THE LITTLE DIGGER

MOWA minnesota onsite wastewater association

August/September 2017 - Vol. 32, Issue 4

A bi-monthly publication

Funding & Fixing

By Matt Summers

Minnesota residents act to bring small sewer systems into compliance

Across the country, many of the areas with the worst wastewater infrastructure are very small, unincorporated rural communities with no money, formal staff or experience managing large capital projects. So when a 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.

The size of the problem is daunting. In Minnesota alone, the Minnesota Pollution Control Agency (PCA) estimates there are more than 1,000 small, unsewered communities in the state—yet fewer than 10 get addressed every year.

With noncompliant sewers, these communities cannot grow. Most counties will not allow residents to sell their property, put on an addition or pull a building permit if they do not have a compliant septic system. If an entire small town is non-compliant, 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. When faced with such a challenge, where do local residents begin?

In this Little Digger

Getting Organized

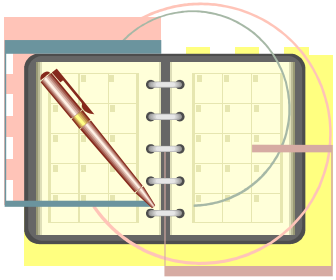
The residents living around Lake Zumbro in Olmstead County, Minn., show what can be done. The small, unincorporated communities along the lake's shores had a large percentage of properties with failing septic systems, and lot sizes often were too small to allow for individual system replacements. When state and local authorities identified these unsewered communities as sources of pollution for Lake Zumbro, the residents did not know where to begin.

The first step a community should take is to organize its residents. In Lake Zumbro, this process was simplified due to the work of a local public-private partnership called the Southeast Minnesota Wastewater Initiative (SEMWI). This group provided, at no cost, staff who organized and educated residents on the problem and potential solutions.

The assistance they provide is multifaceted: door-to-door recruitment and organizing, forming resident action

Funding & Fixing, *Continued on Page 4*

MARK YOUR CALENDAR!!



The Minnesota Onsite Wastewater Association

MOWA

Proudly Announces Its

2018 Annual Convention and Exhibitor Showcase

January 30th – 31st, 2018

Arrowwood Resort – Alexandria, MN
https://arrowwoodresort.com/

Please visit our Web site for updates:
www.mowa-mn.com

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Edina, MN 55436
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WELCOME NEW MEMBERS!

Ashley Krause
Ark Septic, LLC – Zimmerman, MN

Charley Kaskinen
C K Septic Service & Toilet Rental, LLC
Annandale, MN

Tami May
DTB Mgmt., LLC – Coon Rapids, MN

Eric Daniels
Eljen Corporation – East Hartford, CT

Marty Imholte
Imholte Excavation & Trucking – Clear Lake, MN

Tony Scully
Saint Croix Sewer Service – White Bear Lake, MN

Larry Christiansen
Scandia Compliance & Inspections, LLC – Scandia, MN

From MOWA's Executive Director

By Pat Martyn, MOWA Executive Director

Thank you to Flygare Excavating!

Flygare Excavating in Annandale hosted the 2017 Summer Seminar in late July. Many, many thanks to the Flygares for holding this successful event. Many thanks, also, to our record number of sponsors: Dakota Supply Group - DSG; Fiedler's Your Pumping Specialists, Inc.; FS3, Inc.; Infiltrator Water Technologies; Overland Insurance Agency; PointWatch Systems; Rep Rite Burke & Associates; Satellite Industries/Vacuum Xpress; WEXCO Environmental; Wieser Concrete; and ZieglerCAT. And also thanks to MOWA volunteers Bernie Miller, Eric Blasing, Mike Capra, Stacey Feser, Nick Haig, and Sara Heger for putting on such a great event. We had good attendance at both tracks, and everyone went home with a commemorative t-shirt and clipboard. All in all, the event was a great success.

Tony Ruppert Scholarship Winners

We are pleased to announce that our Scholarship/Outreach Committee has awarded six scholarships to applicants for the 2017 Tony Ruppert Scholarship for a total award of $4,500. 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.

Annual MOWA Convention is being held in Alexandria, January 30 - 31, 2018!

We are back in Alexandria for the 2017 Winter Convention! The Convention location will be one of our most popular: the Arrowwood Resort. 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.

Look for news soon on the 2018 Mega Conference scheduled for late October in the Twin Cities. MOWA will partnering with the National Onsite Wastewater Association (NOWRA), the National Association of Wastewater Technicians (NAWT), and the State Onsite Regulators Alliance (SORA) to bring you this exciting event.

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 Dean Flygare would appreciate it very much.

We look forward to seeing you soon in Alexandria!

CALENDAR OF EVENTS

MOWA Events

January 30 – 31, 2018 – Annual Convention & Tradeshow – Arrowwood Resort, Alexandria, MN (visit www.mowa-mn.com for details)

Industry Events

October 22-25, 2017 - ***2017 NOWRA/NAWT Onsite Wastewater Mega-Conference*** at Dover Downs Hotel & Casino, Dover, Delaware. For more details regarding the conference as it becomes available, visit www.nowra.org/2017mega.

February 21 – 24, 2018 - ***Water & Wastewater Equipment, Treatment & Transport (WWETT) Show*** at the Indiana Convention Center (visit https://wwettshow.com/ for details).

MOWA
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Funding & Fixing, *Continued from Page 1*

Organized residents and funding are vital components to bringing noncompliant rural sewer systems into compliance.

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

Most places do not have a local nonprofit that specializes in providing wastewater facilitators. In that case, the only real option is to find a resident who is passionate about fixing the problem and has the time and ability to educate themselves and organize their neighbors. It is critical that a local, trusted person start the process and stick with it to the end. In those small systems cases, the projects actually move forward. Wastewater projects often are contentious and expensive and can face significant community resistance. 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.

A community organizer who will profit from the project 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—especially in small towns. 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 organizing is time-consuming, and paying an engineering firm $100 or more per hour to do it is simply not feasible. In rural communities where a local organizer can't be recruited and no nonprofits can help, hiring a small solo practitioner engineer or operator may be a more affordable solution for the pre-work.

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

Scoping the Project

Once a local sewer committee is formed, it can start the process of scoping out and securing funding for the project. The good news is that many states have 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 is a catch-22—a community cannot get funding without getting organized, but cannot get organized without funding or free help. Often, these communities simply do nothing.

For example, 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 higher a project scores, the more likely it is to receive initial funding. The Minnesota 2017 PPL list includes approximately 320 communities. Each year there might be only a few dozen shovel-ready projects on the list that receive funding.

This initial assessment is very technical and often involves a thorough review of county permit records, a drive-by of all the subject properties, mapping of site locations, and an assessment of systems that are compliant and noncompliant. Funding also is impacted by density of homes, local median income data and other factors. It is a technical process that can be burdensome for someone without the expertise to tackle it.

This is the step that causes most noncompliant wastewater systems to go unmitigated. In the case of Lake Zumbro, the SEMWI helped get the process moving. But when left to local residents, a project like this can languish for years until the threat of enforcement action from a state agency forces a community to take action.

Funding & Fixing, *Continued on Page 5*

Funding & Fixing, *Continued from Page 4*

In Minnesota, the local community can apply for a Small Communities Technical Assistance Grant for up to $60,000 to contract with an engineer for a detailed wastewater infrastructure compliance survey and feasibility and cost assessment of any potential solutions. To get this initial grant, however, a community must already be on the state's PPL, as described above. Again, it is a takes-money-to-get-money situation, and availability of similar programs varies by state.

