



Climate Resiliency & Water Reuse in Rosemount, MN

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Introductions:

- **Resilient Communities Project (RCP)**
 - Connects selected communities with relevant courses at the University of Minnesota
- **Environmental Sustainability: Land, Water and Energy Clinic**
 - *Team Members:*
 - Justin Hauschild
 - Tim Culver
 - Brittany Johnson

Project Tasks

1. Identify local climate change risks and impacts and provide methodology for future climate assessment
2. Identify climate change Best Management Practices
3. Assess the City's existing policy documents in relation to climate adaptability
4. Recommend a planning process for the City to address climate adaptation that includes specific strategies

Recommendation:

Conduct a Climate Assessment

- Study large scale climate patterns (Chicago, IL)
- Create local models (Chicago, IL; Keene, NH)
- Consult with local climate experts (Grand Rapids, MI; Dane County, WI)
- Take advantage of local resources (Dane County, WI)
- Consult stakeholders (Minneapolis, MN)

Create: Climate Adaptation Plan

- Introduction
- Risks
- Solutions
 - Transportation
 - Infrastructure
 - Natural Resources
 - Water Quantity
 - Agriculture and Food Resources
 - Public Health
 - Community Relations
- Conclusion



Introduction

- What Is Climate Change?
- Why Have a Climate Adaption Plan?
- Membership in STAR Communities and GreenStep City Program

Risks

- Warmer Temperatures
- Extreme Weather Events

Risks:

Warmer Temperatures

- Heat Islands
- Drought
- Food Spoilage
- Stress on Water Resources
- Heat Related Health Issues
- Higher Energy Demand
- Habitat Effects



Risks:

Extreme Weather Events

- Flooding
- Erosion
- Water Quality
- Agriculture
- Transportation
- Wastewater
- Infrastructure



Solutions

- Transportation
- Infrastructure
- Natural Resources
- Water Quantity
- Agriculture and Food Resources
- Public Health
- Community Relations



Solutions: Transportation

- Alternative transportation for vulnerable populations (Dane County, WI; Grand Rapids, MI)
- Plan for and construct alternate routes for transport of commercial goods (Keene, NH)
- Roads/Railroads



Solutions: Infrastructure

- Urban canopies and permeable pavement (Cleveland, OH; Grand Rapids, MI)
- Replace culverts (Dane County, WI)
- Prevent damage to city structures (Keene, NH)
- Energy efficiency (Cleveland, OH; Dane County, WI)
- Renewable energy (Cleveland, OH; Dane County, WI)



Solutions:

Natural Resources

- Wetland restoration and protection (Dane County, WI; Keene, NH)
- Prevent runoff (Dane County, WI)
- Habitat protection (Dane County, WI; Keene, NH)
- Monitor and plan for changes in water quality (Dane County, WI; Grand Rapids, MI)



Solutions: Water Quantity

- Water conservation
(Evanston, IL; Grand Rapids, MI)
- Water reuse
- Adapt storm water plans and infrastructure to climate change (Keene, NH)
- Develop infrastructure for water diversion and holding (Keene, NH)
- Encourage intra-watershed collaboration between various water authorities (Dane County, WI; Grand Rapids, MI)



Solutions: Agriculture and Food

- Water conservation
- Prevent runoff
(manure; pesticides)
(Dane County, WI)
- Promote
development of
local food system
adapted to climate
change (Dane County, WI; Grand
Rapids, MI)



Solutions: Public Health

- Protect drinking water (Dane County, WI)
- Emergency community cooling systems plan (Dane County, WI)
- Plan for increased climate related illnesses (Dane County, WI; Cleveland, OH; Keene, NH)



Solutions:

Community Relations

- Hire a sustainability coordinator (Keene, NH)
- Collaborate with and Educate community stakeholders (Grand Rapids, MI; Keene, NH)



Planning Process

1. Commission a Climate Assessment
 1. Collaborate
 2. Data collection
 3. Climate model scaling and analysis
2. Draft and adopt Rosemount Climate Action Plan

Planning Process cont.

1. Implement Climate Action Plan
 1. Community Partnerships and Education
 2. Updating City Plans and Code
 - Land Use, Storm Water, and Transportation Plans
 - City Zoning Code provisions



Questions?

Introduction

- What Is Water Reclamation?
- Why Rosemount?
- Obstacles to Water Reclamation
 - Not Permitted Under State Plumbing Code (MPC)
- Updating the MPC
 - Current Plumbing Board Rulemaking
 - Overlapping Oversight/Jurisdiction
- Predictions
- Recommendations

Water Reclamation & Reuse







- Process of treating greywater or blackwater for industrial or residential reuse.
- Mankato uses treated wastewater for irrigation and industrial purposes but not residential.
(City of Mankato, 2015)




Why Water Reclamation?

