



THE SOURCE



NEWSLETTER OF THE NHDES DRINKING WATER SOURCE PROTECTION PROGRAM
ON THE WEB AT WWW.DES.NH.GOV

WINTER 2010

Economical and Environmentally-Friendly Winter Maintenance Techniques

By Pat Santoso, UNH Technology Transfer Center

While road salt is currently the least expensive and most effective option to keep roads clear of ice, the storage and use of road salt can cause significant impacts to water quality. Good winter road maintenance plans and certain changes to plowing and salting operations can reduce the total amount of salt necessary to maintain public safety and minimize the associated impacts to ground and surface water. The use of salt for deicing is reflected in data collected from lakes and ponds in New Hampshire, where levels of conductivity, sodium and chloride have been rising over the past 30 years. These increases have been greatest in urban ponds and ponds near major roads and highways. Salt above the secondary maximum contaminant level (250 mg/L) of either sodium or chloride can be expected to give water a salty taste, while elevated levels of sodium (over 20 mg/L) can present a health issue for people on salt-restricted diets. Vegetation and aquatic life can be negatively affected at chloride concentrations of 230 mg/L (about 1 tablespoon of chlorides in 5 gallons of water). Fortunately, there are practical ways for municipal highway departments to maintain roads during winter storms while using less salt.

Before Winter: Develop a winter maintenance plan that outlines the local approach to maintaining roads during storm events. The plan should include details that help ensure efficient winter maintenance operations, such as guidelines for salt application rates, schedules for equipment calibration and inspection, requirements for staff training, and recordkeeping, e.g., sand and salt purchased/used, accidents, route details. Regular calibration and inspection of equipment ensures that the correct amount of material is dispensed, improving consistency and avoiding waste. Training is also essential for keeping staff abreast of new best practices and providing a refresher before the winter season. Plans may include maps of sensitive resource areas, e.g., wellhead protection

areas, surface water where lower or no salt options may be possible to minimize impacts to water resources.

Before the Storm: Anti-icing is a proactive and cost effective approach designed to prevent snow and ice from bonding to the pavement. Typically anti-icing requires one-quarter the material at one-tenth the overall cost of deicing (removing ice already bonded to road surfaces). Pre-treating (treating the salt stockpile with liquid deicing chemical) and pre-wetting (adding liquid to the salt as it is being applied) are both excellent ways of reducing salt usage by up to 30 percent. Unlike pre-wetting, pre-treating does not require equipment changes and can be a good first step to reducing salt usage. Both methods reduce bounce and scatter by causing salt to stick to the road, as well as increasing effectiveness by jump starting the melting process.

During the Storm: Plowing snow and ice before applying deicing chemicals improves the efficiency of the chemicals and avoids dilution. Deicing should not melt all the snow and ice on the road, rather just loosen the pavement-ice bond so that it can be plowed off.

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Merrimack DPW's Reduced Salt Policy

According to Kyle Foxx, operations manager for the Merrimack DPW, beginning in 1984, the town adopted policies to reduce salt application on roads near the Pennichuck and Merrimack Village District water supplies. Merrimack has established "no salt" and "limited salt" routes, limiting salt application to approximately one-third of all town-maintained roads. The DPW pre-wets salt with calcium chloride and takes other actions, such as proper calibration of salt spreaders and regular monitoring of road surface temperature and icing conditions to minimize its use of salt. •



Spotlight on ... Belmont, Northfield and Tilton Regional Aquifer Collaboration Results in Multi-Town Zoning Proposals for 2010

By Erica Anderson, AICP, Senior Planner,
Lakes Regional Planning Commission

This September, residents of Belmont, Northfield and Tilton completed a multi-town collaborative effort to draft aquifer protection zoning ordinances with a more consistent level of protection for the area's largest stratified-drift aquifer, referred to as the "tri-town aquifer." Within these communities, the tri-town aquifer is a source of drinking water for most residents and, if protected, has the potential to serve greater community water supply demands in the future. The aquifer overlaps with several key commercially developed areas.

This project's work will be an important step to protect this shared resource while allowing for future commercial development.

Concerted efforts to protect the tri-town aquifer began in 2002 with a DES Local Source Water Protection Grant to the Lakes Regional Planning Commission (LRPC). At that time, all three towns were experiencing considerable growth pressures in commercial/industrial zoned areas that overlie important water resources. The LRPC worked with residents from the three communities to summarize land use data, identify and rank potential aquifer threats, and recommend actions to further protect the aquifer. This initial effort resulted in a comprehensive regional aquifer protection plan titled *Protecting Shared Drinking Water Resources* (December 2003).

