

From Shore to Shore

A publication of the University of Minnesota Extension
Water Resources Team

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Protect the Environment, Human Health AND Your Pocket Book

A compliant septic system that is properly operated and maintained can protect the environment, human health and the system owner's financial investment. The University of Minnesota Extension offers classes that help septic system owners achieve those goals.

A properly designed, installed and maintained septic system can last for 20, 30, or more years. During that time, the system effectively removes or stores nutrients such as nitrogen and phosphorus, which can cause water quality issues in lakes, rivers and streams. The system also treats pathogens such as bacteria, virus and protozoa that can cause health problems for humans.

Septic systems, often referred to as soil-based treatment systems, can range in cost from \$7,000 to several tens of thousands of dollars. These systems are simple machines that perform work for the system owners. Like other machines, septic systems require routine maintenance to keep the system properly treating wastewater and protecting homeowners' investment.

The University of Minnesota Watershed Education Program offers Homeowner Operation and Maintenance Education (HOME) classes for septic system owners. These 90-minute HOME classes explore several types of septic systems, components of a compliant septic system, how system components work together. The classes also review daily and periodic maintenance measures to keep septic systems operating properly for effective sewage treatment.

Generally, HOME classes are sponsored by local lake associations, water districts, counties and other groups concerned with preserving or improving water quality in their area. Classes draw 20 – 80 participants and are held in the evening or on a Saturday.

If you are interested in holding one of these classes in your area please call Doug Malchow, University of Minnesota Extension Educator, in Rochester, toll free at 888-241-4536 or e-mail at malch002@umn.edu. ■



Calendar of Events

For the most current calendar items and more details, visit www1.extension.umn.edu/environment/water/

Meeting Clean Water Goals for Sherburne County

Date: Thursday, October 24; 5:30 - 9 p.m.

Location: Elk River, MN

Contact: Tiffany Determan, tdeterman@sherburneswcd.org, 763-241-1170 ext. 3

Preparing Minnesota for Climate Change: A Conference on Climate Adaptation

Date: Thursday, Nov. 7; 9 a.m. - 5:30 p.m.

Location: St. Paul, MN

Website: <http://wrc.umn.edu/news/PreparingMinnesotaforClimateChangeAConferenceonClimateAdaptation>

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Watershed Specialist Training Now in Session!



The new Minnesota Watershed Specialist Training is now in session! This course, developed under the leadership of the University of Minnesota Water Resources Center, is designed to help water resources professionals build their skills and knowledge for developing, updating and implementing a water resource plan. By the end of the 14-week online course, participants will:

- Have a deeper appreciation of water and land as an integrated system, and a better understanding of how to address water issues from a systems perspective;
- Understand the structure of policy and institutions related to water management in Minnesota;
- Expand their knowledge of tools useful in supporting their work;
- Expand their skills for leading a watershed community, including communication skills and approaches to engaging the community;
- Understand the fundamentals of water resource science, and appreciate the need to integrate science from multiple disciplines;
- Be able to use a systems approach to gather information that supports decision-making, including clarifying project goals, identifying

needed information, and integrating diverse physical and social information from varied sources;

- Be methodical and explicit with processes that lead to project outcomes, including writing work plans, and selecting implementation activities;
- Expand their long-term network of colleagues; and
- Have a personalized plan for future professional development.

The pilot course began on September 3 and runs through December 8. It is covering wide-reaching topics including Policy and Institutions; Watershed Science; Civic Engagement; Assessment, Monitoring and Evaluation; Communication; Implementation Activities; and Implementation and Follow-through. Participants in the pilot session include Soil and Water Conservation District staff, a DNR Hydrologist, watershed district staff, graduate students, county water planners, and a city engineer.

This interactive course is completely online, using the Moodle platform. Students have weekly assignments, including prep work (such as required readings and short videos) followed by discussion forums and assignments to post online. Students are also frequently required to respond to what

others have posted, which generates discussion and enables students to get to know each others' professional strengths and expertise. It is expected that students will dedicate 6-8 hours per week to the course. Since learning and assignments are all computer based, no time or other resources need to be spent on travel.

Funding for course development was through a grant from the Clean Water Act Section 319 Nonpoint Program. The second class, for which tuition is \$800, is already scheduled for spring semester (January 21 through May 9, 2014). For more information, visit <http://z.umn.edu/wst>.

As resource agencies and organizations throughout Minnesota move to a broader watershed-based approach to improving and protecting our precious waters, it is critical to 'speak the same language'. Whether training participants are early in their careers or well down the road, they will benefit from the new skills, knowledge and network of colleagues built by the Watershed Specialist Training Program. Cleaner water throughout Minnesota is the likely outcome of this innovative program, and that is something that everyone supports. ■

Street Cleaning – Street Sweeping

Portions reprinted with permission. Contributed by Paula Kalinosky (graduate research assistant) and Lawrence A. Baker, Bioproducts and Biosystems Engineering University of Minnesota; Sarah Hobbie, Department of Ecology, Evolution, and Behavior, University of Minnesota; and Ross Bintner, City of Edina, Minnesota.

The research team listed above has been studying the impacts of pollution from streets in communities – impervious pathways to many of our water resources. Unless properly cleaned (via street sweeping), streets can be a conduit that carries pollutants to your community's lakes, streams, and rivers. Here are a few excerpts from the study, Quantifying Nutrient Removal through Targeted Intensive Street Sweeping.