It is a catch-22—a community cannot get funding without getting organized, but cannot get organized without funding or free help.

This study provides potential project cost estimates that are used to apply for infrastructure funding. The report is then submitted to the PCA for review and comment. Residents then must hold a community meeting to present the findings and some of the alternatives to the decision-making body—usually the township board, but sometimes a county or special district board.

Hiring an engineer to conduct the community assessment and cost out potential solutions involves drafting a request for proposal, sending 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. This is where an organization like the SEMWI is invaluable.

There are tens of thousands of communities around the country with non- compliant or inadequate wastewater systems that are polluting the environment and keeping their communities stuck in time. The process of fixing them is crawling along at a snail's pace. The good news is that the money to deal with problem wastewater infrastructure is out there. In fact, many states are even looking at expanding the available pool of money for shovel-ready projects.

Do not let cost be an obstacle. A good consultant partnered with a passionate grassroots organizer is the fastest way to get a project funded and completed. It worked for the residents of Lake Zumbro, and it can work for you.

Matt Summers is environmental scientist for Wenck. Wenck can be reached at msummers@wenck.com or 651.395.5206.

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UNIVERSITY OF MINNESOTA

Contaminants of Emerging Concern

Chemicals of Emerging Concern and Land Application

By Sara Heger, Ph.D., University of Minnesota OSTP

The federal biosolids rule is contained in 40 CFR Part 503 and is a major focus of the Resource Conservation and Recovery Act (RCRA). It contains the regulations and quality standards for biosolids land application. It clearly divides biosolids into a number of categories septage being one of them. Septage is the waste coming from septic tanks, aerobic treatment units and portable toilets. The number and type of requirements associated with the land application of septage are affected not only by quality (pollutant levels, level of pathogen reduction, and attractiveness to vectors), but also by the method of distribution.

Contaminants of Emerging Concern (CEC), including hormones, pharmaceuticals, and personal care products are a diverse group of common household substances used for health, beauty and cleaning purposes. These include disinfectants, fragrances, insect repellents, preservatives, etc. Some of them are considered chemicals of emerging concern due to their presence and negative impact on aquatic ecosystems, specially related to endocrine disruption and reproductive disorders.

Contaminants of Emerging Concern (CEC), including hormones, pharmaceuticals, and personal care products are a diverse group of common household substances used for health, beauty and cleaning purposes.

Biosolids, septage, and manure contain various natural and synthetic chemicals. There is the potential for a large variety of synthetic chemicals, such as pharmaceuticals and personal care product chemicals to be present.

There is limited published research on the municipal biosolids related to CECs, but very little relating to septage from septic systems. In general, septage is less concentrated than biosolids. In a thesis by Puddephat (2013), the traces of biosolids-borne chemicals on soil biota, plants, crops, animals, and food were found to NOT have significant impacts under real-world field conditions. In a soon to be published study by the Minnesota Pollution Control Agency, soils and groundwater were tested for PCPs in the soil and downstream from a land application site. As part of the study the land application site along with large septic systems and rapid infiltration basins were evaluated for hormones, pharmacticals, antibiotics, and hazardous waste compounds. The only category of contaminant found was steroids in the groundwater near the land application site. When the soil itself was analyzed at the land application site pharmaceuticals (7), steroids (9), fragrances (5), polycyclic aromatic hydrocarbons (4), pesticides (2), alkyl phenols (2), plasticizers (2) and flame-retardants (1) were found.

An outdoor mesocosm study was conducted in Baltimore, Maryland, to explore the fate of 72 pharmaceuticals and personal care products (PPCPs) over the course of three years in that were placed in plastic containers made from polyvinylchloride and kept exposed to ambient outdoor conditions. Of the 72 PPCPs, 15 were initially detected in the soil/biosolids mixtures at concentrations ranging from low parts-per-billion to parts-per-million levels. Many PPCPs degraded over time, but some compounds persist in the soil years after their application in the form of biosolids.

Another area requiring further research is the potential for plants and crops to take up microcontaminants from biosolids-amended soils. For example, it has been documented that certain antibiotics, specifically tetracyclines and fluoroquinolones, can be taken up by crop plants, but have been found at very low levels.

There are currently no plans to change the Federal 503s to deal with CECs. With the lack of research results focusing on septage, it is best for industry professionals to stay tuned as new studies are published and request on both your state and federal level that more research be funded in this area.

MPCA: Septic System and Plumbing Regulations

What professionals and regulators need to know

Due to the related nature of plumbing and subsurface sewage treatment system (SSTS) work, it is important to recognize whether proposed work is defined as plumbing, SSTS, or both. This determination ensures those involved understand who is authorized to complete specific work tasks and who the responsible administrative authority is for review, permitting, and inspection purposes.

Code jurisdictions

The Minnesota Plumbing Code regulates all water supply and drainage activities within a structure and premises, including the building drain, building sewer, and the building sewer connected to an SSTS.

...it is important to recognize whether proposed work is defined as plumbing, SSTS, or both.

Minn. R. ch. 4714 defines the building drain as the waste drainage piping that exits a structure, terminating two-feet outside of the building foundation. The building sewer is the pipe that connects to the end of the building drain and transports the waste away from the structure to an approved point of disposal. The building sewer connected to an SSTS is the pipe that connects a structure to a septic system. The building sewer connected to an SSTS is co-defined as both a plumbing and SSTS component in Minn. R. ch. 7080.

The plumbing code regulations stop where the building sewer ends. The plumbing code ends at the point that occurs first:

1. Property line
2. Start of public pipe ownership (such as a collection system)
3. Septic tank, holding tank, or point of treatment or disposal

SSTS regulations begin at the building sewer connected to an SSTS. However, the SSTS rules defer to the plumbing code standards for technical specifications for building sewers and any external sump, lift, or grinder pump or grease interceptor preceding an SSTS component. This creates a simplified overlap of program authority and enables both professions to conduct work in accordance with the appropriate requirements.

When multiple dwellings/units are connected together to discharge to a SSTS, and that SSTS does not require a state permit, the collection system component is regulated by the SSTS rules and design guidance.

Licensing requirements

All work determined to fall under SSTS jurisdiction must be authorized by the Minnesota Pollution Control Agency (MPCA), which issues licenses to businesses that conduct SSTS work. This is a statewide requirement.

All work determined to fall under plumbing code jurisdiction must be authorized by the Department of Labor and Industry (DLI) which issues plumbing contractor licenses and pipe layer bond registrations for businesses that conduct plumbing work. This is also a statewide requirement.

Work that is co-defined as both plumbing and SSTS may be completed by either a licensed plumbing contractor, a DLI registered pipe-laying contractor, or a licensed SSTS business in accordance with local and state requirements.

For industry professionals and regulators, this means:

1. MPCA licensed SSTS installers* may install and repair external water service lines, building sewers, grinder pumps, sewage ejectors, and grease interceptors. The MPCA validates DLI pipe laying certification and bonding requirements as a part of the SSTS license issuance and renewal process and shares that information with DLI to authorize all pipe laying activities: https://secure.doli.state.mn.us/ccldbond/. SSTS installers are acting as pipe layers (see #5 below) when they install piping that is defined or co-defined as plumbing. They must provide adequate notice to the local septic system program and appropriate plumbing program representative when work requires an SSTS and/or plumbing inspection. They may also be required to provide a valid pipe layer card or personal plumbing license upon inspection.

   *Other SSTS professionals may obtain DLI pipe laying bond registration by submitting their pipe laying card or personal plumbing license to the MPCA.

