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Workshop Series for
Comprehensive Plan Updates

Water Management Tools: Going Beyond the Comprehensive Plan

September 12, 2017

METROPOLITAN COUNCIL

Stormwater

Potable Water

Wastewater

PLUMBING CODE:
Stormwater Reuse
Cathy M. Tran, PE

Drinking Water Protection and thoughtful Land Use Planning

Lawn Irrigation Efficiency
Brian Davis

Adopting MIDS into Local Ordinance on the St. Croix
Mikael Isensee

Water and Climate
Jen Kader, Freshwater Society

Inflow & Infiltration Reduction
Bert Tracy
Interceptor Services Manager

Tools for Managing Salt
Rachel Olmanson
MINNESOTA POLLUTION CONTROL AGENCY

Smart Salting Trainings
Brooke Asleson
MINNESOTA POLLUTION CONTROL AGENCY

Landscape and Water Quality
Laura Scholl

Minnesota's Stormwater Manual
Mike Trojan

Integrated Water Resource Management

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Adopting MIDS into Local Ordinance on the St. Croix

Mikael Isensee

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Program Goal

Integrate Minimal Impact Design Standards (MIDS) into Local Ordinances

Type(s) of resource available:

- MIDS Community Assistance Package (MN Stormwater Manual)
- MIDS Calculator (MN Stormwater Manual)
- St. Croix Communities MIDS Report (mscwmo.org)
- Me (MSCWMO) Jay Michels (EOR Inc.) John Bilotta (U of M Extension, Project NEMO) Anne Gelbmann (MPCA)

What is MIDS

Performance Standard

Most Sites

- Retain on site 1.1” of runoff from new and/or fully reconstructed impervious surfaces

Linear Sites

- Retain on site 0.55” of runoff from new and/or fully reconstructed impervious surfaces

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What is MIDS

Performance Standard- Flexible Treatment Options

Most Sites

- Retain on site 1.1” of runoff from new and/or fully reconstructed impervious surfaces

FTO 1: Clay, etc.

- Retain 0.55” of runoff from the new and/or fully reconstructed impervious surfaces AND
- Remove 75% of the annual TP load

FTO 2: Contam-ination

- Achieve as much volume reduction as practicable AND
- Remove 60% of the annual TP load

FTO 3

- Off-site mitigation

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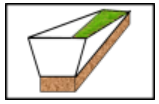
What is MIDS

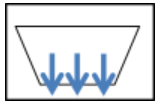
Credit Calculator- Primarily for Flexible Treatment Options

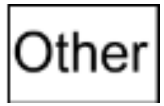
Credits approved by the Minnesota Pollution Control Agency


Bioretention


P. Pavers

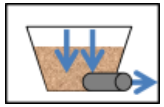

Swales


Infiltration Basin



Isolator Rows, etc.


Trees


Sand Filters

And Many More!

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9 Communities 2 Year Process

Year 1

- Announce Opportunity to Adopt MIDS
- Overview of MIDS
  - Community staff
- Legal Preview Workshop
  - Community Attorneys (reimburse cost for attendance)
- Overview of MIDS
  - P.C. and C.C.
  - Resolution to Adopt Changes at the End of the Process

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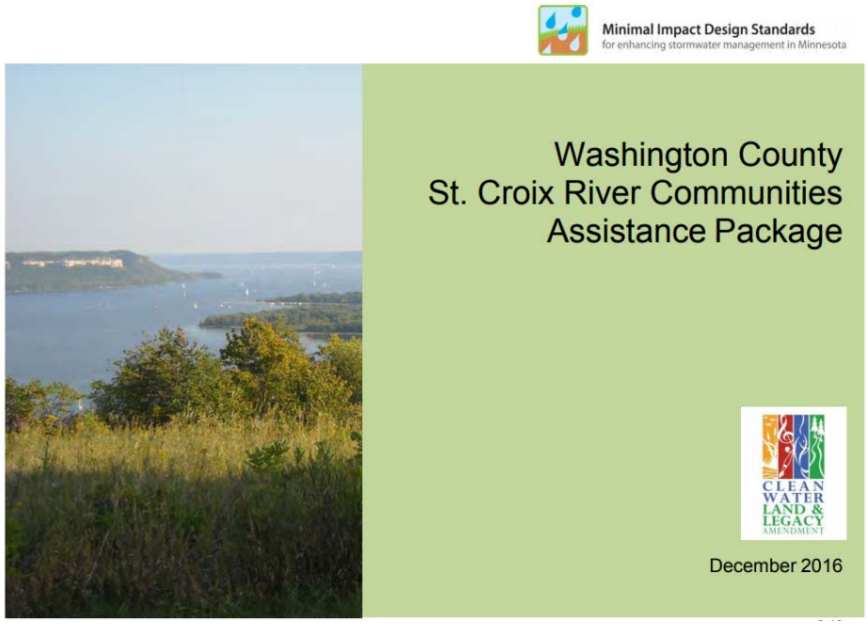
9 Communities 2 Year Process

Year 2

- Audit Existing Ordinances
  - Meet with Community Staff
- First Draft Revisions to Incorporate CAP
  - Meet with Community Staff
- Second Revisions
  - Meet with PC
- Third Revisions
  - Meet with City Council
- Legal Review & Publication



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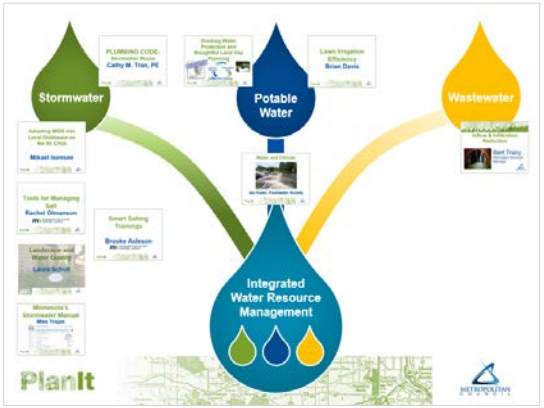
How Is MIDS Working?