**2030 MODEL - PROJECTED
DRAWDOWN IN THE
PRAIRIE DU CHIEN-
JORDAN AQUIFER**

**CHANGE IN FUTURE
GROUNDWATER DRAWDOWN**

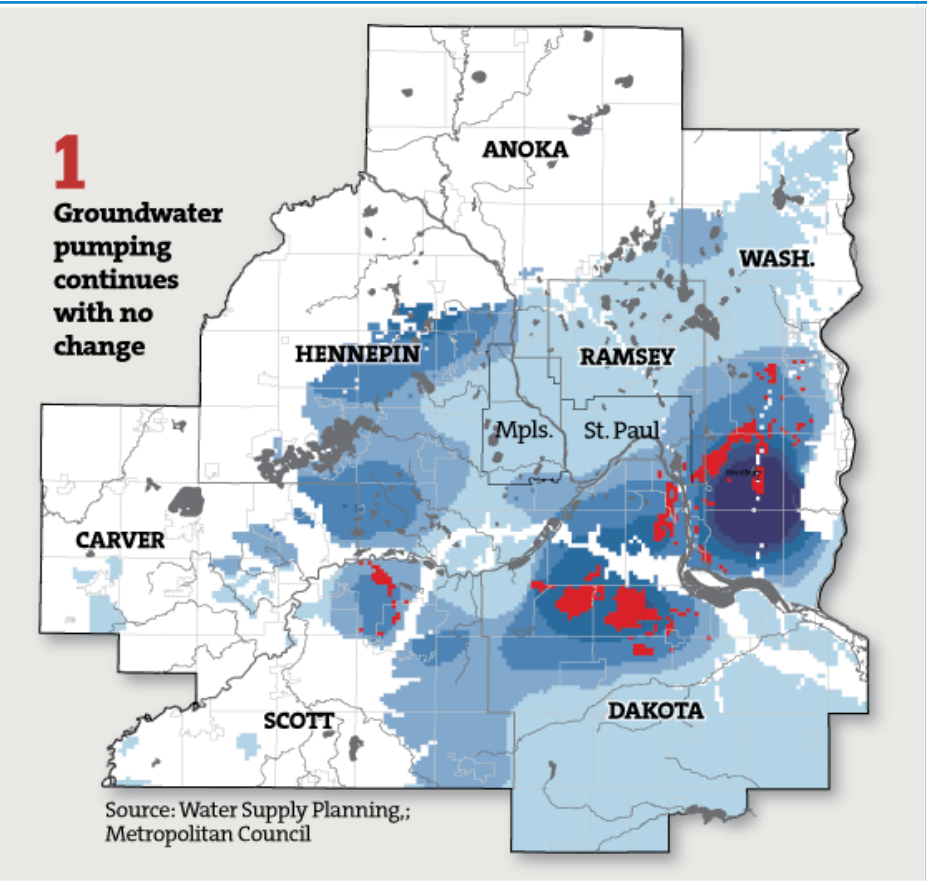
 Less than 5 feet	 5.1 to 10 feet
 10.1 to 20 feet	 20.1 to 30 feet
 30.1 to 40 feet	 40.1 to 45 feet

AREAS MOST AFFECTED

 **Drawdown exceeds
50% of available head***

*Available head in a well is the height water rises above the physical top of the aquifer, the 50 percent mark is when it becomes the greatest concern.

Note: Model 1 results assume long-term average conditions and continued development of traditional water supplies. Models 2 and 3 assume that some communities adopt different water supplies than they currently use.

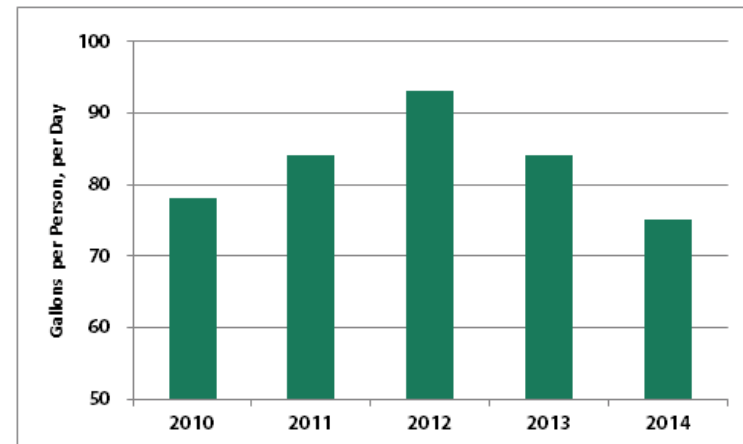


Source: StarTribune, February 23, 2013

Water Usage

- Average citizen in Minneapolis uses 60-70 gallons per day. (City of Minneapolis, 2015)
- Average usage in Rosemount exceeds Minneapolis' average. (City of Rosemount, 2015)

