

THE LITTLE DIGGER

MINNESOTA ONSITE WASTEWATER ASSOCIATION

A Bi-Monthly Publication

Fall 2019 - Vol. 34, Issue 4



2019 Summer Seminar Delivers!

Despite the heat, close to 50 MOWA members and supporters gathered in Jordan Friday, July 12th for a Soils Continuing Education and Member Appreciation Cookout.

Thanks to Scott County for hosting the event. The six hour Soil CEU training and the *Disturbed Soils, Testing and Design Alternatives Demo* were held at the SCALE Regional Public Safety Training Facility. The 4th Annual Cookout followed by a Bean Bag Tournament were held at Lagoon Park in Jordan.

For more photos and information from another successful Summer Seminar training, go to Pages 4-5. ■

MPCA develops guidance on SSTS soils verification for LGUs and Inspectors

The topic of soil/separation verification requirements for LGUs and/or inspectors when inspecting new or existing SSTS systems has come up often, including during SSTS Talking Tours hosted by the MPCA across the state the past few years.

The issue often raised is this: *When can an inspector complete a compliance inspection of an existing SSTS system without conducting a soil observation?* Or, in other words, what constitutes acceptable "prior documentation" when conducting an existing system compliance inspection?

There is a related question as well, and that is: *Going forward, what process (actions, documentation, etc.) should LGUs and inspectors follow when inspecting newly installed systems to ensure that adequate prior documentation will be available during future compliance inspections?*

The MPCA has developed guidance information to help answer these questions and provide LGUs and inspectors with a process to follow in both situations. This is not a new policy, nor a new rule. ■

For this article and more news from MPCA, check out the SSTS Bulletin! <https://www.pca.state.mn.us/water/ssts-bulletin-newsletter>

Tony Ruppert Memorial Scholarship Fund Awards 10 First-Place Awards

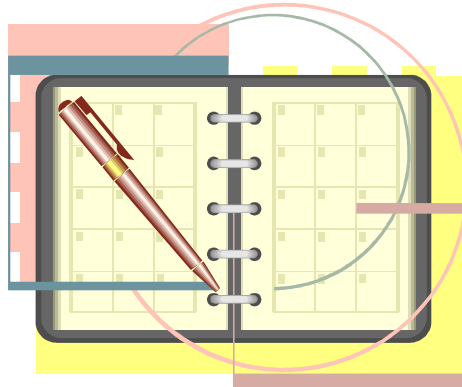
Ten first place scholarships were awarded to students competing for Tony Ruppert Scholarship dollars in an unprecedented ten-way tie. Each winner received \$500 in scholarship funding.

Winning essays were received from Madelyn Pearson of Nisswa, MN; Jillian Ewald of Baxter; Johanna Haeg of St. Joseph; Seija Kingston of Norwood; Morgan Miller of Maple Grove; Isabel Dahl of Underwood; Riley Miller of Kimball; Justine Miller of Kimball; Tucker Grant of Lake Crystal, all of Minnesota; and Hallie Zellmer of Colfax, WI. ■

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Mark Your Calendar—Annual Convention is January 28-29, 2020

MARK YOUR CALENDAR!!



The Minnesota Onsite Wastewater Association

MOWA

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Exhibitor Showcase**

January 28th – 29th, 2020

Mankato Civic Center

Please visit our Web site for updates:

www.mowa-mn.com

From MOWA's Executive Director



By Pat Martyn, MOWA Executive Director

Thank you to Scott County!

Scott County hosted the 2019 Summer Seminar in mid-July at its SCALE Regional Public Training Facility, followed by a Bar-B-Que and games at Lagoon Park. Many thanks to our generous sponsors: Dakota Supply Group - DSG; Eljen Corporation, Fiedler's Your Pumping Specialists, Inc.; Infiltrator Water Technologies; Multi-Flo

Wisconsin; Overland Insurance Agency; Rep Rite Burke & Associates; and SJE Rhombus. And, of course, thanks again to MOWA Summer Seminar Committee Co-Chairs Dean Flygare and Bernie Miller with committee members Mary Von Eschen, Stacey Feser, Mike Capra, and Matt Summers for putting on such a great event. We had good attendance, and everyone went home with a commemorative t-shirt and clipboard. All in all, the day was a great success.

Tony Ruppert Scholarship Winners

We are pleased to announce that our Scholarship/Outreach Committee has awarded 10 scholarships to applicants for the 2019 Tony Ruppert Scholarship for a total award of \$5,000. Each year, MOWA gives away up to \$5,000 in scholarship money. These funds are raised at the auction held at our Convention each winter and are available to high school graduates who will be enrolled as full-time students in post-secondary undergraduate education. Winning essays are published in this and future editions of the Little Digger.

NOWRA 2019 Mega-Convention Being Held in Colorado October 13 – 16th!

This year's Mega-Conference is being held in Loveland, Colorado. Highlights include Technical Education & Training, Outstanding Field Trips, and the NOWRA/NAWT Expo. More information is included in this issue.

Annual MOWA Convention is being held in Mankato January 28-29, 2020!

We will be at the state-of-the-art Mankato Civic Center January 28 – 29th for the 2020 Winter Convention! The Convention Committee has been hard at work for months planning this event, and is putting together a stellar program, with a few fun surprises and some old favorites. As always, the Convention Committee is looking for volunteers to help make this a successful – and fun! – event. If you are interested in helping to plan this event and/or want to be on-hand at the Convention itself, just let the office know. You will find elsewhere in this newsletter a listing of the Board Members. You are invited to pick up a phone or email any of them, and let them know how you feel about the organization. President Mike Capra would appreciate it very much.

We look forward to seeing you soon in Mankato! ■

Calendar of Events

MOWA Events

January 28th – 29th, 2020 – 2020 Annual Convention and Tradeshow- Mankato Civic Center, Mankato.