2016 & 2017 Implementation Summary

- 64% of new and redevelopment sites met the full standard- 1.1” or 0.55” infiltration (16/25)
- 8% FTO #1-Vol. + 75% TP (2/25)
  - karst
- 24% FTO #2 – At least 60% TP (6/25)
  - contaminated soils, pollutant hot spot, high surficial ground water, well head emergency response area (1 year travel time).
- 4% FTO #3 –Off Site Mitigation (1/25)
  - high surficial groundwater, limited right of way.

For More Information…



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Web Links

- www.mscwmo.org
- http://mscwmo.org/wp-content/grant-reporting/MIDS_Community_Ordinance_Final_Report%20Dec_2016.pdf
- https://stormwater.pca.state.mn.us/index.php?title=Overview_of_Minimal_Impact_Design_Standards_(MIDS)

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Drinking Water Protection and thoughtful Land Use Planning

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Slide 2: Program Goal

The **GOAL of Wellhead Protection (WHP)** is to ***prevent potential contaminants from entering public water supply wells***.

DEPARTMENT OF HEALTH

"*Science Based Planning*"

well & aquifer vulnerability + local issues = good planning!

Resources that can help:

- City Utility Manager
- City Wellhead Protection Plan & Maps
- MDH SWP Grants available for efforts
- MDH / MN Rural Water Planners

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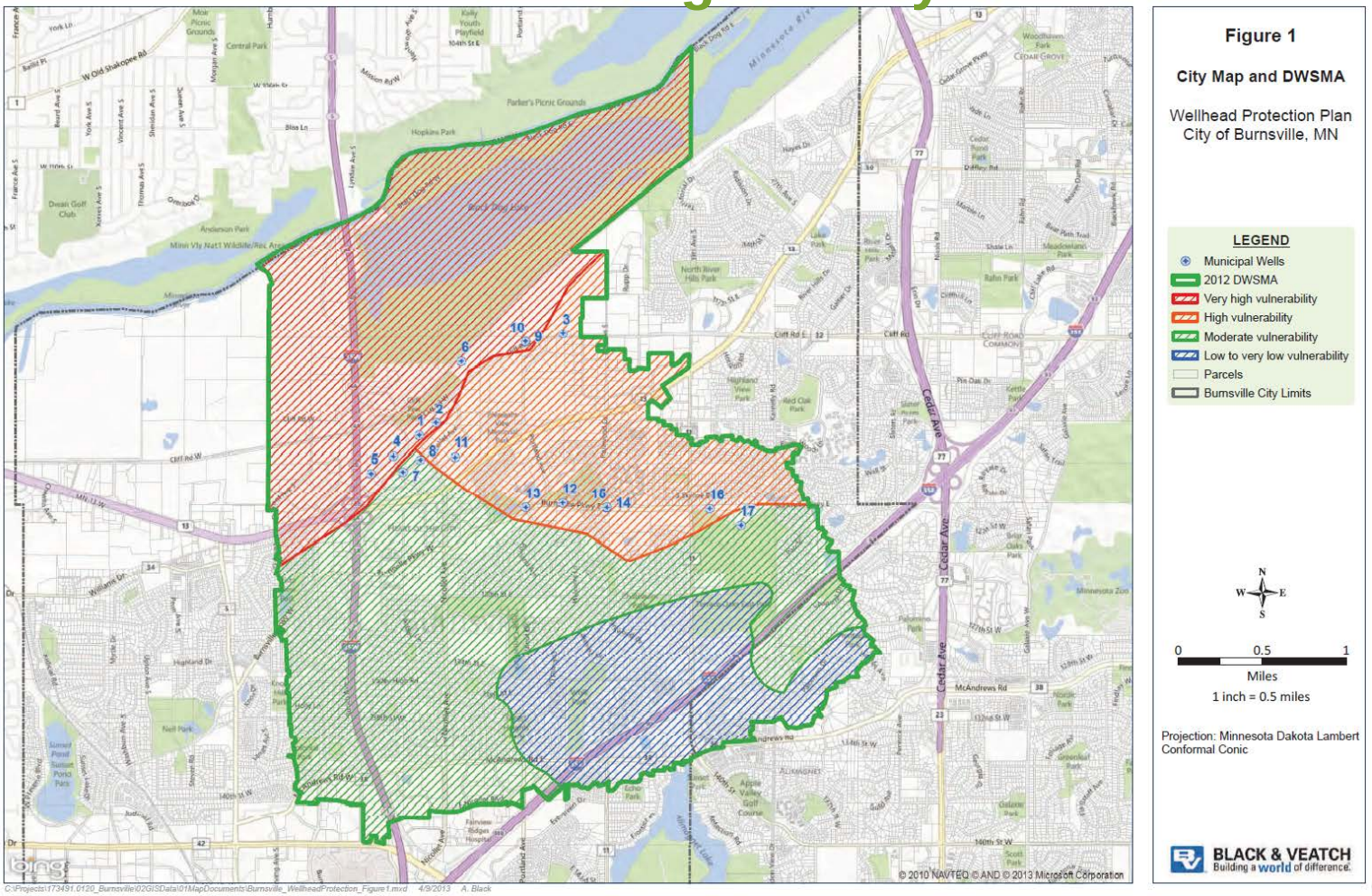
City of Burnsville

Wellhead Protection Zoning Overlay District



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For More Information…

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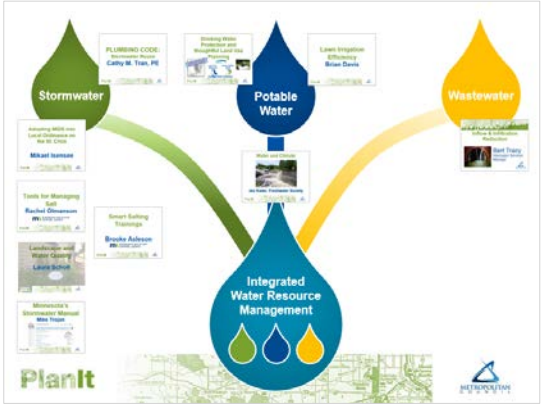

