



Onsite

NEWSLETTER

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Redefining Rural Water Management in Ontario: A Clearford and the county of Frontenac partnership

By: Jessica Sweeney, Digital Marketing & Design Lead, Clearford



Clearford is excited to announce its new project with the County of Frontenac (the County) through their Frontenac Municipal Service Corporation (FMSC), marking a significant milestone in rural water and wastewater servicing management. This is the first utility created in Ontario to exclusively manage decentralized water and wastewater services. The FMSC model is potentially a transformative approach to infrastructure delivery while maintaining municipal control.

A New Era For Municipal Responsibility Agreement

Municipal Responsibility Agreements (MRAs) have long been a challenge for developers especially in smaller municipalities, often stalling infrastructure development due to the significant financial risks, legal fees, and lengthy approval processes. While MRAs are designed to protect municipalities—especially resource-constrained ones—they can impose high costs on developers which are ultimately passed on to homebuyers. Even when funding is set aside, condominium corporations, land lease communities, and privately serviced subdivisions often struggle to cover the ongoing costs of funding the obligations under the MRAs, creating a significant roadblock to development.

FMSC’s framework eliminates the need for MRAs by incorporating infrastructure responsibility to the municipal service corporation (MSC).

Story continued on page 18

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President's Message



Welcome to the 2025 Ontario Onsite Wastewater Association Annual Convention and Expo. We are back in the city of Ottawa after being away for over two decades. As I reflect back on that 2004 conference, I remember being a very nervous young(er) person in the industry that delivered a presentation on sewage system reinspection programs. It's hard to believe that it is now over 20 years later, and I am the President of this great organization.

I also want to take a moment to celebrate the collective achievements and commitment each of you has shown in shaping the success of the onsite wastewater industry. All of us contribute, in our own way, to the growth and advancement of onsite wastewater in Ontario, so let's celebrate that over the next few days.

The past year has been filled with growth, challenges and great accomplishments at OOWA. Here are a few high-level standouts:

- Developed and released several communication pieces throughout the year (videos, newsletters, guidance documents, etc.) We took part in Septic Awareness week with our friends from the Western Canada Onsite Wastewater Management Association.
- Facilitated numerous training sessions and member engagements. We exhibited at the Concrete Precasters Association Conference in Huntsville, Ontario.
- Expanded our collaboration with like-minded organizations inside and outside of Ontario.
- Continued engagement with our provincial regulatory bodies.
- Adopted a new organizational structure and hired new staff.

So, what are some of the things that OOWA has planned over the next year:

- Continue advancing the initiatives we have worked on this past year.
- Review and update our strategic plan.
- Hire a Membership Coordinator.
- Grow our membership.
- Update our communication tools.
- Develop and deliver new training courses.

These, of course, are not exhaustive lists. The number of things we've accomplished over the last year and the things we plan to do is way too much to fit into this message. But rest assured, we will continue to work hard on your behalf to make OOWA the go to source for all things onsite wastewater in Ontario.

I cannot end this without thanking the endless number of people that make our conference a reality. Thank you to the sponsors, exhibitors, attendees, speakers, volunteers and our awesome staff for all the hard work that you do to make this event happen every year.

Enjoy the convention!

Bill Goodale, President



Ontario Onsite Wastewater Association
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Land Acknowledgement

The Ontario Onsite Wastewater Association (OOWA) represents members from across the Province of Ontario and beyond. We respectfully acknowledge that Ontario's lands and waters are the traditional territories of many First Nations, including the Anishnaabeg, Cree, Haudenosaunee, Huron-Wendat, Mississauga, Odawa, and Petun.

Our office in Nogojiwanong, or Peterborough, Ontario, is on the traditional territory of the Treaty 20 Michi Saagiig and Chippewa Nations, collectively known as the Williams Treaties First Nations, which include Curve Lake, Hiawatha, Alderville, Scugog Island, Rama, Beausoleil, and Georgina Island First Nations.

OOWA acknowledges that the First Nations have been and continue to be the stewards and caretakers of these lands and waters in perpetuity, and that they continue to maintain this responsibility to ensure their health and integrity for generations to come.

As onsite wastewater professionals, we have a role in protecting our waterways and human health by following industry best practices and promoting the regular maintenance of onsite wastewater systems.

