

16th Annual Road Salt Symposium

Environmental Leadership Award Winners

PARK NICOLLET HEALTH SERVICES

Jim Holm – Park Nicollet

Charles Glossop – Consultant

Kevin Baur – Prescription Landscape

David Fors – Prescription Landscape

Cody Dalbec – Prescription Landscape

David Eddy – Prescription Landscape

Ed Brown – Prescription Landscape

John Smith – Prescription Landscape

Steve Hutton – Prescription Landscape

Over the past few snow seasons we have increased our commitment to help the environment. As a result we have greatly reduced the amount of salt used and reduced our costs.

Here is what we are doing:

- Hired Charles Glossop, snow removal and salt reduction consultant, to advise and provide training for our snow removal vendor and team members.
- Hired Prescription Landscape to do our winter maintenance.
- Implemented a salt reduction program at all of our 36 sites
- Process Improvements:
 - Increase use of liquids, pre-treatment and pre-wet.
 - Contractor invested in newer technology and equipment.
 - Ongoing training and mentoring.
 - Site monitoring and equipment calibration.
 - Our plan does not compromise safety.

We started using liquid brine in the winter of 2013-14 to reduce the volume of granular salt this showed a 45% salt reduction in 2014-15 and an additional 28% salt reduction in 2015-16. We have reduced landscape damage caused by salt by over 75%.

We are sharing our news! We presented to:

- The HealthPartners Facilities group on snow removal process improvement and salt reduction program.
- The Primary Care Clinic managers and supervisors.
- Created and shared a flyer highlighting Phase 1 and Phase 2 of the salt reduction program with clinic managers and supervisors, Maintenance and Grounds, Safety and Security.
- Updated our snow removal specifications and standards to include SIMA best practices.
- Our salt reduction program article was published in the PGMS Forum.

The Future:

- Salt Reduction training is on-going with the following teams: vendor, security, valet, engineers, clinic managers, supervisors and maintenance. The training consists of discussing benefits, calibration and a field demonstration. Along with constant monitoring of process.
- Prescription Landscape (our snow removal vendor) has really partnered with us on these snow removal process improvements and our salt reduction program.
- We plan to continue to work on snow removal process improvement and salt reduction this winter and into the future. Our goal for 2016-17 and 2017-18 is an additional 10% reduction annually.

CITY OF JORDAN

Scott Haas

Jason Stocker

Chuck Kaiser

Derik Briese

Steve Kochlin

John Hennen

Scott Haas started working for the city of Jordan in 2010 and became the Public Works Director in 2014. One of the first items he wanted to do was cut the amount of salt used on the roads in half but keep the same results. We started by talking to a lot of other cities, researching how they used pre-wet systems. Pre wet systems are not for everyone, as there are high costs associated to outfitting trucks and making the salt brine. So we didn't want to jump into it without a plan. After some time we came up with a few ideas on how to get the system to work and we were able to save the City \$18,500 in upfront equipment costs.

First we started out by buying an old farm sprayer, using a tank we had sitting around to make our own brine and bought four 20 gallon plastic tanks. We spoke with a local metal fabrication company and they made brackets to hang the system on the trucks. This equipment only cost the City \$1,500.

The biggest obstacle we had to figure out was how to get the brine onto the salt system we built. The first year we wanted to let gravity do the work for us. That was successful but we knew it could be better.

Second year instead of using gravity we added small pumps on the trucks to pressurize the system and get more of the liquid out onto the salt. This year we are trying to upgrade the pre-wet system by adding a second spray tip which will add more brine to the salt.

With the improved pre-wet system, we also changed how we plow the streets. We salt only the hills and intersections until the snow has stopped, and add Road Guard 8 to the salt brine when temperatures get below 10 degrees.

These changes in practice have not only cut the salt use in half but also saved the department on equipment wear and tear and thousands of dollars in fuel. What has helped our crew find innovative ways to do our jobs is to always keep an open mind and not be afraid to try new ideas.

