

CHLORIDES AND ROAD MAINTENANCE

BACKGROUND

Planning for the proposed widening of I-93 from four to eight lanes resulted in discovery of chloride impairments in four corridor watersheds in 2006, completion of TMDLs in 2008, and salt reduction implementation plans in 2010. The detailed studies done in the I-93 corridor found that state roads contributed only 10 – 15% of the overall chloride load to impaired waters. The remaining sources were town roads, private roads and parking lots.

As of 2012, there were 46 chloride-impaired water bodies due to road salt statewide (DES, 2013). Since routine chloride sampling is not conducted statewide, DES analyzed data from the TMDL watersheds and determined that chloride impairments were likely to occur when average chloride concentrations exceed 102 mg/l, and that such levels are likely to be found in watersheds where developed land uses (buildings, pavement, and transportation) exceed 15% of the watershed area.

With the need to reduce salt application by as much as 45% in the I-93 watershed, the NH Department of Transportation lead the way in salt reduction BMP implementation, using liquid brine anti-icing, underbody plows, road weather information systems, and increased driver training. Many of these BMPs are now routinely used on other sections of state highways. In addition to training its own drivers, DOT now requires all contract drivers to be trained in salt reduction techniques.

As part of the I-93 expansion project, DES and DOT entered into a ten-year memorandum of agreement (MOA) focused on salt reduction in 2006. The MOA calls for DOT to achieve salt reductions commensurate with the TMDL-specified load reductions in order to comply with their permit to expand the highway to eight lanes. The MOA also established a Salt Reduction Work Group, consisting of the two state agencies, the Federal Highway Administration, the EPA, the University of New Hampshire Technology Transfer Center (UNH T2), and representatives of corridor municipalities, regional planning commissions, environmental groups, and private sector parking lot maintainers. The Work Group reviewed and approved TMDL implementation plans for three of the four impaired watersheds as well as revised sector allocations for salt loading. The TMDL for the fourth watershed, the North Tributary to Canobie Lake,



was recently revised to account for dissipation in loading from a historic salt brine groundwater discharge.

A key to success for salt reduction in the I-93 corridor and statewide has been the UNH T2 center. Building on their historic success in training municipal highway maintainers, UNH T2 created a voluntary training and certification program, called Green SnowPro, for all winter maintenance professionals, public and private. This was the first effort in the northeastern United States to organize professional training and certification of private salt applicators. Since 2011, UNH T2 has trained and certified over 300 salt applicators. Certified applicators learn how salt functions, how different weather conditions affect winter maintenance practices, how to calibrate different types of salt spreaders, how to make and use salt brine for anti-icing and pre-wetting of salt, and how to track salt use.

The Green SnowPro program is the model cited for legislation (RSA 489-C) passed in 2013 creating a voluntary salt applicator certification program and limiting liability for hazards caused by snow and ice. The law requires certified applicators to maintain event-based records and to submit annual reports relative to salt use and the amount of pavement maintained. Under the program, DES will adopt rules and manage the certification program. The annual reports will be used to track application rates, adjusted for weather severity, over time to measure the effects of the program.

MEASURES TO CONTROL NPS POLLUTION

- Salt Applicator Certification Option (RSA 489-C)
- DOT Salt Reduction Plan for I-93, see particularly Appendix A, <http://www.rebuildingi93.com/documents/DOT%20TMDL%20Chloride%20Implementation%20Plan-Sept%202009.pdf>.
- DES Salt Reduction Initiative, <http://des.nh.gov/organization/divisions/water/wmb/was/salt-reduction-initiative/index.htm>.
- UNH Technology Transfer Center Road Salt Reduction BMPs, <http://t2.unh.edu/salt-reduction-bmps>.

TABLE 11. CHLORIDE AND ROAD MAINTENANCE GOALS, OBJECTIVES, AND MILESTONES

Chloride and Road Maintenance (C) Goal. Reduce salt loading while maintaining the current level of services on public and private roads, driveways, sidewalks, and parking lots.							
Objective	Milestone	Measure of Success	Schedule				
			2015	2016	2017	2018	2019
Objective C-1 New Hampshire salt applicators are trained in winter road maintenance best management practices.	Milestone C-1.1 Salt applicators are trained in winter maintenance BMPs each year. <i>Partners: DES, UNH Technology Transfer Program</i>	Measure C-1.1 500 new salt applicators complete Green Snow Pro certification training within 5 years.					
	Milestone C-1.2 Salt applicators working at the Pease Tradeport are certified. <i>Partners: Hodgson Brook Advisory Committee, Pease Development Authority (PDA)</i>	Measure C-1.2 75% of salt applicators at the Pease Tradeport are certified.					
	Milestone C-1.3 Town of Durham and UNH implement winter maintenance BMPs. <i>Partners: Town of Durham, UNH</i>	Measure C-1.3 Salt reduction achieved by Durham and UNH in accordance with the College and Reservoir Brook Watershed-based Plans for chloride.					
Objective C-2 Increased understanding of the amount of road salt applied in New Hampshire.	Milestone C-2.1 Increase the number of salt applicators using the on-line salt accounting database. <i>Partners: UNH Technology Transfer Program</i>	Measure C-2.1a Incorporate salt use reporting into program rules.					
		Measure C-2.1b Reporting reminders sent annually.					
		Measure C-2.1c 80% of salt applicators submit annual reports.					
	Milestone C-2.2 Analyze salt use/salt loading data received from DOT and I-93 corridor towns and compare to TMDL sector allocation, adjusted for weather severity. <i>Partners: UNH Technology Transfer Program, NH Dept. of Transportation, I-93 Salt reduction Work Group</i>	Measure C-2.2 Complete report of salt use data annually.					

TABLE 11 (CONT). CHLORIDE AND ROAD MAINTENANCE GOALS, OBJECTIVES, AND MILESTONES

Objective	Milestone	Measure of Success	Schedule				
			2015	2016	2017	2018	2019
Objective C-3 Identify priority watersheds and develop Watershed-Based Plans for waters that are known to be impaired for chloride.	Milestone C-3.1 Develop and incorporate priority list of salt reduction watersheds in NPS Program Plan by reference. <i>Partners: DES Water Quality Section</i>	Measure C-3.1 Develop priority list of salt reduction watersheds.					
	Milestone C-3.2 Complete Watershed-Based Plans for chloride. <i>Partners: Hodgson Brook Advisory Committee, Pease Development Authority, City of Portsmouth, UNH Technology Transfer Center, UNH Facilities, Town of Durham, others TBD</i>	Measure C-3.2 Two completed Watershed-Based Plans for chloride in Priority watersheds.					