Industry Events

October 13-16, 2019, 2019 – NOWRA 2019 Mega-Conference - Embassy Suites Hotel & Conference Center - Loveland, Colorado (www.NOWRA.org)

February 17 – 20, 2020 – WWETT Show – Indiana Convention Center (<https://www.wwettshow.com/en/special-events.html>)

The is a bi-monthly publication of the Minnesota Onsite Wastewater Association

Editor: Carla Tourin E-mail: MOWAcarla@aol.com

The articles printed in the publication do not necessarily reflect the opinion of this organization. Readers are encouraged to respond to the articles with their own points-of-view. We welcome industry-related comments or articles. Information or inquires should be sent to any of the following: MN Onsite Wastewater Association, MOWA, 5021 Vernon Ave, So., Suite 241, Edina, MN 55436 Phone: 612.801.5897 Fax: 952.487.4447 Website: www.mowa-mn.com

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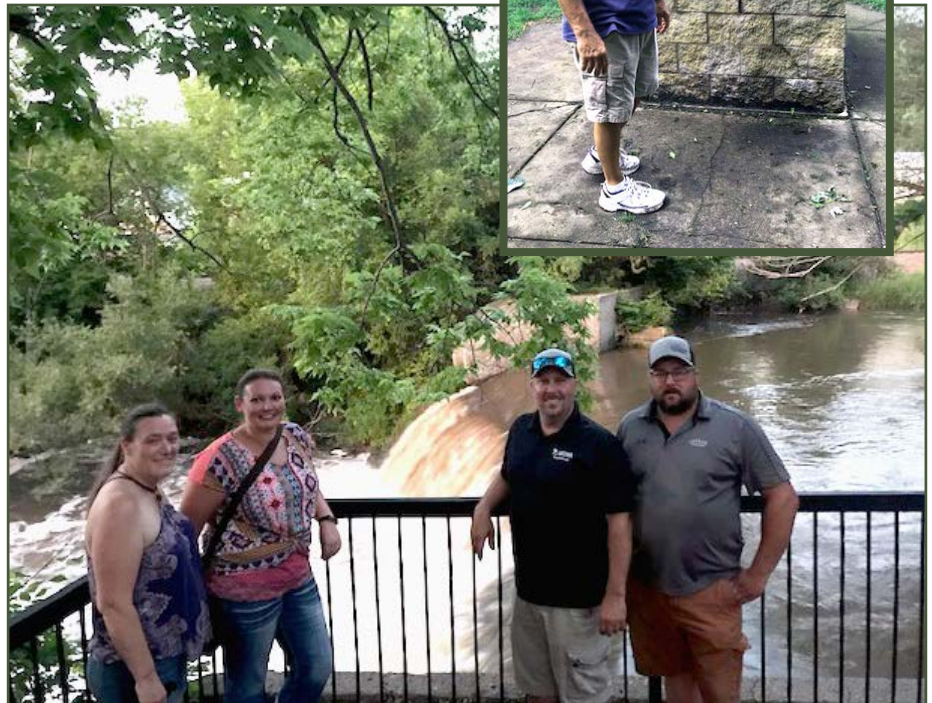
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Summer Seminar combines high quality training with fun!



Jordan provided a summery setting for high quality training that satisfied Continuing Education requirements (shown above and left).

Lagoon Park (shown below and right) was a "cool" setting for the evenings cook-out and bean bag tourney. The rushing water reminded everyone of why our profession is so important to the state ■



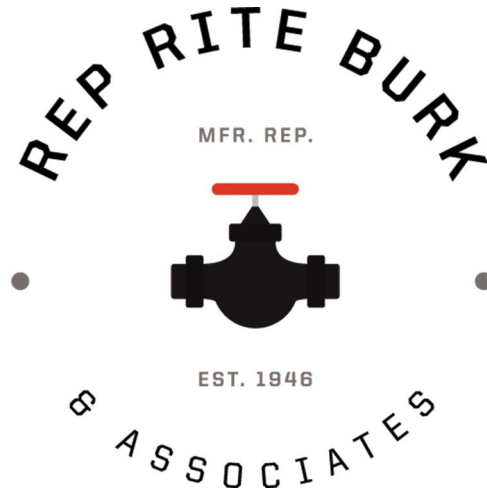
**MOWA Welcomes
NEW Members**

Eric Appelwick
AE2S Operations
Maple Grove, MN

Cameron Klehr
Klehr Septic Services
Belle Plaine, MN

Thank You to MOWA Summer Seminar 2019 Sponsors!

As always, MOWA is as strong as its members and the generous support they provide as the organization works to strengthen the industry. Thanks goes out to all the sponsors who contributed to the Summer Seminar event!
We couldn't have done it without you!



Mega-Conference—Onsite Wastewater Event of the Year!

Join NOWRA in Colorado for the 2019 Onsite Wastewater Mega-Conference



The Rocky Mountains are the backdrop for the 2019 Onsite Wastewater Mega-Conference, which will be held October 13-16 at the Embassy Suites Hotel & Conference Center in Loveland, Colorado. People call the Mega-Conference the "Onsite Wastewater Event of the Year" because it brings together four leading onsite wastewater groups for an event showcasing the best the industry has to offer – top educators and trainers, industry thought leaders, leading companies, great networking – all intended to give you a useful and memorable experience.

The Mega-Conference is the largest national conference focusing directly on decentralized and onsite wastewater treatment. It is jointly hosted by the top three national onsite associations and the host state association:

NOWRA

SORA (State Onsite Regulators Association)

NAWT (National Association of Wastewater Technicians)

CPOW (Colorado Professionals in Onsite Wastewater)

The Mega-Conference offers a rich mix of activities. More than 50 education and training sessions are planned, along with outstanding field trips, great social events and networking, and scores of the industry's leading exhibitors in the Mega-Conference Expo.

Should you attend this conference? Absolutely yes if you believe the value you'll receive is greater than your investment of time and money to attend. And while everyone defines value in their own way, consider some of the following benefits of attendance:

Earn CEUs to meet your licensing requirements – NOWRA's curriculum is typically approved by most states which require CEUs for contractors. The Mega-Conference website – www.nowra.org/2019mega -- has a current list of states approvals.