Other Source Water & Drinking Water Information:

***MDH** - Source Water Protection Grants:*
http://www.health.state.mn.us/divs/eh/water/swp/grants/index.html#PreviousGrantAwards

***Met Council** - Considering Source Water In Your Plan:*
https://metrocouncil.org/Handbook/Training/Tutorials.aspx

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PLUMBING CODE:
Stormwater Reuse

Cathy M. Tran, PE

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Slide 2: Plumbing Code

- **Opportunities**
  - Rainwater Harvesting System (Chapter 17, Nonpotable Rainwater Catchment System)
  - Scope & Applicability
- **Code Exclusions/Limitations**
  - Lawn/Landscape Irrigation Systems From Storm Ponds
  - Stormwater Collection Systems Use Solely For Outside Lawn/Landscape Irrigation Systems
  - Stormwater From Parking/Roads Lots

Slide 3: CHS Field, St. Paul

- Rainwater Harvesting for Irrigation & Flushing
- Project Challenge: Turbidity/System Alarms
- Water Quality Standard

TABLE 1702.9.4

Measure	Limit
Turbidity (NTU)	<1
E. coli (MPN/100 mL)	2.2
Odor	Non-offensive
Temperature (degrees Celsius)	MR
Color	MR
pH	MR

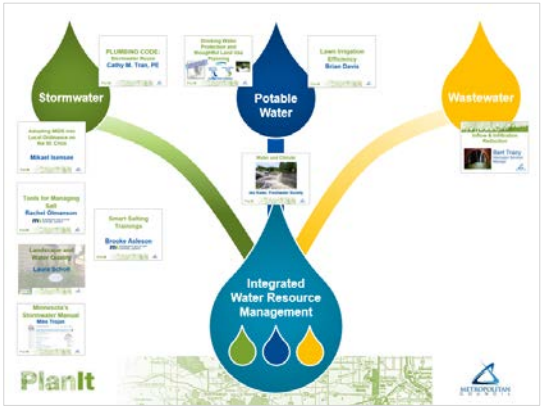
MR = measure and record only

Treatment:

5 micron or smaller absolute filter

Minimum .5-log inactivation of viruses

For More Information…



Cathy Tran, PE, Supervisor

Plumbing Plan Review Unit

MN Department of Labor and Industry

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Web Links

- http://www.dli.mn.gov/CCLD/Plumbing.asp
- https://stormwater.pca.state.mn.us/index.php?title=Stormwater_and_rainwater_harvest_and_use/reuse
- http://www.health.state.mn.us/divs/eh/water/dwp_cwl/reuse/index.html

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Tools for Managing Salt

Rachel Olmanson

MINNESOTA POLLUTION CONTROL AGENCY

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Salt (Chloride) Management

Program goal: Assist local partners in reducing salt (chloride) use to protect and restore water resources, and provide safe and desirable conditions for the public.

Type(s) of resource available:

- Chloride Management Plan
  - Implementation Strategies (Section 3.2)
  - Educational Resources (Appendix D)
  - Grant Opportunities (Section 3.6)
- Winter Maintenance Assessment tool (WMAt)
- MN Model Snow and Ice Policy

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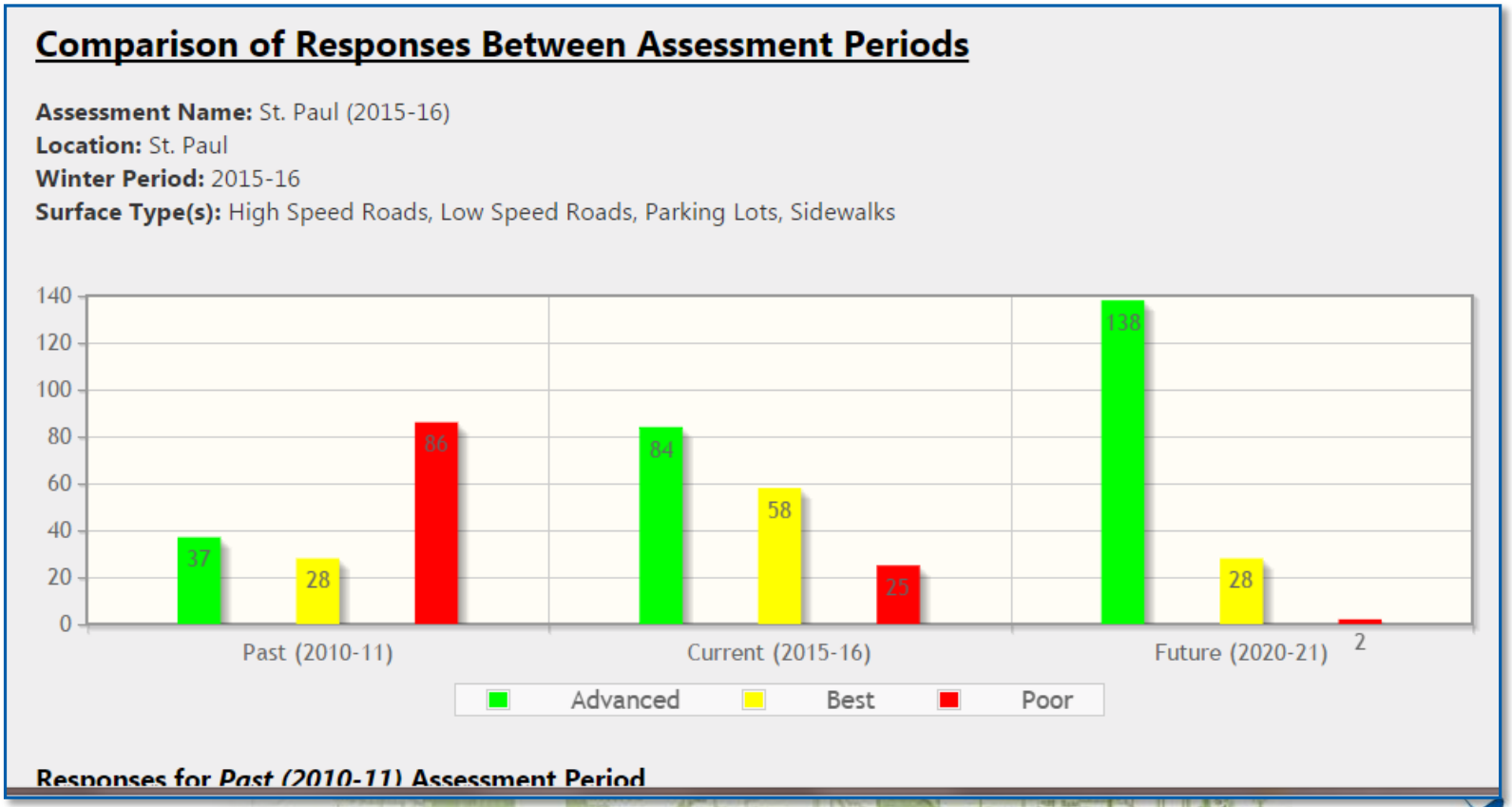
Success: St. Paul Public Works