CONVENTION SCHEDULE - DAY 1

Sunday, March 30, 2025

10:30 am - 11:30 am	OOWA Board Meeting	Room 211
12:00 pm - 4:00 pm	Registration Desk Open	Guest Service Foyer
12:00 pm - 6:00 pm	Exhibitor Set-Up	Main Ballroom 106
1:00 pm - 4:00 pm	Training Sessions	See Right
4:15 pm - 5:30 pm	Annual General Meeting	Room 118 AB
6:00 pm - 9:00 pm	Welcome Reception: Light dinner, Trivia, Games, Canvas Brewery samples	Main Ballroom 106
9:00 pm Onwards	Hospitality Suites	

CONVENTION SCHEDULE - DAY 2

Monday, March 31, 2025

7:30 am - 8:45 am	Networking Breakfast	Main Ballroom 106
8:45 am - 9:00 am	Welcome and Opening Remarks	Room 118 CDE
9:00 am - 10:00 am	KEYNOTE ADDRESS Dr. Sarah Heger; Adjunct Assistant Professor, Research Associate, University of Minnesota Installation Keys for Long-Term System Performance	Room 118 CDE Keynote session will not be recorded.
10:00 am - 10:30 am	Networking Break and Exhibit Hall	Main Ballroom 106
10:30 am - 11:05 am	Room 118 AB Session 1A: The Importance of Ventilation and Sewage Systems Danielle Ward Adam Bros Construction	Theatre Hall 110 Session 1B: Limiting Layers: What they are and how to recognize them Dominic Mercier Enviro-Step Technologies
	Session 2A: Applying Code Requirements to Shallow Buried Trench Leaching Beds Brady Straw, Emma Deyo Waterloo Biofilter Systems Inc.	Session 2B: System Remediation Dr. Sarah Heger University of Minnesota
11:15 am - 11:45 am		
11:55 am - 12:25 pm	Session 3A: Insurance in our Industry Scott McMullen Verge Insurance	Session 3B: Flow Monitoring and Analysis at Ontario Campground Trailer Dumping Stations: Insights and Implications Mike Varty Envision Consultants Inc.
12:25 pm - 1:40 pm	Equipment Rodeo, Networking Lunch and Exhibit Hall	Main Ballroom 106
1:40 pm - 2:00 pm	Session 4: Update from the Ministry of Municipal Affairs & Housing James Ross MMAH - To be confirmed	Room 118 CDE
2:00 pm - 3:00 pm	Session 5: Installer Panel Discussion; Moderated by Brady Straw, Waterloo Biofilter Panelists: Brenda Burrows-Rabb, Jordan Kuipers, Bill Robinson, Dan Friesen Rabb Coonstruction, Kuipers Construction, Robinson Enterprises, ESI Group	Room 118 CDE
3:10 pm - 3:40 pm	Session 6A: Understanding Locates: Setting up for Safe and Successful Excavation Ryan Quesnel Thomas Cavanagh Construction	Session 6B: Gravel less Systems Dennis F. Hallahan Infiltrator Water Technologies
3:40 pm - 4:30 pm	Equipment Rodeo, Networking Lunch and Exhibit Hall	Main Ballroom 106
4:30 pm - 6:00 pm	No scheduled events	
6:00pm - 7:00 pm	Pre-Banquet Reception	Room 118 CDE
7:00pm - 11:00 pm	Annual Awards Dinner & Entertainment	Room 118 CDE
11:00 pm Onwards	Hospitality Suites	

TRAINING SESSIONS

Sunday, March 30, 2025
1:00 pm to 4:00 pm

** Training sessions run concurrently and therefore you can only attend one session. **These sessions will not be recorded.**