Get training for you or your employees – The *Onsite Systems Troubleshooting track* features an all-star line-up of experts to help students better understand how to identify and address system problems. Lots of good training can also be found in other concurrent sessions and field trips

Learn about new products/services you can use – The Mega-Conference Expo brings dozens of national manufacturers offering innovative technologies and services

Generate ideas you can use – Whether it's through insights gained in the classroom or ideas exchanged with colleagues in a social setting or hallway conversation, chances are you'll get a fistful of ideas you can begin to implement when you get home.

Expand your business. If septage disposal is a problem in your area, NAWT's Septage Treatment Workshop may be the answer. Learn from top private septage plant operators the ins and outs of setting up your own septage treatment business.

Gain a competitive edge – If you want to stand out from your local competition, it's helpful to look for ideas outside your local area. Useful and innovative programs, ideas and activities can be found all over the US, The Mega-Conference brings them together in one place. It present you with a tremendous opportunity to gain an edge over competitors who don't attend.

Renew and grow your network. – The Mega-Conference is a great place to reconnect with old friends and colleagues and make new ones

Get a big picture view of our industry – Get a better understanding of the trends and directions of the onsite industry. Onsite wastewater technology is being deployed in new ways to address water issues around the country. Staying current with these trends can help you identify future opportunities or challenges.

With so many activities, educational opportunities, and networking possibilities, there is something for everyone at the 2019 Mega-Conference. As you contemplate whether to attend, please keep in mind that attending an onsite conference at the state or national level should be viewed as an investment in you and your company, not an expense. We think you'll find more than enough value with the Mega-Conference to determine it is a worthy investment. Won't you consider attending this year? Full conference details can be found on the NOWRA website: www.nowra.org/2019mega. ■

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- 20" x 12" Riser - 3009-R12
- 20" Riser Pan - 3009-RP
- 12" x 6" Riser - 3017-R



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Maintenance—Working with Home Owners

UNIVERSITY OF MINNESOTA

3 Steps for Successful Onsite System Service Visits

By Sara Heger, Ph.D., Onsite Installer - Aug. 22, 2019



As a septic professional, it is your responsibility to ensure the homeowner clearly understands their responsibilities in maintaining their new system. This will increase the longevity of the system (thereby making it cost-effective), improve customer satisfaction and protect our water quality.

The checklist and information below provides installers with a tool to guide discussions with the homeowner. Your task as you maintain the system is to help the customer understand that the long-term success or failure of an onsite sewage treatment system depends on:

1. Proper design of the system
2. Proper installation of the system
3. Proper use of the system by the homeowner and occupants
4. Proper maintenance of the system by maintainer/service provider
5. Proper maintenance of the system by the homeowner.

Three activities should be part of maintenance for all systems. The first is to determine what maintenance is needed. The property

owner may know this or you may need to do additional work to determine what is needed based on the type of system. Then you will actually need to perform the maintenance and finally communicate about your visit to the owner.

Activity 1. Septic system management plan/operating permit

Did the system designer or installer provide the property owner with a management plan for the system? If so, review it with the owner; if no management plan is available from the owner, you may want to check with the permitting authority along with the system designer/installer. If one still cannot be located, you will need to develop one.

Activity 2: Perform maintenance activities — for conventional systems

- Maintenance holes
 - If no risers were installed, encourage the homeowner to add them. Be sure they are insulated (if needed), sealed and tightly secured.
 - If the maintenance hole is not on risers and below grade, discuss with the homeowner the need to expose the maintenance hole to ensure proper cleaning of the tank. Determine who will expose the maintenance hole and what, if any, additional excavating fees may apply if this is to be done by the professional.
- Collect samples if required or needed.
- Check tank level, scum depth and sludge depth, and record these. Pump if needed.
- Verify and record baffle integrity.
- Verify and record tank integrity.
- Verify and record manhole/riser integrity.
- Verify functioning of any alarms; make sure the homeowner understands the alarms.
- Check inspection pipes — all in place, with good covers. Replace or recommend replacement of any damaged parts.
- Pumps — Check that all pumps, controls, the pump vault and any alarms are operating properly. Clean the pump vault if needed. Check the drainback (if part of the system). Check the event counter/clock if there is one.
- Walk the soil treatment area, preferably with the homeowner; check for any concerns. Watch for surfacing, odors, ponding and other issues. If any clean-outs are necessary, flush and clean as needed.

Successful Onsite Visits, Continued on Page 9



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Successful Onsite Visits, Continued from Page 8

- Effluent screen maintenance:
 - Clean it and be sure it is functioning correctly. Check the alarm if there is one.
 - Discuss with the homeowner any product and water use issues evident from cleaning the screen.
 - If there is none, encourage the homeowner to consult a professional about adding a screen.

Activity 3: Educate the homeowner about proper maintenance of the system

- Discuss when the next visit should be and record on invoice.
- Communication with the homeowner — If you have the chance to talk with them this is a great opportunity to educate by providing a system overview to the customer. If you notice any problems, discuss possible causes and solutions. Discuss how the system works, how pathogens are destroyed, how clean water reenters the groundwater. Check if the homeowner has any problems or concerns. Consider providing an education brochure highlighting:
 - Water and product use tips. Discuss how to prevent system overloading by excessive water and inappropriate product use and other household topics.
 - Provide a key list of toxics to avoid.
 - Provide basic best practices include using detergents without bleach, spreading laundry and other water uses

out throughout the day and the week, avoiding the use of antibacterial products and automatic toilet or shower cleansers, and using natural cleansers when a cleanser is necessary. Do not use the toilet as a trash can — only allow toilet paper and human waste to enter the system. Do not use a garbage disposal, reroute clearwater sources and repair leaks immediately.

- Discuss the benefit of maintenance.
- If the home is in a jurisdiction/county with a maintenance or pumping requirement ordinance, determine with the homeowner who is responsible for filing the certificate.

