

WATER MANAGEMENT: CHALLENGES AND OPPORTUNITIES

TOPICS AND PANELISTS

Facilitated by Lili McMillan, Former Mayor of Orono and Chair of the RCM Water Committee

Jump to: Contaminants in Public Water Supplies

Greg Johnson WSB & Associates
Rick Wahlen, City of Eden Prairie

Jump to: Summer Water Use

Todd Hubmer, WSB & Associates

Jump to: Efficiency Incentives vs Water Rates

Steve Woods, Fresh Water Society
Craig Johnson, League of MN Cities

Jump to: Implementing the Master Water Supply Plan

Ali Elhassan, Metropolitan Council

CONTAMINANTS IN PUBLIC WATER SUPPLIES

Greg Johnson WSB & Associates and Rick Wahlen, City of Eden Prairie

VIEW PRESENTATION

SOURCES OF CONTAMINATION INCLUDE

- Manufacturing
- Agricultural pesticides
- Nitrogen fertilizers from both agricultural and residential sources
- Gasoline leaks
- Animal waste and dead animals
- Drugs, pharmaceuticals, narcotics
- Sewage and waste runoff

DEFINING AND MANAGING CONTAMINANTS IN MINNESOTA

- **Primary Contaminants** are defined as those that affect health outcomes. Examples include microorganisms, disinfectants, and organic chemicals.
- **Secondary Contaminants** create nuisances or affect aesthetics. Examples include aluminum, iron and fluoride. Manganese is a secondary contaminant that now has a health limitation as well.
- Minnesota Department of Health tests for more than 100 contaminants

PRESENTERS' OPINION: CONTAMINANTS OF MOST INTEREST IN MINNESOTA

Bolded items in the list below were covered in greater depth.

- Lead and Copper
- **Ammonia and Nitrates**
- **Chloride**
- Manganese
- Volatile Organic Compounds (VOCs) and pesticides
- Radionuclides
- **Emerging Contaminants - Perfluorochemicals (PFCs), pharmaceuticals, 1,4-Dioxane, etc.**

AMMONIA AND NITRATES:

- Mostly come from leaking septic tanks, animal livestock, and fertilizers.
- Treatment methods include:
 - **Ion exchange filtration:** Basically, a huge water softener. The primary concern is that these systems discharge chloride, just like home water softeners do.
 - **Reverse osmosis membranes:** These systems are effective at cleaning water but produce 10-20% "reject water" that is sent to the sewer system. Losing this amount means additional water must come from somewhere else, such as new wells or efficiency improvements
 - **Biological filtration:** Uses bacteria to "de-nitrify" water. This is the method of the future. Does not use chemicals, produces better results, and lasts longer.

EMERGING CONTAMINANTS

- Includes pharmaceuticals, pesticides, industrial effluents, and personal care products that are washed down drains and discharged to municipal wastewater treatment plants.
- Testing now goes down to one part per trillion, which is one teaspoon in 1,000 Olympic swimming pools. Lower detection limits make it easier to find contaminants but increase the challenge of educating the public on risk.
- St. Anthony Village Water Treatment Plant uses Advanced Oxidation Process, a combination of ultraviolet light and peroxide, to test and treat down 1,4-dioxane down to one part per billion. Byproducts are just water and CO₂.

CHLORIDE

- High concentrations are harmful to aquatic plants and animals. Chlorides enters lakes and streams from road salt and home water softeners. Each home water softener discharges 10,000 gallons a year into the sewer system.
- Most wastewater plants are not designed to remove this. It is a big problem that we are largely doing to ourselves.
- Municipal lime water softening systems can treat chloride; however, they are no longer inexpensive to build and are increasingly necessary as chloride increases.
- Fortunately for Eden Prairie, the city built a lime system many years ago well ahead of the need.
- Without that system, Eden Prairie would have 190 million gallons of wastewater annually for 4.3 billion gallons of lost water between now and 2040 and would generate 40,000 lbs annually of magnesium chloride.

EFFICIENCY INCENTIVES VS WATER RATES

Steve Woods, Fresh Water Society and Craig Johnson, League of MN Cities

THREE THINGS CITY LEADERS SHOULD ASK ABOUT THEIR WATER SYSTEMS

According to the Journal of American Water Works, only about 50% of cities polled said they are close to covering the full costs of their water system while 33% said they are in bad shape. Ask about these items to assess your system.

