

Information Item

Metropolitan Area Water Supply Advisory Committee



Meeting Date: May 17, 2022

Topic

Water issues: white papers

District(s), Member(s):	All
Policy/Legal Reference:	2050 Water Resources Policy Plan, which includes the Wastewater System Plan
Staff Prepared/Presented:	Judy Sventek, Manager, Water Resources, 651-602-1156 Jen Kostrzewski, Environmental Analyst, Water Resources, 651-602-1078
Division/Department:	Environmental Services

Background

Under state law (Minn. Stat. 473.145), the Metropolitan Council (Council) is required to produce a comprehensive development guide for the metro area. The guide includes policy statements, goals, standards, programs, and maps prescribing guidance on the orderly and economical development of the metropolitan area. Additionally, the Council is also required to adopt a water resources plan (Minn. Stat. 473.157) and a federally required regional management plan to address pollution from point and non-point sources (33 U.S. Code §1288). The Water Resources Policy Plan fulfills these requirements and provides clear goals for the region's waters.

To gather external guidance from regional water sector professionals, the Water Resources Policy Plan Advisory Group was created as an integral part of the 2050 Water Resources Policy Plan update. This group of 21 advisors (7 Public Works, 7 Water Suppliers, 7 Watershed Administrators – including 4 MAWSAC/TAC members) is tasked to provide input and guidance to Council staff as they develop Water Resources Policy Plan content.

Early in the 2050 Water Resources Policy Plan update process, Council staff acknowledged the need to provide good, science-based policy options to the Council Members and decided that the creation of topical white papers were necessary. White papers are reports that inform readers concisely about a complex issue. They are meant to help readers understand an issue, solve a problem, or make a decision. The Water Resources Policy Plan white papers will be vetted and guided by the Water Resources Policy Plan Advisory Group and other stakeholder engagements to ensure they represent both a regional and local perspective of water issues concerning the metro area and will be offered to Council Members for their consideration as we work with them on the policies that will be included in the 2050 Water Resources Policy Plan. The end goal of the entire process is to have a data-driven, targeted, and measurable Water Resources Policy Plan to further the growth and economical development of the metro area.

White Paper Topics

The Water Resources Policy Plan white paper topics were chosen through a two-step process. First, Council staff participated in an issue identification brainstorm of current and future water concerns for the metro area. Most of the selected concerns touched all the roles of Environmental

Services – Water Resources Management and Planning, Water Supply Planning, and Wastewater Collection and Treatment.

Council staff combined the brainstormed concerns and those identified indirectly from other efforts, including MAWSAC/TAC input, to author a series of Framing Papers to establish a foundational understanding of how these water concerns affected the region (see following pages).

The Framing Papers started a conversation/dialogue with the Water Resources Policy Plan Advisory Group. Council staff wanted to gain their perspective and highlight local connections or identify additional issues that Council staff may have missed. The Framing Papers and the Water Resources Policy Plan Advisory Group input was integrated to generate the final white paper topic areas:

- Water Quality
- Wastewater Issues
- Water + Climate
- Rural Water Concerns
- Water Reuse
- Source Water Protection & Vulnerable Areas*
- Water Availability*

* Denotes MAWSAC may be particularly interested in the topics

Project Milestones & Next Steps

The Water Resources Policy Plan white papers will be written in three groupings. This will allow Council staff to focus on and investigate the issues in a more manageable manner. It also allows us to adapt our research and authoring processes to increase efficiency and effectiveness. This project schedule fits within the Water Resources Policy Plan schedule that culminates with the adoption of the 2050 Water Resources Policy Plan in late 2024.

Milestone	Start Date	End Date	Status
Council Staff Issue Identification, Informal External Input	1/1/2019	6/1/2021	Complete
Author Framing Papers	6/1/2021	1/31/2022	Complete
Outreach on Framing Papers (WAG & others)	12/10/2021	3/1/2022	Complete
White Paper Research & Writing	3/1/2022	10/1/2022	Ongoing
1 Water Quality	3/1/2022	5/31/2022	Ongoing
1 Water + Climate	3/1/2022	5/31/2022	Ongoing
1 Wastewater Issues	3/1/2022	5/31/2022	Ongoing
2 Source Water Protection & Vulnerable Areas	6/1/2022	7/31/2022	Not Started
2 Rural Water Concerns	6/1/2022	7/31/2022	Not Started
3 Water Availability	8/1/2022	10/1/2022	Not Started
3 Water Reuse	8/1/2022	10/1/2022	Not Started
Review White Papers w/ WAG	9/15/2022	11/30/2022	Not Started
Finalize White Papers	10/1/2022	12/31/2022	Not Started
Outreach on White Papers	11/1/2022	6/30/2023	Not Started
Use White Papers to frame and draft 2050 policy	6/30/2023	10/31/2023	Not Started



Water Resources Policy Plan Framing Paper: Water Quality

Problem Statement

GOAL:

Ensure clean, usable water – which is vital for life and regional prosperity – now and for future generations. Clean water to support safe and reliable drinking water sources, ecosystem health, aquatic life, and recreation.

CHALLENGES:

The metro region is experiencing increased pollutant-loaded runoff, impaired regional waters, eutrophication of waterbodies, an increase in harmful algal blooms, and contaminated drinking water resources with associated treatment costs. Uncertainty around emerging contaminants, regulatory changes, and climate change intensifies these issues and complicates how to address water contamination.

Water quality depends on:

- Environmental drivers, like climate, ecology, and geology.
- Past and current practices and land uses resulting in contamination or reduced ecosystem function.
- Management decisions, policies, and actions, such as development practices, land use policy, surface water protection and restoration activities, and wastewater system services.

Water supply and land use policies, wastewater operations, as well as water resource protection, monitoring, and assessment all influence water quality. Understanding these relationships and adaptively managing water resources are essential to plan for the best outcome.

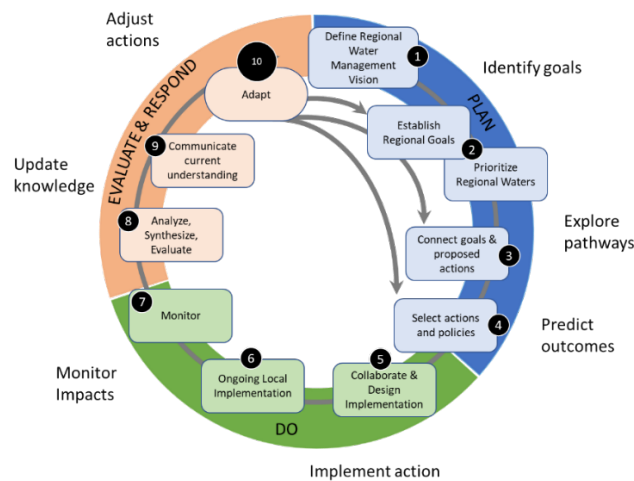


Figure 1: Adaptive management process. Image modified from <https://mavensnotebook.com/delta-plan/>

Pressing Concerns

The region's industrialization, growth, and development over the past centuries have negatively impacted the quality of our water resources. In some areas, contamination makes groundwater unusable or increases the cost of treatment. In others, pollution limits our ability to eat fish, swim, and participate in traditional cultural activities. Water suppliers, wastewater systems, watersheds, residents, and businesses must contend with these historic negative impacts, as well as many current and emerging water pollution sources.