About the author

Sara Heger, Ph.D., is an engineer, researcher and instructor in the Onsite Sewage Treatment Program in the Water Resources Center at the University of Minnesota. She presents at many local and national training events regarding the design, installation, and management of septic systems and related research. Heger is education chair of the Minnesota Onsite Wastewater Association and the National Onsite Wastewater Recycling Association, and she serves on the NSF International Committee on Wastewater Treatment Systems. Ask Heger questions about septic system maintenance and operation by sending an email to kim.peterson@colepublishing.com. ■

This article was first posted as an Online Exclusive August 22, 2019 in the Onsite Installer magazine, published by COLE Publishing Inc., www.onsiteinstaller.com. It is reprinted by permission.

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I have a great business for sale. My dad started the business in 1951 and we have been going strong ever since. We've had a great reputation in this area for over 60 years. We do septic pumping, drain cleaning, jetting, camera, locating and pump replacement. We service every part of septic systems. Equipment includes: 2 septic trucks: 2007 and 2003 Kenworths, 10 speeds with cummins engines. Both trucks have 3500 gallon stainless steel tanks with hoists, 1000 CFM blowers, 3000 gallon waste, and 500 gallon fresh water compartments. They have 2" pressure pumps for easy cleaning of septic tanks, pits etc. I bought these trucks new, the stainless tanks will never have to be replaced.

2002 Ford transit style bus

This unit is a rolling shop. Equipped with 2 jetters, a 300 gallon water tank, many roto rooting machines plus sewer camera and locators. Everything to do the job. 1 steam trailer for thawing frozen pipes, equipment cleaning, etc., 300 gallon water tank, self contained unit, 40,000 gallon temporary storage tanks and 14 acres PCA approved spread site, which I rent from a local farmer. 300 plus customers on my pump list which I started 25 years ago. Also for rent a 3-stall heated shop with wash bay, mechanic pit and tools plus new 40x80 building.

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Housing Affordability? Onsite Could Help Lower Cost!

Editorial: Smart Growth and Septic System Innovation Go Hand in Hand

When communities on the edge of growing urban centers discuss community septic systems, installers should join the conversation

By Jim Kneiszel

January 2018 - Editors Notebook - Onsite Installer

Community septic systems — or cluster systems — can provide one good answer to ongoing issues of suburban sprawl in America. But a battle being waged between forces promoting more population density and those who cling to the age-old model of widely spread estates show why innovative shared onsite systems have not become more prevalent in the world of installers.

In a recent story out of Milton, Georgia, members of the City Council fought over whether to spend planning dollars to explore the concept of community septic systems. The city of Milton was formed from an unincorporated area north of Atlanta in 2006, a prototypical exurban community where people move to get away from the city, then often drive back downtown every day to work.

At issue is a dwindling amount of developable land and how it should be parceled. As explained in local Forsyth Herald coverage, one group of city leaders wants to consider promoting smaller residential lots and maintaining conservancy areas to preserve some rural landscape. Those plans would necessarily involve homeowners sharing onsite wastewater systems.

"The whole essence of what we are doing here is planning for the future, and if we deny that concept, I don't think we are doing our jobs completely," says council member Bill Lusk. Other members of the City Council prefer to stick with larger lot sizes utilizing individual systems and oppose \$20,000 to study the viability of community septic systems.

"I would rather see \$20,000 spent on some kind of tax-incentive program so that people who do have larger parcels will keep the larger parcels or develop 3- to 5-acre lot subdivisions," argues council member Karen Thurman.

Funding the study failed on a 4-3 vote.

Smart Growth

As the cost of remaining land around cities rises — and many communities lose an appetite to keep extending expensive sewer lines farther away from treatment plants — you will probably see more promotion of community septic systems in your world. Maybe you already have. Shared systems can make sense in many areas, and it seems this will only become a more popular idea as onsite technologies continue to improve, giving homeowners more



Please note: Septic systems vary. Diagram is not to scale.

Illustration courtesy of Environmental Protection Agency - <https://www.epa.gov/septic/types-septic-systems#cluster>

economical and long-lasting wastewater options.

This plays into the concept of "smart growth," something, by the way, that government leaders around Atlanta know nothing about or just plain don't agree with. Why do I say that? Because Atlanta has long been considered an urban planning disaster. If you've ever driven through the city, you know it's a tangled mess of highways that bottleneck downtown.

Smart growth, as defined by the American Planning Association, promotes "efficient and sustainable land development, incorporates redevelopment patterns that optimize prior infrastructure investments and consumes less land that is otherwise available for agriculture, open space, natural systems and rural lifestyle. ... Smart growth is about tailoring choices for individual settings; it may well mean offering smaller detached homes on smaller lots within walking distance of schools and amenities. ... This approach to growth and planning cannot only deliver dynamic, attractive communities with greater choices for consumers, but can be a

Housing Affordability & Clusters, Continued on Page 11

Housing Affordability & Clusters, Continued from Page 10

powerful tool for farmland, open space and habitat preservation.”

Need Housing Options?

The good people of Milton reflect Atlanta’s history of wariness over the idea of smart growth. The city makes several worst urban design lists, including one from www.escapehere.com.

“Traffic doesn’t get much worse than this city, and in fact, the traffic here is legendary. In the 1980s and 1990s, there was a boom in Atlanta that caused a massive urban sprawl, and along with poorly situated highways, there seems to be no hope in terms of it getting any better. Unless something drastic happens in this city, expect that the poor design will continue for decades.”

So it seems that this booming southern metropolis has been shortsighted in its planning for years. That said, I have nothing against large single-family homes occupying 5-acre lots. If that’s what people want, they should be able to have it (as long as they can afford the cost). However, I do feel it’s important to offer a variety of housing choices that fit various lifestyles. This should include new homes on small lots as well as condominiums or apartments located in outlying areas and served by onsite wastewater systems.

Those who want the 5,000-square-foot home on an estate property in the country should remember that people go through different phases in their lives and they may choose to downsize at some point. Kids move away, health problems restrict their ability to do yardwork, or they simply can’t afford the big house in retirement.