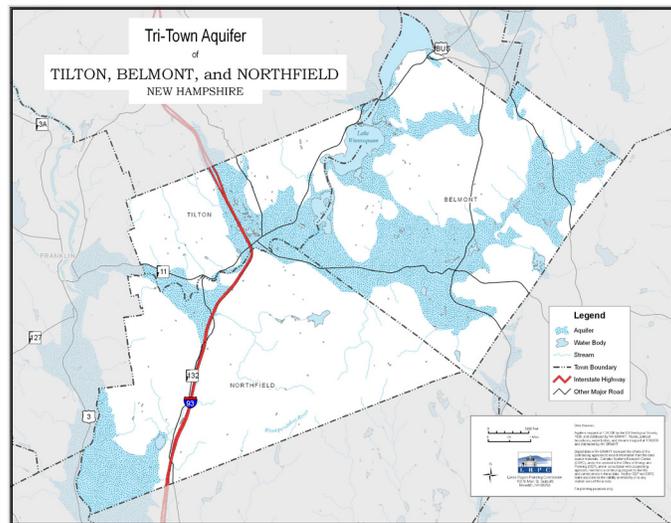
The partnership between LRPC and the communities continued with the implementation of several other priority recommendations identified in the 2003 report, including the development of a *Best Management Practice Guidebook* (2006), a resource guide for community planners to identify best management practices for regulated substances (e.g., oil, gas), and for other specific activities that pose a potential risk to the shared aquifer.

The priority recommendation from the 2003 tri-town aquifer plan was to adopt an aquifer protection ordinance within each town. Using DES's *Model*

Groundwater Protection Ordinance (2006), water district managers, municipal staff, board members and citizens from each town participated as members of a tri-town committee to consider language to incorporate into each town's zoning ordinance. If accepted by the voters in the spring, all three towns will provide similar levels of aquifer protection.

This regional collaborative to make aquifer protection consistent across community boundaries is unique and innovative. This collaborative reflects

that the tri-town aquifer does not fit neatly within any one town's boundary and highlights that it is prudent to work together to protect the long-term viability of shared drinking water resources. The tri-town aquifer project now serves as a catalyst for regional groundwater protection throughout the Lakes Region and elsewhere. This is due, in large part, to the dedication of the community representatives. •



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29 Hazen Drive
PO Box 95
Concord, NH
03302-0095
(603) 271-3503

Commissioner	Thomas S. Burack
Asst. Commissioner	Michael J. Walls
Division Director	Harry T. Stewart
Bureau Administrator	Sarah Pillsbury
Program Manager	Paul Susca
Editors	Pierce Rigrod Holly Green

To subscribe, contact Pierce Rigrod
at (603) 271-0688 or
pierce.rigrod@des.nh.gov
www.des.nh.gov

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Rock Blasting and the Municipal Role in Protecting Groundwater

DES is concerned with preventing, detecting and mitigating adverse impacts on groundwater and water supplies related to rock blasting, such as the release of nitrates, nitrites and volatile organic compounds. The detection of nitrate and nitrite in drinking water supplies above health based standards (maximum contaminant levels) is of significant concern because short-term exposure to nitrate and nitrite in groundwater above these standards can quickly result in adverse health effects to certain populations.

According to the annual *Minerals Year Book*, published by the U.S. Geological Survey, the use of explosives in New Hampshire has increased by 400 percent from 1994 through 2007. The increase in the use of explosives is likely due to land development trends, a lack of remaining suitable building sites in the southern part of the state, and the development of mobile rock crushing technology. Increased use of explosives

in developed areas, coupled with over 200,000 drinking water supply wells in New Hampshire, increases the importance of implementing measures to protect drinking water sources.

In July 2009, DES issued a second draft of a document titled "Potential Impacts of Blasting Related Activities on Water Resources and Measures that Can Be Implemented to Prevent or Mitigate These Impacts." This document includes a summary of potential impacts that may occur to water resources. It also describes best management practices to prevent, detect or mitigate these impacts, as well as the legal authority for municipalities or the state to regulate blasting relative to the protection of water resources.