Four pollutants and the Covid-19 pandemic-related water indicators have been identified due to their pressing impacts on the region. The Metropolitan Council is actively addressing these emerging concerns:

Chloride from deicing salts, water softeners, fertilizers, and other sources have been getting into our waters. As this chloride pollution concentrates in our waters, it affects taste and healthfulness, raises the cost of treating our water supplies, impacts fish and other aquatic life, kills vegetation, damages soils, corrodes infrastructure, and limits our ability to reuse water for various purposes.

Nitrates are harmful to the aquatic environment. In the Mississippi River, they contribute to the pollution in the dead zone in the Gulf of Mexico. At levels above 10 mg/l, nitrates are a concern to human health, especially for babies and cardiovascular compromised adults. According to the Minnesota Pollution Control Agency, most nitrates in Minnesota's waters come from agricultural lands (>70%). Wastewater is the second highest contributing source (9%).

Per- and polyfluoroalkyl substances (PFAS) are a group of persistent, synthetic chemicals significantly impacting the region. Because of their past extensive use in industrial settings as water- and grease-resistant applications on consumer products and packaging, PFAS enter the environment in many ways (e.g. chemical spills, landfill leachate, residential and industrial wastewater, biosolids). Once released, the chemicals can easily contaminate drinking water supplies and build up in the tissues of fish, wildlife, and people. Current wastewater treatment processes do not fully remove PFAS.

Phosphorus is primarily derived from sediments, agricultural fertilizers, manure, and wastewater. While essential for plant life, too much phosphorus can cause algal blooms and reduce the amount of oxygen in the waters, killing fish and other aquatic life.

Viruses pass through the regional wastewater treatment system. Most coronavirus types inactivate in water, especially in treated waters. Wastewater analysis can serve as a public health indicator, showing the extent of infections in communities and complementing existing surveillance where clinical testing is underutilized or unavailable.

Emerging Contaminants

Emerging contaminants are human-made, chemical compounds detected at low levels in surface water, groundwater, and wastewater that may have a detrimental impact on public health and aquatic life. PFAS is an emerging contaminant, along with these others impacting our water quality:

Microplastics are tiny pieces of plastic from a variety of sources (e.g., litter and fishing gear breaking down in surface water, and microfibers from laundered synthetic fabric). Because plastics degrade

slowly over time and their small size, microplastics can be consumed and accumulate in animals like mussels, fish, and birds. This can seriously impact their health and the role they play in the ecosystem.

Pharmaceuticals enter the wastewater system through human excretion and by drugs flushed down the toilet. Today’s treatment processes cannot remove them. Pharmaceuticals can negatively affect the health and behavior of wildlife like insects, fish, and birds.

As water professionals learn more about these emerging contaminants and others unknown today, we will need to develop approaches to mitigate their effects at the regional, state, and national levels.

Spatial Data

Twin Cities Impaired Waters

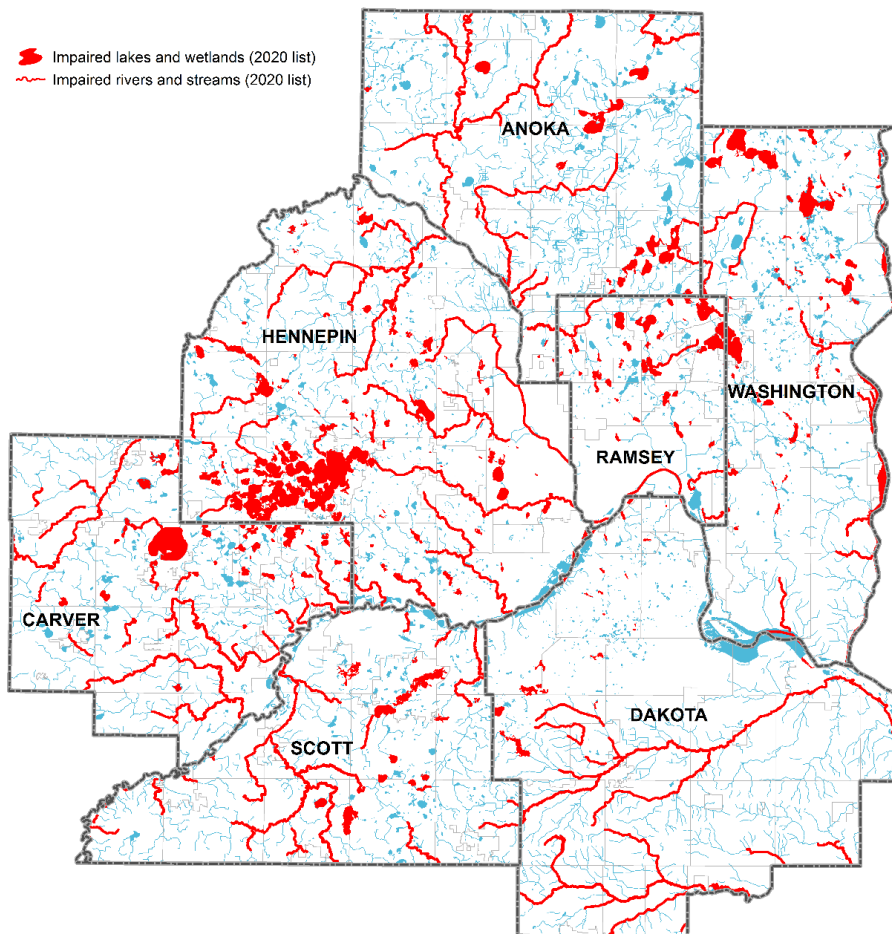


Figure 1: Impaired waters within the metro area. Data from the EPA 303d impairment list - <https://gisdata.mn.gov/dataset/env-impaired-water-2020>

