal community water supply system from groundwater and surface water sources, plus the water pumped by privately owned, high-capacity wells. This is calculated using the following equation:

Total Metro Region Water Use = Projected municipal community public water system use + projected privately owned high-capacity well use

The projection method uses historical water use data from the DNR and the Minnesota Department of Health (MDH), along with population forecasts developed by the Met Council.

These water demand projections for 2030, 2040, and 2050 help link regional water supply planning to the broader regional development framework, Imagine 2050, by using the same population forecasts for those years.

Method for projecting a range of water use

Simplifying assumptions

The approach does not include estimates for low-capacity, privately owned wells that use less than 10,000 gallons per day and less than one million gallons per year. This is because they make up less than five percent of the total water use in the region and the majority of this water is returned to the local groundwater system through individual subsurface sewage treatment systems.

The approach assumes that water-use patterns from 2013 and 2022 in the metro region are representative of how water will continue to be used in the future. For example, this approach assumes that the average amount of water used per person per day from 2013 to 2022 will stay the same in 2030, 2040, and 2050.

This approach further assumes the growth rate for water use by privately owned high-capacity wells, which have water appropriation permits from and report annual water use to the DNR, will follow the average annual growth rate that occurred from 2013-2022.

Lastly, this approach assumes that future population served by each community's municipal community public water system can be calculated by adding Met Council's projected population increases for 2030, 2040, and 2050 to the MDH's 2020 water service population data.

Analysis of historical data as input to projections

Historical municipal community public water supply system total use per person per day

The Met Council calculated the total water use per person per day for each year from 2013 to 2022 for municipal community public water supply systems. This was done by dividing the total annual water use for each year by the population served in that year, and then dividing that result by 365 days.

Input data:

- Total annual water use data for municipal community water supply systems was obtained from the DNR Permitting and Reporting System (MPARS). Annual water use data between 2013 and 2022 was downloaded from the DNR Minnesota Water Use data website. Total annual municipal community public water supply system water use is the sum of the year's residential, commercial, governmental, institutional, and unaccounted for water, as reported by the municipal community public water supply system to the DNR.
- The population served by the municipal community public water supply for each community was obtained from Local Water Supply Plans submitted by communities to the DNR for years that data was available (generally through 2018) and from the MDH's Minnesota Public Health Data Access Drinking Water Quality dataset where data was not available in Local Water Supply Plans and for years 2019-2022.

Results for each municipal community water supply system are reported in Tables F.6, F.7, F.8 and were used to calculate the regional average total water use per person per day (Table H.1 and Figure H.1). The 2013-2022 regional average was 100.81 gallons per person per day.

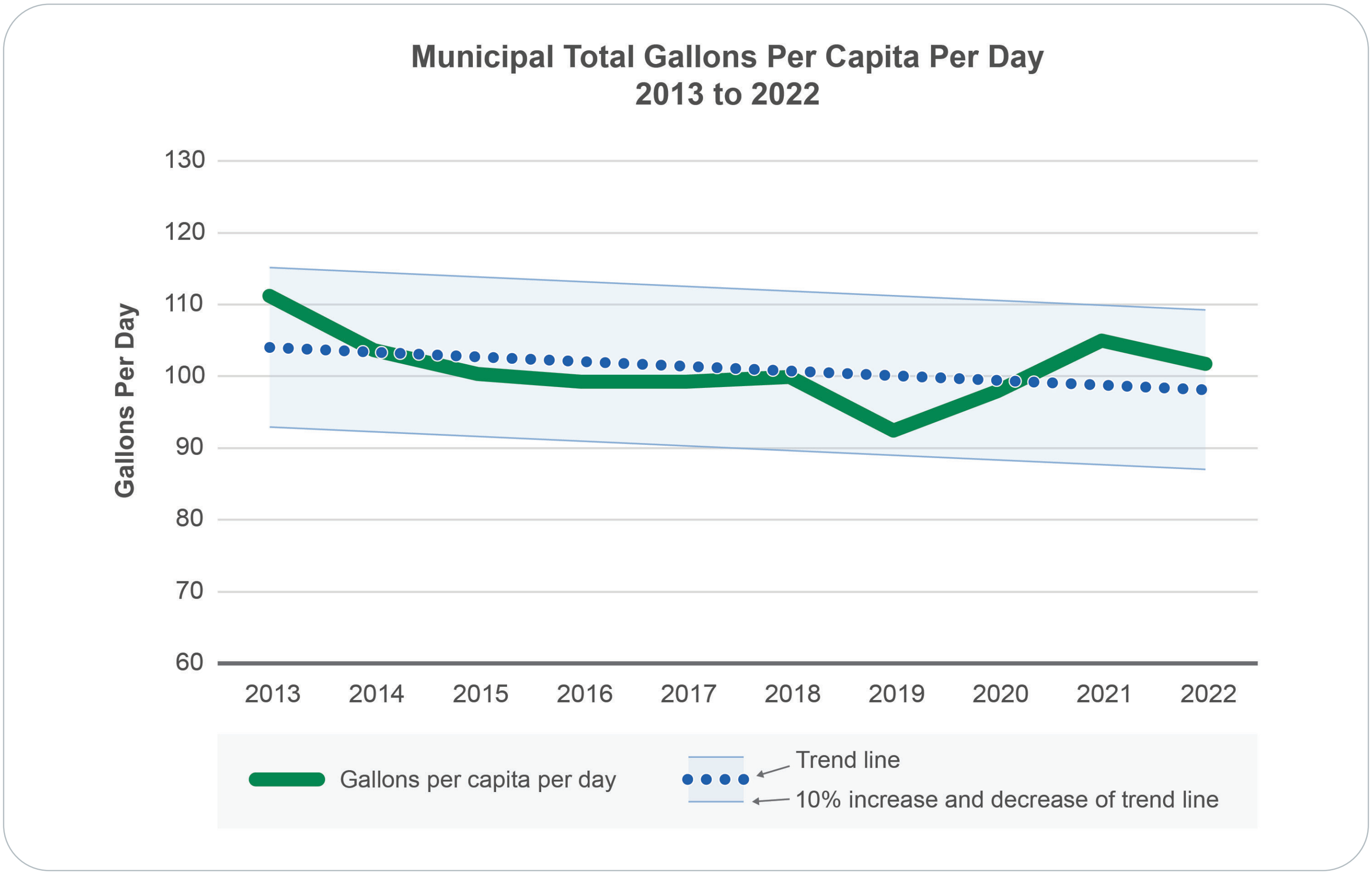
While the average total water use per person per day was 100.81 during this period, it is important to recognize that water use varied significantly from year to year between 2013 and 2022 due to factors such as development, wet versus dry years, changes in water efficiency, and other variable factors affecting water use.

Met Council recommends that regional water use results should be reported with a minimum variable range of plus or minus 10% to reflect uncertainty due to regionwide shifts in population and industrial changes, changes in water efficiency, extreme weather patterns (wet and dry), and other variable conditions that could affect water demand (Figure G.1).

Table H.1: Total annual municipal community public water supply system water use per person per day from 2013-2022.

Year	Total Use (Gallons/Person/Day)
2013	111.03
2014	103.55
2015	100.34
2016	99.27
2017	98.53
2018	99.22
2019	91.90
2020	97.34
2021	104.36
2022	102.58
Range	91.90-111.03
Average (2013-2022)	100.81
% Above Average	10.13
% Below Average	-8.84

Figure H.1: Average annual municipal water use



Data are per person per day across the entire metro region for municipal community public water supply systems for the years 2013-2022 (blue line). The annual average total gallons per person per day ranged by approximately plus and minus 10% below the trend line (dotted blue line). Data sources: Minnesota DNR's MPARS, MDH, and community local water supply plans

Historical privately owned, high-capacity well use

Privately owned, high-capacity well use is being calculated by Met Council for each community in the metro region for each year from 2013 to 2022.

Input data:

- Annual water use data for privately owned, high-capacity wells is being obtained from the Minnesota Department of Natural Resources (DNR) Permitting and Reporting System (MPARS). Annual water use data between 2013 and 2022 was downloaded from the DNR Minnesota Water Use data website.

The Met Council will calculate the average annual increase in pumping observed for each water use category for the privately owned, high-capacity well use for each community from 2013 to 2022. Results for privately owned, high-capacity well use will be reported for each community in the metro region and used to project future water use for 2030, 2040, and 2050.

