



Autumn leaf litter in gutters and salt from winter deicing compounds both contribute to waterway pollution. Some straightforward practices can help to minimize both sources.

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LETTER FROM THE PRESIDENT

Dave Gorman

The DRSCW has a hard-working Chlorides Committee comprised of representatives of the Illinois State Toll Highway Authority, the Illinois Department of Transportation, the DuPage County Division of Transportation, and a few municipalities. We are proud of the annual Deicing Workshops that we've held since 2008. Over these 14 years, hundreds of attendees have learned the best management practices for smart salting and that a successful program starts with a clearly stated and intentional level of service policy.

It used to be common practice to just spread as much salt as possible during an ice or snow event with the simple goal of obtaining and maintaining black pavement. Indiscriminate operational practices produced unrealistic expectations, wasted salt supplies, wore out employees, damaged parkways, and polluted waterways. There was so much room for improvement.

Defining the desired levels of service based on your judgement of what is prudent, affordable, and realistic allows public agencies to work toward and increasingly succeed in meeting goals. As experience builds with each passing event, ask yourself: Do you have well defined levels

of service objectives clearly stated in your Snow Plan? Are they communicated to your citizens before and during snow responses? Do they differ between arterials, collectors, local roads, and cul-de-sacs? Is the expectation the same at 3AM as at 5PM? How thin do your ranks become when the operation extends over multiple days, and other priorities such as water main breaks and other emergencies need to be addressed?

By measuring our in-stream water chemistry over many years, we've come to better understand the ecological benefits of better salt management. Road salt is indeed a serious stressor to aquatic life, and it plays a significant role in holding us back from meeting our obligations under the Clean Water Act. The managers and drivers that have attended our workshops better understand the impact of their winter operations, and they are more empowered to contribute ideas on how to adjust operations to meet the simultaneous public goals of safe roads, controlled costs, continuity of operations, and environmental stewardship. Thank you for your membership, and I wish you all a safe and smart start to your winter operations.

NPS STUDY — RECOMMENDATIONS

DRSCW Staff

With assistance from DuPage County Stormwater Management and Baxter and Woodman Engineering, the DRSCW and the Lower DuPage River Watershed Coalition (LDRWC) have completed a non-point source (NPS) phosphorus reduction analysis. This analysis sought to quantify phosphorous capture by current street sweeping and leaf litter removal practices, and then make recommendations on how such practices might be expanded or optimized. The study covered the watersheds of the DuPage River (West Branch, East Branch, and Main Stem) and Salt Creek (see Figure 1 below).

Using data gathered from 95 agencies and the Minnesota Pollution Control Agency Street Sweeping Credit Calculator, it was estimated that between 6,870 and 12,021 lbs. of phosphorous are captured annually via street sweeping. This value is based on the 25th-50th percentiles from the Calculator, giving us a conservative but realistic estimate. While that’s quite a bit, it only represents between 0.6% and 1% of the approximated 1,129,419 lbs. per year released from publicly owned treatment plants (based on 2019 figures). As such, it’s clear that the lion’s share of future reductions will have to occur

at waste water treatment plants.

Since most agencies already sweep streets and perform leaf litter pickup, it is clear that there is not a need to fill a void of these practices. Rather, this analysis and supporting studies do suggest a number of ways that more phosphorous may be captured with slight changes to the existing practices. So far, no attempt has yet been made to set reduction goals by these recommendations. However, they are listed here in an approximate descending order of importance. It should be noted that changing the seasonal frequency of street sweeping may capture more phosphorous but may also diminish the capture of other pollutants:

USGS and other studies show the majority of phosphorous in stormwater is produced by rain falling on leaf litter accumulated in the street (or other impervious surfaces). They also show that large decreases in stormwater phosphorus can be achieved via management actions (Figure 2). Increasing street sweeping frequency in the Fall, especially immediately after leaf collection would increase TP capture. Increased Fall frequency could be offset by reduced sweeping frequency during the Summer months, when less leaf litter is present.

A second, smaller influx of phosphorus is observed in the Spring. Increased Spring street sweeping will help remove high phosphorus organic material before it is leached by Spring rains. Again, increased Spring frequency could be offset by reduced sweeping frequency during the Summer months when less leaf litter is present.

The study also produced a high-resolution GIS canopy cover database to determine areas of the watershed with high effective canopy cover (areas with a relatively high percentage of right-of-way overlaid with canopy cover). Agencies can use this information to prioritize areas with high effective canopy cover for additional street sweeping and leaf litter removal in Spring and Fall and reduce frequency in areas with low effective canopy cover.