Without many options for living arrangements, they may not be able to stay in the community they love.

Time to Educate!

Onsite installers have a vested interest and community responsibility when it comes to these urban planning issues. First, you recognize that in many cases extension of the big pipe is only feasible to some distance from city centers. Beyond that, septic systems are going to continue to be an important element of the planning process. You want to be a part of that decision-making process. Also, you know how outside-the-box system design and new decentralized wastewater treatment technologies are improving in dynamic ways. Quite simply, the treatment capabilities we see today are not your grandfather’s septic systems. It benefits you and the industry to spread the word about clean and efficient wastewater treatment.

As an educated installer or designer, you can demystify modern septic systems for the laymen and women who serve on City Councils like the one in Milton and make them more comfortable with concepts like community septic. Together with smart growth advocates, you can explain how today’s onsite systems — whether they serve an individual house or 150 homes in a subdivision — can be a suitable, permanent and effective wastewater solution.

Community leaders need to be made to understand the value of diverse development and the role onsite systems can play in building sustainable communities where people will want to live through all stages of life. This is an important message that we can and must share when smart growth issues are discussed. ■

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Wastewater Resources for Unincorporated Small Towns

Community Wastewater Systems are Viable Option for Small Towns

by [Matthew Summers](#), Professional Soil Scientist, [Wenck Associates, Inc.](#)



Across the state of Minnesota, many of the areas with the worst wastewater infrastructure are small, unincorporated rural communities with little money, no formal staff, and no experience managing large capital projects. So, when the state's Pollution Control Agency notifies one of these communities that they need to address their wastewater issues at a potential cost of millions of dollars, what do they do? Too often, the problem simply goes unmitigated.

And the size of the problem is daunting. In Minnesota alone, the MPCA estimates there are over 1,000 small, unsewered communities in the state with some level of SSTS compliance concerns – yet only a handful are addressed each year.

With noncompliant sewers, these communities can't grow. Most counties won't allow you to sell your property, put on an addition, or pull a building permit if you don't have a compliant septic system. Many of these small communities are too far from an existing WWTP to make connecting feasible. If you have an entire small town that has non-compliant SSTS and cannot connect to a WWTP, it will eventually die if nothing is done.

In most unincorporated areas, it is up to the township government or the residents themselves to take action. So, when faced with such a challenge, where do local residents begin?

Getting Organized

The residents living around Lake Zumbro in Olmstead County, Minn., are a perfect example. The small, unincorporated communities along its shores had a large percentage of properties with failing septic systems and lot sizes were often too small to allow for individual system replacements. When

state and local authorities identified these unsewered communities as sources of pollution for Lake Zumbro, the residents didn't know where to begin.

The first step a township should take in this situation is to organize the residents. In Lake Zumbro, this process was made significantly easier due to the work of a local public/private partnership called the Southeast Minnesota Wastewater Initiative (SEMWI). This group provided, at no cost, community organizing staff who came in to organize and educate residents on the problem and potential solutions.

The assistance they provide is multifaceted: door-to-door recruitment and organizing, forming resident action committees, teaching public meeting rules and procedures, providing technical know-how, helping obtain funding and engineering services, engaging local and state authorities, advocating to political representatives, and more. SEMWI helped several communities on Lake Zumbro organize and address

significant wastewater problems, and even helped obtain funding for these costly projects. For most of them, 70 to 80 percent of the total project cost was covered by public grants, and the rest with low-interest loans.

Most places don't have a local non-profit that specializes in providing wastewater facilitators. In that case, the only real option is to find a local resident who is passionate about fixing the problem, and who has the time and ability to educate themselves and organize their neighbors. Such a resident can be rare. It's critical that a local, trusted person start the process and stick with it to the end. Those are the cases where projects actually move forward. Wastewater projects are often contentious, expensive projects that can face significant resistance in the community. The per-property cost of a new sewer system (before public funding) might exceed the home values in some rural communities. The typical capital cost for a new public decentralized wastewater system can be around \$50,000 or more per connection.

Having the community organizer be someone who will profit from the project—such as a consultant—is problematic because it takes a long time for a company with a profit motive and a vested interest in a project to develop trust. A resident, trusted official or nonprofit organizer who will take the time to go door-to-door and meet in people's houses, have town hall meetings, have coffee and dinner with people and grow trust is a critical factor in the ultimate success of the project.

Another benefit of recruiting a local organizer is that paying a professional engineering firm to do the organizing and initial technical work is usually prohibitively expensive. Door to door

Community Wastewater Systems, Continued on Page 14

Community Wastewater Systems, Continued from Page 13

organizing is time consuming, and paying an engineering firm \$100+ per hour to do it is simply not feasible. In rural communities where a local organizer can't be recruited and non-profits can help, hiring a small solo practitioner engineer/operator may be a more affordable solution for the pre-work.

Regardless of who does the organizing, getting residents on the same page and in agreement about fixing the problem is a critical first step because the initial phase of work, before professionals can be brought on board, is too much work for one person to handle without the support of the community.

Scoping the Project

Once a local sewer committee is formed of local residents, the committee can start the process of scoping out and securing funding for the project. The good news is that Minnesota has dedicated funds available for wastewater infrastructure projects. The bad news is that applying for and obtaining that funding requires technical expertise and an organized community. It's a catch-22 – a community can't get funding without getting organized, but can't get organized without funding or free help.

For instance, the State of Minnesota maintains a project priority list (PPL) that assigns a priority ranking to the wastewater projects that have been submitted for funding requests. This prioritization is done based on a score determined through initial engineering assessments that must be completed along with the application. The PPL application involves a review of county permit records, a drive by of all the subject properties, project area mapping, and an estimation of whose systems are compliant and noncompliant. The Minnesota 2019 PPL list includes approximately 256 potential projects. Each year

there might be only a handful of shovel-ready projects on the list that receive funding.