Projecting privately owned, high-capacity well use

Water pumped volumes from private high-capacity wells, which produce more than 10,000 gallons per day or more than one million gallons per year, are also being projected for the metro region for 2030, 2040, and 2050. The estimated amount of future water use for privately owned, high-capacity wells will be calculated for each water use category for each community for 2030, 2040, and 2050 using the following equation:

> **Projected privately owned, high-capacity wells water pumped = [current total annual high-capacity wells pumped volume] X [2013-2022 average annual increase percentage in water pumped volume] with a variable range**

Input data:

- Current total annual high-capacity wells pumped volume is available through the DNR Permitting and Reporting System (MPARS) because these wells require a permit from the MN DNR, and their annual pumping is reported in MPARS. Annual water use data between 2013 and 2022 was downloaded from the DNR Minnesota Water Use data website.
- 2013-2022 average annual increase percentage in water pumped volume, to be determined

The Met Council recommends using a variable range of +/-10 to 20% for estimating water pumped from privately owned, high-capacity wells. This approach helps in planning that can adapt to changes such as in industrial development, changes in water efficiency, extreme weather, and other factors that could impact future water use.

Projecting population served

Population served by each municipal community public water supply system was calculated by adding Met Council's forecasted increase in total population from 2020 to 2030, 2020 to 2040, and 2020 to 2050 to the 2020 population served reported by MDH.

Input data:

- The forecasted increase in population was obtained from Met Council preliminary forecasts for 2030, 2040, and 2050 (published in the spring of 2024).
- The population served by the municipal community public water supply for each community in 2020 was obtained from MDH's Minnesota Public Health Data Access Drinking Water Quality dataset.

Projected 2030, 2040, and 2050 population served by each municipal community public water supply system are reported in Tables F.6, F.7, F.8.

Projecting municipal community public water supply system use

The estimated amount of future water use for each municipal community public water supply system in the metro region was calculated for 2030, 2040, and 2050 using the following equation:

Projected municipal community public water supply system water use for YEAR = [projected population served for YEAR] X [2013-2022 average municipal community public water supply system total water use per person per day] X 365 days

Input data:

- Projected population served, reported in Tables F.6, F.7, F.8
- 2013-2022 average total water use per person per day, reported in Tables F.6, F.7, F.8

Projected 2030, 2040, and 2050 municipal community public water supply system total use is reported in Tables F.6, F.7, F.8.

The Met Council recommends that individual communities should consider using a variable range of +/-20% for projecting water use when planning for improvements to water system infrastructure and adjusting water utility billing rates. This accounts for potential increases in population and industrial growth beyond projections, changes in water efficiency, varying weather patterns (both wet and dry), and other factors that could affect future water demands. This recommendation is supported by the fact that several communities in the metro region experienced fluctuations in water demand that were closer to +/-20% rather than just the +/-10% that was experienced for the metro region as a whole from 2013 to 2022. These fluctuations were mainly due to significant changes in industrial water use and unexpected rapid growth in residential areas.

Projecting future total water use in the metro region

The projected total amount of water use in the seven-county Twin Cities metropolitan area will be calculated for 2030, 2040, and 2050 by adding together the projected future water use for each community's municipal community public water supply systems and privately owned, high-capacity wells.

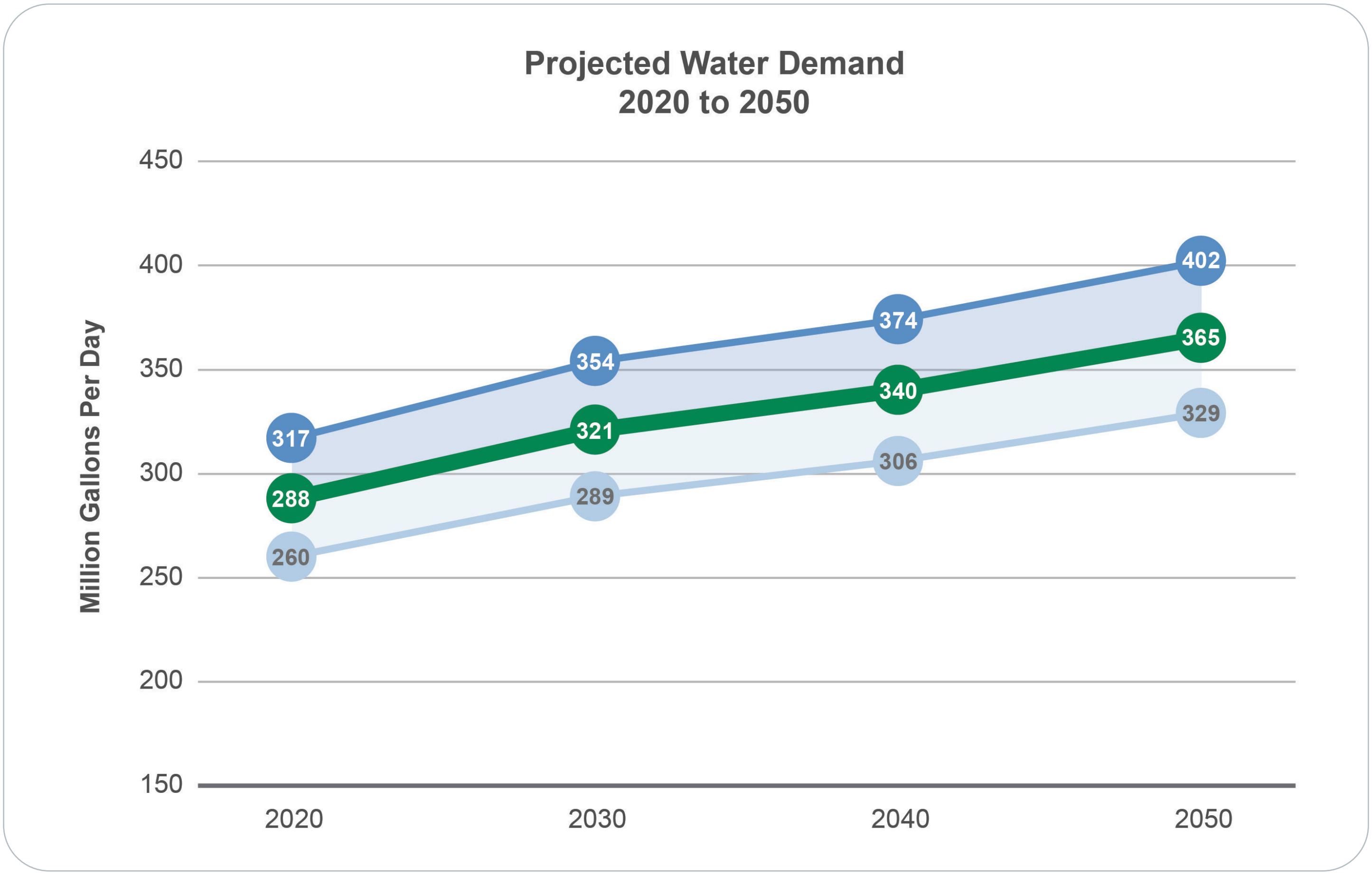
Total estimated water use for the metro region will be calculated using the following basic equation:

Total metro region water use = projected municipal community public water system use + projected privately owned high-capacity well use

Conclusions

The Twin Cities region is estimated to need 283 to 346 million gallons per day (MGD) in 2030, 301 to 367 MDG by 2040, and 323 to 395 MGD by 2050 for municipal community public water supply systems and privately owned, high-capacity wells (Figure G.2). The reported range reflects uncertainty due to regionwide shifts in population and industrial changes, changes in water efficiency, extreme weather patterns (wet and dry), and other variable conditions that could affect water demand.

Figure H.2: Projected water demand



Projected water demand by municipal community public water supply systems from a baseline in 2020 to 2030, 2040, and 2050. A range of +/-10% is recommended to reflect uncertainty due to region-wide shifts in population and industrial changes, changes in water efficiency, extreme weather patterns (wet and dry), and other variable conditions that could affect water demand. Data source: Met Council

The estimated amount of future water use for each municipal community public water supply system in the metro region was calculated for 2030, 2040, and 2050 as reported in Tables F.6, F.7, F.8 to support local water supply planning efforts. The Met Council recommends that individual communities should consider using a variable range of +/-20% for projecting water use, and these values are also included in Tables F.6, F.7, F.8.

These water demand projections are intended to:

1. Help community planners and Met Council planners, policymakers, and state agencies prepare for future growth and tackle regional issues.

2. Guide communities in developing the water supply section of their comprehensive plans, estimating

water utility revenue, planning for water infrastructure improvements, and requesting DNR appropriation permit amendments to support growth.