- Ask to see your aquifer trend line for the past two decades. About 52% of regional aquifers show a trend of long-term decline, which could produce a water supply crisis if not dealt with.
- Ask whether your water rate is sufficient to cover system basics (pumping, treatment, storage and distribution).
- Ask if your rate is high enough to cover costs AFTER conservation measures begin to work. Conservation will lower consumption and therefore lower utility receipts. Your rates must maintain the system after this happens.

SECURING PAYMENT OF UTILITY CHARGES

Access more information on LMC website [here](#).

- Cities are being challenged to lower utility volume (water, electricity) for conservation purposes while depending on volume for revenues. This creates a conflict in terms of funding and maintenance.
- Cities have a tremendous amount of flexibility in what they include in their water services. They can include charges for studies, staffing, conservation efforts, etc.
- Think comprehensively about billing and setting rates. It may not be enough cover your previous budget, particularly if there are conservation efforts in place or changes in utilization.
- Remember when giving discounts to water rates (bulk rates), you're significantly impacting your ability to cover costs. You are probably increasing your costs while simultaneously limiting your ability to recover them.
- Water in MN is still incredibly cheap compared to other places, so discounting rates is not the way to go.

PRIVATE WELLS AND MUNICIPAL WATER SYSTEMS

- Private well industry was heavily impacted by housing market crash. To find new customers, they turned to condos and apartment, impacting revenues for cities when private well users leave municipal systems.
- Cities have the right to limit land use, including drilling of private wells. Department of Health controls everything else about wells. Private well drillers disagree, but it doesn't hold up in court.

SUMMER WATER USE

Todd Hubmer, WSB & Associates

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SUMMER WATER USE IS 2-3X GREATER THAN WINTER USAGE

- Increased summer use comes from residential, agricultural and recreational/seasonal uses, and all aspects of water infrastructure must be larger to account for this spike.
- Among recreational uses, splash pad systems are often installed without recovery capabilities because it doubles the upfront cost, but a single one can account for 5-10% of a community's total demand in summer.

REGULATORY EFFORTS TO LIMIT DEMAND INCLUDE

- Time of day bans to prevent waste from evaporation.
- Odd/even restrictions. Data shows this reduces peak day demand but not total volume in aggregate.
- Potable water irrigation restrictions. Medina, MN has an ordinance for this.
- Monthly billing, which provides customers more immediate feedback on their usage
- Higher rates tied to customer types (e.g. industrial, residential, agricultural)
- Tiered Rates: As use increases, the price gets higher. Similar to an income tax bracket.
 - Met Council study suggests many cities have tiers at an ineffective volume for influencing consumption. First tier should be at 8,000 gallons.

EXAMPLE SEMI-REGULATORY REUSE EFFORTS

- **St. Anthony:** Uses stormwater and filter backwash water from water treatment plant. Irrigates 20-acre Central Park. Reuses 6 million gallons annually, equivalent to 2% of city's need
- **Hugo Water's Edge Stormwater Reuse:** Irrigates 275 townhomes with stormwater with a system owned by the HOA. Estimated savings of 15 million gallons in summer.
- **CHS Field in St. Paul:** Rainwater harvesting using roof of Met Council Operations and Maintenance facility. System holds 27,000 gallons which is treated with UV light on-site and then used for irrigation and toilet flushing.

CHALLENGES TO REUSING WATER

- Health concerns: There is an interagency effort to develop regulations and recommendations for safe reuse.
- Cost: Water in Minnesota remains very cheap
- Public perception: There is an "ick" factor to reusing water that must be overcome.

FUTURE EFFORTS

- Low grow, low water, low mow grass
- Drought tolerant landscaping
- Smart irrigation with soil moisture sensors

IMPLEMENTING THE MASTER WATER SUPPLY PLAN

Ali Elhassan, Metropolitan Council

[VIEW PRESENTATION](#)

OVERVIEW ON WATER USE IN THE REGION

- At the US Water Alliance, people wondered why Minnesota cares, and the reason is that it's critical to be ahead of the curve before changes affect us.
- Among those changes, we now use more groundwater than river water which requires different management.
- Some communities use 6x the amount of water in summer compared to winter during hot years.
- Keeping up with water quality requirements is challenging. Communities sometimes build a system for present requirement and then must change or upgrade as standards change and evolve.
- Efficiency is a more effective word than conservation. Conservation implies a forced reduction of water use that you otherwise have a right to. Efficiency implies smarter and more cost-effective use.