Many agencies utilize weather forecasting for winter deicing operations, and a similar system could be used for leaf collection and street sweeping in order to clear organic material before rainstorms. This can also help keep storm drains clear and minimize local ponding issues in streets.

The Nonpoint Source Phosphorus Reduction Feasibility Analysis is a permit condition of the Nutrient Implementation Plan, which is due to the Illinois EPA as part of our NPDES permit special condition in 2023. The full report and data can be found at the DRSCW website at www.drscw.org/activities/project-identification-and-prioritization-system/

All DRSCW members are encouraged to share DuPage County Stormwater Management’s guidance for citizens regarding leaf litter. Find their videos and brochure at www.drscw.org/activities/nutrient-management

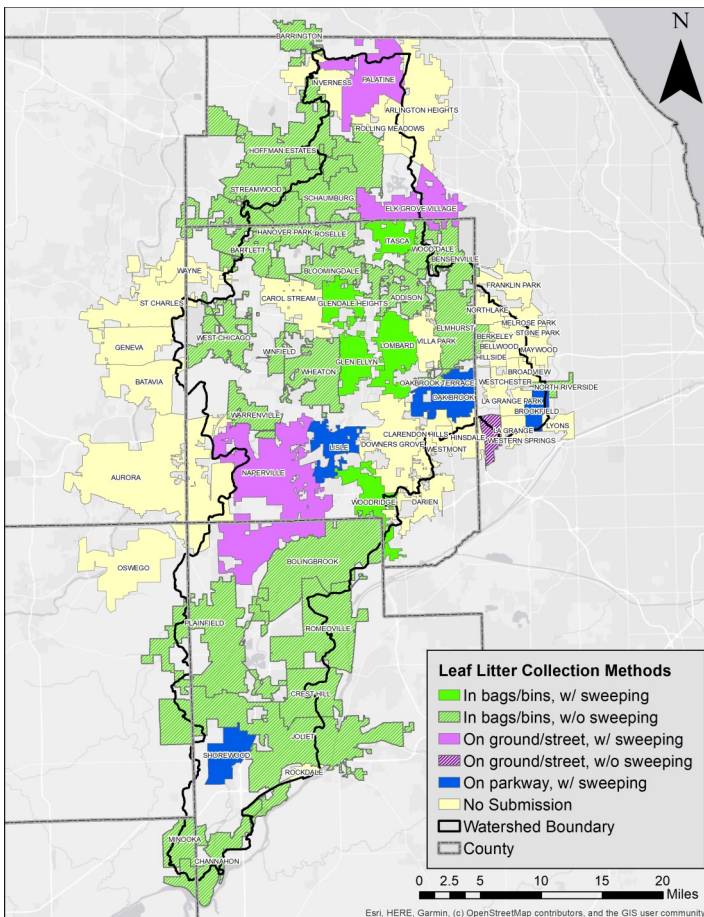


Figure 1. Map of municipalities within the NPS study area. Green shading indicates agencies that collect leaves in bins or bags. Purple shading indicates leaves are collected from the street. Blue shading indicates collection from the parkway. Solid areas undergo street sweeping after collection and hatched areas do not. Yellow shading indicates no data.

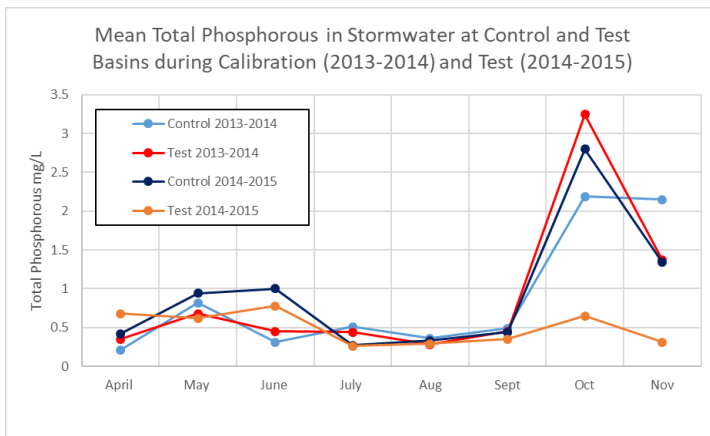


Figure 2. Total Phosphorus (TP) concentrations in two basins in Wisconsin over 2 years. Basin 1 (Control) shows elevated phosphorus in the fall for both years. Basin 2 (Test) shows elevated TP in the fall when no treatment is performed and shows over an 80% reduction in TP when stringent leaf removal practices are applied. (Selbig, W. R. (2016). Evaluation of leaf removal as a means to reduce nutrient concentrations and loads in urban stormwater. *Science of the Total Environment*, 571, 124-133.)