3. Provide water demand data for Met Council's groundwater modeling projects, surface water analyses, and other studies.

Table H.2: 2030 municipal community public water supply system projections

Community	2013-2022 Average Total Water Use (Gallons/ Peron/ Day)	2030 Projected Population Served	2030 Projected Average Daily Water Use (Million Gallons/Day)	-10%	+10%	-20%	+20%
Andover	127.19	23,711	3.016	2.714	3.317	2.413	3.619
Anoka	123.50	21,732	2.684	2.416	2.952	2.147	3.221
Apple Valley	112.12	56,040	6.283	5.655	6.912	5.027	7.540
Bayport	114.64	2,559	0.293	0.264	0.323	0.235	0.352
Belle Plaine	91.59	8,630	0.790	0.711	0.869	0.632	0.948
Bloomington	103.69	72,247	7.491	6.742	8.240	5.993	8.990
Brooklyn Center	94.46	30,241	2.857	2.571	3.142	2.285	3.428
Brooklyn Park	103.91	84,112	8.740	7.866	9.614	6.992	10.488
Burnsville	141.30	66,605	9.411	8.470	10.353	7.529	11.294
Carver	86.82	5,951	0.517	0.465	0.568	0.413	0.620
Centerville	70.78	4,434	0.314	0.282	0.345	0.251	0.377
Champlin	98.34	24,451	2.405	2.164	2.645	1.924	2.885
Chanhassen	107.44	28,231	3.033	2.730	3.336	2.426	3.640
Chaska	112.47	28,544	3.210	2.889	3.531	2.568	3.852
Circle Pines	80.63	5,140	0.414	0.373	0.456	0.332	0.497
Cologne	77.51	2,231	0.173	0.156	0.190	0.138	0.208
Columbus	100.00	632	0.055	0.050	0.061	0.044	0.066
Coon Rapids	106.60	66,049	7.041	6.336	7.745	5.632	8.449
Cottage Grove	93.91	40,070	3.763	3.387	4.139	3.010	4.515
Dayton	61.15	7,485	0.458	0.412	0.503	0.366	0.549
Eagan	118.21	74,798	8.842	7.958	9.726	7.073	10.610
Eden Prairie	113.13	69,010	7.807	7.027	8.588	6.246	9.369
Edina	119.60	61,853	7.398	6.658	8.138	5.918	8.877
Elko New Market	63.09	5,843	0.369	0.332	0.406	0.295	0.442

Community	2013-2022 Average Total Water Use (Gallons/ Peron/ Day)	2030 Projected Population Served	2030 Projected Average Daily Water Use (Million Gallons/Day)	-10%	+10%	-20%	+20%
Empire Township	99.28	2,691	0.267	0.240	0.294	0.214	0.321
Excelsior	122.88	2,075	0.255	0.229	0.280	0.204	0.306
Farmington	85.19	23,726	2.021	1.819	2.223	1.617	2.425
Forest Lake	111.09	14,497	1.611	1.449	1.772	1.288	1.933
Fridley	94.21	29,661	2.794	2.515	3.074	2.236	3.353
Greenfield	121.04	668	0.081	0.073	0.089	0.065	0.097
Hamburg	58.44	587	0.034	0.031	0.038	0.027	0.041
Hampton	66.06	706	0.047	0.042	0.051	0.037	0.056
Hastings	102.93	25,905	2.666	2.400	2.933	2.133	3.200
Hopkins	108.23	21,442	2.321	2.089	2.553	1.857	2.785
Hugo	84.72	14,764	1.251	1.126	1.376	1.001	1.501
Inver Grove Heights	79.74	39,620	3.159	2.843	3.475	2.527	3.791
Jordan	86.84	6,824	0.593	0.533	0.652	0.474	0.711
Lake Elmo	98.70	10,296	1.016	0.915	1.118	0.813	1.219
Lakeland	65.29	3,257	0.213	0.191	0.234	0.170	0.255
Lakeville	102.59	69,909	7.172	6.455	7.889	5.738	8.607
Lexington	88.99	2,551	0.227	0.204	0.250	0.182	0.272
Lino Lakes	87.00	21,043	1.831	1.648	2.014	1.465	2.197
Long Lake	103.62	1,900	0.197	0.177	0.217	0.157	0.236
Loretto	81.24	728	0.059	0.053	0.065	0.047	0.071
Mahtomedi	83.44	7,282	0.608	0.547	0.668	0.486	0.729
Maple Grove	114.38	85,679	9.800	8.820	10.780	7.840	11.760
Maple Plain	88.93	2,368	0.211	0.190	0.232	0.168	0.253
Marine on St. Croix	69.93	149	0.010	0.009	0.011	0.008	0.013
Mayer	83.84	2,203	0.185	0.166	0.203	0.148	0.222
Medina	121.21	5,230	0.634	0.571	0.697	0.507	0.761
Minneapolis	101.93	594,630	60.611	54.550	66.672	48.489	72.733
Minnetonka Beach	148.99	435	0.065	0.058	0.071	0.052	0.078
Minnetonka	113.58	61,175	6.948	6.253	7.643	5.559	8.338
Minnetrista	120.29	5,363	0.645	0.581	0.710	0.516	0.774
Mound	64.46	9,181	0.592	0.533	0.651	0.473	0.710
Mounds View	93.39	12,971	1.211	1.090	1.332	0.969	1.454
New Brighton	104.80	22,987	2.409	2.168	2.650	1.927	2.891

Community	2013-2022 Average Total Water Use (Gallons/ Peron/ Day)	2030 Projected Population Served	2030 Projected Average Daily Water Use (Million Gallons/Day)	-10%	+10%	-20%	+20%
New Germany	59.47	548	0.033	0.029	0.036	0.026	0.039
New Prague	88.26	8,912	0.787	0.708	0.865	0.629	0.944
New Trier	72.77	149	0.011	0.010	0.012	0.009	0.013
Newport	82.97	4,767	0.396	0.356	0.435	0.316	0.475
North St. Paul	74.17	12,134	0.900	0.810	0.990	0.720	1.080
Norwood Young America	67.86	4,405	0.299	0.269	0.329	0.239	0.359
Oak Grove	83.36	118	0.010	0.009	0.011	0.008	0.012
Oak Park Heights	127.23	4,678	0.595	0.536	0.655	0.476	0.714
Oakdale	84.75	29,618	2.510	2.259	2.761	2.008	3.012
Orono	89.98	4,424	0.398	0.358	0.438	0.318	0.478
Prior Lake	68.30	29,667	2.026	1.824	2.229	1.621	2.432
Plymouth	105.43	79,030	8.332	7.499	9.165	6.665	9.998
Prior Lake	68.30	29,667	2.026	1.824	2.229	1.621	2.432
Ramsey	131.70	18,501	2.437	2.193	2.680	1.949	2.924
Randolph	167.42	443	0.074	0.067	0.082	0.059	0.089
Richfield	76.13	38,110	2.901	2.611	3.192	2.321	3.482
Robbinsdale	78.92	15,251	1.204	1.083	1.324	0.963	1.444
Rockford	80.55	4,484	0.361	0.325	0.397	0.289	0.433
Rogers	134.88	14,307	1.930	1.737	2.123	1.544	2.316
Rosemount	101.37	36,472	3.697	3.328	4.067	2.958	4.437
Savage	54.24	33,515	1.818	1.636	1.999	1.454	2.181
Shakopee Public Utilities	121.48	45,376	5.512	4.961	6.064	4.410	6.615
Shoreview	88.49	28,240	2.499	2.249	2.749	1.999	2.999
Shorewood	99.51	4,095	0.408	0.367	0.448	0.326	0.489
South St. Paul	111.45	20,373	2.271	2.043	2.498	1.816	2.725
Spring Lake Park	106.94	6,804	0.728	0.655	0.800	0.582	0.873
Spring Park	104.97	2,305	0.242	0.218	0.266	0.194	0.290
St. Anthony Village	86.61	10,105	0.875	0.788	0.963	0.700	1.050
St. Bonifacius	82.60	2,353	0.194	0.175	0.214	0.155	0.233
St. Francis	107.49	7,181	0.772	0.695	0.849	0.618	0.926
St. Louis Park	110.70	51,666	5.719	5.147	6.291	4.575	6.863
St. Paul Park	90.80	6,390	0.580	0.522	0.638	0.464	0.696

Community	2013-2022 Average Total Water Use (Gallons/ Peron/ Day)	2030 Projected Population Served	2030 Projected Average Daily Water Use (Million Gallons/Day)	-10%	+10%	-20%	+20%
Saint Paul Regional Water Services	91.49	476,120	43.559	39.203	47.915	34.847	52.271
Stillwater	100.35	22,297	2.238	2.014	2.461	1.790	2.685
Tonka Bay	96.42	1,747	0.168	0.152	0.185	0.135	0.202
Vadnais Heights	95.76	14,122	1.352	1.217	1.488	1.082	1.623
Vermillion	92.85	502	0.047	0.042	0.051	0.037	0.056
Victoria	109.26	9,984	1.091	0.982	1.200	0.873	1.309
Waconia	82.89	17,579	1.457	1.311	1.603	1.166	1.748
Watertown	66.92	5,493	0.368	0.331	0.404	0.294	0.441
Wayzata	158.44	5,791	0.918	0.826	1.009	0.734	1.101
White Bear Lake	86.90	26,068	2.265	2.039	2.492	1.812	2.718
White Bear Township	98.72	11,271	1.113	1.001	1.224	0.890	1.335
Woodbury	101.56	77,462	7.867	7.081	8.654	6.294	9.441
TOTAL		**3,115,626**	**314.092**	**282.683**	**345.501**		

2030 municipal community public water supply system projections, including estimated 10% and 20% higher and lower projections to reflect uncertainty due to potential shifts in population and industrial changes, changes in water efficiency, extreme weather patterns (wet and dry), and other variable conditions that could affect water demand. This information is expected to be updated periodically with community input. These values were published on 2/15/2025, the date of the 2050 Water Policy Plan adoption. Values may be updated and available through the Met Council Environmental Services Planning Water Resources Policy and Planning group.