MASTER WATER SUPPLY PLAN SUSTAINABILITY GOAL (2015)

- Purpose is to ensure the region's water supply is sustainable now and in the future.
- Goal: 90 gallons per person, per day. This is still very high compared other regions, even in places that receive similar amounts of rainfall. We are currently at 120, and a 25% reduction is attainable.
- Engage, educate, execute, evaluate through local and regional events as well as sub-regional collaboration.

REGIONAL WATER SUPPLY PROGRAMS AND INITIATIVES

- **Sub-regional Workgroups:** A platform for collaboration facilitated by the Met Council with resources and support, but agendas are determined by the local communities.
- **Industrial Water Conservation Program:** Aims to make effective use of the Clean Water Fund. Involves auditing water use to identify opportunities. Saved 135 million gallons (4K people per year). Program only cost \$160K for four years and saved \$1.1M per year
- **Water Efficiency Grants Program:** Using cost-sharing with communities, this funded activities like replacing old toilets, washing machines, and using smart irrigation controllers. Saved 85 million gallons (2.5K people per year). Killed by legislature this year with no funding going forward, but the Met Council hopes to revive it.
- **Stormwater Grants:** From 2015–2017, the Met Council award \$2.8M to regional communities for stormwater projects, including \$1.5M for reuse. These grants have resulted in reuse of 50 million gallons per year.

THE PRESENT AND THE FUTURE

- Reuse projects remain a regulatory maze that needs to be solved.
- Efforts are working. Metro water was 17 million gallons per day lower from 2011–2015 than from 2007–2010.
- Future efforts need funding and will focus on efficiency and wise use of water, developing workable solutions, and collaborating to produce better results.

EXECUTIVE DIRECTOR'S REPORT

Updated ULI Minnesota Brochure: *Chapter 2* of our organizational brochure is now available! This document outlines the organization's many programs and activities focused on our motto, "What can I do? What can we do together?"

[VIEW THE BROCHURE](#)

RCM Executive Committee and Greater Minnesota: The Executive Committee is working to build relationships with mayors in Greater Minnesota. If anyone has an existing personal relationship with a mayor from outside the metro who might be interested in this work, please contact [Caren Dewar](#).

NEXT MEETING

Monday, September 11th

11:30 a.m. to 1:30 p.m.

Seattle Room at Dorsey & Whitney, 50 South 6th Street, Minneapolis, MN.

JULY 10TH ATTENDEES

MAYORS

James Hovland	City of Edina (Co-Chair)
Elizabeth Kautz	City of Burnsville (RCM Founder)
Sandy Martin	City of Shoreview (Past Chair)
Doug Anderson	City of Lakeville
Bob Crawford	City of Elko New Market
Molly Cummings	City of Hopkins
Jerry Faust	City of St. Anthony
Shep Harris	City of Golden Valley
Marvin Johnson	City of Independence
Peter Lindstrom	City of Falcon Heights
Dan Lund	City of Newport
Julie Maas-Kusske	City of Maple Plain
Tim McNeil	City of Dayton
Terry Schneider	City of Minnetonka
Mike Webb	City of Carver
Lisa Whalen	City of Minnetrista
Ken Willcox	City of Wayzata
Janet Williams	City of Savage

GUESTS

Ellen Sahli, Family Housing Fund; Steve Woods, Freshwater Society; Craig Johnson, League of Minnesota Cities; Lanya Ross, Metropolitan Council; Ali Elhassan, Metropolitan Council; Rich Wahlen, City of Eden Prairie; Greg Johnson, WSB & Associates; Todd Hubmer, WSB & Associates; Bob Engstrom, Robert Engstrom Companies; Rick Carter, LHB; Katie Rodriguez, Metropolitan Council; Marc Nevinski, City of Golden Valley; Debbie Goettel, Hennepin County; Mark Casey, City of St. Anthony; Peter Wagenius, City of Minneapolis; Burke Murphy, Corporation for a Skilled Workforce; Pat Mascia, Briggs & Morgan; Jim Westerman, City of Woodbury; Jean Kane, Colliers; Ani Backa, Stoel Rives; Cecile Bedor, GREATER MSP; Patricia Nauman, Metro Cities

ULI MINNESOTA

Aubrey Austin, Cathy Bennett, Caren Dewar, David Baur, Gordon Hughes