TRAINING SESSION # 1

Commercial Vehicle 101: MTO Requirements, Road Safety and CVOR Compliance

Hank Dubee
MTO

Room 118 A/B

TRAINING SESSION # 2

Installation of a Septic Tank with a focus on 50,000L plus

Presenters TBA
Various Precasters

Theatre Room 110

CONVENTION SCHEDULE - DAY 3

Tuesday, April 01, 2025

7:30 am - 8:45 am	Networking Breakfast	Main Ballroom 106
8:45 am - 9:00 am	Welcome and Opening Remarks	Room 118 CDE
9:00 am - 10:00 am	KEYNOTE ADDRESS Jenn Grant: Funniest Female Comic Nominee Comedian Humour Stress Management Expert Find the Funny because Success is a Laughing Matter!	Room 118 CDE Keynote session will not be recorded.
10:00 am - 10:30 am	Networking Break and Exhibit Hall	Main Ballroom 106
10:30 am - 11:30 am	Session 1A: Decentralized Panel Discussion; Moderated by Joe Gallivan John Levie - Clearford Water Systems, Brad Gaffney - Newterra, Noelle Reeve - Tay Valley Township, Chris Gerrits - Mayor of Amaranth, TBA - MECP representative, Joe Gallivan - County of Frontenac	Room 118 CDE
11:40 am - 12:10 pm	Room 118 AB Session 2A: Flushed With Challenges: Navigating On-Site Sewage Systems Amidst the Urban Exodus Chantal Stevens Peterborough Public Health	Theatre Hall 110 Session 2B: Media Matters: Biofilm Treatment Considerations Ray Foster, Etienne Boutet Bionest
	Session 3A: Alternative Solutions – Thinking Outside of the Part 8 Box Anne Egan R.J. Burnside & Associates	Session 3B: A River is a Report Card: Understanding the Ottawa River's ecological health Laura Reinsborough Ottawa Riverkeeper
12:20 pm - 12:50 pm		
12:50 pm - 1:50 pm	Equipment Rodeo, Networking Lunch and Exhibit Hall	Main Ballroom 106
1:50 pm - 2:20 pm	Session 4A: A Comparative Analysis of Water Distribution Optimization Approaches for Enhanced Performance Elise Caron Premier Tech Eau Et Environnement	Session 4B: Advanced treatments and dispersal beds - A comparison of design criteria between Ontario and Quebec Miguel Almassy DRO Expert
2:30 pm - 3:00 pm	Session 6A: A Passive Multi-Media Filter to Polish Municipal Lagoon Effluent Chris Kinsley University of Ottawa	Session 6B: The Development of a Standard for Flushability Robert Haller Canadian Water and Wastewater Association
3:00 pm - 3:45 pm	Session 7: Understanding the Microbes Responsible for Nitrogen Transformations Kevin Sherman SeptiTech Inc.	Room 118 CDE
3:45 pm - 4:00 pm	Closing Remarks, Prize Giveaways/Pick Up and Final Announcements	Main Ballroom 106

***IMPORTANT NOTE: The Convention Agenda is subject to change at any time leading up to, and throughout the course of the event.**

If you have any questions regarding the agenda please reach out to Kelly at executivedirector@oowa.org

2025 Convention & Expo Exhibitors

Exhibitors: (registered as of our publication deadline: February 21, 2025)















Membership Benefits
IT PAYS TO BE A MEMBER!

