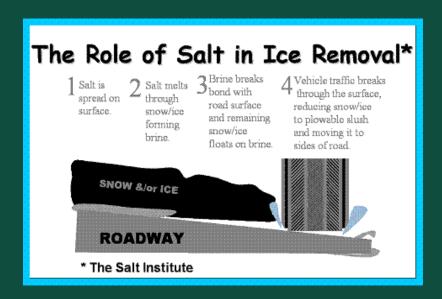
Use of Road Deicers

City of Greater Sudbury

Operations Committee *May 14th, 2018*



Road Deicing





 Deicing is the process of applying solids or liquids to a road to melt snow/ice



Municipal Comparison

- 12 Municipalities/agencies were polled
- All use road salt deicers
- Northern Municipalities use road salt and winter sand (similar to CGS)



Common Types of Road Deicers

- Sodium Chloride (most common)
- Calcium Chloride
- Calcium Magnesium Acetate
- Potassium Acetate
- Organic Compounds (sugar by=products)



Deicer Cost Comparison

Product	Cost per Tonne	Cost per Litre	Cost Magnitude as compared to Salt or Salt Brine
Salt (NaCl)	CAN \$90	-	-
CMA	US \$650	-	9 x Salt
CaCl ₂	CAN \$660	CAN \$0.26	7 x Salt
Salt Brine	-	CAN \$0.03	-
KAc	-	CAN \$2.95	11,375 x Salt Brine
Beet Juice		CAN \$0.65	21 x Salt Brine



Road Salt – Application Rates

- Road salt application rate
 60 –150 kg/2 lane km's
- Winter sand application rate
 100 310 kg/2 lane km's
- Salt application rate is reduced by 20% using salt brine (pre-wetting)



Current Winter Control Service Policy

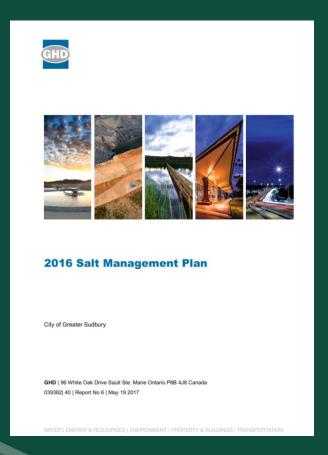
In 2005, BMA Management Consultants undertook an Internal Audit of Winter Maintenance Activities

Audit includes:

- Review existing practices
- Identify opportunities for efficiencies
- Review best management practices



Salt Management Plan (SMP)



Objective

"provide effective winter maintenance to ensure the safety of road users in keeping with applicable legislation and accepted standards while striving to minimize adverse impacts to the environment"



Realizing the Objective of the SMP

- Adhere to SMP procedures
- Comply with applicable laws & regulations
- Review & upgrade SMP periodically
- Staff training
- Annual monitoring



Operational Changes (due to SMP)



Notable Operational changes:

- Staff training
- Equipment calibration
- Onboard brine systems



Source Water Protection



- Improved monitoring of road salt activities
- Improved signage in source water protection areas
- Sand/salt storage & handling at various CGS depot operations



Risk Management Plan (RMP) Frobisher Depot





Risk Management Plan Assessment

Frobisher Depot 1800 Frobisher Street Sudbury, Ontario

City of Greater Sudbury

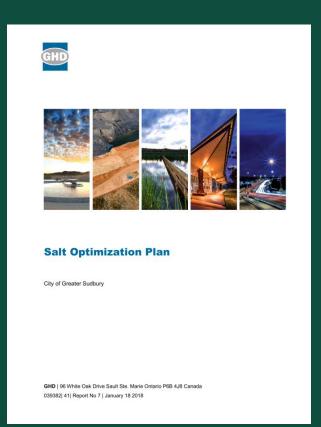
GHD | 96 White Oak Drive Sault Ste. Marie Ontario P6B 4J8 Canada 039382| 42 | Report No 8 | January 18 2018

WATER | ENERGY & RESOURCES | ENVIRONMENT | PROPERTY & BUILDINGS | TRANSPORTATION

- Frobisher site requires Risk Management Plan (RMP) for road salt handling & storage activities
- Assessment completed in 2017



Salt Optimization Plan



The Salt Optimization Plan was prepared to assess potential risk/vulnerability to environmental receptors with the application of road salt with the CGS road network.



Salt Vulnerability Index

- Source water protection (SWP)
- Wellhead protection (WHPAs)
- Intake protection zones (IPZs)
- Highly vulnerable aquifers
- Significant/sensitive groundwater recharge areas
- Lake trout & fish spawning areas
- Wetlands & provincially tracked species sensitive to salt application



Conclusion

- Continue to improve effective delivery of winter maintenance services
- Present alternatives & recommendations addressing Infrastructure facility needs, including construction of new sand/salt handling facilities



Questions