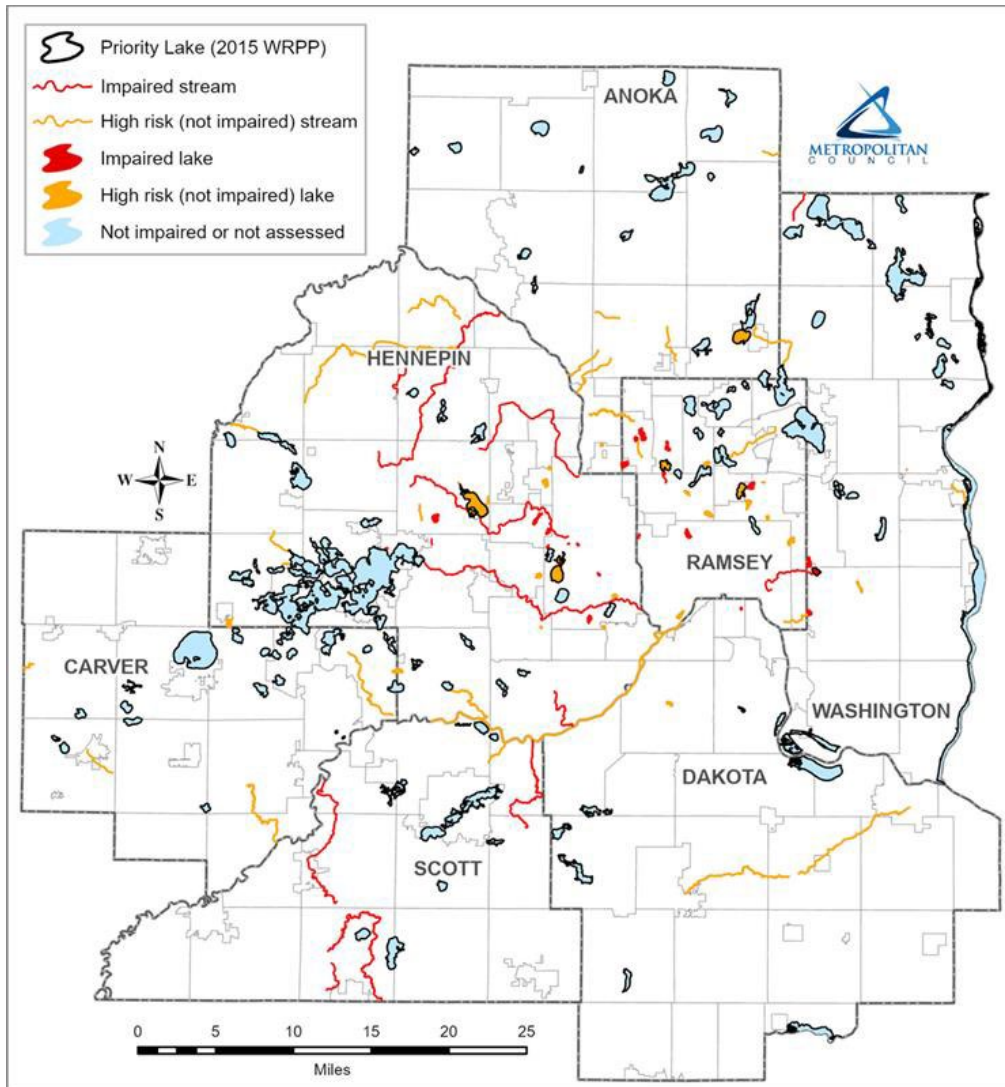


Figure 2: Waters impaired or at risk for chloride impairments within the metro area. Data from the MPCA - <https://www.pca.state.mn.us/water/chloride-101>

MCES Role

As the regional wastewater system operator, and wastewater, surface water and water supply planning agency for the seven-county metro area, the Metropolitan Council must meet National Pollutant Discharge Elimination System (NPDES) permit requirements, address point and nonpoint source pollution, and ensure the sustainability of water resources. We accomplish this by:

- Providing high-quality, cost-efficient wastewater services that protect public health and the environment. Our operations consistently achieve near-perfect compliance with federal and state clean water discharge standards and have reduced the amount of phosphorus discharged system-wide into the Minnesota, Mississippi, and St. Croix Rivers by 88% since 2000.
- Adaptively managing surface water resources in partnership with watershed organizations and communities by:
 - Monitoring regional river, lake, and stream water quality.

- Assessing surface water and groundwater conditions using data collected.
- Providing technical guidance on drinking water protection including source water protection and surface water management through research, advisory committees, plan reviews, and other activities to cities, townships, and watershed organizations.
- Assisting communities through grants to implement water efficiency, stormwater, and inflow and infiltration (I/I) programs.
- Monitoring and analyzing wastewater to augment public health data about the prevalence of COVID-19 in the region.

Questions: Email Judy Sventek at Judy.Sventek@metc.state.mn.us or Kyle Colvin at Kyle.Colvin@metc.state.mn.us for more information about Water Quality and our Water Resources Policy Plan which includes our Wastewater System Plan.

Water Resources Policy Plan Framing Paper: Rural Water Issues

Problem Statement

GOAL:

Meet the water needs of rural communities – now and for future generations. Water strategies should preserve and promote the agricultural economy, rural centers, and rural residential lifestyles.

CHALLENGES:

Some rural communities in the metro region are experiencing high levels of nitrate pollution, with costly implications for drinking water supplies and recreational opportunities. Some are experiencing reduced access to readily available groundwater sourced drinking water. Climate change will impact the amount of rainfall, how runoff flows and transports sediment and pollution, and groundwater recharge.

Rural water quality depends on:

- Environmental drivers, like climate, ecology, and geology.
- Land use and management decisions.
- Water supply and wastewater treatment provided by individual private, communal run wastewater systems or small community systems.
- Leveraging rural water best practices, rather than modifying urban approaches.

In rural centers – rural areas with concentrated growth – local communities supply drinking water and treat wastewater. Typically, drinking water is provided through individual private wells and wastewater is treated by subsurface sewage treatment systems (SSTS), often referred to as septic systems, communal SSTS or community systems. Safe access to drinking water in the rural area often dictates where and how deep private wells need to be.

Rural Water Concerns

Surface Waters: Most field run-off or tile drainage water and pollutant load eventually feed into the Minnesota, Mississippi, and St. Croix Rivers. Too much pollution can increase algae blooms, fish kills, and sedimentation of river channels. Best practices in field management (e.g. precision agriculture, cover crops) help keep the soil and nutrients (nitrogen and phosphorus) on the fields and out of the ditches, streams, and lakes.

Water Supply: The metro area has more than 65,000 private wells. They are the sole source of water in communities without municipal water supply systems. Limited testing by counties and state agencies has documented growing problems with water quality in private wells, raising resident concerns about health and costs for treatment. Rural lands serve as the primary groundwater recharge areas for drinking water wells and the primary land cover for the watershed upstream of the Minneapolis and St. Paul drinking water intakes on the Mississippi River. Rural land use and management decisions directly impact the water quality for these drinking water sources. Additionally, rural residents and communities

lack resources to respond to water emergencies. System failures might call for unplanned extension of municipal water supply service.

Wastewater Treatment: Some rural communities face financial, technical, or regulatory challenges due to the operation and maintenance of both public and private wastewater systems. Underperformance of these systems may directly affect the water quality of surface and groundwaters in the area. System failures have called for unplanned extension of the regional sewer service.

Quality Assurance: For both wells and SSTS, routine maintenance and drinking water quality monitoring is mostly at the discretion of the owner. Documented water quality issues raise concerns about risks for unmonitored systems.

Climate Change: Climate change will have an influence on these issues and complicates how to address rural water concerns.