LEVELS OF SERVICE IN WINTER MAINTENANCE

Dr Wilf Nixon, *President, Professional Snowfighters Association*

What exactly do we mean when we talk about levels of service in winter maintenance? How do they influence the winter maintenance operations conducted by our public works agencies?

Levels of service answers the problem “if you don’t know where you’re going, you’ll end up somewhere else.” Our levels of service should spell out what we want our winter maintenance operations to achieve. However, they need to be grounded in reality—what is suitable for a regular winter storm is likely unrealistic in the face of a blizzard dropping two feet of snow or a two-inch ice storm!

Who should set those levels of service?

Well, they should reflect the will of the people being served by the agency, which means, typically, that they should be set by elected officials. There are of course some constraints. I may declare personally that henceforth I shall only drive exotic supercars, but if my budget is more “used clunker,” then my declarations are meaningless. So too with levels of service—they must reflect our available resources, in terms of budget, equipment, and personnel. So, our levels of service are appropriately set by our elected officials in the context of the constraints that impact our agency.

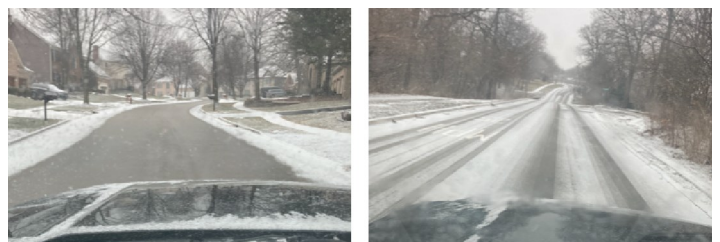
Related to this, the levels of service that we choose are also going to have impacts. “Higher” levels of service will not only consume more resources (equipment, materials, personnel), but will amplify environmental impacts. Every grain of salt and drop of brine that comes out of the back of the truck is in the environment, and only leaves the environment over time. Unlike most other pollutants, salt does not break down in the environment—it’s with us until it physically leaves, down river into the ocean (and that time is a long time!).

What is the right level of service for a community?

There are lots of different opinions on that, and the answer differs in different parts of the U.S. For example, in some parts of the front range in Colorado, they do not even plow residential streets unless a storm drops more than 6 inches of snow! That may not work in your community. Elsewhere, major roads (arterials and the like) must be cleared from curb to curb, but residential streets may only need bare wheel tracks or may even just be plowed (leaving some snow behind over the whole road). It is generally a good idea to vary the level of service according to the traffic level on a given street or road. This might result in different end goals (so busy streets must be “bare and wet” while less busy might only need “bare wheel tracks”) or in different times to achieve the same end goals. (So if the end goal is “bare and wet,” then the time to achieve for busy streets is 6 hours after the end of a storm, while for less busy streets that time might be as long as 48 hours). Deciding on what is right for your community should involve a good deal of discussion and then a firm, and clearly articulated, decision.

Once the decision is made, it needs to be “kept.”

There is no point in having levels of service if the first time somebody complains about their street you send a plow out to deal with it, even if the appropriate level of service has been achieved. Put another way, it is not just a one-time decision, but rather an ongoing management tool to allow your agency to conduct winter operations in the most appropriate way for your community. It is a good tool when used properly!



Do your actual levels of service match the needs of the road? (Image courtesy of Woodridge Public Works, road treated with anti-icing (left) versus untreated road (right), winter 2021-22).

2022 DEICING WORKSHOPS

The 2022 deicing workshops were held once again as online webinars. Planning and outreach was coordinated by Lake County and The Conservation Foundation staff while Bolton Menk (formerly Fortin) handled the presentations. Data collected from the workshop surveys indicated that at least 906 individuals attended, with 644 at Public Roads and 262 at Parking Lot & Sidewalks workshops. Three quarters of the survey respondents indicated that the online format was the same or better than in-person workshops.

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DuPage River Salt Creek Workgroup

105404 Knoch Knolls Road

Naperville, IL 60565