2. MPCA licensed SSTS designers must submit building sewer plans to DLI when designing new building sewers connected to SSTS for all “other establishments” that serve commercial, public, or industrial buildings, and residential buildings with five or more units. MPCA licensed SSTS designers are not authorized to design for water services. There is an application linked below that includes plan submittal instructions. Unless defined as a “state project” (http://www.dli.mn.gov/ccld/dele_public.asp), all building sewers connected to SSTS in plumbing code-enforced

Septics and Plumbing Regs, *Continued on Page 10*

Member News: Wieser Concrete names new GM

Andy Winkler Promoted to Wieser Concrete General Manager

MAIDEN ROCK, Wis. – Wieser Concrete Products is pleased to announce that Andy Winkler has been promoted to general manager of its headquarters in Maiden Rock, Wis. He will lead the company's safety, marketing, sales, administrative, and service groups.

Winkler joined the company 16 years ago and has been in the precast industry his entire career. He has worked in production, delivery, installation, sales, and has been instrumental in the company's safety program. "Mr. Winkler's varied experience, and proven success along with his alignment with Wieser Concrete's goals and vision, makes him the ideal person to fill this role," says Andy Wieser, president. "We feel very fortunate to promote an internal candidate who knows the business and the team as well as Andy does." Winkler will continue to work closely with our Maiden Rock production manager, Tom Gruber, as well as the managers at our other four locations. Winkler has also been very involved in industry associations, he is currently president elect of Minnesota Onsite Wastewater Association (MOWA) and serving on the safety, health, and environmental committee of the National Precast Concrete Association (NPCA) as well as, serving as chairman of the crane certification task force. He spearheaded the initiative for the Wisconsin Precast Concrete Association (WPCA) to offer the first boom truck certification class in the country this past spring.

Septics and Plumbing Regs, *Continued from Page 8*

areas are subject to local plumbing program inspection requirements.

3. MPCA licensed SSTS inspectors may permit and/or inspect building sewers connected to SSTS for compliance with the Minnesota Plumbing Code when a plumbing inspection is a) not required for single-family homes in non-code enforced areas, or b) the SSTS inspector has prior permission from the proper plumbing authority. This may be a building official or DLI plumbing program regional inspector for the project. http://workplace.doli.state.mn.us/jurisdiction/. Local SSTS programs may verify all SSTS and plumbing contractors that are authorized to install building sewers here: https://secure.doli.state.mn.us/ccldbond/.

4. DLI licensed plumbing contractors may design and perform the installation of plumbing systems (interior plumbing as well as building sewer and water services). The licensed plumber preparing plumbing plans and specifications must be the installer for the construction project. All plans must be submitted to DLI, or cities with formal plan review agreements, for approval and inspection permits prior to installation of any portion of the plumbing system.

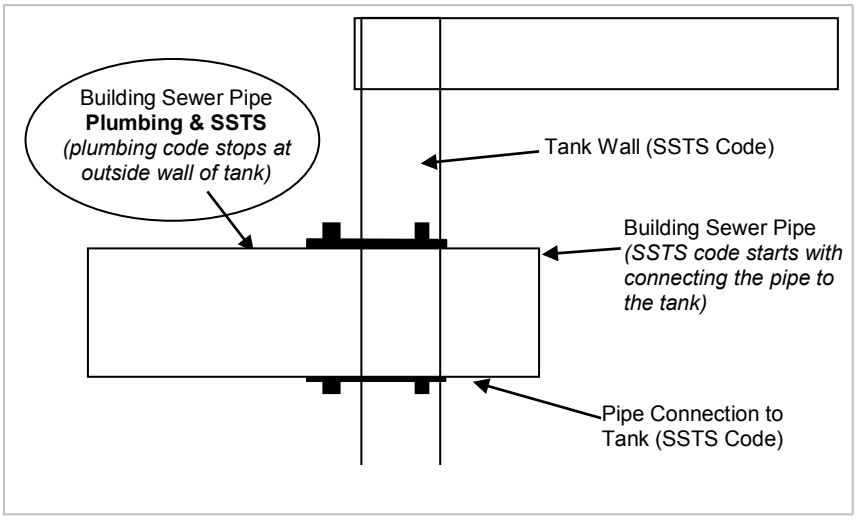
5. DLI registered and bonded pipe laying contractors may perform installation of sewer and water services outside of buildings. DLI registered pipe laying contractors are not authorized to design plumbing systems including designs of building sewer and water services within the property line. Pipe laying contractors must ensure all sewer and water service plans are submitted to DLI or to cities with formal plan review agreements with DLI for approval and inspection permit prior to installation of sewer and water services.

6. Plumbing officials in municipalities that have adopted the State Building Code will issue plumbing permits and perform plumbing inspections within their jurisdiction. DLI performs plumbing plan reviews for "other establishments" for most municipalities. Some municipalities have formal plumbing plan review agreements with DLI and perform their own review, permitting, and inspection activities (except for "state projects"). The municipal plumbing permits and inspections may cover building sewer and water services for single family homes, multi-family homes, commercial buildings, industrial buildings, public buildings, etc. However, the review and inspections of certain projects known as "state projects" are performed by DLI unless a formal plan review agreement is established and inspections are performed by an employee of the municipality that is a master plumber. Local plumbing programs may verify all SSTS and plumbing contractors that are authorized to install building sewers here: https://secure.doli.state.mn.us/ccldbond/.

   For non-code enforced areas of the state, DLI plumbing staff will perform plumbing plan reviews and inspections for plumbing systems including sewer and water services outside of buildings for all commercial, public, industrial, and residential buildings with five or more units – generally all "other establishments" under SSTS rules.

The following diagrams show common situations encountered in the field where the plumbing and the SSTS regulations overlap, and indicate which regulations and requirements apply. The appropriate plumbing officials can be located with this tool: http://workplace.doli.state.mn.us/jurisdiction/

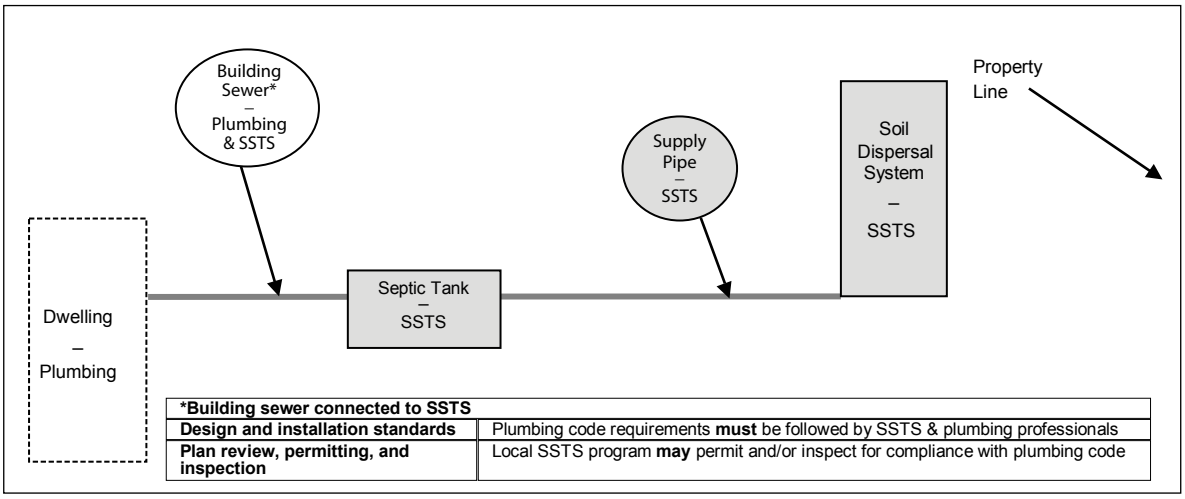
Scenario 1:
Connections between the building sewer and sewage tank