Rural Water Systems & Land Use Connections

Land use planning and development densities are one potential way to address rural water issues. Rural residential development patterns often preclude future development of efficient and cost-effective community water supply and wastewater services. Using diversified rural development patterns enables future services to occur more efficiently. The Metropolitan Council uses four rural community designations:

Designation	Description	Water supply and treatment	Planned density
Rural Centers	Small towns surrounded by agricultural lands and serve as centers of commerce to those surrounding farmlands and the accompanying population.	Supply water through a community system and treat wastewater at a community treatment facility.	3-5 units per acre (equivalent to urban density)
Rural Residential	Residential patterns characterized by large lots.	No plans to provide centralized drinking water or wastewater treatment.	1 unit per 2.5 acres
Diversified Rural	Variety of farm and nonfarm land uses including very large-lot residential, clustered housing, hobby farms, and agriculture. Adjacent to the Emerging Suburban Edge of the Urban Service Area. This designation protects land for rural lifestyles today and potential urban levels of development after 2040.	Rarely provide any drinking water or centralized wastewater treatment.	4 units per 40 acres
Agricultural	Areas with prime agricultural soils that are planned and zoned for long-term agricultural use.	No plans to provide drinking water or wastewater treatment. Irrigation wells are more likely to be present along with private domestic wells and SSTS.	1 unit per 40 acres

Spatial Data

Community Designations

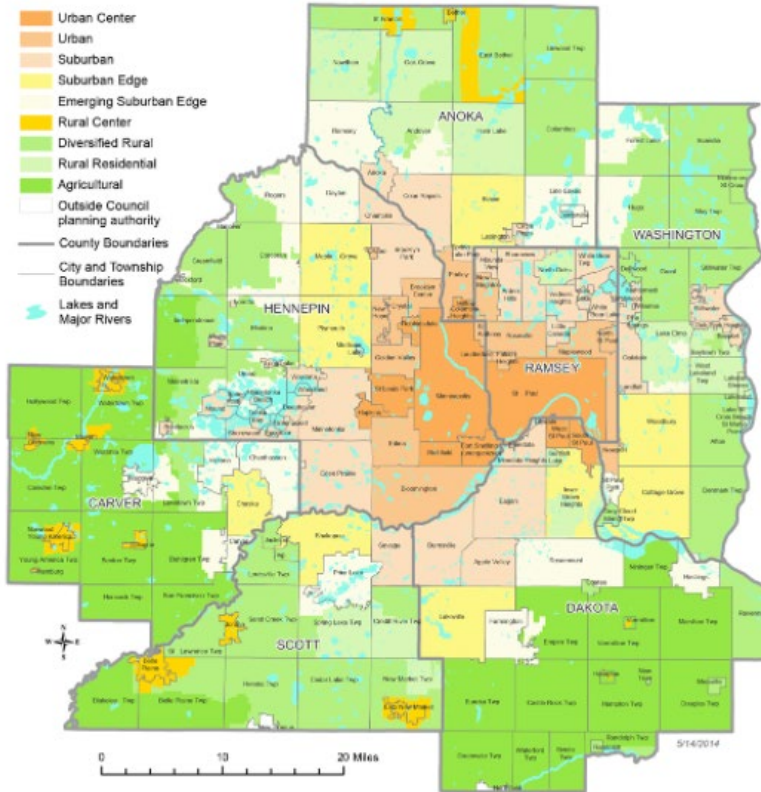


Figure 1: Community Designations. The Council assigns a community designation to each city and township on the basis of existing development patterns, common challenges, and shared opportunities. There are four designations within the rural land use: Rural Center, Rural Residential, Diversified Rural, and Agricultural.

MCES Role

As the regional wastewater system operator, surface water, and water supply planning agency for the seven-county metro area, the Metropolitan Council must meet National Pollutant Discharge Elimination System (NPDES) permit requirements, address point and nonpoint source pollution, and ensure the sustainability of water resources. We accomplish this by:

- Providing high-quality, cost-efficient wastewater services that protect public health and the environment. Our operations consistently achieve near-perfect compliance with federal and state clean water discharge standards, while holding wholesale customer rates to 40% below the national average.
- Working with communities to ensure their SSTS programs prevent systems from failing prematurely.
- Verifying through local wastewater system plan review that adequate wastewater treatment capacity is being planned for to accommodate future growth and service needs.

- Providing guidance through committees, plan reviews, technical projects, and collaborative activities to rural communities and watershed organizations on drinking water planning, source water protection, and protection and management of surface waters.
- Monitoring regional river, lakes, and stream quality.
- Evaluating and assessing surface water conditions using data collected in partnership with state agencies, local governments, and residents of the metro area.
- Providing and supporting programs that remove pollutants at the source to avoid costly ongoing wastewater infrastructure investments.

Questions: Email Judy Sventek at Judy.Sventek@metc.state.mn.us or Kyle Colvin at Kyle.Colvin@metc.state.mn.us for more information about Rural Water Issues and our Water Resources Policy Plan which includes our Wastewater System Plan.

Water Resources Policy Plan Framing Paper: Water Availability

Problem Statement

GOAL:

Ensure our water resources and infrastructure are sustainable and resilient to meet the needs of present and future generations. Water use is planned to maintain sustainable surface water flows and aquifer levels and protect water quality. Where water sources are limited, water access and demands are met in a way that limit negative outcomes to drinking water and recreational resources, as well as ensuring maximizing the water infrastructure, distribution, and treatment systems.

CHALLENGE:

As 75% of the region relies on groundwater as the main source of water supply, some areas in the metro region are experiencing reduced access to readily available groundwater sourced drinking water, public health concerns for public and private water supplies, and polluted recreational waters that limit the ability of residents to fish, swim, and participate in cultural activities.

Water availability, access, and use depends on:

- Environmental drivers, like climate, ecology, and geology.
- Management decisions, policies, and actions, such as development, land use policy, water pollution, and wastewater system services.
- Population and growth patterns.

Our waters are connected. Water use behaviors in one place can have consequences in another. Water supply and land use policies, wastewater operations, as well as water resource protection, monitoring, and assessment all influence water availability and access. Understanding these relationships is essential to plan for the best outcome.

Connected Resources, Connected Systems

Groundwater and surface water are connected - groundwater serves as the foundation for most surface waters, and all groundwater starts off as infiltrated rainwater and surface water. In some areas, these connections have led to negative impacts on water resources and water infrastructure, disrupting people's lives. Because water resources and infrastructure systems are connected, when one source is stressed (e.g. groundwater aquifers as drinking water supplies) it may likely cause stresses to other resources (e.g. surface waters and wastewater treatment). Water monitoring and technical analyses can provide insights about these connections, create understanding of risks, and inform our policies and management decisions. Integrated water policies that limit stress and promote the resiliency of water infrastructure and resources will allow the region to prosper.

Pressing Concerns

As the region continues to grow and climate changes, more demands are likely to be placed on water resources and water infrastructure.

Source Limitations: Drinking water resource limitations such as groundwater overuse (aquifer drawdown), water impacts due to closely located wells (interference), impact of groundwater pumping on surface water bodies, contamination, or less groundwater recharge could become more common requiring increased costs to provide water supplies.