Next year we plan to add a new truck to our fleet, which will have a pre-wet system inside the box, plus the anti-ice bar for treating the roads before the storm hits. We are on the move and making good progress in our salt reduction efforts. We will continue to focus our energy on ways to best serve the citizens of Jordan and protect our water.

ST.CLOUD VA FACILITIES MANAGEMENT

Mary Wenck	Mike Peterson
Robert Wolf	Ian Behnen
Todd Vogel	John Donabauer
Ervin Dufner	Tim Eiyneck
Leroy McDonald	John Vandewalker
Dale Stanger	

The St. Cloud VA Health Care System campus is located on 218 acres of land in St. Cloud, Minnesota. There are 58 buildings on the campus connected by concrete sidewalks and paved roadways. There are 18 paved parking areas on the campus ranging from a few spaces to 234 parking spaces. The campus is bordered on three sides by the Sauk River which is listed by the EPA and MPCA as impaired. The Sauk River flows into the Mississippi which flows to the Gulf of Mexico.

The St. Cloud VA is protecting water resources by incorporating environmentally sound snow and ice control methods into its winter sidewalk, road, and parking lot maintenance program. The St. Cloud VA is using less salt and maintaining high safety standards to protect the environment and keep sidewalks, roads, and parking lots safe for staff, patients, and visitors.

Since 2011, all of Garage Operations employees have attended Winter Parking Lot and Sidewalk Maintenance Training and have become certified in snow and ice control best management practices. Employees have attended the training, passed the exam, and have agreed to apply best management practices to reduce chloride impacts. The St. Cloud VA also teaches best management practices training for small spaces to employees who volunteer to remove snow and ice on sidewalks, entryways, and steps during the snow season.

Facilities Management purchased a new salt spreader after the initial Winter Parking Lot and Sidewalk Training Class in 2011. The new spreader has allowed operators to use brine to pretreat paved surfaces before storms and allows for pre-wetting rock salt before it hits paved surfaces. The first year the new spreader was put into use the St. Cloud VA achieved a 50% reduction in rock salt use.

Salt is not just harmful to water resources it can also damage the facility's environmental surfaces. When salt gets tracked into buildings it damages tile, carpet and rugs, and creates dead weedy zones along the sides of sidewalks. Reducing salt use has helped to reduce the time and expense of fixing the facility's environmental surfaces and benefits the natural environment.

The St. Cloud VA Sustainable Snow and Ice Control Program can be easily replicated at other facilities and organizations. The cost of equipment and training were minimal compared to the benefits of the program. Replicating the project simply requires a commitment to sustainability, training support, and organizational leadership.

CURT PAPE – MINNESOTA DEPARTMENT OF TRANSPORTATION, INDIVIDUAL AWARD

Curt Pape was instrumental in bringing the Maintenance Decision Support System (MDSS), Mobile Data Computer (MDC) and Automated Vehicle Location (AVL) to MnDOT. This system provides real-time route specific information to the driver about weather and pavement condition and recommendations about how much salt to use to restore the bare driving lane condition in the time allowed by performance target. The system records the pavement and weather conditions, the recommendations, and the amount of salt actually applied to the road by the driver.

Over-application of deicing chemicals is unnecessary and expensive. It increases environmental impacts, and damages vehicles and infrastructure. Yet it is difficult to determine how much salt is needed. With the assistance of tools such as MDSS and AVL we can improve our accuracy and not jeopardize road safety.

The data demonstrates that use of MDSS to provide recommendations and AVL to collect data on plow driver chemical usage is a powerful tool; it provides drivers with data to help them apply salt more efficiently, delivers timely road condition information to the public, and helps MnDOT reduce salt use and save money.

The use of MDSS has shown promising results with a range of up to 50% salt savings. This technology is growing and changing fast and Curt has been instrumental in championing this tool for use in Minnesota.

“By optimizing the timing and selection of winter maintenance treatments, the MDSS can help Mn/DOT meet its desired level of service while using the minimum amounts of chemicals and resources.”