Septics and Plumbing Regs, *Continued on Page 12*

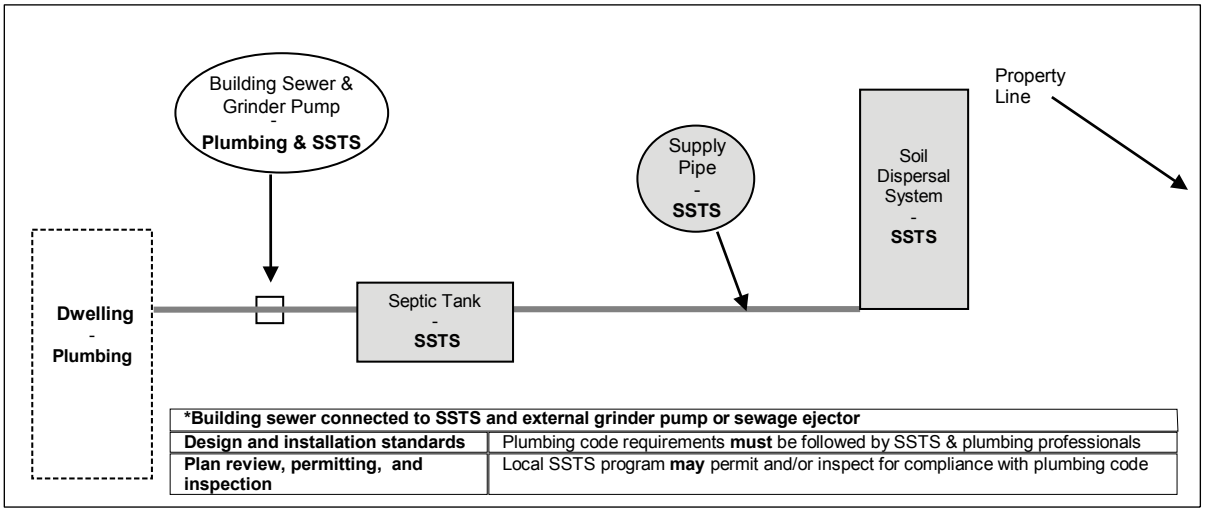
Septics and Plumbing Regs, *Continued from Page 10*

Scenario 2:
Single family dwelling on an individual lot with an SSTS, in areas of the state that do not locally enforce the plumbing code.



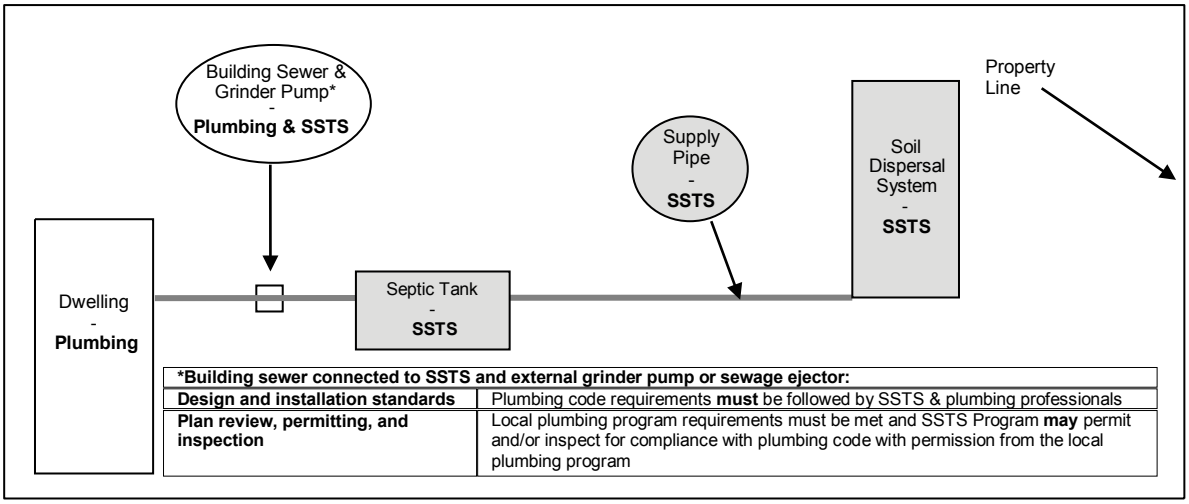
*Building sewer connected to SSTS	
Design and installation standards	Plumbing code requirements **must** be followed by SSTS & plumbing professionals
Plan review, permitting, and inspection	Local SSTS program **may** permit and/or inspect for compliance with plumbing code

Scenario 3:
*Single family dwelling on an individual lot with an SSTS that uses an outside grinder pump or sewage ejector, in areas of the state that **do not** locally enforce the plumbing code.*



*Building sewer connected to SSTS and external grinder pump or sewage ejector	
Design and installation standards	Plumbing code requirements **must** be followed by SSTS & plumbing professionals
Plan review, permitting, and inspection	Local SSTS program **may** permit and/or inspect for compliance with plumbing code

Scenario 4:
*Single family dwelling on an individual lot with an SSTS with or without an outside grinder pump or sewage ejector, in areas of the state that **do** locally enforce the plumbing code.*

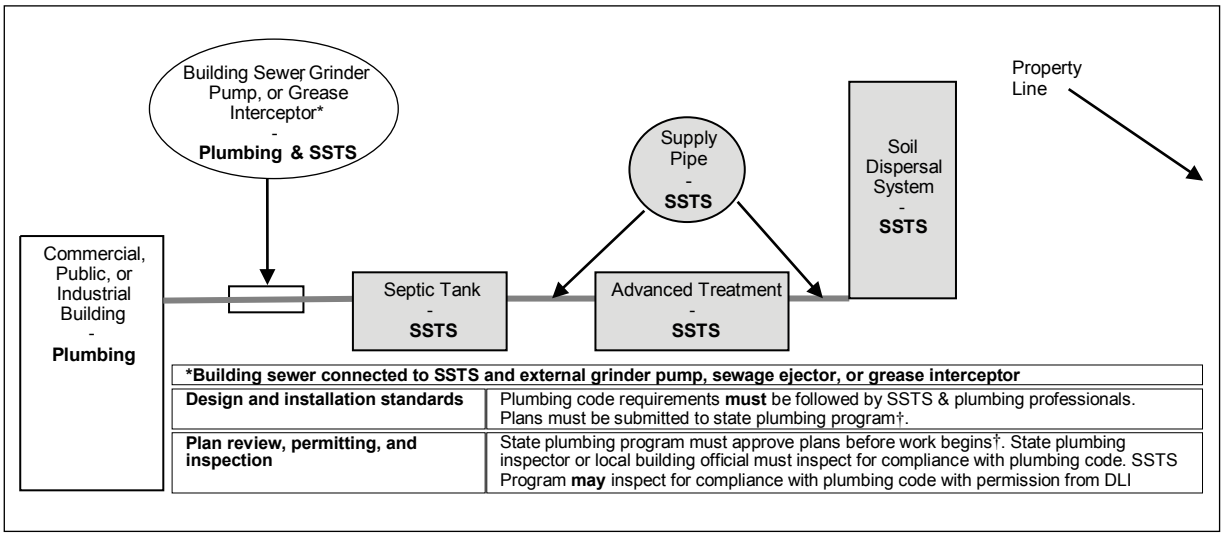


*Building sewer connected to SSTS and external grinder pump or sewage ejector:	
Design and installation standards	Plumbing code requirements **must** be followed by SSTS & plumbing professionals
Plan review, permitting, and inspection	Local plumbing program requirements must be met and SSTS Program **may** permit and/or inspect for compliance with plumbing code with permission from the local plumbing program