Groundwater/surface water interactions: During dry/drought periods, pumping of groundwater can affect groundwater-dependent surface waters, like spring-fed lakes, cold-water streams, and fens, reducing the amount of water available for these surface features and their ecosystems. Conversely, wetter periods may raise the groundwater levels that could cause localized flooding. Proper management of these connected resources is vital to maintaining access and use of these waters.

Knowledge and funding gaps: Understanding the complexity of groundwater and surface water connection within the metro is limited. Some deep groundwater aquifer modeling and research exists; however, we lack sufficient information about the surficial groundwater and surface water relationship. This knowledge gap requires additional monitoring and research to fully comprehend how above and below ground water is coupled so we can ensure its availability.

Since water access and availability is dependent on underlying geology, some metro communities and residents lack access to high quality water resources. Regional investments are needed to safeguard sustainable water for all residents and areas of the region. Short-term funding limits the region's ability to promote proactive investment in water infrastructure. However, planning approaches that consider water resource and utility service impacts holistically will help to maintain and enhance the region's water resources.

Spatial Data

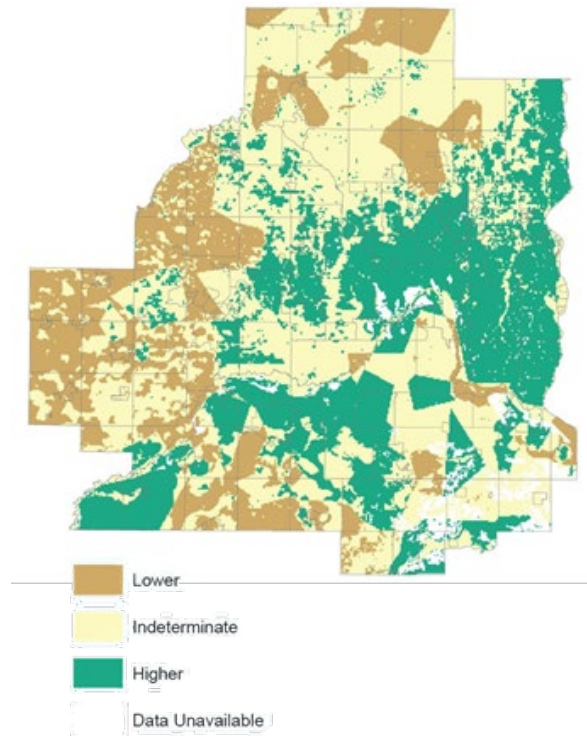


Figure 1: Likelihood of groundwater-surface water connectedness within the metro. Many surface waters (i.e., rivers, lakes, streams) are directly connected to groundwater.

PDCJ aquifer change: 2010 vs. 2040 pumping

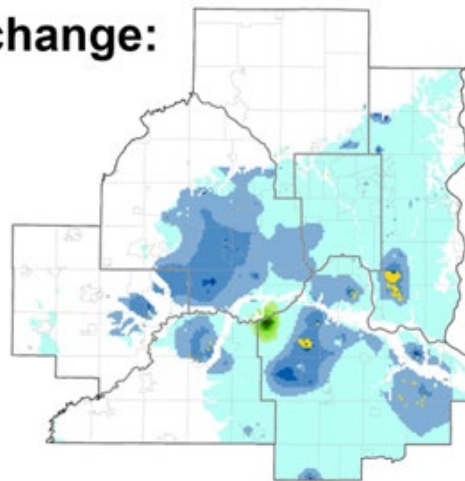
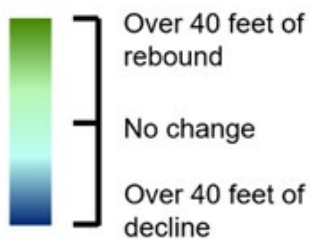


Figure 2: Projected 2040 groundwater pumping rates in the Prairie Du Chien-Jordan Aquifer. Darker blue areas indicate a decline in groundwater levels due to increased consumption. As the region uses groundwater for our water supply, it must be done sustainably. Over consumption or drawdown can strain our water supply and the connected surface water resources.

MCES Role

As the regional wastewater system operator, and water resources and water supply planning agency the Metropolitan Council has an obligation to meet NPDES Permit requirements, address point and nonpoint source pollution, and ensure the sustainability of water supply and water resources within the metro area. We accomplish this through an equitable, integrated water planning approach, as all waters are connected. Specifically, we:

- Conduct technical analyses to inform and guide local water supply plans and decisions, water efficiency programs, and outreach efforts.
- Collaborate with communities, water utilities, watersheds, and regional experts to find solutions to complex water resource and service challenges.
- Develop tools and guidance through committees, subregional work groups and cooperative partnerships that inform sustainable water resource planning.
- Monitor regional river, lake, and streams.
- Evaluate regional and local water quality, quantity, and use trends.
- Provide high-quality, cost-efficient wastewater services that protect public health and the environment. Our operations consistently achieve near-perfect compliance with federal and state clean water discharge standards, while holding wholesale customer rates to 40% below the national average.

Questions: Email Judy Sventek at Judy.Sventek@metc.state.mn.us or Kyle Colvin at Kyle.Colvin@metc.state.mn.us for more information about Water Availability, Water Use, and Water Access and our Water Resources Policy Plan, which includes our Wastewater System Plan.

Water Resources Policy Plan Framing Paper: Source Water Protection and Vulnerable Areas

Problem Statement

Goal:

Protect areas of land that contribute to water supply to ensure safe, sustainable, and sufficient drinking water for the region. Public water suppliers, land use planners and developers, watershed management organizations, business owners/managers, residents, and others need to improve understanding and collaboration to protect water supply sources, particularly where source water protection areas extend beyond any one jurisdiction's boundaries.

Challenge:

More than half of the seven-county metro area (>1,500 square miles) has been designated for source water protection by the Minnesota Department of Health and communities. This land includes areas that contribute to both groundwater and surface water supplies.

Source water protection depends on:

- Collaboration across overlapping drinking water supply management areas (DWSMAs).
- Environmental drivers, like climate, ecology, and geology.
- Management decisions, policies, and actions, such as development practices, land use policy, surface water protection.

The vulnerability of source water areas is generally determined by how quickly and where water and contaminants flow. Geology plays an important role in how vulnerable groundwater is to surface contamination. Naturally occurring constituents such as radium, arsenic, and manganese pose risks to water supplies.

Land use changes, commercial and industrial practices, water use in our homes and businesses, and turf and landscape management can pose potential threats. Actions that generate chemical threats and pathogens are of particular concern. Where aquifers, lakes, and rivers are polluted, water resources become limited in their safe use, requiring extra expense to access, treat, and manage so that the water can be safely used or consumed.

Crucial Concerns

Overlapping jurisdictions: Water does not follow political or management boundaries. Large parts of many communities' drinking water supply management DWSMAs are outside their jurisdiction. In several parts of the metro area, a community's DWSMA extends beyond its border. In other areas, DWSMAs of one city overlap those of another. These communities are dependent on the actions of their neighbors to protect and ensure a safe, clean water supply. Overlap of management areas can cause disagreement about vulnerability and the best protection measures to implement.