Rosemount's Residential Water Usage



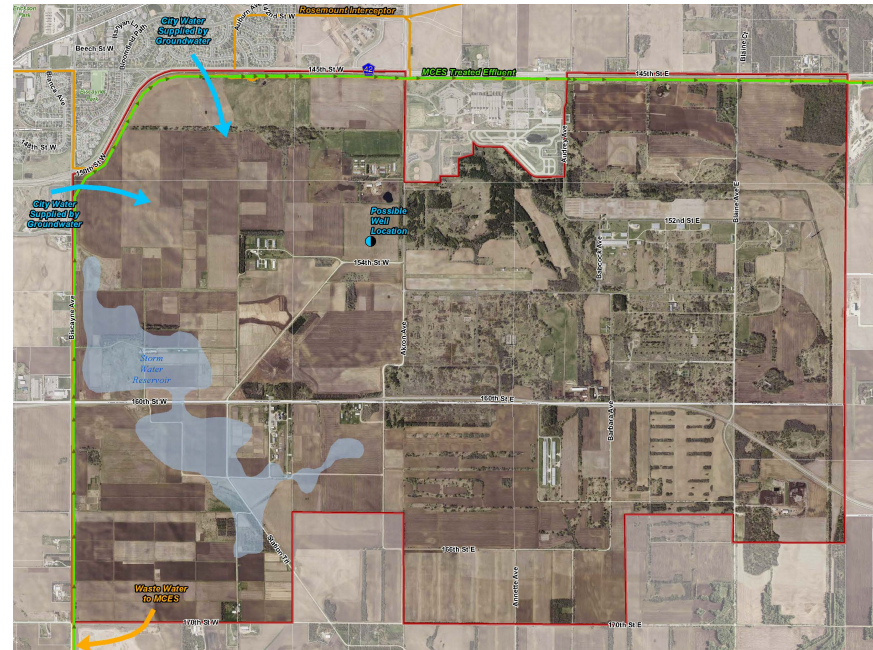
<http://ci.rosemount.mn.us/index.aspx?NID=579>

Why Rosemount?

- “The challenge is, the [users] would have to be next door or there would have to be a distribution system...”

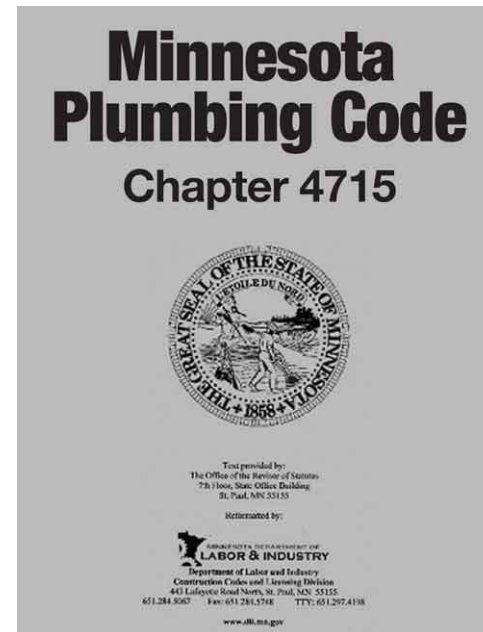
- Mike Mereness
(MCES Assistant
Gen. Man. of Ops.)
(MPR News, 2014)

**Map of Umore Park with MCES
Treated Effluent Line (Green)**



Water Reclamation Issues

- Joint Power Agreement between Rosemount and Metropolitan Council.
- How to establish a 4th Utility District for Re-use.
- Draft development agreement/covenant for future UMore Park development.
- Modifications to Rosemount's storm water management plan.
- Effect on MCES discharge rates and treatment permit.
- **Potential alterations to the plumbing code to allow for residential use of reclaimed wastewater.**