Septics and Plumbing Regs, *Continued on Page 13*

Septics and Plumbing Regs, *Continued from Page 12*

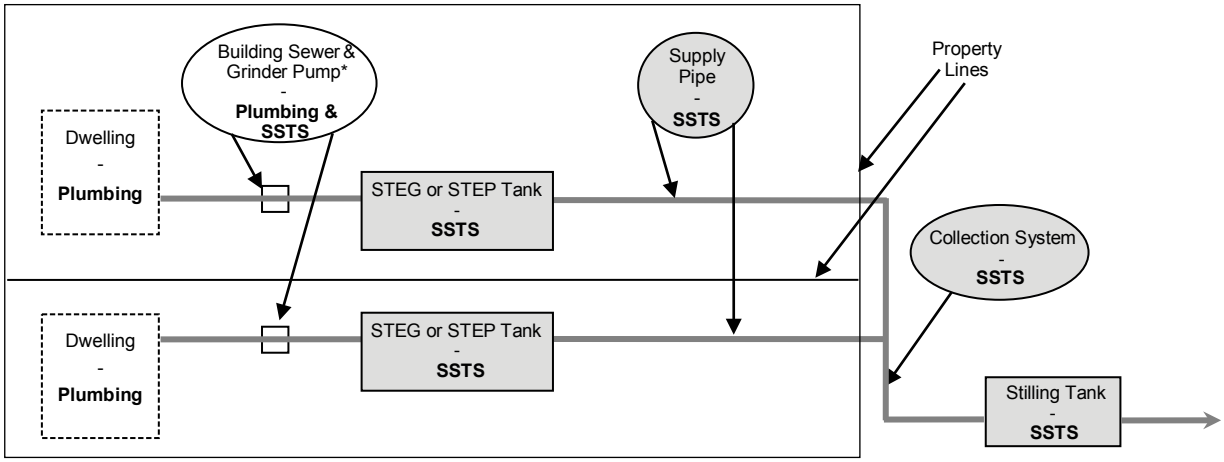
Scenario 5: *Commercial, public, or industrial building on an individual lot with an SSTS with or without an outside grinder pump, grease interceptor, or sewage ejector,* ***in any area†*** *of the state.*



*Building sewer connected to SSTS and external grinder pump, sewage ejector, or grease interceptor	
Design and installation standards	Plumbing code requirements **must** be followed by SSTS & plumbing professionals. Plans must be submitted to state plumbing program†.
Plan review, permitting, and inspection	State plumbing program must approve plans before work begins†. State plumbing inspector or local building official must inspect for compliance with plumbing code. SSTS Program **may** inspect for compliance with plumbing code with permission from DLI

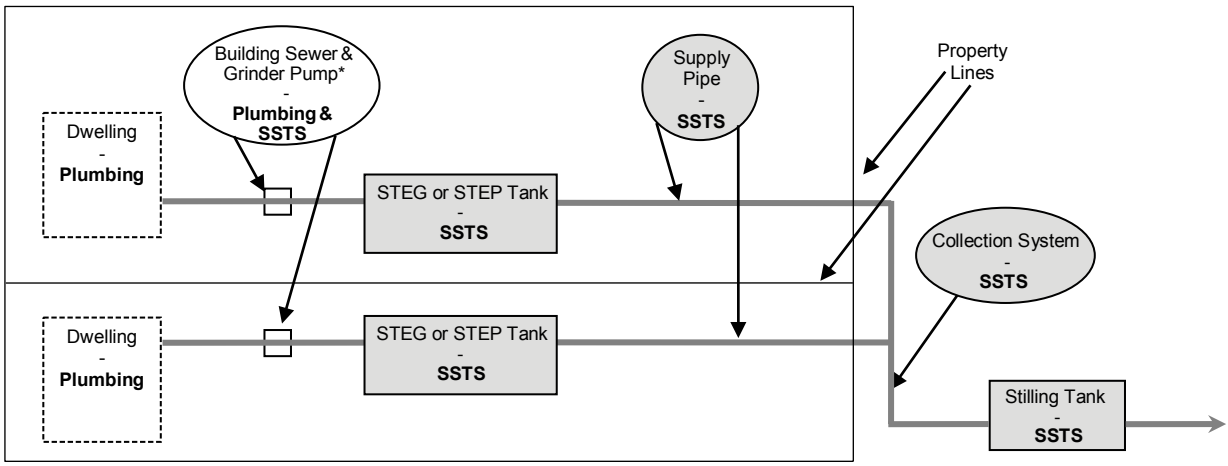
†Except for "state projects", *cities that have* ***plumbing*** *plan review agreements with DLI approve plans and inspect work.*

Scenario 6: *Individual dwellings on multiple lots served by septic tank effluent gravity (STEG) or septic tank effluent pressure (STEP) sewer system to offsite collection and SSTS, in areas of the state that* ***do not*** *locally enforce the plumbing code.*



*Building sewer connected to SSTS and external grinder pump or sewage ejector	
Design and installation standards	Plumbing code requirements **must** be followed by SSTS & plumbing professionals
Plan review, permitting, and inspection	Local SSTS program **may** permit and/or inspect for compliance with plumbing code

Scenario 7: *Individual dwellings on multiple lots served by STEG or STEP sewer system to offsite collection and SSTS, in areas of the state that* ***do*** *locally enforce the plumbing code.*

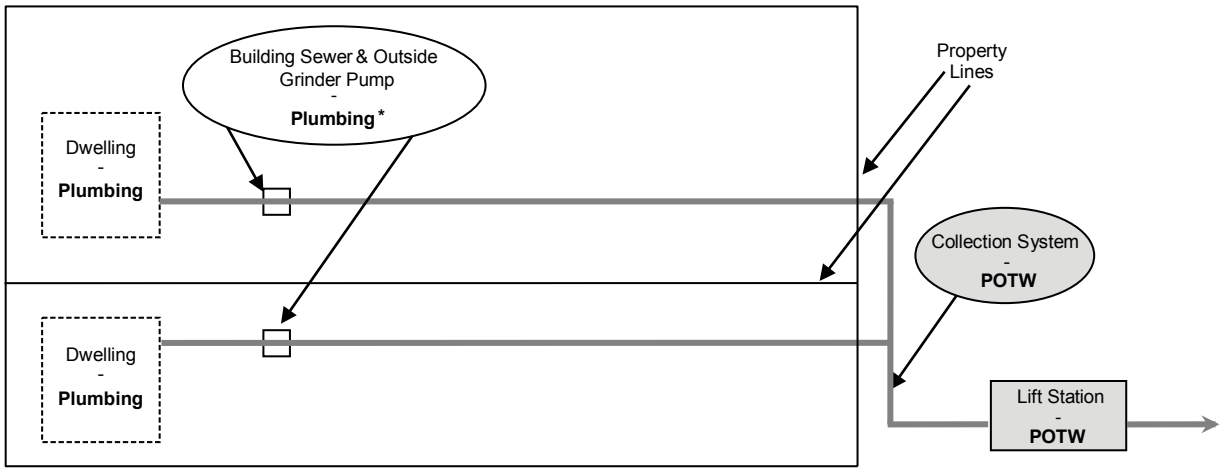


*Building sewer connected to SSTS and external grinder pump or sewage ejector:	
Design and installation standards	Plumbing code requirements **must** be followed by SSTS & plumbing professionals
Plan review, permitting, and inspection	Local plumbing program requirements must be met and SSTS Program **may** permit and/or inspect for compliance with plumbing code with permission from the local plumbing program