The Winter Maintenance Assessment tool was used to show progress and plan for the future to reduce chloride



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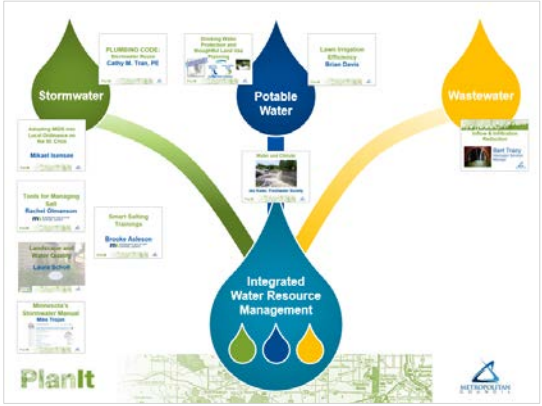

Rachel Olmanson

Minnesota Pollution Control Agency

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Web Links

- Road Salt and Water Quality Webpage
- Twin Cities Metro Area Chloride Management Plan
- Winter Maintenance Assessment Tool (WMAt)
- MN Model Snow and Ice Management Policy
- MN Model Snow and Ice Management Policy Guidance Document

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Water and Climate

Jen Kader, Freshwater Society

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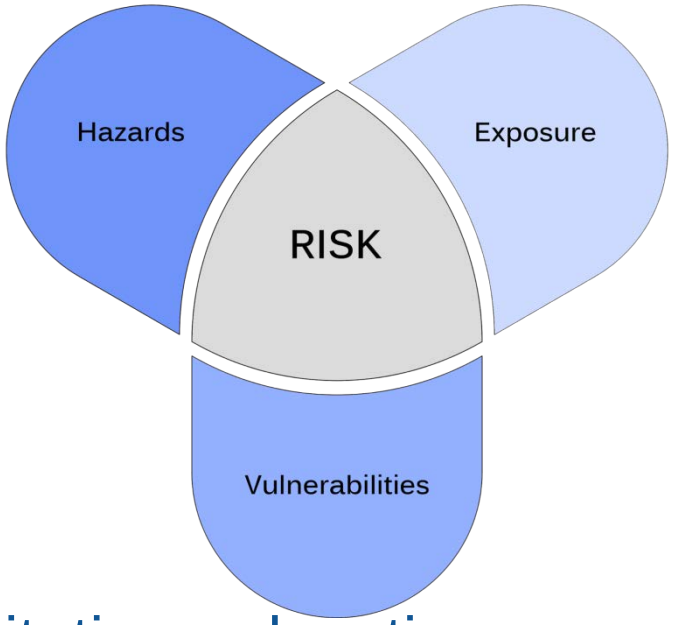
Why is Freshwater doing climate work anyway?

Program goal:

Community Resilience Building

(Reduce impervious surface)



What we can offer here:

- Staff available for speaking, facilitation, education
- Data gathering and interpretation regarding climate impacts and strategies
- Conversation about what we've learned—about this work, as well as from this work

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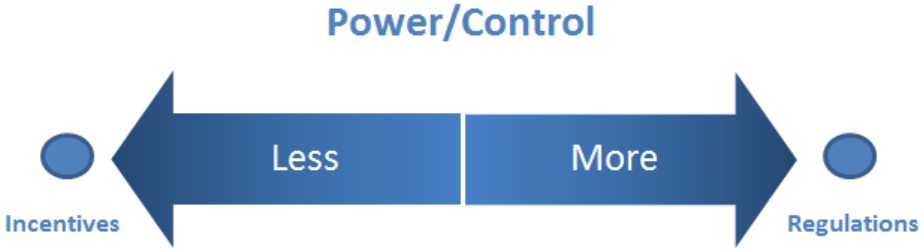
Spring 2016 -- Community Resilience Building Workshops

- Process adapted from The Nature Conservancy
- Riley-Purgatory-Bluff Creek and Nine Mile Watershed Districts, with support from Barr Eng., MPCA, and Met Council
- Asses climate risks and resilience opportunities
- Community-identified strategies



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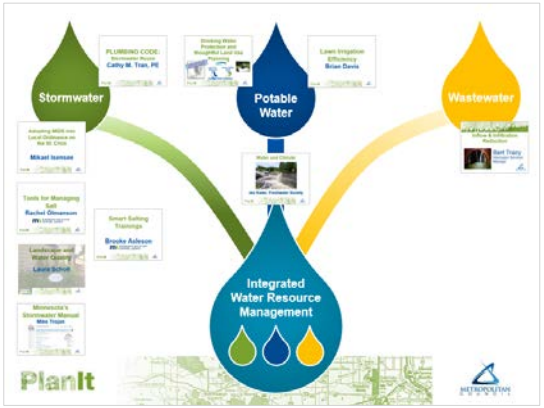