Mitigating and reducing potential water supply contaminants: Actions on the landscape, particularly in DWSMAs, can affect downstream drinking water sources and lead to increased public health risks and

treatment needs. Water supply contamination issues vary throughout the region, primarily driven by differences in hydrogeologic setting and the level of development. The most cost-effective way to address contamination is usually to prevent it through protection of source waters.

Inadequate and uncoordinated emergency response for emerging contamination: Public Water Supplies (PWS) are facing a variety of threats: discovery of legacy contamination, emerging contaminants, and physical and cyber security breaches. No standard protocol exists to aid PWS in addressing these threats. Protection or remediation can be costly, involving new infrastructure and/or technology.

Spatial Data

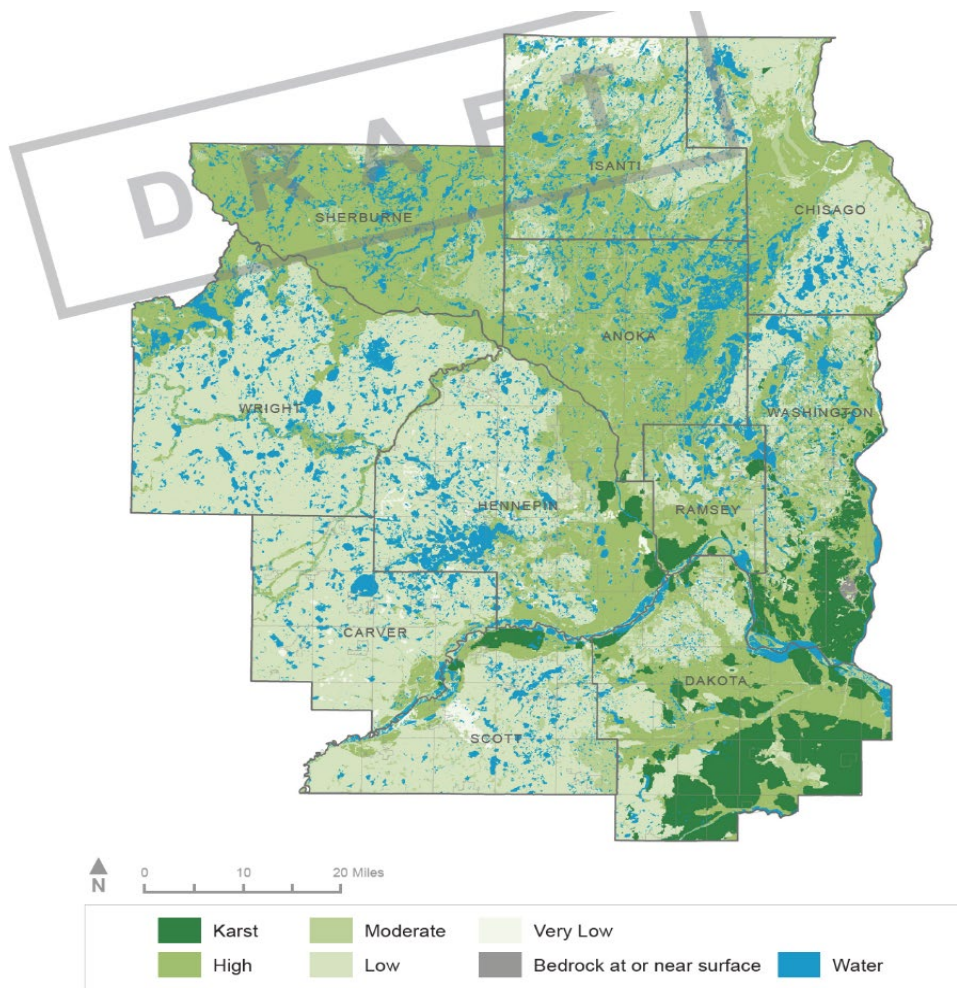


Figure 1: Pollution sensitivity. Due to the region's complex geologic history, the connection between surface water and groundwater varies across the metro area. In some places, water on the land surface can move easily down into the groundwater system, carrying contaminants with it. In other places, groundwater wells up to provide baseflow to trout streams and springs. Water and land use management should take these conditions into consideration.

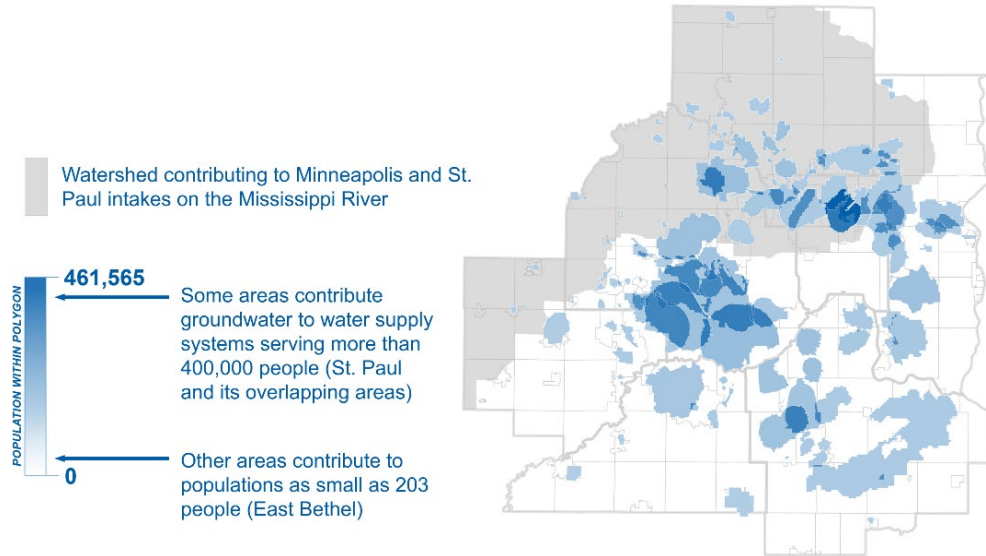


Figure 2: Drinking water supply management areas (DWSMAs) within the metro. DWSMAs need to be protected to ensure safe, reliable drinking supplies for the metro area. The largest water supply area is the watershed upstream of the Minneapolis and St. Paul drinking water intakes near Fridley. They are often overlapping and serve a variety of population sizes. When DWSMAs overlap several jurisdictions, management becomes harder.