Table H.3: 2040 municipal community public water supply system projections

Community	2013-2022 Average Total Water Use (Gallons/ Peron/ Day)	2030 Projected Population Served	2030 Projected Average Daily Water Use (Million Gallons/Day)	-10%	+10%	-20%	+20%
Andover	127.19	25,091	3.191	2.872	3.510	2.553	3.830
Anoka	123.50	22,146	2.735	2.462	3.009	2.188	3.282
Apple Valley	112.12	58,180	6.523	5.871	7.175	5.219	7.828
Bayport	114.64	2,795	0.320	0.288	0.352	0.256	0.385
Belle Plaine	91.59	10,139	0.929	0.836	1.021	0.743	1.114
Bloomington	103.69	76,420	7.924	7.132	8.716	6.339	9.509
Brooklyn Center	94.46	31,752	2.999	2.699	3.299	2.400	3.599
Brooklyn Park	103.91	87,458	9.088	8.179	9.997	7.270	10.905
Burnsville	141.30	70,310	9.935	8.941	10.928	7.948	11.922

Community	2013-2022 Average Total Water Use (Gallons/ Peron/ Day)	2030 Projected Population Served	2030 Projected Average Daily Water Use (Million Gallons/Day)	-10%	+10%	-20%	+20%
Carver	86.82	7,236	0.628	0.565	0.691	0.503	0.754
Centerville	70.78	4,701	0.333	0.299	0.366	0.266	0.399
Champlin	98.34	25,021	2.461	2.215	2.707	1.968	2.953
Chanhassen	107.44	29,992	3.222	2.900	3.545	2.578	3.867
Chaska	112.47	31,034	3.490	3.141	3.839	2.792	4.188
Circle Pines	80.63	5,429	0.438	0.394	0.482	0.350	0.525
Cologne	77.51	2,702	0.209	0.189	0.230	0.168	0.251
Columbus	100.00	1,109	0.055	0.050	0.061	0.044	0.066
Coon Rapids	106.60	70,738	7.540	6.786	8.294	6.032	9.048
Cottage Grove	93.91	43,105	4.048	3.643	4.453	3.238	4.857
Dayton	61.15	9,094	0.556	0.500	0.612	0.445	0.667
Eagan	118.21	77,329	9.141	8.227	10.055	7.313	10.969
Eden Prairie	113.13	73,171	8.278	7.450	9.106	6.622	9.934
Edina	119.60	63,474	7.592	6.832	8.351	6.073	9.110
Elko New Market	63.09	8,658	0.546	0.492	0.601	0.437	0.656
Empire Township	99.28	3,271	0.325	0.292	0.357	0.260	0.390
Excelsior	122.88	2,315	0.284	0.256	0.313	0.228	0.341
Farmington	85.19	25,212	2.148	1.933	2.363	1.718	2.577
Forest Lake	111.09	16,792	1.865	1.679	2.052	1.492	2.239
Fridley	94.21	30,731	2.895	2.606	3.185	2.316	3.474
Greenfield	121.04	954	0.115	0.104	0.127	0.092	0.139
Hamburg	58.44	605	0.035	0.032	0.039	0.028	0.042
Hampton	66.06	745	0.049	0.044	0.054	0.039	0.059
Hastings	102.93	26,985	2.778	2.500	3.055	2.222	3.333
Hopkins	108.23	23,567	2.551	2.296	2.806	2.041	3.061
Hugo	84.72	16,893	1.431	1.288	1.574	1.145	1.717
Inver Grove Heights	79.74	42,352	3.377	3.039	3.715	2.702	4.052
Jordan	86.84	7,461	0.648	0.583	0.713	0.518	0.777
Lake Elmo	98.70	12,007	1.185	1.067	1.304	0.948	1.422
Lakeland	65.29	3,511	0.229	0.206	0.252	0.183	0.275
Lakeville	102.59	74,062	7.598	6.838	8.358	6.079	9.118
Lexington	88.99	2,642	0.235	0.212	0.259	0.188	0.282

Community	2013-2022 Average Total Water Use (Gallons/ Peron/ Day)	2030 Projected Population Served	2030 Projected Average Daily Water Use (Million Gallons/Day)	-10%	+10%	-20%	+20%
Lino Lakes	87.00	23,146	2.014	1.812	2.215	1.611	2.416
Long Lake	103.62	2,033	0.211	0.190	0.232	0.169	0.253
Loretto	81.24	746	0.061	0.055	0.067	0.048	0.073
Mahtomedi	83.44	7,840	0.654	0.589	0.720	0.523	0.785
Maple Grove	114.38	93,066	10.645	9.580	11.709	8.516	12.774
Maple Plain	88.93	2,706	0.241	0.217	0.265	0.193	0.289
Marine on St. Croix	69.93	223	0.016	0.014	0.017	0.012	0.019
Mayer	83.84	2,774	0.233	0.209	0.256	0.186	0.279
Medina	121.21	5,989	0.726	0.653	0.799	0.581	0.871
Minneapolis	101.93	626,466	63.856	57.470	70.241	51.085	76.627
Minnetonka Beach	148.99	452	0.067	0.061	0.074	0.054	0.081
Minnetonka	113.58	66,773	7.584	6.826	8.342	6.067	9.101
Minnetrista	120.29	5,955	0.716	0.645	0.788	0.573	0.860
Mound	64.46	9,608	0.619	0.557	0.681	0.495	0.743
Mounds View	93.39	13,465	1.257	1.132	1.383	1.006	1.509
New Brighton	104.80	23,732	2.487	2.238	2.736	1.990	2.984
New Germany	59.47	661	0.039	0.035	0.043	0.031	0.047
New Prague	88.26	9,232	0.815	0.733	0.896	0.652	0.978
New Trier	72.77	152	0.011	0.010	0.012	0.009	0.013
Newport	82.97	5,742	0.476	0.429	0.524	0.381	0.572
North St. Paul	74.17	12,557	0.931	0.838	1.024	0.745	1.118
Norwood Young America	67.86	4,672	0.317	0.285	0.349	0.254	0.380
Oak Grove	83.36	118	0.010	0.009	0.011	0.008	0.012
Oak Park Heights	127.23	5,006	0.637	0.573	0.701	0.510	0.764
Oakdale	84.75	30,636	2.596	2.337	2.856	2.077	3.116
Orono	89.98	5,223	0.470	0.423	0.517	0.376	0.564
Prior Lake	68.30	33,174	2.266	2.039	2.492	1.813	2.719
Plymouth	105.43	83,573	8.811	7.930	9.692	7.049	10.573
Prior Lake	68.30	33,174	2.266	2.039	2.492	1.813	2.719
Ramsey	131.70	21,306	2.806	2.525	3.087	2.245	3.367
Randolph	167.42	489	0.082	0.074	0.090	0.065	0.098
Richfield	76.13	38,732	2.949	2.654	3.244	2.359	3.539
Robbinsdale	78.92	16,197	1.278	1.150	1.406	1.023	1.534

Community	2013-2022 Average Total Water Use (Gallons/ Peron/ Day)	2030 Projected Population Served	2030 Projected Average Daily Water Use (Million Gallons/Day)	-10%	+10%	-20%	+20%
Rockford	80.55	4,521	0.364	0.328	0.401	0.291	0.437
Rogers	134.88	16,743	2.258	2.032	2.484	1.807	2.710
Rosemount	101.37	38,073	3.860	3.474	4.245	3.088	4.631
Savage	54.24	36,624	1.986	1.788	2.185	1.589	2.384
Shakopee Public Utilities	121.48	51,411	6.246	5.621	6.870	4.997	7.495
Shoreview	88.49	29,184	2.582	2.324	2.841	2.066	3.099
Shorewood	99.51	4,581	0.456	0.410	0.501	0.365	0.547
South St. Paul	111.45	20,879	2.327	2.094	2.560	1.862	2.792
Spring Lake Park	106.94	7,015	0.750	0.675	0.825	0.600	0.900
Spring Park	104.97	2,495	0.262	0.236	0.288	0.210	0.314
St. Anthony Village	86.61	10,249	0.888	0.799	0.976	0.710	1.065
St. Bonifacius	82.60	2,405	0.199	0.179	0.219	0.159	0.238
St. Francis	107.49	9,700	1.043	0.938	1.147	0.834	1.251
St. Louis Park	110.70	54,692	6.054	5.449	6.660	4.843	7.265
St. Paul Park	90.80	6,926	0.629	0.566	0.692	0.503	0.755
Saint Paul Regional Water Services	91.49	498,888	45.642	41.078	50.206	36.514	54.771
Stillwater	100.35	24,240	2.432	2.189	2.676	1.946	2.919
Tonka Bay	96.42	1,860	0.179	0.161	0.197	0.143	0.215
Vadnais Heights	95.76	14,805	1.418	1.276	1.559	1.134	1.701
Vermillion	92.85	500	0.046	0.042	0.051	0.037	0.056
Victoria	109.26	12,117	1.324	1.191	1.456	1.059	1.589
Waconia	82.89	19,302	1.600	1.440	1.760	1.280	1.920
Watertown	66.92	6,575	0.440	0.396	0.484	0.352	0.528
Wayzata	158.44	6,344	1.005	0.905	1.106	0.804	1.206
White Bear Lake	86.90	27,256	2.369	2.132	2.605	1.895	2.842
White Bear Township	98.72	12,123	1.197	1.077	1.316	0.957	1.436
Woodbury	101.56	82,050	8.333	7.500	9.167	6.667	10.000
TOTAL		**3,314,365**	**333.967**	**300.570**	**367.364**		