CITY OF WOODBURY

Mary Hurliman	Jim Snow
Tim Thurmes	John Robertson
Mike Wentlandt	Keith Retting
Brad Metcalf	Ron Peterson
Evan Sieben	Ryan Neuenfeldt
Justin Wolff	Alan Nelson
Adam Boland	Tim Meyenburg
Mitch Knack	Deb Goble
Jim Montgomery	Trent Brunn
Donald Waller	Greg Boche
Jim Thoren	Don Bergeron

The City of Woodbury Streets Division is taking a hard look at our practices and asking, “How can we more effectively and efficiently plow, with less salt use?” Our number one priority is maintaining safe, drivable roadways. Since we operate under high expectations, we balance this priority with many other concerns, such as:

- Public and crew Safety
- Weather Conditions
- Cost
- Environment
- Road priorities
- Professional Judgment
- Need for Adaptability

Efforts are underway to examine our practices with an eye towards salt reduction:

1. Council, staff and resident education
2. Quality equipment
3. Best practice maintenance
4. Continued examination of current practices and willingness to try new things

Council, staff, and resident education

We have been working hard to get the message out there that salt use causes irreversible damage to our lakes, ponds and ground water. We began this process by making our 2016-2017 performance measures goal to examine, "How can we more effectively and efficiently plow, using less salt?" Streets staff presented to the City Council in October of 2016, to adequately address concerns about safe roads, regarding this goal.

The November city newsletter featured 'Smart Salting' to start preparing residents for changes in practice. We will continue to reinforce this message with all resident contacts, regarding snow and ice.

We have been sharing the need for change with council, staff and residents:

- Eagle Valley Golf Course recycles stormwater to water the grass following storms, elevated chloride levels after winter salting prevents this activity, sometimes until June.
- Road salt has raised chloride levels to a concerning level in the South Washington Watershed District and others in the vicinity of Bailey Lake.

Improved equipment

- Our plow trucks are now equipped with road temperature and ambient air sensors that helps us determine what material to use and the application rate.
- We have started using and converting truck plows with a rubber blade that conforms to the road giving us a cleaner surface, using less material and reducing noise levels.
- Our trucks have computerized salter's that are ground speed orientated and are calibrated every year to make sure application rate is correct and at a minimum.

Best Practice Maintenance to reduce material use and protect the environment

- Our salt is stored in an enclosed facility.
- We understand salt alone is not effective unless road temperatures are 15 degrees or above and we supplement with Calcium Chloride for colder temperatures to jump start the melting process. It also helps lower salts effective working temperature and reduces rock salt bounce.

- We street sweep every spring and fall and have testing done looking for contamination.
- We reduced our spinner settings to get the greatest results for a safe roadway.
- We use a 90% salt – 10% sand when temperatures are below 15 degrees so there is some type of abrasives left on the road acting like sandpaper to the surface.
- We track our material, observe application rates for melting and share observations to improve operations and learn from each other.
- We have pre- and post-event meetings to evaluate our results and make adjustments.

Continued examination of current practices and willingness to try new things

2016 Anti-ice Unit: In order to combat these challenges and reach the goal of achieving safe roads with less salt use, the Streets division has purchased an *anti-icing* unit, with 30% of the cost covered by a Washington County watershed grant. The division will be testing the effectiveness of the anti-icing unit on typical problem areas, such as Lake Road and Tamarack bridges. Material will be put down before storms, and residents can expect to see what looks like water stripes on the pavement that will dry into white, salt residue stripes.

2017 Automated Vehicle Locator (AVL): The streets division is demoing AVL technology this winter. The purchase of AVL technology is budgeted in the 2018 Capital Improvement Plan.

2017 Rewrite of Snow and Ice Control Policy: With the recent release of the new Minnesota Model Snow and Ice Control policy and the number of changes the Woodbury Streets division are making to snow and ice control practices, we will be drafting a new and improved snow and ice control policy to replace our 2004 policy, for Council review in 2017.

Woodbury is proud to be on board with progressive winter maintenance and we will continue to work towards the improvement of our operations and the protection of our city's water resources.