	Perkopolis is a discount program with hundreds of available discounts across the country on things like entertainment, car rentals, hotel stays, electronics, flights, food, wellness and attractions. To sign up, visit www.perkopolis.com and use your email address (that OOWA has on file) to create an account.
	No reservation required! Simply use the code provided by OOWA at time of check out and automatically receive the discounted rates. Save \$7/day and \$90/week when parked in Toronto using the Park'N Fly Valet service, or \$4/day and \$39/week when choosing Toronto Self-Park.
	The OOWA Insurance Plan is administered by SeptiGuard, a company within the Verge Group. Coverage includes: General Liability, Pollution/ Environmental, Impairment/ Underground tank policies, Contractors Equipment, Barging and Waterborne Risks, Professional Liability for inspectors, designers etc., Vehicle/ Fleet coverage and Discount Home and Auto rates. Contact Scott Mullen: 905-688-9170 ext. 132 or email at: mcmullen@vergeinsurance.com
	A new CAA Plus membership is reduced to \$99.00 for the first year (\$39.00 savings!) or a CAA Plus Associate Membership is reduced to \$75.00 for the first year. Contact CAA's Corporate Representative at 800-267-6394 ext. 6394 to sign up.
	OOWA members save 10% at Mark's Work Warehouse on the following items and more; Carhart merchandise, Dakota workwear, coveralls and overalls, casual wear, work gloves, and all CSA footwear. Present your card at any location to receive your discount.
	Grand & Toy is your one stop shop for all your office needs including ergonomics, furniture, computer supplies, PPE, Janitorial/Sanitary. OOWA's partnership with G & T provides preferred pricing on 240 commonly consumed essentials, plus 10% off market competitive web pricing. Each member can add a customized price list of up to 25 items reflecting your business needs. Your savings could easily offset OOWA membership dues!
	Save 10% on any ORWC Course offering (cannot be used in conjunction with other discounts). See their course offerings at www.uoguelph.ca/orwc . Contact Bassim Abbassi at 519-824-4120 Ext. 52040 or via email at babbassi@uoguelph.ca
	OOWA members get guaranteed and discounted rates on car and trunk rentals. Reference the business Account Number provided by OOWA when booking a rental vehicle.
	Onsite Installer Magazine is the foremost publication of the onsite wastewater industry. As a member of OOWA you can now get a hard copy delivered to your door at no charge. Keep up to date on the latest technologies, industry trends with interesting system profiles and installer profiles.
	NAPA and Ontario Onsite Wastewater Association are pleased to announce a new partnership and preferred pricing agreement. Are you trying to effectively manage your Fleet amid New Vehicle shortages, and supply chain issues? Did you know that NAPA can help? Contact us today to discuss the needs of your fleet, and how we can support you in keeping your fleet moving.
	OOWA collaborates with other associations in communicating to government with one united voice on issues that are of mutual concern to our industries. OOWA is proud to inform our members that you can access membership rates for events and resources provided by our association partners, including the Ontario Association of Septic Industry Service, the Ontario Building Officials Association, and the Ontario Ground Water Association.

2025 Convention & Expo

Keynote Speakers:

MON. MARCH 31
9AM - 10AM

Dr. Sarah Heger, Adjunct Assistant Professor, Research Associate, University of Minnesota

Presentation Topic: Installation Keys for Long-Term System Performance

Dr. Sara Heger is a researcher and instructor in the Onsite Sewage Treatment Program in the Water Resources Center at the University of Minnesota. Since 1999, she has been providing education and technical assistance to homeowners, small communities, onsite professionals and local units of government regarding onsite wastewater treatment. Sara coordinates the research program at the UMN and is currently, serving as the principal investigator on projects evaluation wastewater treatment and rest areas and developing training related to the land application of industrial wastewater. Heger is on the faculty of the Water Resources Science program, teaching Sustainable Waste Management Engineering. She presents at many local and national training events regarding the design, installation and management of septic systems and related research.

TUES. APRIL 1
9AM - 10AM

Jen Grant, Funniest Female Comic Nominee, Comedian, Stress Management Expert

Presentation Topic: Find the Funny because Success is a Laughing Matter!

Jen Grant is an award-winning comedian and first-ever Canadian finalist at the prestigious Boston Comedy Competition and named as one of Ottawa's Most Influential People in The Capital. Jen Grant has performed at the Hub Cap Comedy Festival, and Just for Laughs Festival, and has a dynamic ability to weave hilarity with audience interactions.

Presenters:



Miguel Almassy: Miguel Almassy is a biotechnology engineer who graduated with a focus on wastewater treatment. He has been with DBO Expert for six years, where he currently serves as the Technical Director. Alongside his role in regulatory compliance, Miguel actively contributes to research and development, ensuring DBO Expert's solution, the System O, is appropriately adapted to meet on-site wastewater treatment needs across Canada. Miguel actively participates in different technical committees, including OOWA's, Quebec's Groupe of Experts in Decentralized Water Management, the CAN/BNQ 3680-600's, and the Ontario Building Code's revision.



Etienne Boutet: Etienne Boutet is a recognized expert in wastewater treatment having over ten years of experience in the industry. He holds a bachelor's degree in water engineering and a master's degree in civil engineering from Université Laval and an MBA from HEC Montreal. A speaker at prestigious events for different association such as the Canadian Association on Water Quality (CAWQ) and the International Water Association (IWA), he is also co-author of several scientific papers published in renowned journals such as Water Research and Water Science & Technology. He is co-inventor of many patents such as the KAMAK technology to enhance wastewater lagoons' treatment capacity and performance. Currently Director of Operations at Bionest, a company specialized in the development, design, and manufacturing of domestic wastewater treatment systems, he oversees production, engineering, research and development as well as institutional, commercial and municipal sales.