2040 municipal community public water supply system projections, including estimated 10% and 20% higher and lower projections to reflect uncertainty due to potential shifts in population and industrial changes, changes in water efficiency, extreme weather patterns (wet and dry), and other variable conditions that could affect water demand. This information is expected to be updated periodically with community input.

Table H.4: 2050 municipal community public water supply system projections

Community	2013-2022 Average Total Water Use (Gallons/ Peron/ Day)	2030 Projected Population Served	2030 Projected Average Daily Water Use (Million Gallons/Day)	-10%	+10%	-20%	+20%
Andover	127.19	27,287	3.471	3.124	3.818	2.777	4.165
Anoka	123.50	23,422	2.893	2.603	3.182	2.314	3.471
Apple Valley	112.12	60,351	6.767	6.090	7.443	5.413	8.120
Bayport	114.64	3,000	0.344	0.310	0.378	0.275	0.413
Belle Plaine	91.59	14,127	1.294	1.164	1.423	1.035	1.553
Bloomington	103.69	86,358	8.955	8.059	9.850	7.164	10.745
Brooklyn Center	94.46	32,891	3.107	2.796	3.418	2.486	3.728
Brooklyn Park	103.91	91,295	9.486	8.538	10.435	7.589	11.384
Burnsville	141.30	75,200	10.626	9.563	11.688	8.501	12.751
Carver	86.82	11,065	0.961	0.865	1.057	0.769	1.153
Centerville	70.78	5,058	0.358	0.322	0.394	0.286	0.430
Champlin	98.34	24,894	2.448	2.203	2.693	1.958	2.938
Chanhassen	107.44	31,990	3.437	3.093	3.781	2.750	4.124
Chaska	112.47	35,938	4.042	3.638	4.446	3.233	4.850
Circle Pines	80.63	5,700	0.460	0.414	0.506	0.368	0.552
Cologne	77.51	3,432	0.266	0.239	0.293	0.213	0.319
Columbus	100.00	1,666	0.055	0.050	0.061	0.044	0.066
Coon Rapids	106.60	76,659	8.172	7.354	8.989	6.537	9.806
Cottage Grove	93.91	49,259	4.626	4.163	5.088	3.701	5.551
Dayton	61.15	12,253	0.749	0.674	0.824	0.599	0.899
Eagan	118.21	81,266	9.606	8.646	10.567	7.685	11.528
Eden Prairie	113.13	78,285	8.857	7.971	9.742	7.085	10.628
Edina	119.60	66,302	7.930	7.137	8.723	6.344	9.516
Elko New Market	63.09	11,481	0.724	0.652	0.797	0.580	0.869
Empire Township	99.28	3,860	0.383	0.345	0.422	0.307	0.460
Excelsior	122.88	2,656	0.326	0.294	0.359	0.261	0.392
Farmington	85.19	28,580	2.435	2.191	2.678	1.948	2.922
Forest Lake	111.09	20,266	2.251	2.026	2.477	1.801	2.702
Fridley	94.21	32,376	3.050	2.745	3.355	2.440	3.660
Greenfield	121.04	1,286	0.156	0.140	0.171	0.125	0.187
Hamburg	58.44	613	0.036	0.032	0.039	0.029	0.043

Community	2013-2022 Average Total Water Use (Gallons/ Peron/ Day)	2030 Projected Population Served	2030 Projected Average Daily Water Use (Million Gallons/Day)	-10%	+10%	-20%	+20%
Hampton	66.06	783	0.052	0.047	0.057	0.041	0.062
Hastings	102.93	28,280	2.911	2.620	3.202	2.329	3.493
Hopkins	108.23	25,477	2.757	2.482	3.033	2.206	3.309
Hugo	84.72	20,547	1.741	1.567	1.915	1.393	2.089
Inver Grove Heights	79.74	45,765	3.649	3.284	4.014	2.919	4.379
Jordan	86.84	8,227	0.714	0.643	0.786	0.572	0.857
Lake Elmo	98.70	14,527	1.434	1.290	1.577	1.147	1.721
Lakeland	65.29	3,489	0.228	0.205	0.251	0.182	0.273
Lakeville	102.59	84,015	8.619	7.757	9.481	6.895	10.343
Lexington	88.99	2,702	0.240	0.216	0.264	0.192	0.289
Lino Lakes	87.00	26,474	2.303	2.073	2.533	1.843	2.764
Long Lake	103.62	2,103	0.218	0.196	0.240	0.174	0.261
Loretto	81.24	770	0.063	0.056	0.069	0.050	0.075
Mahtomedi	83.44	7,770	0.648	0.583	0.713	0.519	0.778
Maple Grove	114.38	103,428	11.830	10.647	13.013	9.464	14.196
Maple Plain	88.93	3,111	0.277	0.249	0.304	0.221	0.332
Marine on St. Croix	69.93	281	0.020	0.018	0.022	0.016	0.024
Mayer	83.84	3,098	0.260	0.234	0.286	0.208	0.312
Medina	121.21	6,837	0.829	0.746	0.912	0.663	0.994
Minneapolis	101.93	656,264	66.893	60.204	73.582	53.514	80.272
Minnetonka Beach	148.99	449	0.067	0.060	0.074	0.054	0.080
Minnetonka	113.58	73,365	8.333	7.500	9.166	6.666	9.999
Minnetrista	120.29	6,726	0.809	0.728	0.890	0.647	0.971
Mound	64.46	9,656	0.622	0.560	0.685	0.498	0.747
Mounds View	93.39	13,998	1.307	1.177	1.438	1.046	1.569
New Brighton	104.80	24,885	2.608	2.347	2.869	2.086	3.129
New Germany	59.47	817	0.049	0.044	0.053	0.039	0.058
New Prague	88.26	9,638	0.851	0.766	0.936	0.680	1.021
New Trier	72.77	154	0.011	0.010	0.012	0.009	0.013
Newport	82.97	6,605	0.548	0.493	0.603	0.438	0.658
North St. Paul	74.17	12,552	0.931	0.838	1.024	0.745	1.117
Norwood Young America	67.86	5,083	0.345	0.310	0.379	0.276	0.414

Community	2013-2022 Average Total Water Use (Gallons/ Peron/ Day)	2030 Projected Population Served	2030 Projected Average Daily Water Use (Million Gallons/Day)	-10%	+10%	-20%	+20%
Oak Grove	83.36	118	0.010	0.009	0.011	0.008	0.012
Oak Park Heights	127.23	5,408	0.688	0.619	0.757	0.550	0.826
Oakdale	84.75	32,974	2.795	2.515	3.074	2.236	3.353
Orono	89.98	5,895	0.530	0.477	0.583	0.424	0.636
Prior Lake	68.30	36,976	2.525	2.273	2.778	2.020	3.031
Plymouth	105.43	89,566	9.443	8.498	10.387	7.554	11.331
Prior Lake	68.30	36,976	2.525	2.273	2.778	2.020	3.031
Ramsey	131.70	25,018	3.295	2.965	3.624	2.636	3.954
Randolph	167.42	565	0.095	0.085	0.104	0.076	0.114
Richfield	76.13	40,031	3.048	2.743	3.352	2.438	3.657
Robbinsdale	78.92	16,490	1.301	1.171	1.431	1.041	1.562
Rockford	80.55	4,579	0.369	0.332	0.406	0.295	0.443
Rogers	134.88	20,199	2.724	2.452	2.997	2.180	3.269
Rosemount	101.37	40,517	4.107	3.697	4.518	3.286	4.929
Savage	54.24	39,211	2.127	1.914	2.339	1.701	2.552
Shakopee Public Utilities	121.48	61,731	7.499	6.749	8.249	5.999	8.999
Shoreview	88.49	30,623	2.710	2.439	2.981	2.168	3.252
Shorewood	99.51	4,623	0.460	0.414	0.506	0.368	0.552
South St. Paul	111.45	21,603	2.408	2.167	2.648	1.926	2.889
Spring Lake Park	106.94	7,345	0.785	0.707	0.864	0.628	0.943
Spring Park	104.97	2,721	0.286	0.257	0.314	0.228	0.343
St. Anthony Village	86.61	10,314	0.893	0.804	0.983	0.715	1.072
St. Bonifacius	82.60	2,390	0.197	0.178	0.217	0.158	0.237
St. Francis	107.49	11,133	1.197	1.077	1.316	0.957	1.436
St. Louis Park	110.70	58,459	6.471	5.824	7.118	5.177	7.765
St. Paul Park	90.80	7,701	0.699	0.629	0.769	0.559	0.839
Saint Paul Regional Water Services	91.49	519,437	47.522	42.770	52.274	38.018	57.027
Stillwater	100.35	24,282	2.437	2.193	2.680	1.949	2.924
Tonka Bay	96.42	1,970	0.190	0.171	0.209	0.152	0.228
Vadnais Heights	95.76	14,743	1.412	1.271	1.553	1.129	1.694
Vermillion	92.85	501	0.047	0.042	0.051	0.037	0.056