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Web Links

- www.freshwater.org/water-resilience
- www.freshwater.org/facilitation-services
- toolkit.climate.gov
- http://www.georgetownclimate.org/adaptation/toolkits/green-infrastructure-toolkit/introduction.html

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Inflow & Infiltration Reduction

Bert Tracy

Interceptor Services Manager

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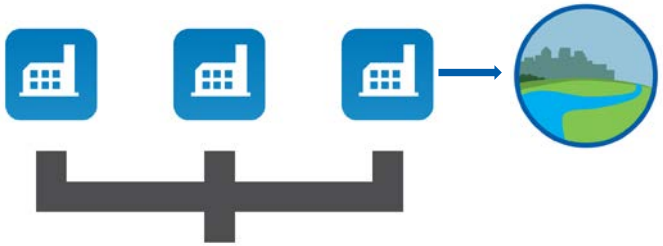
About us



Pre-1969
Fragmented sewer system.
35 underperforming plants meeting minimum requirements discharging to area lakes and rivers.

Post-1969
Partnership with 109 communities to:

Protect human health

Achieve water quality goals

Promote economic vitality

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I/I Program Goals

Protect Public Health by avoiding backup of sewage into basements

Protect Water Quality by avoiding spills to lakes and rivers

Maintain Economic Efficiency by avoiding unnecessary expansion of sewers and treatment plants

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INFLOW

- A Roof Drain Connection
- B Sump Pump or Foundation Drain Connection
- C Deteriorated Manhole
- D Uncapped or Broken Clean-Out
- E Storm Cross Connection

INFILTRATION

- F Faulty Manhole Cover/Frame
- G Root Intrusion
- H Open Joints
- I Faulty Service Connection
- J Broken or Cracked Pipe

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Wastewater – Inflow & Infiltration (I/I)

- Define your community's goals, policies, and strategies for preventing and reducing excessive I/I in the local municipal and private sanitary sewer systems.
- Describe the requirements and standards in your community for minimizing I/I.
- Describe the sources, extent, and significances of existing I/I in **both** the municipal and private sewer system.
- Describe the implementation plan for preventing and eliminating excessive I/I from entering **both** the municipal and private sewer system.

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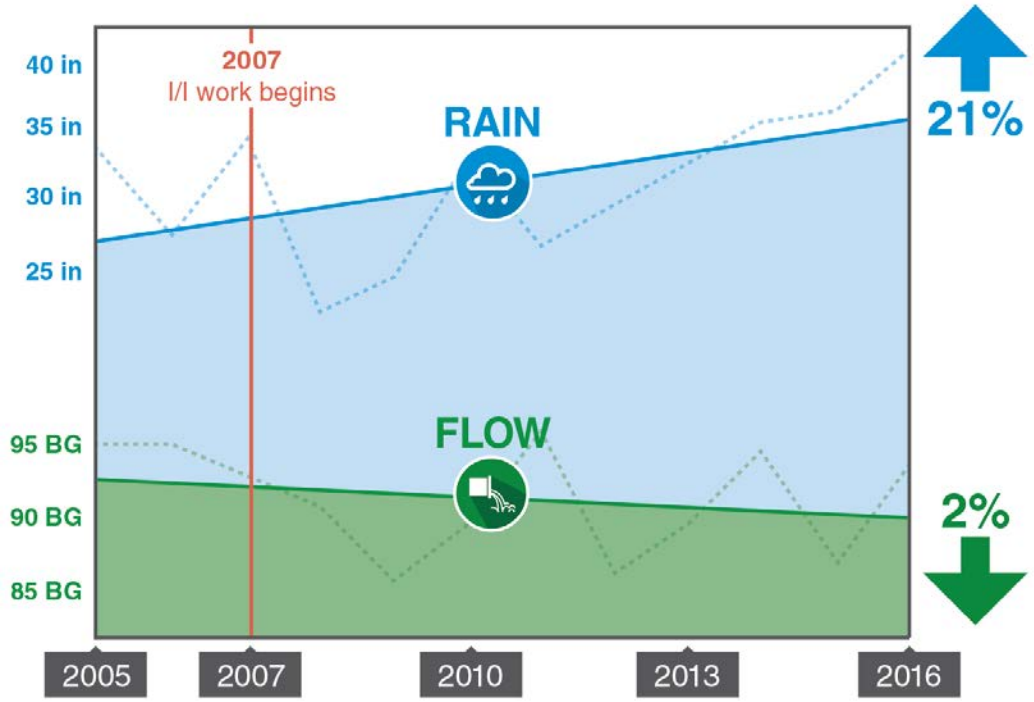
Metershed Flow Reductions

I/I Mitigation Strategy	Reduction		
	BASEFLOW	PEAK FLOW	I/I FLOW
Public Infrastructure Only	24%	17%	11%
Extensive Public & Private	11%	69%	75%
Public & Private	5%	24%	28%
Baseline	6%	4%	0%

Regional Flow vs Rainfall



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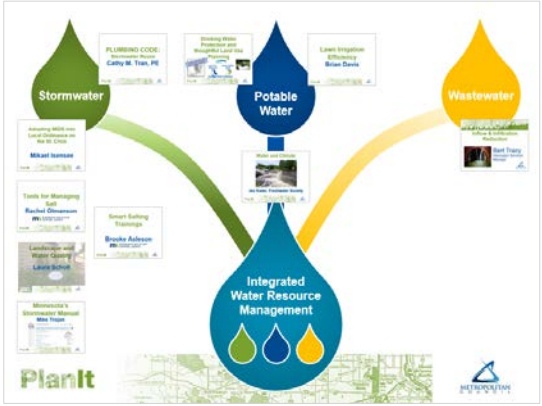