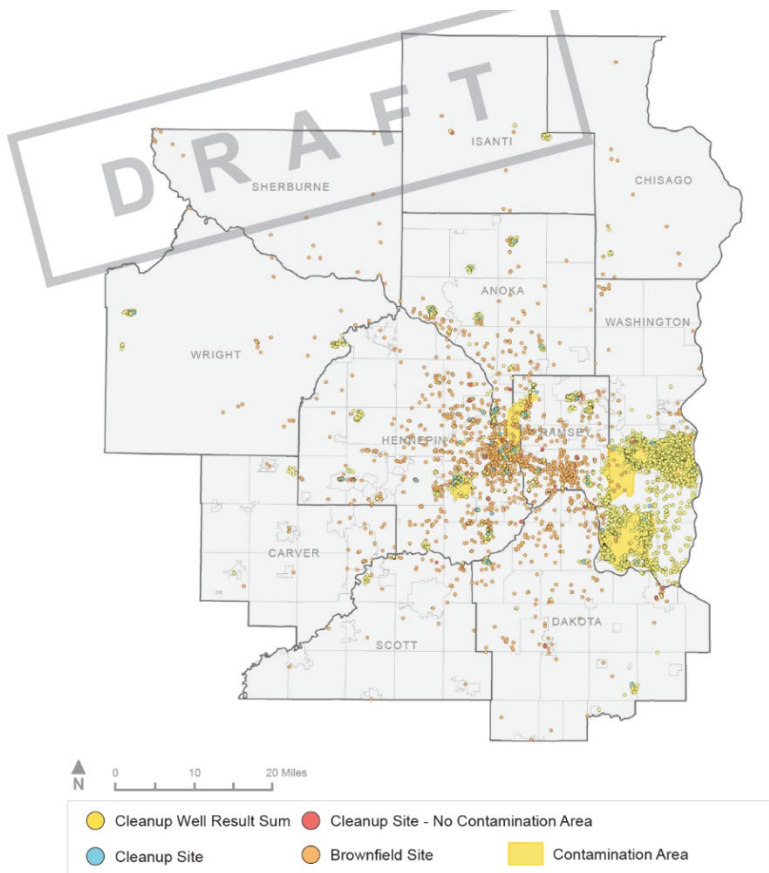


Figure 3: Contamination. Documented potential contaminants exist across the region due to the wide range of land use and business practices that support our healthy economy. Working with property and business owners to support the safe handling of these materials is particularly important in vulnerable drinking water source areas.

MCES Role

As the regional wastewater system operator and surface water and water supply planning agency, the Metropolitan Council has an obligation to assist with water supply planning to help maintain a safe, sustainable water supply for the region. We accomplish this by:

- Hosting and encouraging cross-community collaboration through sub regional work groups and pilot projects like the West Metro Wellhead Protection Planning.
- Providing grant funding for water efficiency to conserve resources for future use.
- Supporting watershed management and stormwater management best practices.
- Providing guidance to communities through input and review oversight of local comprehensive plan, Local Water Plans, Watershed Management Plans, One Water One Plans, and Local Water Supply plan requirements to encourage the incorporation of source water issues in planning and development.
- Considering water supply impacts in the exploration of wastewater treatment and discharge plans.
- Developing tools, guidance, and information through research projects targeted at groundwater/surface water interactions, groundwater modeling, and future growth / demand scenarios.

Questions: Email Judy Sventek at Judy.Sventek@metc.state.mn.us or Kyle Colvin at Kyle.Colvin@metc.state.mn.us for more information about Source Water Protection and Vulnerable Areas and our Water Resources Policy Plan, which includes our Wastewater System Plan.

Water Resources Policy Plan Framing Paper: Wastewater Challenges

Problem Statement

GOAL:

Ensure wastewater services protect human health and the environment. The region needs reliable wastewater collection and treatment services to protect public health, safety, and the environment. Infrastructure and services need to accommodate future growth, foster economic prosperity, and maintain affordable rates and quality service for the region.

CHALLENGES:

Aging subsurface sewage treatment systems (SSTS) increase risks to public health as property owners wrestle with the high costs of replacement. Systems failures have called for unplanned extension of the regional wastewater disposal system. Communities also face challenges addressing private property inflow and infiltration (I/I) and disposing of liquid and vector waste due to the lack of locally available disposal facilities.

Reliable wastewater service depends on:

- Maintaining regional and community wastewater infrastructure and services.
- Assessing population and growth patterns.
- Adapting to environmental drivers, like climate and geology.
- Meeting changing regulatory requirements.

These challenges add financial hardship for communities and residents looking to dispose of waste.

System Concerns

Reconveyance Policy. Facilities that serve less than 1,000 developable acres no longer fall under the definition of an interceptor by the Metropolitan Council and should be reconveyed to the municipality where they are located.

The Metropolitan Council routinely identifies interceptors that are no longer needed to implement the Council's System Plan for the collection, treatment, and disposal of sewage in the metropolitan area. Interceptors are defined as facilities that serve 1,000 developable acres in an upstream community and provide regional benefit. To reconvey many of those facilities back to local communities, premature rehabilitation investments have been historically necessary in order for the recipient community to accept the facility. Should the Council initiate reconveyance when it is determined that a facility no longer provides regional benefit, or should the Council postpone reconveyance of those facilities until necessary system renewal projects are completed?

Private Inflow/Infiltration (I/I). The metro region has an estimated 7,500 miles of private sewer laterals connected to approximately one million properties. Private service laterals are the largest source of I/I – clear water that enters wastewater systems, takes up limited space in wastewater pipes, and increases demand at wastewater treatment plants. Excessive flows can result in public and environmental health

concerns if untreated sewage discharges to basements, rivers, lakes, or other public areas. Failure to address private property sources of I/I creates serious financial, environmental, and public health risks. Communities need financial assistance for private property I/I mitigation.