Community	2013-2022 Average Total Water Use (Gallons/ Peron/ Day)	2030 Projected Population Served	2030 Projected Average Daily Water Use (Million Gallons/Day)	-10%	+10%	-20%	+20%
Victoria	109.26	15,780	1.724	1.552	1.896	1.379	2.069
Waconia	82.89	23,882	1.979	1.782	2.177	1.584	2.375
Watertown	66.92	7,591	0.508	0.457	0.559	0.406	0.610
Wayzata	158.44	6,931	1.098	0.988	1.208	0.879	1.318
White Bear Lake	86.90	27,521	2.392	2.152	2.631	1.913	2.870
White Bear Township	98.72	12,175	1.202	1.082	1.322	0.962	1.442
Woodbury	101.56	88,885	9.028	8.125	9.930	7.222	10.833
TOTAL		3,563,556	359.160	323.244	395.076		

2050 municipal community public water supply system projections, including estimated 10% and 20% higher and lower projections to reflect uncertainty due to potential shifts in population and industrial changes, changes in water efficiency, extreme weather patterns (wet and dry), and other variable conditions that could affect water demand. This information is expected to be updated periodically with community input.

Appendix I

Priority Waters List

Table I.1: Priority Lakes

Lake Name	DNR Lake ID	Primary Metro County	Metro Watershed Organization	Area	Qualified as a Drinking Water Source	Qualified for Recreation and Tourism	Qualified for Healthy Habitat	Qualified for Well-rounded
Amelia	02001400	Anoka	Vadnais Lake Area WMO	156.4	No	No	Yes	No
Ann	10001200	Carver	Riley-Purgatory-Bluff Creek WD	115.7	No	Yes	No	Yes
Auburn	10004400	Carver	Minnehaha Creek WD	290.6	No	Yes	No	No
Bald Eagle	62000200	Ramsey	Rice Creek WD	1049.1	Yes	Yes	No	No
Baldwin	02001300	Anoka	Rice Creek WD	181.6	No	No	Yes	Yes
Battle Creek	82009100	Washington	Ramsey-Washington Metro WD	105.7	No	Yes	No	Yes
Bde Maka Ska	27003100	Hennepin	Minnehaha Creek WD	423.9	No	Yes	No	Yes
Big Carnelian	82004900	Washington	Carnelian-Marine-St. Croix WD	457.0	No	No	Yes	No
Big Marine	82005200	Washington	Carnelian-Marine-St. Croix WD	1799.2	No	Yes	Yes	Yes
Black	62001900	Ramsey	Vadnais Lake Area WMO	10.9	No	No	Yes	No
Black Dog	19008300	Dakota	Lower Minnesota River WD	510.1	No	No	No	Yes
Blue	70008800	Scott	Lower Minnesota River WD	154.4	No	No	Yes	No
Bryant	27006700	Hennepin	Nine Mile Creek WD	179.9	No	Yes	No	Yes
Bush	27004700	Hennepin	Nine Mile Creek WD	171.0	No	Yes	No	No
Byllesby	19000600	Dakota	North Cannon River WMO	1368.3	No	Yes	Yes	Yes
Cedar	27003900	Hennepin	Minnehaha Creek WD	163.8	No	Yes	No	No
Cedar	70009100	Scott	Scott WMO	793.4	No	Yes	No	No
Centerville	02000600	Anoka	Rice Creek WD	473.9	Yes	Yes	No	Yes
Charley	62006200	Ramsey	Vadnais Lake Area WMO	37.1	Yes	No	No	No
Christmas	27013700	Hennepin	Minnehaha Creek WD	267.2	No	No	Yes	No

Lake Name	DNR Lake ID	Primary Metro County	Metro Watershed Organization	Area	Qualified as a Drinking Water Source	Qualified for Recreation and Tourism	Qualified for Healthy Habitat	Qualified for Well-rounded
Chub	19002000	Dakota	North Cannon River WMO	228.0	No	No	Yes	No
Clear	82004500	Washington	Carnelian-Marine-St. Croix WD	41.7	No	No	Yes	No
Clear	82016300	Washington	Rice Creek WD	429.0	No	Yes	No	No
Cleary	70002200	Scott	Scott WMO	144.7	No	Yes	No	Yes
Como	62005500	Ramsey	Capitol Region WD	71.3	No	Yes	No	Yes
Coon	02004200	Anoka	Sunrise River WMO	1481.2	No	Yes	Yes	Yes
Crooked	02008400	Anoka	Coon Creek WD	114.9	No	Yes	No	Yes
Crystal	19002700	Dakota	Black Dog WMO	293.2	No	Yes	No	No
Crystal	27003400	Hennepin	Shingle Creek WMC	79.1	No	Yes	No	Yes
Deep	62001800	Ramsey	Vadnais Lake Area WMO	71.7	Yes	No	No	No
DeMontreville	82010100	Washington	Valley Branch WD	157.1	No	No	Yes	No
Eagle	10012100	Carver	Carver County WMO	183.2	No	Yes	No	No
Eagle	27011101	Hennepin	Shingle Creek WMC	296.2	No	Yes	No	Yes
East Twin	02002000	Anoka	Coon Creek WD	15.4	No	No	Yes	No
East Twin	02013300	Anoka	Upper Rum River WMO	92.0	No	Yes	Yes	Yes
East Vadnais	62003801	Ramsey	Vadnais Lake Area WMO	392.9	Yes	No	No	Yes
Elmo	82010600	Washington	Valley Branch WD	256.8	No	Yes	Yes	Yes
Empire	19034200	Dakota	Vermillion River Watershed JPO	21.0	No	No	Yes	No
Fish	02006500	Anoka	Upper Rum River WMO	334.3	No	No	Yes	Yes
Fish	27011800	Hennepin	Elm Creek WMC	237.7	No	Yes	No	No
Fish	70006900	Scott	Prior Lake-Spring Lake WD	175.9	No	Yes	No	No
Fisher	70008700	Scott	Lower Minnesota River WD	259.3	No	No	Yes	No
Forest	82015900	Washington	Comfort Lake Forest Lake WD	2270.9	No	Yes	Yes	No
French	27012700	Hennepin	Elm Creek WMC	216.2	No	No	Yes	Yes

Lake Name	DNR Lake ID	Primary Metro County	Metro Watershed Organization	Area	Qualified as a Drinking Water Source	Qualified for Recreation and Tourism	Qualified for Healthy Habitat	Qualified for Well-rounded
George	02009100	Anoka	Upper Rum River WMO	488.6	No	Yes	Yes	Yes
George Watch	02000500	Anoka	Rice Creek WD	486.0	No	No	No	Yes
Gervais	62000700	Ramsey	Ramsey-Washington Metro WD	235.0	No	Yes	No	Yes
Golden	02004500	Anoka	Rice Creek WD	58.1	No	Yes	No	No
Gun Club	19007800	Dakota	Lower Minnesota River WD	341.7	No	No	Yes	Yes
Ham	02005300	Anoka	Coon Creek WD	154.6	No	Yes	Yes	Yes
Harriet	27001600	Hennepin	Minnehaha Creek WD	341.2	No	Yes	No	No
Hiawatha	27001800	Hennepin	Minnehaha Creek WD	52.9	No	Yes	No	No
Hickey	02009600	Anoka	Upper Rum River WMO	40.4	No	No	Yes	No
Howard	02001600	Anoka	Rice Creek WD	455.6	No	No	Yes	Yes
Hyland	27004800	Hennepin	Riley-Purgatory-Bluff Creek WD	83.9	No	Yes	No	Yes
Independence	27017600	Hennepin	Pioneer-Sarah Creek WMC	832.0	No	Yes	No	Yes
Island	02002200	Anoka	Sunrise River WMO	72.7	No	Yes	No	No
Island	62007500	Ramsey	Rice Creek WD	58.8	No	Yes	No	Yes
Jane	82010400	Washington	Valley Branch WD	158.1	No	No	Yes	No
Jensen	19007100	Dakota	Eagan-Inver Grove Heights WMO	52.3	No	Yes	No	No
Johanna	62007800	Ramsey	Rice Creek WD	211.9	No	Yes	No	Yes
Josephine	62005700	Ramsey	Rice Creek WD	116.2	No	Yes	No	Yes
Keller	62001002	Ramsey	Ramsey-Washington Metro WD	73.3	No	Yes	No	Yes
Kohlman	62000600	Ramsey	Ramsey-Washington Metro WD	84.1	No	No	No	Yes
Lac Lavon	19044600	Dakota	Black Dog WMO	65.9	No	Yes	No	No
Lake of the Isles	27004000	Hennepin	Minnehaha Creek WD	114.2	No	Yes	No	No
Legion	27002400	Hennepin	Minnehaha Creek WD	55.7	No	No	No	Yes
Lily	82002300	Washington	Middle St. Croix WMO	43.8	No	No	No	Yes
Linwood	02002600	Anoka	Sunrise River WMO	572.1	No	Yes	No	Yes