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Web Link

- https://metrocouncil.org/Handbook/Plan-Elements/Water-Resources/Wastewater.aspx

Hand out

Landscape and Water Quality

Laura Scholl

Metro Blooms Goal & Resources

Program Goal: Educate and engage citizens to install and maintain sustainable landscapes

Benefits: Leverage partnerships, create resilient communities, build social capital for clean water projects, and improve water quality

Type(s) of resource available:

- Partnership for Public Education & Outreach (*Resilient Yard Workshops, Ed Materials, and Community Engagement*)
- BMP Maintenance Services & Training
- Stormwater Consultation and Design Services

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Blooming Alleys for Clean Water

- **Problem**: Impaired Water Body in Urban Residential Area
- **Location**: Lake Nokomis Watershed, Minneapolis
- **Partners**: City of Minneapolis, Clean Water Fund, Minnehaha Creek Watershed District, Hennepin County, Friends of Lake Nokomis, Nokomis East Neighborhood, Master Water Stewards, and Master Gardeners
- **Outcome**: 13 Alleys, 264 stormwater BMPs = 2.3 Tons sediment, 17 lbs TP, 3.5 million gallons runoff annually

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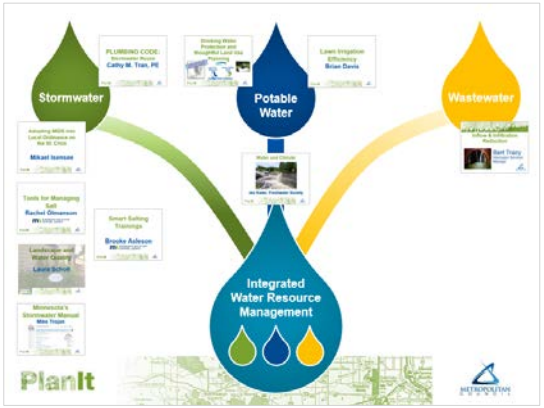
For More Information…



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Web Links

- metroblooms.org
- Bluethumb.org
- metroblooms.org/resources/publications/

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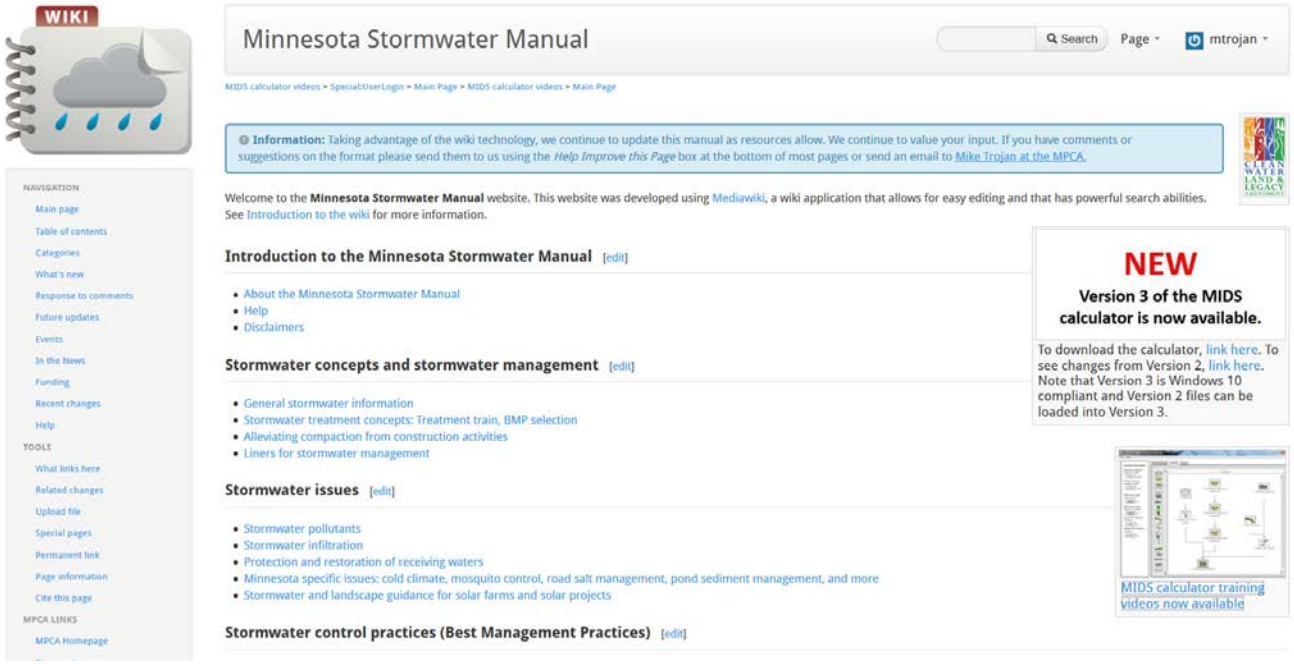
Minnesota's Stormwater Manual