Elise Caron: Elise Caron has a background in academic chemistry research. She joined Premier Tech Water and Environment three years ago, where she has been working on developing new technologies for the company.

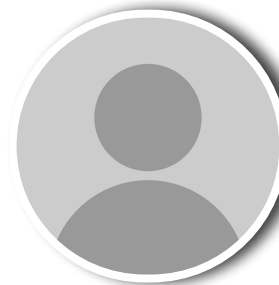


Emma Deyo: Emma Deyo is a graduate of Trent University with a Bachelor's degree in Biology and has been with Waterloo Biofilter for 1.5 years. Emma entered the industry conducting re-inspection programs before becoming an inspector with the OSSO/MRSSO. Having also worked at the Mississippi Valley Conservation Authority, Emma offers a unique understanding of both the Ontario Building Code and Conservation Authority regulations.



Anne Egan: Anne Egan, M.Sc. (Eng.), P.Eng. is a Professional Engineer and Manager of Onsite Wastewater Services with R.J. Burnside & Associates Limited, where she leads a team of professionals specializing in onsite and decentralized wastewater management. The team services a broad client base with a variety of projects involving the assessment, design, approvals, construction and operation of onsite and decentralized wastewater treatment systems. Anne is a graduate of Queen's University, having earned both a Bachelor's and Master's degrees in Civil Engineering. She has served on the OOWA board of directors since 2014.

2025 Convention & Expo Presenters



Ray Foster: Bio not provided.



Dennis Hallahan: Dennis F. Hallahan, P.E., is the Technical Director of Infiltrator Water Technologies. Dennis has over thirty years of experience with the design and construction of on-site wastewater treatment systems. He has authored several articles for on-site industry magazines and has given numerous presentations nationally on the science and fundamentals of on-site wastewater treatment systems. Dennis also oversees a department that is responsible for product research and testing for both Universities and private consultants. The department develops system sizing charts for national and international codes, and assists engineers in the design of large decentralized systems, some in excess of 1 million gallons per day.



Robert Haller: Robert Haller, executive director of the CWWA, will share the history of those efforts and bring an update on the latest progress toward the creation of a standard and the development of better product labeling.



Chris Kinsley: Chris Kinsley is currently an assistant professor in the Department of Civil Engineering at the University of Ottawa. Previously, Chris worked with the Ontario Rural Wastewater Centre at the University of Guelph since its inception in 1998 and was instrumental in the development of the centre. Chris has developed and delivered several training courses in the agri-food and decentralized wastewater sectors, both within Canada and overseas.



Scott McMullen: Scott McMullen is a commercial account executive at the Verge Insurance Group handling the insurance needs of a variety of commercial clients. He has a speciality in insuring contractors in the wastewater industry. Scott has worked in the insurance industry for the past 23 years; he also holds the Canadian Accredited Insurance Broker (CAIB) and the Canadian Professional Insurance Broker (CPIB) designations.



Dominic Mercier: With a degree in Civil Engineering and a master’s degree in Environmental Engineering, I have worked for 30 years in the Onsite Wastewater Industry. I have designed thousand of residential systems and hundreds of various types of commercial, institutional, industrial and communal applications. I was involved in the development, certification and commercialization of many treatment technologies used today in Canada. I am the founder and president of Enviro Neptune, a research and development company dedicated to Onsite Wastewater Research as well as founder and president of Enviro-STEP Technologies, a company developing, manufacturing and distributing Onsite wastewater treatment technologies for the Canadian market.



Ryan Quesnel: Ryan Quesnel is a seasoned business leader with over 24 years of experience in the construction and mining industries. Growing up in mining communities in Northern Ontario, he spent his youth and early career on field crews and operating equipment. He currently serves as the Manager of Development and Integration at Thomas Cavanagh Construction Ltd, where he leads cross-functional initiatives in data analytics, integrations, quality control, environment, project management, data preparation, and surveying. Ryan specializes in business process mapping, strategic development, and optimization, and is adept at implementing industry-leading tools and technologies for data management and integration.

