



Winter Storm Management

2014 National Stormwater Practitioners
Meeting

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We all have a stake in **A**  **B**



Ramp Salt Recipe

- ▶ A bunch of ramps
- ▶ ½ to 1 cup sea salt flakes
- ▶ Wild leek flavored salt
- ▶ How much is the right amount?



“Salt Recipes”

- ▶ EPA
- ▶ Illinois
- ▶ Wisconsin
- ▶ Iowa
- ▶ Minnesota (based on EPA criteria)
 - 230 – 4 day average
 - 860 – 1 day average
 - Separate STDs for other Use Classifications
 -



SNOW and ICE FIGHTING



SNOW and ICE FIGHTING



ICE and SNOW FIGHTING

- ▶ 12,00 miles of state and interstate
 - 30,637 lane miles, 5,500 in Metro
- ▶ Snowfall 22.3" (11–12), 88.6 (10–11)
- ▶ 800 Snowplows
- ▶ Salt 242,495 tons (3 yr ave)
- ▶ Brine 2,605,670 gallons (3 yr ave)
- ▶ Sand 45,212 tons (3 yr ave)
- ▶ 1,400 full time drivers, 250 backup drivers
- ▶ \$55 Million Snow and Ice Budget (3 yr ave)
- ▶ \$1788/ lane mile



Minnesota Water Statistics

- ▶ 11,842 Lakes (10+ acres)
- ▶ 6,594 Rivers and streams (69,200 miles)
- ▶ 10.6 Million acres of wetlands
- ▶ 2,560,299 acres lakes and rivers
- ▶ 13,136,357 acres surface water including wetlands



- ▶ MnDOT strives to provide safe roads while minimizing chemical use
- ▶ Balance Public Safety and Environment



MnDOT BMPs

- ▶ Operator Training
- ▶ Equipment upgrades and calibration
- ▶ Anti-icing
- ▶ Prewetting
- ▶ Loading
- ▶ Alternative deicers and abrasives
- ▶ Storage – Chemical, sand, snow
- ▶ RWIS
- ▶ MDSS/AVL
- ▶ Research



Material Storage



Equipment Calibration



Equipment Upgrades – Brine Tank



Anti-icing





RIGHT LANE
CLOSED

Henderson

ASPEN
EQUIPMENT
MINNEAPOLIS
OHAMA
DEX MOINES
SOLUTH

3500X
ENERGY ABSORPTION
SYSTEM, INC.

2011 5 9





RWIS



MDSS





Current Research

- ▶ Clear Roads Toxicity
 - K-Acetate > MgCl > CaCl > NaCl
 - Corrosion Inhibitors a Factor
- ▶ LRRB Cl Transport in Watershed
- ▶ Roadway Based Public Safety Factor
- ▶ National interest



Yet Chloride Impairments

- ▶ 2 CI based TMDLs
- ▶ 20 on current 303d list (streams)
- ▶ 35 proposed for 2014 list (streams and lakes)



TMDLs

▶ Shingle Creek

- 71% collective loading reduction to Shingle Creek based on implementing BMPs to MEP
- “understanding the unique financial, public safety and perception, and feasibility limitations”

▶ Nine Mile Creek

- 30% reduction – Nine Mile Creek
- MnDOT WLA = 291 T/yr, 0.797 T/day
- Improvement of existing practices
- Full implementation over 10–20 years



The process

- ▶ Clean Water Act
- ▶ State Law and Rules
- ▶ State Water Quality Standards
- ▶ Monitoring
- ▶ Assessment and Listing
- ▶ **TMDL**
- ▶ Implementation Plan (MN)
- ▶ WLAs enforced through NPDES permits
- ▶ SWPPP Program Implementation



Triennial Standards Review (TSR)

- ▶ 2004 Requested review of CL Standard based on data from Wisconsin and Iowa
- ▶ 2014 Mn DOT again requests review of STD – urged balance of environment and public safety
- ▶ Joined by local partners: CEAM, MCSC, MCEA, Bloomington, Champlin, Inver Grove Heights, Minneapolis, MICA, AMC, MESERB, Scott County
- ▶ **MPCA agrees to review CI standard**



2014 303(d) list

- ▶ TCMA
- ▶ Professional Judgment Group
- ▶ MnDOT commented on CI and other listings
- ▶ Asked that most not be listed (CI) until new standard developed
- ▶ Data issues
- ▶ Others commented
- ▶ **List revised based on comments**



TCMA CI Study Phase 2 2010–2014

- Monitored additional Streams, and Lakes (mostly by partner agencies)
- Winter/Spring, Lakes– Surface and bottom
- 35 new Lakes and Streams proposed for listing, then TMDLs (44) (250 met STDS)
- WRAP TMDL, and Protection (applies to all waterbodies in study Area)
- **Proposed Performance Based Approach – use BMP Assessment Tool Green/Yellow/Red**



Next Steps

- ▶ Continue smart cost effective chemical management practices
- ▶ Continue working with local partners
- ▶ Continue working with national partners
- ▶ Stakeholder discussion
- ▶ Status of EPA
- ▶ Communication with other State DOTs
- ▶ Support Research Efforts
- ▶ Be aware of assessments and 303d listings
- ▶ Prepare for CI STD rulemaking



Summary

- ▶ Participate as an active stakeholder
- ▶ Know the rules (WSDOT)
- ▶ Question the Standard (TSR)
- ▶ Review draft 303d list – don't wait until PN
- ▶ Review draft TMDL– don't wait until PN
- ▶ Provide data
- ▶ Challenge assumptions
- ▶ Partner with locals
- ▶ Provide the best “recipe”