Lake Name	DNR Lake ID	Primary Metro County	Metro Watershed Organization	Area	Qualified as a Drinking Water Source	Qualified for Recreation and Tourism	Qualified for Healthy Habitat	Qualified for Well-rounded
Little Carnelian	82001400	Washington	Carnelian-Marine-St. Croix WD	136.6	No	No	Yes	No
Little Coon	02003200	Anoka	Sunrise River WMO	86.0	No	No	Yes	No
Little Long	27017900	Hennepin	Pioneer-Sarah Creek WMC	69.5	No	No	Yes	Yes
Long	27016000	Hennepin	Minnehaha Creek WD	285.0	No	Yes	No	No
Long	62006700	Ramsey	Rice Creek WD	172.6	No	Yes	No	Yes
Long	82011800	Washington	Valley Branch WD	63.2	No	No	No	Yes
Lotus	10000600	Carver	Riley-Purgatory-Bluff Creek WD	245.1	No	Yes	No	No
Lower Prior	70002600	Scott	Prior Lake-Spring Lake WD	956.2	No	Yes	No	No
Marion	19002600	Dakota	Vermillion River Watershed JPO	530.3	No	Yes	No	Yes
Marshan	02000700	Anoka	Rice Creek WD	203.5	No	No	Yes	Yes
Martin	02003400	Anoka	Sunrise River WMO	232.3	No	Yes	No	No
Mays	82003300	Washington	Carnelian-Marine-St. Croix WD	40.2	No	No	Yes	No
McCarron	62005400	Ramsey	Capitol Region WD	73.3	No	Yes	No	Yes
McMahon	70005000	Scott	Scott WMO	186.6	No	Yes	No	No
Medicine	27010400	Hennepin	Bassett Creek WMC	924.4	No	Yes	No	Yes
Minnetonka	27013300	Hennepin	Minnehaha Creek WD	14205.6	No	Yes	Yes	Yes
Minnewashta	10000900	Carver	Minnehaha Creek WD	679.7	No	Yes	Yes	Yes
Mitchell	27007000	Hennepin	Riley-Purgatory-Bluff Creek WD	113.9	No	Yes	No	No
Mud	82016800	Washington	Rice Creek WD	178.9	No	No	Yes	Yes
Nokomis	27001900	Hennepin	Minnehaha Creek WD	201.2	No	Yes	No	No
Normandale	27104501	Hennepin	Nine Mile Creek WD	104.1	No	Yes	No	No
O'Dowd	70009500	Scott	Scott WMO	300.5	No	Yes	No	No
Olson	82010300	Washington	Valley Branch WD	87.1	No	No	Yes	No
Oneka	82014000	Washington	Rice Creek WD	358.0	No	No	Yes	Yes
Orchard	19003100	Dakota	Black Dog WMO	237.9	No	Yes	No	No
Otter	02000300	Anoka	Rice Creek WD	302.2	Yes	No	No	No

Lake Name	DNR Lake ID	Primary Metro County	Metro Watershed Organization	Area	Qualified as a Drinking Water Source	Qualified for Recreation and Tourism	Qualified for Healthy Habitat	Qualified for Well-rounded
Owasso	62005600	Ramsey	Ramsey-Washington Metro WD	375.0	No	Yes	No	Yes
Parkers	27010700	Hennepin	Bassett Creek WMC	100.2	No	Yes	No	Yes
Peltier	02000400	Anoka	Rice Creek WD	551.9	Yes	Yes	No	Yes
Phalen	62001300	Ramsey	Ramsey-Washington Metro WD	197.7	No	Yes	No	Yes
Pickerel	02013000	Anoka	Upper Rum River WMO	238.4	No	No	Yes	Yes
Piersons	10005300	Carver	Minnehaha Creek WD	266.9	No	No	Yes	No
Pleasant	62004600	Ramsey	Vadnais Lake Area WMO	607.2	Yes	No	No	No
Quarry	70034300	Scott	Lower Minnesota River WD	70.1	No	Yes	No	No
Rebecca	19000300	Dakota	Vermillion River Watershed JPO	81.6	No	Yes	No	No
Rebecca	27019200	Hennepin	Pioneer-Sarah Creek WMC	263.3	No	Yes	No	Yes
Rice	02000800	Anoka	Rice Creek WD	371.2	No	No	Yes	Yes
Rice	70002500	Scott	Lower Minnesota River WD	115.8	No	No	Yes	No
Rice	82014600	Washington	Rice Creek WD	125.5	No	No	Yes	Yes
Riley	10000200	Carver	Riley-Purgatory-Bluff Creek WD	296.2	No	Yes	No	No
Rondeau	02001500	Anoka	Rice Creek WD	248.3	No	No	Yes	No
Round	02008900	Anoka	Lower Rum River WMO	256.2	No	No	No	Yes
Sarah	27019100	Hennepin	Pioneer-Sarah Creek WMC	557.2	No	Yes	No	No
Shady Oak	27008900	Hennepin	Nine Mile Creek WD	90.6	No	Yes	No	No
Silver	62000100	Ramsey	Valley Branch WD	76.0	No	Yes	No	No
Silver	62008300	Ramsey	Rice Creek WD	70.8	No	Yes	No	Yes
Snail	62007300	Ramsey	Ramsey-Washington Metro WD	158.4	No	Yes	No	Yes
Snelling	27000100	Hennepin	Lower Minnesota River WD	102.6	No	Yes	No	Yes

Lake Name	DNR Lake ID	Primary Metro County	Metro Watershed Organization	Area	Qualified as a Drinking Water Source	Qualified for Recreation and Tourism	Qualified for Healthy Habitat	Qualified for Well-rounded
Spring	70005400	Scott	Prior Lake-Spring Lake WD	591.8	No	Yes	No	No
Spurzem	27014900	Hennepin	Pioneer-Sarah Creek WMC	81.9	No	No	No	Yes
Square	82004600	Washington	Carnelian-Marine-St. Croix WD	203.0	No	Yes	Yes	No
Staring	27007800	Hennepin	Riley-Purgatory-Bluff Creek WD	167.1	No	Yes	No	Yes
Steiger	10004500	Carver	Minnehaha Creek WD	165.9	No	Yes	No	No
Sucker	62002800	Ramsey	Vadnais Lake Area WMO	63.4	Yes	No	No	No
Susan	10001300	Carver	Riley-Purgatory-Bluff Creek WD	88.3	No	Yes	No	No
Swan	02009800	Anoka	Upper Rum River WMO	40.5	No	No	Yes	No
Tanners	82011500	Washington	Ramsey-Washington Metro WD	74.4	No	Yes	No	Yes
Terrapin	82003100	Washington	Carnelian-Marine-St. Croix WD	121.7	No	No	Yes	No
Tiger	10010800	Carver	Carver County WMO	405.9	No	No	Yes	Yes
Turtle	62006100	Ramsey	Rice Creek WD	450.0	No	Yes	Yes	Yes
Twin	27004200	Hennepin	Shingle Creek WMC	217.4	No	Yes	No	Yes
Upper Prior	70007200	Scott	Prior Lake-Spring Lake WD	386.3	No	Yes	No	No
Waconia	10005900	Carver	Carver County WMO	3080.4	No	Yes	No	Yes
Weaver	27011700	Hennepin	Elm Creek WMC	152.1	No	Yes	No	No
West Moore	02007502	Anoka	Rice Creek WD	67.8	No	No	No	Yes
West Vadnais	62003802	Ramsey	Vadnais Lake Area WMO	211.6	Yes	No	No	No
Westwood	27071100	Hennepin	Bassett Creek WMC	42.9	No	No	No	Yes
Whaletail	27018400	Hennepin	Pioneer-Sarah Creek WMC	510.0	No	Yes	No	No
White Bear	82016700	Washington	Rice Creek WD	2427.7	No	Yes	Yes	Yes
Wirth	27003700	Hennepin	Bassett Creek WMC	40.0	No	Yes	No	Yes