Septics and Plumbing Regs,
Continued on Page 14

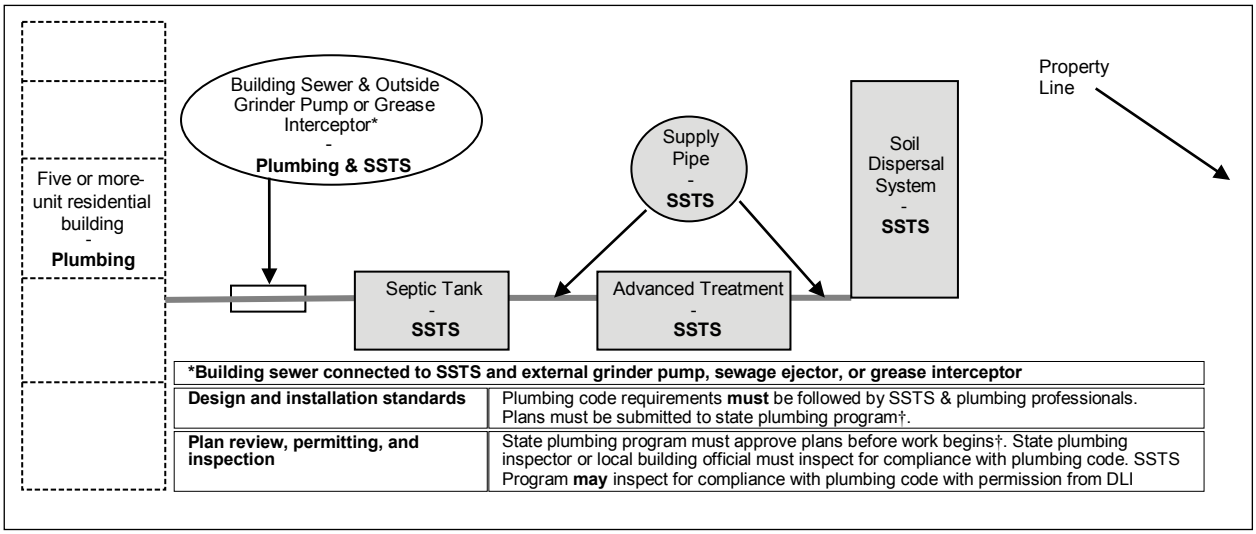
Septics and Plumbing Regs, *Continued from Page 13*

Scenario 8: *Individual dwellings on multiple lots with or without an outside grinder pump or sewage ejector served by gravity or pressure sewer to a publically owned treatment works (POTW)* ***in any area*** *of the state.*



*Building sewer and external grinder pump or sewage ejector:	
Design and installation standards	Plumbing code requirements **must** be followed. SSTS professional may install but may not design
Plan review, permitting, and inspection	Local plumbing program requirements must be met

Scenario 9: *Five or more unit-residential building on an individual lot with an SSTS with or without an outside grinder pump or sewage ejector,* ***in any area†*** *of the state.*



*Building sewer connected to SSTS and external grinder pump, sewage ejector, or grease interceptor	
Design and installation standards	Plumbing code requirements **must** be followed by SSTS & plumbing professionals. Plans must be submitted to state plumbing program†.
Plan review, permitting, and inspection	State plumbing program must approve plans before work begins†. State plumbing inspector or local building official must inspect for compliance with plumbing code. SSTS Program **may** inspect for compliance with plumbing code with permission from DLI

†Except for "state projects", *cities that have* ***plumbing*** *plan review agreements with DLI approve plans and inspect work.*

Additional information

Find more information about SSTS professionals and building sewers in this factsheet: https://www.pca.state.mn.us/sites/default/files/wq-wwists3-26.pdf

Find a list of all contractors authorized to install or repair external water service lines, building sewers, grinder pumps, sewage ejectors, and grease interceptors: https://secure.doli.state.mn.us/ccldbond/

Minnesota State Building Code Jurisdiction Directory: http://workplace.doli.state.mn.us/jurisdiction/

Find more information about building sewer specifications here: http://www.dli.mn.gov/CCLD/PDF/pe_usc.pdf

Find more information about collection system specifications here: https://www.pca.state.mn.us/sites/default/files/wq-wwists4-44.docx

Plumbing Program Plan Review Unit webpage: http://www.dli.mn.gov/CCLD/PlanPlumbing.asp

Plumbing Plan Review Application: http://www.dli.mn.gov/CCLD/PDF/pe_plumbplanrevapp.pdf

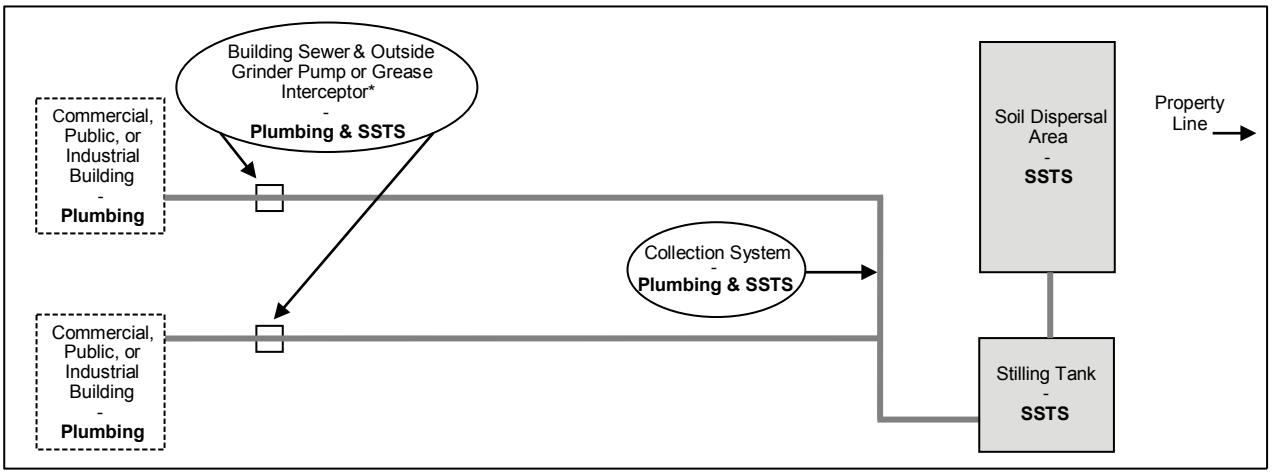
Plumbing Permit and Inspection information: http://www.dli.mn.gov/CCLD/PDF/pe_inspection_fee_submittal.pdf

For more information on the Minnesota Plumbing Code, please visit http://www.dli.mn.gov/. For more SSTS information, please visit the MPCA at http://www.pca.state.mn.us/programs/ists/ or call us at 651 296 6300 or toll free at 800-657-3864.