DES conducted a public meeting on August 17, 2009, to discuss the document and accepted written comments through August 24, 2009. A revised draft of the document will be issued by the printing of this newsletter and additional public comments will again be solicited. Please contact Brandon Kernen at (603) 271-0660 or brandon.kernen@des.nh.gov if you would like more information on this initiative. •

Be Proactive - Protect Your Source Through Reclassification

The greatest threat to groundwater is the mismanagement of activities on the land surface. To reduce this threat, communities and water suppliers should take a proactive approach to increase public awareness and implement best management practices that minimize the release of contaminants to groundwater. In 1991, the legislature established groundwater "classifications" applicable to all groundwater in the state. The statute establishes a process to "reclassify" and further protect certain areas that contribute recharge to public water supplies, e.g., wellhead protection areas, aquifers, or other defined areas of high value for present or future drinking water supplies.

Under RSA 485-C, a local entity, such as municipality or water supplier, can apply to DES to reclassify a community wellhead protection area, an aquifer, watershed or an entire town. The statute establishes a GAA classification designed for current wellhead protection areas surrounding community wells as the "most protected" classification and GA1 for "high value" groundwater, such as an aquifer. GAA and GA1 classifications require additional DES permitting and groundwater quality monitoring for certain high risk uses. Within GAA classified areas, six high-risk land uses are prohibited. GAA and GA1 classifications involve local water system or municipal officials in regularly (at least once every three years) providing

information to potential contamination sources about the state's best management practices requirements and conducting on-site BMP surveys/inspections to ensure compliance. GAA or GA1 reclassifications provide consistent protection within delineated wellhead protection areas or aquifers that cross municipal boundaries.

Groundwater reclassification programs have raised community awareness about drinking water source protection and the necessity to prevent activities that could harm public health, impact groundwater quality and limit the value of local water supply resources. To obtain an application or guidance, or find communities or water districts that have adopted a reclassification program, contact Pierce Rigrod at DES at (603) 271-0688 or pierce.rigrod@des.nh.gov, or visit www.des.nh.gov, click on "A to Z List" and select "Groundwater Reclassification Program." •

View the 2009 DES Annual Report on the DES website.
www.des.nh.gov
Look under "What's New."

Source Water Protection Strategy Update

The revision of DES's Source Water Protection Strategy is close to wrapping up.

The private well working group reported its recommendations to the Groundwater Commission, which voted in November to introduce legislation to implement the private well testing recommendation. The legislation (HB 1685) would require water quality testing of new, deepened or hydrofractured private wells and testing of wells prior to real estate transfer unless the buyer "opts out."

The surface water working group adopted a set of action items, including identifying key players who can champion watershed planning efforts, working through the DES Watershed Management Bureau's anti-degradation program to protect water supply sources, and looking for opportunities to refine DES's Alteration of Terrain and Shoreland Protection rules to lock in protection of undisturbed areas.

To complete the strategy update, a draft outreach and education plan is currently being reviewed by an advisory committee. The Groundwater Commission has produced its 2009 annual report, which will serve as the groundwater portion of the Source Water Protection Strategy update.

For more information on the Source Water Protection Strategy update, visit www.des.nh.gov, click on "A to Z List" and select "Source Water Protection Strategy." •

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Deicing is reactive and costs more than anti-icing in terms of equipment, materials, time and environmental damage. The most effective application of chemicals varies with pavement temperature; generally, less salt is required when the temperature is rising and more when it is falling.

While a number of state initiatives are underway to address the increasing impacts associated with salt applications to parking lots and roads, better planning and a proactive approach to maintaining roads during winter storms can minimize the operational costs and the environmental impacts. The Road Scholar Program at UNH's Technology Transfer Center offers training and certification for local road managers, with a workshop on winter maintenance operations planned for March 25, 2010. For more information, visit the Technology Transfer Center website at www.t2.unh.edu/. •

Sampling Grace Period - No More

Effective January 1, the DWGB is no longer accepting sample results collected after your scheduled compliance period ends. Historically, when systems have not sampled in their assigned month/quarter/period, the DWGB allowed a grace period of seven days before or after the assigned compliance period to accept samples. EPA does not allow this and, in fact, has criticized us in audits. You may sample before your compliance period only if you are on an annual or triennial schedule for that contaminant. Please plan accordingly; monitoring/reporting violations will be issued that may require public notice by the water system. •

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