Mike Trojan

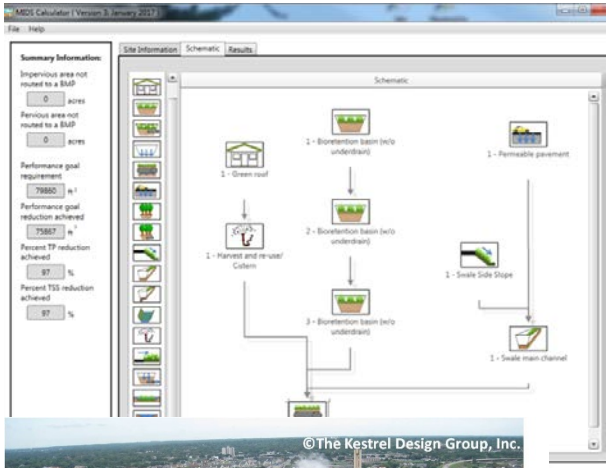


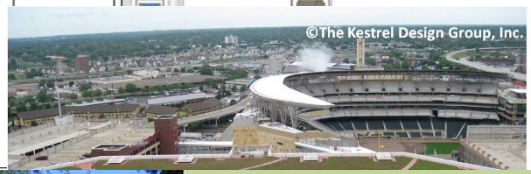
Program Goal

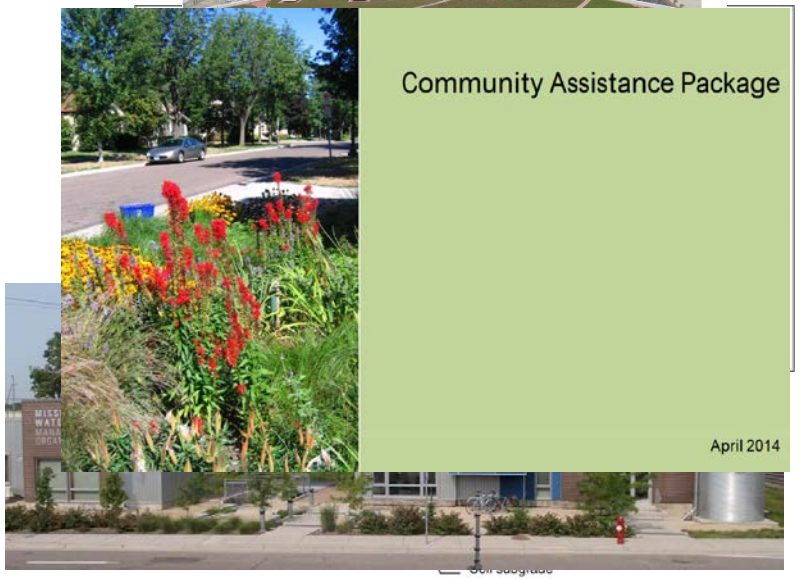
Program goal: Provide guidance and tools to help better manage stormwater

What does the Manual provide?

- Guidance on BMP selection
- Guidance on BMP implementation
- Calculation of pollutant loading
- Access to tools
- Links and case studies







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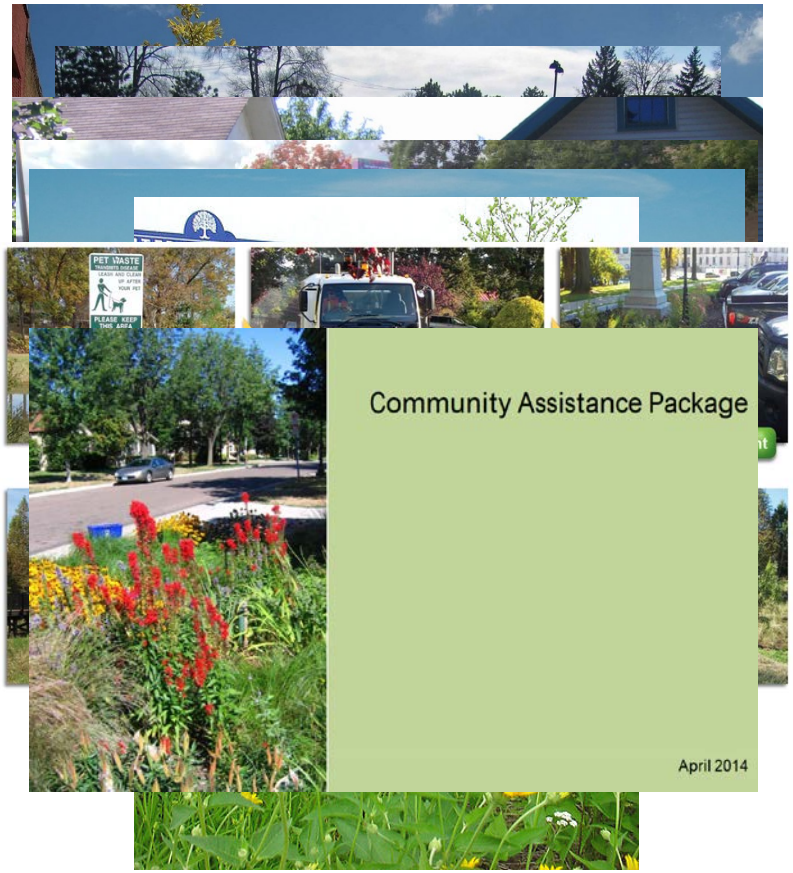
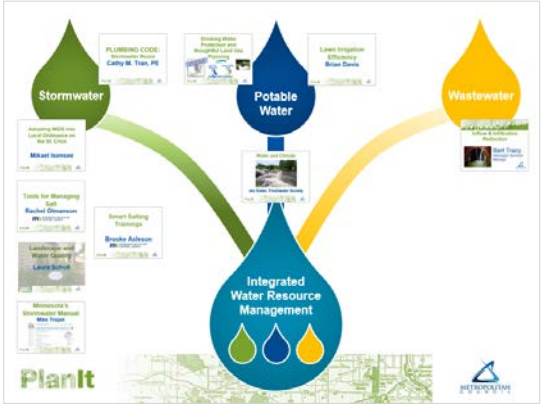
Use of the resource



We rarely work on specific projects

- The Manual provides guidance that helps achieve good stormwater management
- 8.7 million hits on the Manual
- 2000 downloads of MIDS calculator
- About 600 attendees for 3 webinars
- Assistance requests
- Incorporation into local rules and ordinances

For More Information…



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Web Links

- Google search “Minnesota stormwater manual”

OR

- https://stormwater.pca.state.mn.us/index.php?title=Main_Page

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Lawn Irrigation Efficiency

Brian Davis

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Reduce Summer Water Demand

University of Minnesota

Turfgrass Science Program

- We can do better!
- Watering only when needed
  - Smart controllers
  - Soil moisture sensors
- Replace broken sprinkler heads
- Healthier lawn
- Less future water infrastructure

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Give Your Lawn a Brain

Invest in a SMART Controller

Take the worry out of when to water. Whether it rains a little or a lot, a SMART controller automatically adjusts to weather and soil moisture conditions. For a couple hundred dollars, you can be water SMART!