Septics and Plumbing Regs, *Continued on Page 15*

Septics and Plumbing Regs, *Continued from Page 14*

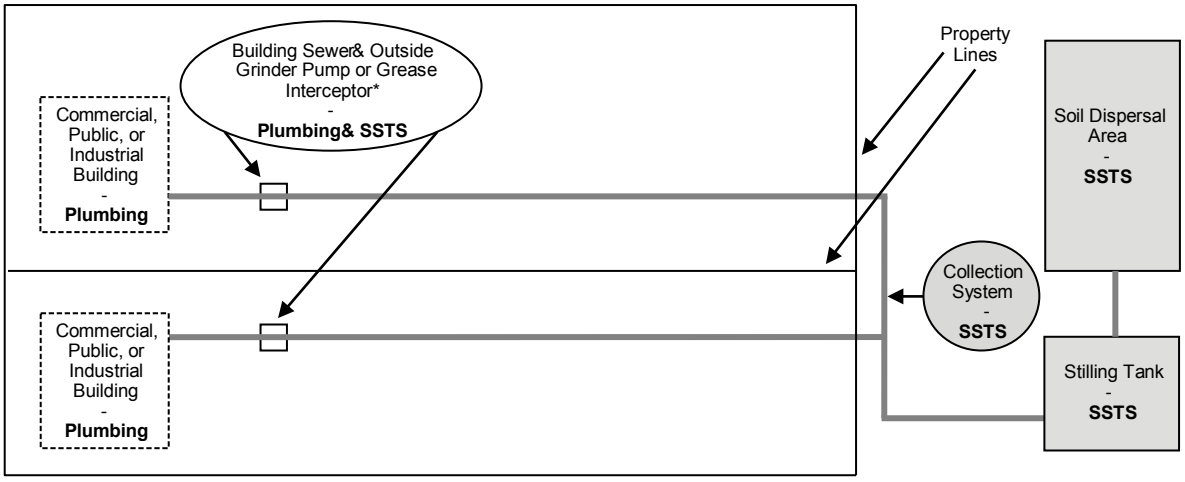
Scenario 10: *Commercial, public, or industrial building(s) on an individual lot with an SSTS with or without an outside grinder pump, grease interceptor, or sewage ejector,* ***in any area†*** *of the state.*



*Building sewer connected to SSTS and external grinder pump or sewage ejector:	
Design and installation standards	Plumbing code requirements **must** be followed by SSTS & plumbing professionals. Plans must be submitted to state plumbing program†.
Plan review, permitting, and inspection	State plumbing program must approve plans before work begins†. State plumbing inspector or local building official must inspect for compliance with plumbing code. SSTS Program **may** inspect for compliance with plumbing code with permission from DLI

†Except for "state projects", *cities that have* ***plumbing*** *plan review agreements with DLI approve plans and inspect work.*

Scenario 11: *Commercial, public, or industrial building on multiple lots with an SSTS with or without an outside grinder pump, grease interceptor, or sewage ejector,* ***in any area†*** *of the state.*



*Building sewer connected to SSTS and external grinder pump or sewage ejector:	
Design and installation standards	Plumbing code requirements **must** be followed by SSTS & plumbing professionals. Plans must be submitted to state plumbing program†.
Plan review, permitting, and inspection	State plumbing program must approve plans before work begins†. State plumbing inspector or local building official must inspect for compliance with plumbing code. SSTS Program **may** inspect for compliance with plumbing code with permission from DLI

†Except for "state projects", *cities that have* ***plumbing*** *plan review agreements with DLI approve plans and inspect work.*

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

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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

2017 Tony Ruppert Scholarship Winning Essays

The Solution to Septic System Pollution

by Ashley Anderson of Glenwood, MN

As the world's population increases, so does the need for septic systems. Septic systems are one of the most common waste removal methods in existence for a reason. This reason is that they are effective in safely removing human waste, when they function as they are supposed to. When septic systems are improperly maintained, they can not only have expensive and irreparable damage, they can start leaching contaminants into the soil and groundwater such as nitrates, pathogens, and a number of other compounds. These contaminants can not only affect human health as well as the environment and animal health. Therefore, being informed about proper maintenance is vital.

One of the biggest contaminants the public is concerned about are nitrates. Nitrates are mainly composed of nitrogen, which is a naturally occurring and necessary gas. But when these nitrates get into water, they oxidize iron, which lowers the oxygen carrying ability of molecules. This basically means nitrates lower the oxygen level in anything they are found in. Just like all things a small number of nitrates are not harmful, but when the nitrate level rises above the 10 ppm, or parts per million, regulation they can become harmful. (Oram 2014). The oxygen level in lakes, streams, and rivers could also be affected by high levels of nitrates preventing aquatic animals to receive the oxygen they need and deteriorating our lakes. Due to the fact, nitrate pollution can be so harmful it is important we know how to prevent it.

A reasonable concern people have about septic systems is the ability to spread disease through them. Because septic systems are not designed to destroy bacteria, viruses, intestinal parasites, or protozoa in certain cases they can pass through the system (Jenkins 1996). These cases are usually when people have a diarrheal illness that prevents the pathogens from being trapped in a solid substance (Walton 2015). Diarrheal illnesses make it possible for disease causing molecules to travel with effluent and reach the surrounding soil, and possibly the groundwater. Being aware of this, some people believe pouring chemicals to clean their tanks will prevent the spreading of these diseases. Little do they know, they are actually making it much worse. Most bacteria killing chemicals also kill the bacteria in the tanks that are breaking solids down.

Of course, not all pollution is caused by septic systems, there are many other causes like feedlots, over applied fertilizer or chemicals, road salt, landfills, run off, and accidental spills; but most of the leaching caused by septic systems is due to improper maintenance or being non-compliant. The problem we face is informing the public that their systems have to be maintained, like cleaning the effluent screen an estimated twice a year, knowing not to dump disinfectants, paint, medications or chemicals that kill the aerobic bacteria, and pumping them an average of every three years. As pumpers clean out your tank, they check the operating level. They also carry a camera to detect cracks in the tanks, or non-functioning effluent screens. Without knowledge of the upkeep septic systems require, systems may continue leaching nitrates, pathogens, and other harmful contaminants such as phosphates, chloride, and more organic compounds (PCA 2016). The Environmental Protection Agency, or EPA, has multiple requirements about the placement of septic systems, and the care of them. By informing the public about the rules and regulations required by the EPA, we can prevent the pollution caused by inoperative septic systems.

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Saving the world with new technologies

by Madeline Haeg of St. Joseph, MN

The sad reality is, people around the world are still suffering from lack of clean water. The number of people affected by the lack of clean water is now approaching 1 billion with nearly half of the deaths being children (Dakkak 2016). Contaminated water can directly cause death through the spread of diseases such as cholera, typhoid or intestinal worms. Some effects of unclean water are not so clear, for example, water that is not stored properly can become breeding grounds for mosquitos that carry malaria. With preventable diseases such as these taking such a high toll on these countries, it is logical to ask why action is not being taken.

A crucial barrier to clean water in third world countries is a lack of stable government to fund and enforce clean water initiatives. According to the UN Environment Programme study, the majority of countries in Africa stated that their constraints to providing clean water to its citizens are due to lack of support and interest, rather than lack of money (Vidal 2012). Unfortunately, when governments do take initiative to provide clean water, people in rural areas are often overlooked (Robeson 2015). Being that three out of four individuals in developing countries live in rural areas in these conditions, the situation seems futile. Fortunately for the millions suffering from unclean water, there is now hope that communities that previously had to live without clean water may finally get one of their most basic human needs met. Scientists have found a solution that can be executed across rural areas of third world countries by communities, and individuals to properly treat and store water.