In Minnesota, the local community can apply for a Small Communities Technical Assistance grant. This program provides a grant up to \$60,000 to hire an engineer for a detailed wastewater infrastructure compliance survey and feasibility and cost assessment of potential soil-based community system solutions. This study is known as a Community Assessment Report (or "CAR"). To get this initial \$60,000 CAR study grant, however, your community must already be on the PPL as described above. Hiring an engineer to conduct the CAR assessment and cost out potential solutions involves drafting an RFP, sending it out to known firms, and going through an interview and hiring process. This can be a big challenge for a small, unorganized community not experienced in hiring and managing consultants. Again, this is where an organization like SEMWI is invaluable.

This study provides potential project cost estimates that are then used to apply for infrastructure funding. The CAR is then submitted to the Minnesota Pollution Control Agency (MPCA) for review and comment. Community meetings are held to present the findings and potential alternative solutions to the decision-making body – usually the township board, but sometimes a county board or a special district board.

Funding for an actual design and construction project is partially based on the findings of the CAR study, making the CAR the gateway to a publicly-funded community SSTS. Many factors go in to the final funding package, such as overall size and cost, resident density, severity of existing conditions, median income, impairment status of receiving waters, resident interest, and others. There are several different funding programs in Minnesota offering a mix of grants and low-interest loans for community SSTS. Navigating the funding processes usually requires significant assistance from experienced professionals and/or community organizers like SEMWI.

SEMWI has been highly effective but is active only in southeast Minnesota and their funding is on a year-to-year basis. Contact the Cannon River Watershed Partnership (<http://crwp.net/wastewater/>) for assistance.

The University of Minnesota Onsite Sewage Treatment Program (OSTP) can also help small communities get organized, see their small community SSTS website here: <https://septic.umn.edu/wastewater-issues>. Any small community in Minnesota looking to address substandard wastewater infrastructure should start by contacting the OSTP. Contact Dr. Sara Heger at sheger@umn.edu for more information.

The Midwest Assistance Program (<http://www.map-inc.org/>) is an organization that works closely with USDA to help bring federal funds to bear on small community water and wastewater infrastructure. Contact Pete Smith, MAP Regional Field Manager for more information: psmith@map-inc.org. ■

Matthew Summers is a Professional Soil Scientist and small-community SSTS specialist with Wenck Associates, Inc, a Minnesota-based environmental and engineering firm.

Small Community Wastewater Treatment Program

Eligibility - Cities, counties, townships, sanitary districts or other governmental subdivisions that have a project ranked on the Minnesota Pollution Control Agency's Project Priority List due to non-complying septic systems and/or straight pipe systems are eligible. Projects will be funded in priority order.

Project Requirements - A governmental unit receiving construction must own the SSTS systems built under the program and shall be responsible, either directly or through a contract with a private vendor, for all inspections, maintenance, and repairs necessary to ensure proper operation of the systems. Each property owner voluntarily seeking to participate in the program must provide a utility easement to the governmental unit to allow access to the system for maintenance and repairs.

Allowable Costs - Allowable costs for technical assistance grants include costs of site evaluation and soil borings. Eligible costs for construction funds are those associated with replacing non-complying systems with publicly-owned SSTS systems and soil-based cluster systems, including design, construction, land acquisition and related legal fees. <https://mn.gov/deed/pfa/funds-programs/smallcommunitywastewatertreatmentprogram.jsp>

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2019 Tony Ruppert Scholarship Fund—Winning Essay

Minnesota Homeowners Contaminate Our Water

By Seija Kingston of Norwood, Minnesota



Water laps against the side of your boat as you cast your line. Soaring out over the still water, it lands with a satisfying ripple in the lake. You look out over the serene water. The sun is just starting to peek up over the edge of the lake. As the sun gets higher in the sky the less peaceful the lake seems, the beauty fades. Now that the sun is risen, you realize what the problem is. The lake is murky, a thick foam coats the edge of the lake, and you spot some dead fish floating a ways off. The lake is contaminated.

In Minnesota, the land of 10,000 lakes, an abundance of septic systems are not functioning properly. The main cause of this is due to homeowners inadequately maintaining their septic systems. Often times, homeowners do not give their septic systems a second thought. These septic systems, when faulty, contaminate our 10,000 lakes. In order to keep the lakes of Minnesota clean, we need homeowners to realize the responsibility that they have with their septic systems and take action to keep theirs maintained.

Many lakes and rivers in Minnesota are contaminated. As Dan Gunderson states, "40 percent of Minnesota rivers and lakes have been found to be impaired" (2016). Each year, MPCA adds more bodies of water to their list of contaminated waters. Many things can cause contamination in our water. This contamination is caused by "livestock production facilities, farm field runoff, agricultural drainage tile, inadequate septic systems, urban runoff and sewage treatment plants" (MN Center, 2019). While all of these are sources of pollution, one in particular demands attention, inadequate septic systems.

As the study from the Minnesota Pollution Control Agency points out, the second largest cause of impairment in water is caused by "Escherichia coli & Fecal Coliform" (MPCA, 2019). One of the sources of E. Coli and Fecal Coliform in our water is from faulty septic systems. These faulty systems leak the sewer into our water. MPCA estimates that in Minnesota there are over 100,000 septic systems that are putting groundwater at risk. Of those 100,000 septic systems, one quarter of them are "an immediate threat to human health" (Enger, 2016). A common cause for a faulty septic system is

aging. Initially, the septic system that is installed does its job very well, but over time the quality of its work can start to degrade. The reason for this failure is not due to inadequacy of septic companies, but rather, as Cornell University explains to us, "The most common reasons for early failure are misuse or inadequate maintenance by homeowners" (2013). It is your responsibility as a homeowner to maintain your septic system. To maintain your septic system, it is best to have your septic system checked to make sure that it is functioning properly, and not contaminating our water. It is especially important to have your septic system checked due to the fact that "even one failing septic system can have an impact", impairing the lakes of Minnesota (Enger, 2016). As the United States Environmental Protection Agency informs us, "The average household septic system should be inspected at least every three years by a septic service professional" (2019). This insures that your septic system is functioning properly.