Get SMART with a Rain Sensor

A rain sensor can be added to any irrigation system. It stops it from running when it rains. In fact, it's the law. A sensor is required on any system installed in Minnesota after 2003.

A SMART Controller can reduce water useage by 30 to 50%.

Extension Turfgrass Science

METROPOLITAN COUNCIL

CLEAN WATER LAND & LEGACY AMENDMENT

To learn more, visit:
extension.umn.edu/turfgrass

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Grow Easy Peasy Lawns

Try Low-Maintenance Grasses

Fescue grass at Minnesota Governor's Residence, St. Paul

Most Minnesota lawns are planted with Kentucky bluegrass which requires lots of water, fertilizer and mowing to look good. For a terrific looking, easy lawn, try growing fescues. Fine fescue grows slowly. Tall fescue's roots grow deep and stay green even after drought. Mow less, water less!

Results after 60-day drought trial

Extension Turfgrass Science

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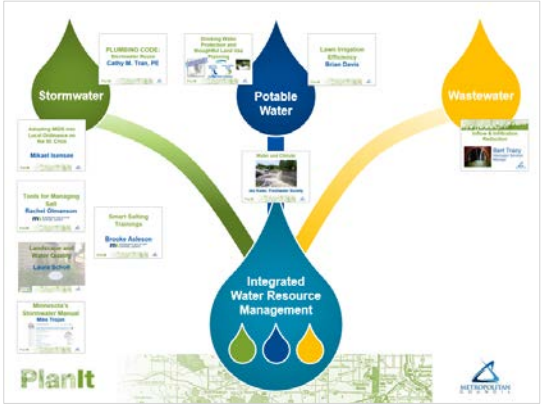

Brian Davis

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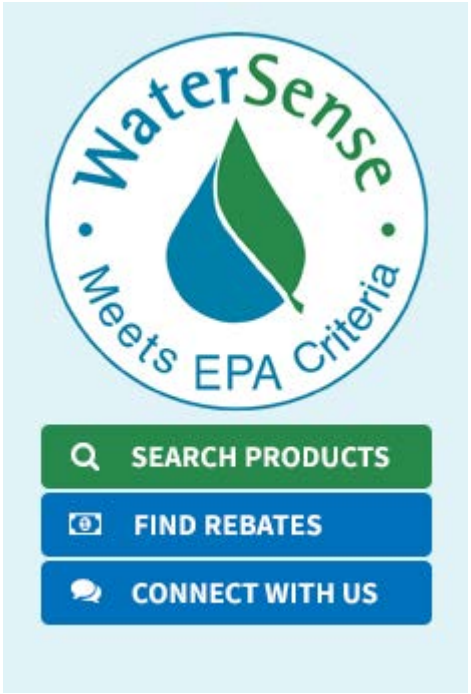
651-602-1519

Web Links

- http://turf.umn.edu/
- Twitter: @urbanturfmn
- https://www.epa.gov/watersense



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Smart Salting Trainings

Brooke Asleson

MINNESOTA POLLUTION CONTROL AGENCY

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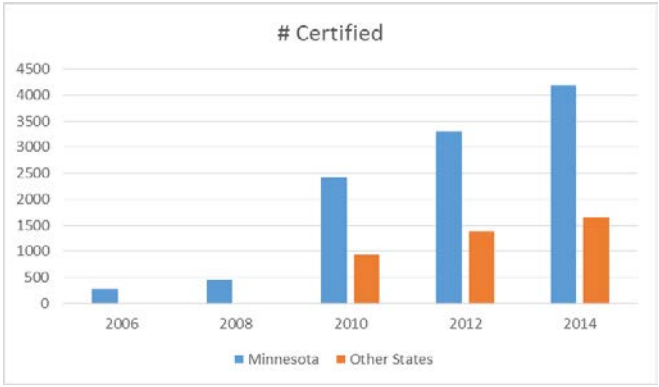
Smart Salting (S2) Training program

Program goal: Provide training, resources, and information sharing opportunities to winter maintenance professionals to reduce their salt use while maintaining public safety.



Type(s) of resource available:

- S2 Level 1: Parking Lots & Sidewalks individual certification
- S2 Level 1: Roads individual certification
- S2 Level 2: Winter Maintenance Assessment organization certification
- Winter Maintenance Assessment tool (WMAt)

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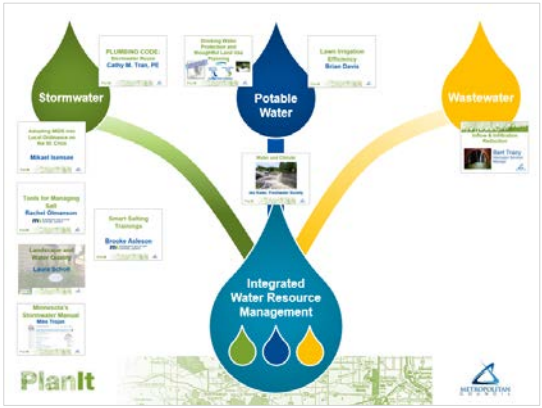
Success: City of Shoreview

The city of Shoreview has implemented and continues to implement changes to their operations to reduce their salt use. Since 2006 have achieved a **44%** reduction in salt use and in 2014 alone save **$24,468**.

- Installed state of the art salt spreading controls, pre-wetting tanks and controls and pavement sensors
- Use calcium chloride in the pre-wetting tanks
- Annual training
- Anti-ice main roads
- Covered salt storage facility

For More Information…



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Web Links

- Smart Salting Training Webpage
- Winter Parking Lot and Sidewalk Maintenance Manual
- Smart Salting Success Stories
- Winter Maintenance Assessment Tool (WMAt)
- Road Salt and Water Quality Webpage

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