Lake Name	DNR Lake ID	Primary Metro County	Metro Watershed Organization	Area	Qualified as a Drinking Water Source	Qualified for Recreation and Tourism	Qualified for Healthy Habitat	Qualified for Well-rounded
Wood	27002600	Hennepin	Richfield-Bloomington WMO	41.8	No	No	No	Yes
Zumbra-Sunny	10004100	Carver	Minnehaha Creek WD	271.1	No	Yes	No	No

Table I.2: Priority rivers and streams

River or Stream Name	River or Stream ID (DNR Kittle #)	Metro Counties	Metro Watershed Organization	Length (miles)	Qualified as a Drinking Water Source	Qualified for Recreation and Tourism	Qualified for Healthy Habitat	Qualified for Well-rounded
Assumption Creek	M-055-017	Carver	Lower Minnesota River WD	2.8	No	No	Yes	No
Bass Creek	M-058-005	Hennepin	Shingle Creek WMC	3.4	No	No	No	Yes
Bassett Creek	M-057S2	Hennepin	Bassett Creek WMC, Mississippi WMO	12.7	No	Yes	No	No
Battle Creek	M-053	Washington, Ramsey	Ramsey-Washington Metro WD	7.5	No	Yes	No	Yes
Bluff Creek	M-055-014	Carver, Hennepin	Riley-Purgatory-Bluff Creek WD, Lower Minnesota River WD	10.1	No	No	Yes	No
Brown's Creek	M-050-012	Washington	Browns Creek WD	7.9	No	No	Yes	No
Cannon River	M-048	Dakota	North Cannon River WMO	118.3	No	Yes	No	No
Carver Creek	M-055-022	Carver	Carver County WMO, Lower Minnesota River WD	31.5	No	No	Yes	No
Cedar Creek	M-063-003	Anoka	Upper Rum River WMO, Lower Rum River WMO	25.6	No	No	Yes	No
Chub Creek	M-048-017	Dakota	North Cannon River WMO	24.7	No	No	Yes	No
Coon Creek	M-061	Anoka	Coon Creek WD	25.7	No	No	No	Yes
Credit River	M-055-007	Scott	Vermillion River Watershed JPO, Scott WMO, Lower Minnesota River WD	21.9	No	Yes	No	No

River or Stream Name	River or Stream ID (DNR Kittle #)	Metro Counties	Metro Watershed Organization	Length (miles)	Qualified as a Drinking Water Source	Qualified for Recreation and Tourism	Qualified for Healthy Habitat	Qualified for Well-rounded
Crooked Brook	M-063-003-006	Anoka	Upper Rum River WMO	5.2	No	No	Yes	No
Crow River	M-064	Hennepin	Pioneer-Sarah Creek WMC, Elm Creek WMC	194.5	No	Yes	Yes	Yes
Crow River, South Fork	M-064-005	Carver, Hennepin	Carver County WMO, Pioneer-Sarah Creek WMC	124.9	No	Yes	No	Yes
Diamond Creek	M-062-003	Hennepin	Elm Creek WMC	6.3	No	No	No	Yes
Eagle Creek	M-055-009	Scott	Lower Minnesota River WD	2.2	No	No	Yes	No
Elm Creek	M-062	Hennepin	Elm Creek WMC	20.3	No	Yes	Yes	Yes
Fall's Creek	M-050-024	Washington	Carnelian-Marine-St. Croix WD	1.2	No	No	Yes	No
Kennaley's Creek	M-055-004-000.5	Dakota	Lower Minnesota River WD	1.0	No	No	Yes	No
Kohlman Creek	M-053.5-003	Ramsey	Ramsey-Washington Metro WD	3.7	No	No	No	Yes
Lambert Creek	M-053.5S1	Ramsey	Vadnais Lake Area WMO	4.3	No	Yes	No	No
Mill Stream	M-050-019	Washington	Carnelian-Marine-St. Croix WD	1.4	No	No	Yes	No
Minnehaha Creek	M-056S3	Hennepin	Minnehaha Creek WD	21.1	No	Yes	No	Yes
Minnesota River	M-055	Carver, Scott, Hennepin, Dakota, Ramsey	Carver County WMO, Scott WMO, Lower Minnesota River WD	344.0	No	Yes	Yes	Yes

River or Stream Name	River or Stream ID (DNR Kittle #)	Metro Counties	Metro Watershed Organization	Length (miles)	Qualified as a Drinking Water Source	Qualified for Recreation and Tourism	Qualified for Healthy Habitat	Qualified for Well-rounded
Mississippi River	M	Anoka, Hennepin, Ramsey, Dakota, Washington	Lower Rum River WMO, Elm Creek WMC, Coon Creek WD, West Mississippi WMC, Rice Creek WD, Mississippi WMO, Shingle Creek WMC, Capitol Region WD, Lower Mississippi River WMO, Ramsey-Washington Metro WD, South Washington WD, Vermillion River Watershed JPO	664.1	Yes	Yes	Yes	Yes
Mud Creek	M-048-017-004	Dakota	North Cannon River WMO	7.1	No	No	Yes	No
Nine Mile Creek	M-055-005S2	Hennepin	Nine Mile Creek WD	8.6	No	No	No	Yes
Nine Mile Creek, North Fork	M-055-005S1	Hennepin	Nine Mile Creek WD	7.8	No	Yes	No	No
Nine Mile Creek, South Fork	M-055-005-001	Hennepin	Nine Mile Creek WD	9.5	No	Yes	No	No
Purgatory Creek	M-055-011	Hennepin	Riley-Purgatory-Bluff Creek WD, Lower Minnesota River WD	14.8	No	No	No	Yes
Rice Creek	M-059	Washington, Anoka, Ramsey	Rice Creek WD	29.4	No	Yes	No	Yes
Rum River	M-063	Anoka	Upper Rum River WMO, Lower Rum River WMO	153.5	No	Yes	Yes	Yes
Rush Creek	M-062-004	Hennepin	Elm Creek WMC	17.1	No	No	Yes	Yes
Seelye Brook	M-063-005	Anoka	Upper Rum River WMO	17.2	No	No	Yes	Yes
Shingle Creek	M-058S2	Hennepin	Shingle Creek WMC	11.2	No	Yes	No	Yes
Silver Creek	M-050-013	Washington	Carnelian-Marine-St. Croix WD	2.5	No	No	Yes	No
Springbrook Creek	M-060.5	Anoka	Coon Creek WD	4.0	No	Yes	No	Yes

River or Stream Name	River or Stream ID (DNR Kittle #)	Metro Counties	Metro Watershed Organization	Length (miles)	Qualified as a Drinking Water Source	Qualified for Recreation and Tourism	Qualified for Healthy Habitat	Qualified for Well-rounded
St. Croix River	M-050	Washington	Carnelian-Marine-St. Croix WD, Middle St. Croix WMO, Valley Branch WD, South Washington WD	172.9	No	Yes	Yes	No
Sunrise River, West Branch	M-050-034-014	Anoka	Sunrise River WMO	17.3	No	No	Yes	No
Trott Brook	M-063-001.5	Anoka	Lower Rum River WMO	16.8	No	No	Yes	No
Trout Brook	M-048-007	Dakota	North Cannon River WMO	7.4	No	No	Yes	No
Trout Brook	M-050-005	Washington	South Washington WD	5.9	No	Yes	Yes	No
Valley Branch	M-050-007-002	Washington	Valley Branch WD	1.0	No	No	Yes	No
Valley Creek	M-050-007	Washington	Valley Branch WD	6.2	No	No	Yes	No
Vermillion River	M-049	Scott, Dakota	Vermillion River Watershed JPO	62.5	No	Yes	Yes	Yes
Vermillion River, South Branch	M-049-005	Dakota	Vermillion River Watershed JPO	11.8	No	No	Yes	No

Appendix J

Endnotes

1. This translation was provided by the Met Council's American Indian Advisory Council.

2. U.S. Global Change Research Program. (2023). Fifth national climate assessment. Crimmins, A.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, B.C. Stewart, and T.K. Maycock, Eds. U.S. Global Change Research Program, Washington, DC, USA. https://doi.org/10.7930/NCA5.2023

3. Minnesota Pollution Control Agency. (2024). Minnesota's 2024 impaired waters list. https://www.pca.state.mn.us/air-water-land-climate/minnesotas-impaired-waters-list

4. Metropolitan Council internal "HR Workforce Dashboard."

5. Metropolitan Council. (2018). Climate vulnerability assessment. https://metrocouncil.org/Communities/Planning/Local-Planning-Assistance/CVA.aspx

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