In the United States, the most common way that water is reused is through the use of a septic system in which wastewater is pumped from the house into the septic tank. Once in the septic tank, the solids sink to the bottom while the oils and greases rise to the top. The water then filters through a screen and flows into the drain field. Once in the drain field, the water percolates through the soil which then purifies the water by removing the remaining bacteria, nutrients, and viruses. The now clean water joins the groundwater and is ready to be used again. The drawback to a septic system is that certain types of soils need to be in place so that the water gets completely purified. Septic Systems require yearly maintenance and can be expensive to install, making it a poor choice for impoverished communities (Haeg 2017)

The alternative to a septic system is an all natural solution known as constructed wetlands. These wetlands harness the power of sunlight, microbes, and algae in order to purify water in a natural fashion. (Vymazal) In Constructed Wetlands Wastewater flows through a pipe into the constructed wetland. Wastewater can either flow on top of the existing soil or through a porous substance such as gravel. A waterproof liner is used on the sides and bottom of the wetland to prevent leaks and ensure enough water for the wetland plants. This wetland is planted with swamp plants such as cattails and bulrushes. Roots and stems of the plants form a thick surface. Down at the bottom, the wastewater goes through biological and chemical processes so that it is broken down thoroughly.

The scientific development of constructed wetlands are promising for third world countries because they cost 50-90% less than a septic system, they require less maintenance and if managed properly they can keep mosquito levels down (Purdue University 2017). These natural purifiers are not designed for heavy use so having them in small rural communities is ideal. Constructed wetlands are a much better alternative to conventional septic systems that many people in developed countries rely on. With the implementation of this technology, millions of people will be spared from horrible diseases and the water that is so precious to this earth will be conserved in a sustainable manner for generations to come.

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MOWA congratulates 2017 Ruppert Scholarship Winners

The Minnesota Onsite Wastewater Association is pleased to announce the 2017 Tony Ruppert Scholarship winners. This year six submissions tied for first place. Winners are: Ashley Anderson of Glenwood, MN; Madeline Haeg of St Joseph, MN; Kailee Kanfler of Little Falls, MN; Josh Miller of Kimball, MN; Ashley Thelen of Park Rapids, MN; and Wyatt Wirth of Dodge Center, MN. Each winner will receive $750 in scholarship funds.

2017 OSTP Certification Course Descriptions and Offerings

Introduction to Onsite Systems (15 Direct Credits)
Fee: $360 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

10-3 St. Cloud - Moose Lodge 11/13-15/17 Deadline: 11/6/17

Installing Onsite Systems (12 Direct Credits)
Fee: $265 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

112-3 St. Cloud - Moose Lodge 11/16-17/17 Deadline: 11/9/17

General Continuing Education (12 Direct Credits)
Fee: $265 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 Mankato - Morson-Ario VFW 11/2-3/17 Deadline:10/26/17
60-4 St. Cloud - Moose Lodge 12/12-13/17 Deadline: 12/5/17

Installer Continuing Education (12 Direct Credits)
Fee: $265 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 Grand Rapids - Sawmill Inn 11/29-30/17 Deadline: 11/22/17

Pipelayer Certification (2 Direct Credits, 1 Related Credit)
Course begins at 1:00PM Exam: Yes Fee: $75
This 3-hour workshop is once again offered this year to accommodate a change in the Minnesota Plumbing Code that requires all septic system installers be either certified pipelayers, licensed plumbers, or registered apprentices in order to install sewer or water service pipes outside of a building in Minnesota.
Topics include:
- MN Plumbing Code
- Pipelaying
- Code compliance bond packet instruction

92-3 Grand Rapids - Sawmill Inn 11/30/17 Deadline: 11/23/17

Enroll online at: septic.umn.edu

OSTP, 173 McNeal Hall, 1985 Buford Ave., St Paul, MN 55108
Fax: 612-624-6434 Phone: 800-322-8642

2017 MOWA MEMBERSHIP APPLICATION

MOWA minnesota onsite wastewater association

Membership: ❑ **Renewal** ❑ **New Member**

❑ Individual Member $240 (1 person)
❑ Business Group /Government Unit $340 (up to 5 people; $100 /person after 5)
❑ Student $140 (1 person)
❑ Life-time
❑ Honorary

Note: Your MOWA Membership includes one NOWRA membership

Memberships are based on calendar year - After July 1st, new members pay $140-individual / $190-business or gov't groups for remainder of 2017

Individual/Group Contact: **This person will be listed as the NOWRA member on the Septic Locator website. They will be listed first in all MOWA publications. Please print clearly.**

• **1st Member** _____ **Company Name** _____

Address _____ City/State/Zip _____

Title _____ Phone _____ Mobile/800# _____ Fax _____

Email _____ Website _____ County _____

Circle the counties you work in: *Needed for Directory and Website.*

Statewide 88

Aitkin....1
Anoka....2
Becker....3
Beltrami....4
Benton....5
Big Stone....6
Blue Earth....7
Brown....8
Carlton....9
Carver....10
Cass....11
Chippewa....12
Chisago....13
Clay....14
Clearwater....15
Cook....16
Cottonwood....17
Crow Wing....18
Dakota....19
Dodge....20
Douglas....21
Faribault....22
Fillmore....23
Freeborn....24
Goodhue....25
Grant....26
Hennepin....27
Houston....28
Hubbard....29
Isanti....30
Itasca....31
Jackson....32
Kanabec....33
Kandiyohi....34
Kittson....35
Koochiching....36
Lac qui Parle Lake....37
Lake....38
Lake of the Woods....39
Le Sueur....40
Lincoln....41
Lyon....42
Mahnomen....43
Marshall....44
Martin....45
McLeod....46
Meeker....47
Mille Lacs....48
Morrison....49
Mower....50
Murray....51
Nicollet....52
Nobles....53
Norman....54
Olmsted....55
Otter Tail....56
Pennington....57
Pine....58
Pipestone....59
Polk....60
Pope....61
Ramsey....62
Red Lake....63
Redwood....64
Renville....65
Rice....66
Rock....67
Roseau....68
Scott....69
Sherburne....70
Sibley....71
St. Louis....72
Stearns....73
Steele....74
Stevens....75
Swift....76
Todd....77
Traverse....78
Wabasha....79
Wadena....80
Waseca....81
Washington....82
Watonwan....83
Wilkin....84
Winona....85
Wright....86
Yellow Medicine....87

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❑ Soil Scientist ❑ Professional Engineer ❑ Manufacturer ❑ Operator/Maintenance ❑ Supplier ❑ Other: _____

Additional Business/Government Members:

• **2nd Member** _____ Title _____ County _____

Address _____ City/State/Zip _____

Phone _____ Mobile/800# _____ Fax _____ Email _____

• **3rd Member** _____ Title _____ County _____

Address _____ City/State/Zip _____

Phone _____ Mobile/800# _____ Fax _____ Email _____

(Please list additional business/government group members on separate sheet with complete contact information.)

Publications: Would you prefer receiving 'Little Digger' newsletters via ... ❑ Regular Mail ❑ Electronically

We currently send one publication per address to business/government groups. Contact the MOWA office if you'd like additional copies.

Additional NOWRA Memberships: **MOWA membership fees include one NOWRA membership per company/organization. List names of members who want additional NOWRA memberships here: Cost - $40 per person.**

2)_____ 3)_____ 4)_____ 5)_____

Payment: *(Please print)*

MOWA Membership $_____ + Add'l NOWRA Memberships = **Amount: $ _____**

❑ Check enclosed (Payable to MOWA) ❑ VISA ❑ MasterCard

Card Number: _____ CVV: ____ Expiration Date: _____ Cardholder Name: _____

Signature: _____ Date_____

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Note: Dues payable to MOWA are not deductible as a charitable contribution but may be deductible as an ordinary and necessary business expense. MOWA estimates that 10% of your MOWA dues are used for governmental affairs issues and therefore are not deductible.

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