Homeowners, not realizing that they have a faulty or aged septic system that is contaminating our water, is a problem that the whole of Minnesota is dealing with. While some Minnesotans are doing their part, keeping their septic systems maintained, others are not. As Aaron Jensen MCPA septic supervisor puts it, "most people never think about their septic systems" (Enger, 2016). By simply taking care of your own septic system, you can get the ball rolling towards clean water in Minnesota. If you were to see a septic company at your neighbor's house, it might spark a thought in your mind to have yours checked as well. Through this simple act, awareness spreads and Minnesota as a whole, improves. One person, one septic system, one lake at a time, we are making Minnesota not just the land of 10,000 lakes, but the land of 10,000 beautiful lakes.

As Minnesota's lakes become cleaner, you can sit in your boat, the sun rising. The beauty doesn't fade as daylight comes, instead, the beauty only grows. The sun sits high in the sky as you look out across the clear water. You think of how the lakes used to be. You are thankful for the homeowners who have taken action and maintained their septic systems and for the companies who have done the septic work. ■

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2019 Tony Ruppert Scholarship Fund—Winning Essay

Affects the Everyday Pharmaceutical has on the Water System

By Riley Miller of Kimball, Minnesota

Wastewater treatment plants around the United States have around 34 billion gallons of water ran through them every day. Very rarely does the everyday person think about where their water is coming from. Whether it's a well system out in the suburbs, or city water coming from a nearby body of water, one doesn't think much of it.

The problem here is that people should be more aware of where their water is coming from and the process behind cleaning and making it safe to drink. Multiple people on an everyday basis flush things down the toilet or wash things down the sink they shouldn't be.

That's not the only problem either, there are things being flushed that we can't necessarily help like pharmaceuticals. In the U.S. alone there are 3.7 billion prescriptions filled every year. Pharmaceuticals are a problem because when most drugs are taken, they enter the body; they take effect, and then what happens? Eventually one has to relieve themselves and the drug ends up in the water system. Now, this is mainly a problem for major cities because of the density of humans doing this every day. What's left of the drug after it is processed through the body are usually 7 different compounds, but the main concern here is something called endocrine disruptors.

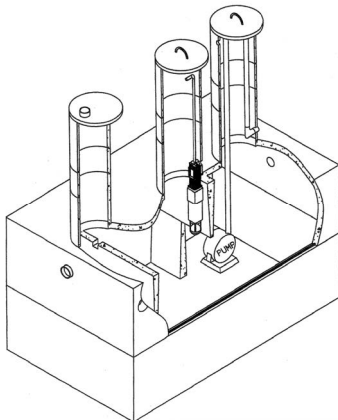
The endocrine system, defined by the U.S. Department of Health and Human Services, is a chemical messenger system comprising of hormones released by internal glands of an organism directly into the circulatory system, regulating distant target organs. (2010) In humans, the major endocrine glands are the thyroid gland and the adrenal glands. So I'm sure you can see why endocrine disruptors aren't good in any way at all. The major effects they have on your body would be disrupting internal biological processes such as development, growth, and reproduction that are regulated by hormones. (Ghanta, 2017) We also know not only is it affecting humans but the surrounding wildlife is being harmed along with us. It's making male fish have female traits caused by synthetic hormones and they have also found intersex frogs in city ponds. (Carrington, 2014) In order to try and solve this problem, the EPA has taken a four-pronged approach that involves public education, stepped-up monitoring of water supplies, partnerships with health care facilities and agribusinesses to reduce waste, and eventually, perhaps, new regulations. (Roberts, 2011) Actions that can be taken at home to solve this problem or at least slow it down would be

TRS Winner - Miller Essay, Continued on Page 18

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2019 Tony Ruppert Scholarship Fund—Winning Essay

Microplastics

By Justine Miller of Kimball, Minnesota

People believe that our earth is polluted mostly with bags, bottles and straws etc. Little do they know that a big problem today is the struggle with particles, smaller than just five millimeters long, of non-degradable plastic, microplastics. These particles are affecting more than just humans, they have greatly affected the organisms in our waters. Microplastics are used in large amounts and are much harder to clean up compared to other plastic materials. (Caitlin M. Cameron M.S., 3/15/19)

Microplastics come from many personal care products; they come from soaps, exfoliating scrubs, toothpaste, shampoo, deodorant and makeup. In the past fifty years microplastics have replaced natural exfoliating ingredients in personal care products. In some cosmetic products, ninety percent of the product is made up of microbeads. Microbeads are manufactured plastic beads intentionally put into the products. All these products eventually end up going down the drain into our lakes, rivers and oceans. Another source of this problem is clothing made from nylon and polyester. Same thing as the personal care products, one wash and large amounts of these microplastics are poured into our water sources. (Caitlin M. Cameron M.S., 3/15/19)

The presence of these microplastics are a threat to the marine environment and overall, the ecosystem. The microplastics are entering the marine environment mostly through terrestrial and land based activities, especially runoffs. Studies show large numbers of marine organisms being affected by microplastics in Africa, Asia, Southeast Asia, India, South Africa, North America and in Europe. This is changing the fate of the food chain drastically. (Elsevier, 2017)

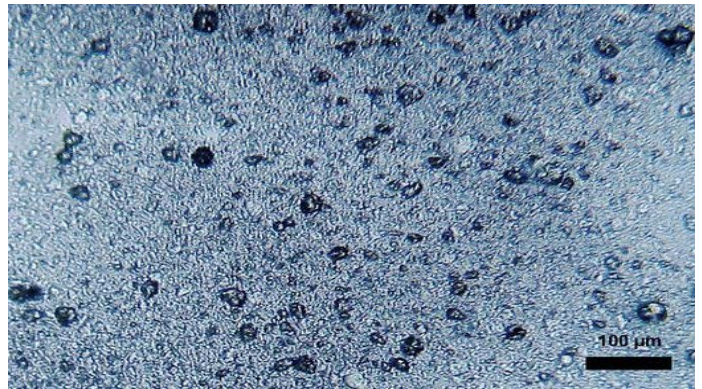
In the western part of Lake Superior they found an average of 20,000 particles per square kilometer. Compared to what has been recorded in the eastern part of Lake Superior, Lake Michigan, or Lake Huron that number is significantly larger. Researchers at UMD's Large Lake Observatory just launched a new study of inland lakes and fish. They will partner with the DNR and will spend two years studying water, sediment and fish from our Minnesota lakes. They will look into what kinds of fish are ingesting the microplastics and will see what types of microplastics they are most vulnerable to. (Bjorhus, 2019)