Urban watersheds face unique concerns, not the least of which is nutrient management, and it is quite possible we have been underestimating one key component relating to urban water quality. Coarse organic debris (e.g., leaves, grass clippings) that finds its way onto streets can leach nutrients into stormwater runoff, and eventually make its way into storm sewers, unless removed by sweeping. Once in storm sewers, this material can accumulate in catch basins and pipes, or be transported into streams, lakes, and rivers, releasing nutrients along the way as it decomposes. The first step in managing this source of nutrients to stormwater is to quantify the magnitude of the problem.

In 2010, the City of Prior Lake partnered with the University of Minnesota in a street sweeping study to address nutrient management. The main objectives of the study were to measure the total amount of sediment and associated nutrients removed by street sweeping and to quantify the influence of the tree canopy on the character and quantity of sediments found on the street. Over two-years beginning in August 2010, street sweeping operations were conducted in nine study routes classified as having “high”, “medium”, or “low” tree canopy cover.



Stormwater runoff from curbs and gutters along streets carry sediment, debris, and other pollutants directly to storm sewers. Frequently, urban stormwater flows untreated to receiving waters.

A brief synopsis of some of the findings:

- Coarse organic material made up 15% of the total dry weight of swept material collected during the study, but 36% of the total phosphorus (TP) and 71% of the total nitrogen (TN).
- Excessive amounts of phosphorus in surface waters can lead to undesired excessive algae growths.
- The amount of material on streets followed a seasonal pattern. During the fall (Sept – Oct), coarse organics accounted for 36% of solids, 60% of TP, and 80% of TN.
- The dry solids and nutrient loads generally increased with tree canopy cover and sweeping frequency.

- Material loading patterns indicated a build-up rate of roughly 10 days, such that sweeping at higher frequencies increased the total amount of material recovered, but at diminishing returns on a per sweeping event-basis.
- Total solids collected increased with tree canopy at any given sweeping frequency.

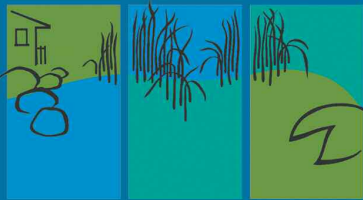
Sweeping was most cost effective in the spring and fall when targeted sweeping operations were applied. On the whole, targeted sweeping appears to be a cost-effective strategy for nutrient reduction when compared to treatment ponds, where costs are generally higher. (The average cost was below \$100/lb of phosphorus removed in medium and high canopy areas during the month of October (peak leaf drop) and similarly cost effective for the first sweeping events in early spring).

What does this mean for you? Clean streets mean cleaner water. Municipal operations such as street sweeping, while often thought of as a cosmetic practice, really act as pollution prevention measures.

What's next? Education and training workshops and a guidance manual will soon be available for municipal staff. For more details about the research project or to read a recent full length article about the study, visit <http://stormwater.safl.umn.edu/updates-march-2013>. ■

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www.shorelandmanagement.org

A publication of the Water Resources Team, dedicated to educating Minnesota citizens about water resources issues to improve water quality, habitat, and aesthetics of our lakes and rivers.

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SNAPSHOTS: Water Resources Team Programming and Research - Recent Past and Upcoming Efforts

Past Events

The International Low Impact Development Symposium, August 18-21, drew more than 800 stormwater professionals to St. Paul. Twelve concurrent sessions focused on green roofs, urban retrofits, regulatory successes, cost/benefit data on forested buffers, sustainable housing materials, sediment load reduction in watersheds, and more. Roughly 300 presentations were delivered.

The Green Infrastructure for Clean Water - The Essential Role of People!, was held at the Minnesota Landscape Arboretum on September 12. This event focused on how people can affect water, with featured presentations addressing personal motivation, the influence of social connections on our behavior, and the capacity of both individuals and communities to engage in green infrastructure planning, policies, and practices. Participants learned about tools and techniques that can lead a variety of audiences to action, and left with a clearer understanding of ways to achieve clean water in communities by engaging people in green infrastructure processes. More information is available at <http://arboretum.umn.edu/2013CleanWaterSummit.aspx>.

Upcoming Events

Climate Change and Stormwater Adaptation - Team members are already incorporating content into Extension programming and continue to participate in professional development to expand the depth of knowledge. For example,

- Stormwater Management in a Changing Environment - NEMO workshops and presentations in the Minnehaha Creek Watershed; various dates (see our calendar at www1.extension.umn.edu/environment/water/)

- National Climate Change Initiative - Cloquet, October 28-31; for Extension professionals nationwide.
- Preparing Minnesota for Climate Change: A Conference on Climate Adaptation - Thursday, November 7, St. Paul; <http://wrc.umn.edu/news/PreparingMinnesotaforClimateChangeAConferenceonClimateAdaptation>.

Minnesota Minimal Impact Design Standards (MIDS) - Stormwater -

Extension WRT members are playing an integral role in education and training across Minnesota on the new performance goals, best management practices (BMP) credit calculator, and new model ordinances for clean water. Presentations and workshops will be held with the League of Minnesota Cities (June), Low Impact Development Symposium (August), the Minnesota Chapter of the American Planners Conference (September), and BMP Calculator training (November). More about MIDS at www.pca.state.mn.us/index.php/water/water-types-and-programs/stormwater/stormwater-minimal-impact-design-standards-mids.html

Partnerships

The WRT is partnering with University of Minnesota Extension Leadership and Civic Engagement, Valley City State University, North Dakota State University, and the International Water Institute to study water resources-related education efforts in the Red River of the North Basin. The study is seeking input from a list of over 300 stakeholders to document past and current water-related education in the Basin as well as to identify education gaps. Understanding what types of education are available and what is missing will create opportunities for educators, learners, and funders to work together to provide effective and efficient education throughout the Red River Valley. ■