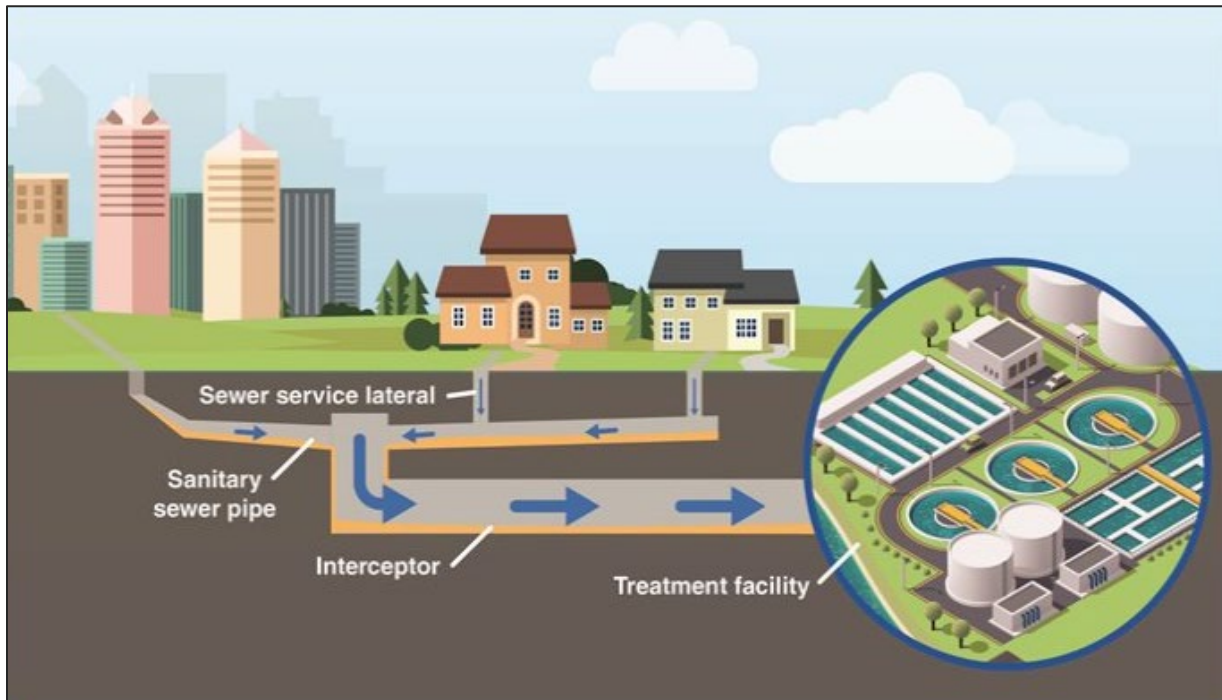
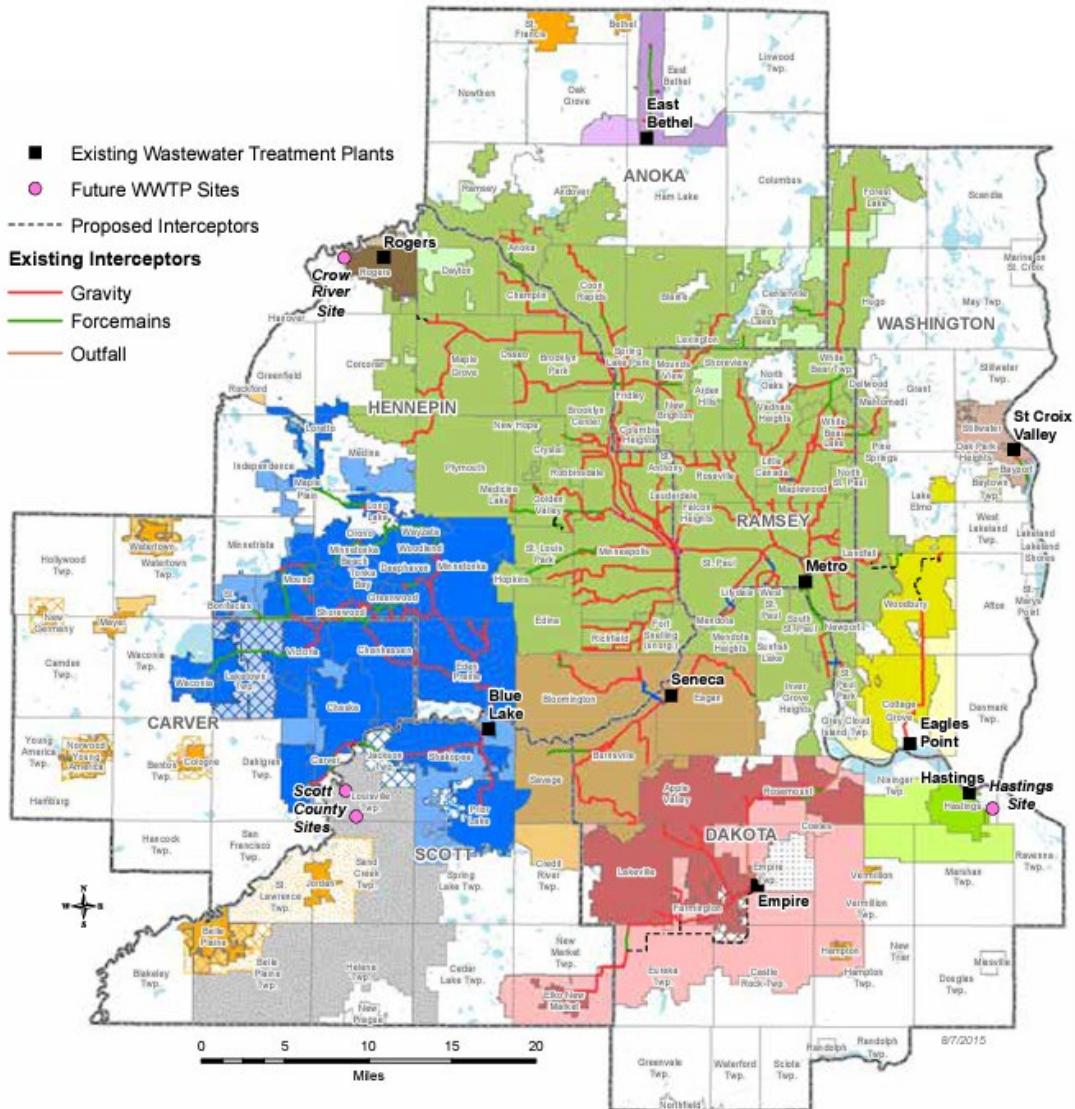


Figure 1: Within the regional wastewater system, wastewater is carried through a pipe away from the property into a municipal sanitary sewer pipe. That pipe, in turn, is connected to a regional sewer interceptor, and finally to the wastewater treatment plant.

Vector waste disposal during floods. Communities have limited options for disposal of vector waste – grit, sludge, fats and grease, trash, wipes and rags, industrial pretreatment or food waste, or other materials contaminated with biosolids. Providing local communities a location to discard of vector waste decreases the potential for blockages or extensive maintenance to local conveyance systems. Currently, MCES offers vector waste disposal at one location, the Metropolitan Wastewater Treatment Plant. During flood conditions, this site is closed. Communities have expressed interest in establishing a new vector waste disposal site that can be accessed during flood conditions.

Liquid Waste Recycling. Approximately 1/3 of the metro area is provided wastewater service through individual SSTs, which are predominately in rural areas. These systems require periodic maintenance, including the removal of solids that are typically hauled to centralized treatment works. Many rural treatment works have discontinued the acceptance of this material, limiting the availability of disposal options.

Spatial Data



Long-Term Service Areas



Figure 2: MCEC Long-Term Service Areas and Wastewater Infrastructure.

MCES Role

As the regional wastewater system operator and the surface water and water supply planning agency, the Metropolitan Council has an obligation to meet NPDES Permit requirements, address point and nonpoint source pollution, and ensure the sustainability of water resources within the metro area. We accomplish this by:

- Providing wastewater collection and treatment services to 2.8 million people in 111 communities and treating approximately 250 million gallons per day of wastewater from homes, industries, and businesses.
- Maintaining and improving our regional wastewater system to provide sewage treatment for the region. The 640 miles of interceptor pipe, 61 lift stations, and 9 wastewater treatment plants are valued at an estimated \$7 billion.
- Providing technical guidance through committees, plan reviews, other activities to cities, townships, and watershed organizations on wastewater planning and protection and surface water management.
- Investing over \$275 million, in partnership with communities, to mitigate I/I since 2007.
- Exploring how to fill regional gaps for vector and liquid waste disposal.

Questions: Email Judy Sventek at Judy.Sventek@metc.state.mn.us or Kyle Colvin at Kyle.Colvin@metc.state.mn.us for more information about Wastewater Issues and our Water Resources Policy Plan which includes our Wastewater System Plan.