So now you know about microplastics and how they are affecting the earth. Our next step is simply to reduce the use of plastics or the products we use containing plastics. We can reuse our plastic items or choose to use all-natural care products instead of the products filled with microbeads. If we do not realize how our earth was created to be, without microplastics, soon all living things will be in critical condition. (Belton, 6/29/18)

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Microplastic spherules in tooth paste, about 30 μm in diameter.

Dantor, 18 November 2013 - Share Alike 3.0 Unported

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<https://www.sciencedirect.com/science/article/pii/S016041201631011X>

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Basic Design of Onsite Systems (24 Credits)

Course begins at 1:00 pm Fee: \$465 Exam: Yes

This 24-hour workshop teaches attendees to properly design various septic systems in preparation for the Basic Designer exam. Enrollees must have the current manual to use during the workshop. Onsite Manuals are available for \$50.

PREREQUISITE: Introduction to Onsite Systems

Topics include:

- Flow determination
- Tank design
- System design
- Pumps and pressure design

20-3 New Ulm - Turner Hall 12/9-13/19 Deadline: 12/2/19

General Continuing Education (12 Credits)

Fee: \$275 Exam: No

This 12-hour workshop is designed to meet the continuing education requirement for SSTS professional registration. The topics will be varied to give a wide range of information for SSTS professionals.

Topics include:

- Rule change implications
- Pressure distribution
- Working on difficult sites
- MPCA update

60-3 Little Falls - Initiative Fdn 11/6-7/19 Deadline: 10/30/19

60-4 St. Cloud - Moose Lodge 12/17-18/19 Deadline: 12/10/19

Installer Continuing Education (12 Credits)

Fee: \$275 Exam: No

This 12-hour workshop will meet the continuing education requirements for any certification but is specifically tailored for Installers. All information will be provided from the perspective of a system installer.

Topics Include:

- Construction safety
- Keys to proper installation
- Pumps and dosing
- Rule change implications

69-3 Detroit Lakes - Holiday Inn 11/19-20/19 Deadline: 11/12/19

Installing Onsite Systems (12 Credits)

Fee: \$275 Exam: Yes

This 12-hour workshop prepares attendees for the Installer exam and provides information about proper installation practices.

PREREQUISITE: Introduction to Onsite Systems

Topics include:

- Construction planning
- Tools for installing
- Construction practices
- Pipelayer certification

112-4 St. Cloud - Moose Lodge 11/14-15/19 Deadline: 11/7/19

Introduction to Onsite Systems (15 Credits)

Fee: \$370 Exam: Yes

This 15-hour workshop is the foundation for all SSTS certification courses and is best completed prior to the other workshops. It prepares participants for the Basic exam and provides an overview of onsite treatment options and concepts. Enrollment in this workshop includes a copy of the Manual for SSTS Professionals in Minnesota.

Topics include:

- Treatment of wastewater
- Site evaluation
- Wastewater characteristics
- Soil treatment systems

10-4 St. Cloud - Moose Lodge 11/11-13/19 Deadline: 11/4/19

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- Soils observations
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55-7 Red Wing - Goodhue County Law Enforcement Center 10/2/19 Deadline: 9/25/19

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TRS Winner - Miller Essay, Continued from Page 17

limiting bulk purchases so you don't have to get rid of medicines. If you do have extra medicine, use drug take back days issued by the federal law, or if you're impatient you can dispose of the medicine by crushing or cracking the pills in a bag with water and then put sawdust or cat litter in the bag.

The 34 billion gallons of water running through the treatment plants each day already have a significant amount of pharmaceuticals in them and that percentage isn't going to lower if we don't do something about it. If no action is taken the percentage will only go up. Actions are being taken by certain companies but that won't be enough to stop the problems that are being faced right now.

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Revolutionary Float Switch Connection System

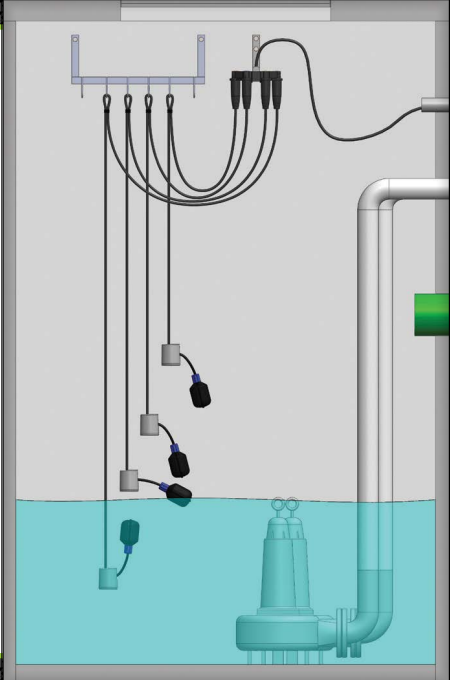
Installation is as easy as 1, 2, 3...Simply install the manifold, plug in the floats, and wire the manifold cable to the control panel. The color-coded cable makes for a quick, clean installation! The quick release float switch connections allow for easy maintenance and replacement of floats, saving installers time and money...up to 75%! Many float switch options and 3-port manifold available to suit your needs!



- Simple, clean installation
- Up to 4 quick release floats
- Mounts directly in riser
- Great for new and retrofit applications
- Easy maintenance



US Patent No.
9,559,455 and 9,583,867
Foreign Patents Pending



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