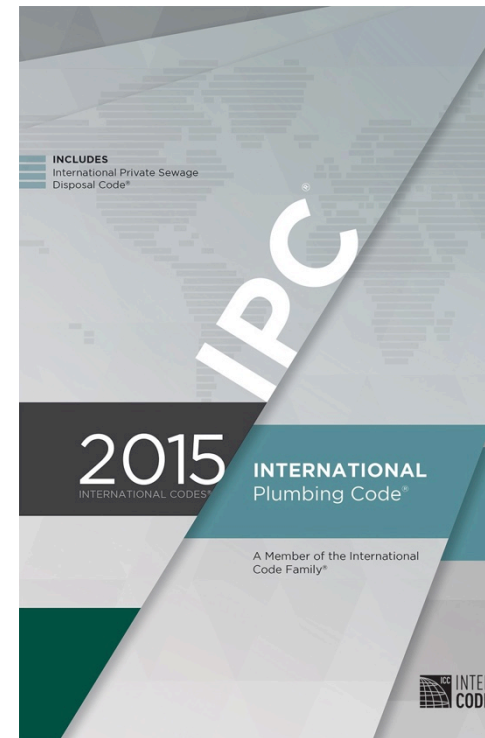
Minnesota Plumbing Code

- Under the regulatory/ rulemaking authority of Minn. Plumbing Board (MPB), a division of the Dept. of Labor and Industry. (Minn. Stat. 326B.435)
- MPC does not anticipate or permit wastewater reclamation. (Minn. Ad. Rule, 4715.0100 *et seq.*)
- Regulates other non-potable water usage. (Minn. Ad. Rule, 4715.1910)



Model Plumbing Codes - IPC

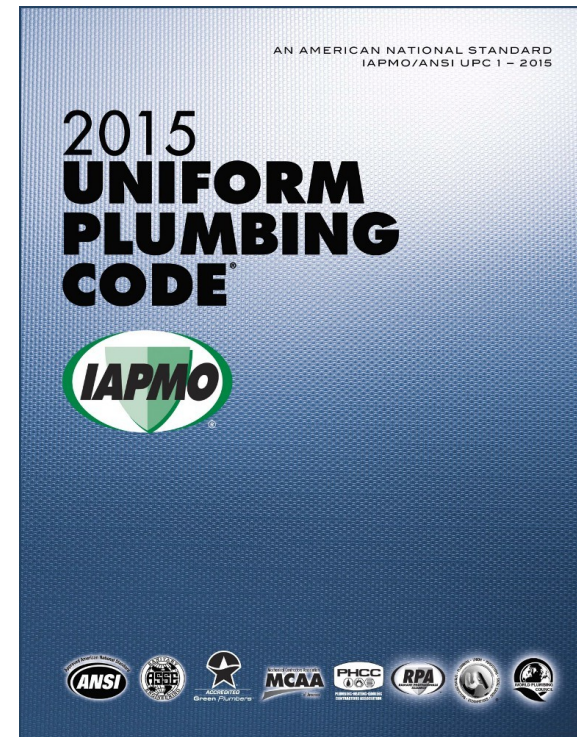
- International Plumbing Code
 - Published by the International Code Council (D.C.).
 - Currently adopted in 35 states.
 - Allows wastewater and greywater reclamation and reuse.
 - Areas in Texas (an IPC state) treat wastewater to potable standards.



(International Code Council, 2015)

Model Plumbing Codes - UPC

- Uniform Plumbing Code
 - Published by the International Association of Plumbing and Mechanical Officials (Ca.).
 - Adopted in **South Dakota** (SD Codified Law §36-25-15), **North Dakota** (ND 2009 UPC), and **Iowa** (IA Admin. Code 641-Ch. 25).
 - Allows wastewater and greywater reclamation and reuse (UPC - Ch. 16, 2009, 2012, & 2015).



MPB Adoption of UPC

- Pending MPB rule adopts amended portions of the UPC. *(MPB, 2014)*
- MPB discussed inclusion of Ch.16, but dropped at suggestion of Water Reuse Interagency Work Group (WRIW). *(Id.)*
- Administrative legal hearing on proposed rules April 30, 2015 (decision pending). *(Id.)*
- MPB Chair Parizek specifically intends adoption of Ch. 16 in the future. *(Id.)*

Predictions

- Proposed rulemaking is likely to succeed, partially incorporating the UPC.
- WRIW will discuss and address overlap issues and support amended adoption of Ch.16.
- Following passage, MPC will consider 2018 modifications, including Ch. 16.

Recommendations

- Track the administrative ruling on MPB's adoption of UPC.
- Following passage, contact MPB, Chair Parizek, and WRIW to share potential wastewater reuse project in Rosemount and support Ch. 16.
- If UPC is not adopted at this time, contact MPC, Chair Parizek, and WRIW to support the inclusion of wastewater re-use in subsequent revisions.

Questions?

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