With a background in Civil Engineering Technology and a Master Certificate in Project Management, Ryan is also pursuing a Bachelor of Management part-time. His notable achievements include overseeing multiple heavy civil project management teams, leading enterprise architecture initiatives, and chairing the Locate Improvement Committee for the National Capital Heavy Construction Association. Ryan’s dedication to continuous improvement and vertical integration strategies has made him a key player in his field.



Laura Reinsborough: Laura Reinsborough (BES, MES) has created positive environmental change at the helm of non-profits and charities. Since 2021, she has held the title of Riverkeeper & CEO with Ottawa Riverkeeper. Originally from Sackville, New Brunswick, Laura grew up very connected to water: canoeing on the lake in her backyard, swimming on the beaches of the Northumberland Strait, and mudsliding on the Bay of Fundy mudflats. Laura lives close to the Ottawa River in Orleans. She speaks four languages and loves to cross-country ski.



Kevin Sherman: Kevin Sherman received a B.S. in ecology & evolution from Stony Brook University. He also has a B.S. in civil engineering from the FAMU/FSU College of Engineering. Kevin has a M.S. in Biology from the University of South Carolina, and a M.P.H. in Public health management from the University of South Florida. He also has a Ph.D. in Biological Oceanography from Florida State University. Kevin is author or co-author of over 50 publications. He is a past-president of the Florida Environmental Health Association and the National Onsite Wastewater Recycling Association. He is a Professional Engineer in two states, a retired professional engineer in two states and a Registered Sanitarian in Florida.



Chantal Stevens : A public health inspector for over 10 years, Chantal has worked for Ontario Parks Public Health Program, the PEI Department of Health and Wellness, joined Peterborough Public Health’s Safe Sewage program at the height of the COVID-19 pandemic in 2021 and worked as a Part 8 Regulator until the program was sunset in 2024.



Brady Straw: Brady Straw is a graduate of the University of Guelph with a Bachelor’s degree in Environmental Science (Environmental Economics & Policy) and has been with Waterloo Biofilter for almost 20 years. An active OOWA and industry participant for most of those years, Brady is the OOWA Past President, the association Membership Committee Chair, and is an Onsite Designer in the OOWA In-Development Professional Program.



Mike Varty: Michael Varty is the Director of Water at EnVision Consultants, bringing over 22 years of experience in environmental engineering. He has led many high-profile on-site wastewater programs in Ontario and beyond. His portfolio includes leading investigation and design services for the MECP (Ontario Parks), overseeing sewage re-inspection programs for regions such as Wellington County, and designing large communal leaching beds for private development. Michael also specializes in non-traditional wastewater discharges, including high-strength and difficult-to-treat applications.

His technical background covers a wide range of areas, including water resource impact studies, water supply investigations, surface water impact studies, lake capacity assessments, and groundwater mounding assessments. An active member of OOWA, Michael has served on its Board of Directors, and has delivered many presentations throughout Ontario on a variety of onsite wastewater topics.



Danielle Ward: Danielle is a designer and project manager for Adams Brothers Construction that specializes in residential and commercial onsite wastewater systems.

Monday, March 31, 2:00 pm

Installer Focused Panel

Four panelists from across the Province join together to discuss various topics relating to designing and installing onsite sewage systems. These professionals will touch on quoting, how things can change during an installation and how to respond to it, general advice to newer installers, and guidance to engineers/designers for their prepared designs, from the installer perspective.



Brady Straw:
(Moderator)

Brady Straw is a graduate of the University of Guelph with a Bachelor's degree in Environmental Science (Environmental Economics & Policy) and has been with Waterloo Biofilter for almost 20 years. An active OOWA and industry participant for most of those years, Brady is the OOWA Past President, the association Membership Committee Chair, and is an Onsite Designer in the OOWA In-Development Professional Program.



Brenda Burrows-Rabb:

Brenda joined her family business, Rabb Construction Ltd. in 1998. She earned a Civil Engineering Degree from the University of Guelph, completed in 1991. Brenda jumped into the heavy construction business after 9 years working in the civil engineering consulting side of the industry; ultimately deciding that she was a contractor at heart. Brenda also sits as a Board Member and Director on the Ontario Onsite Wastewater Association for the on-site sewage installation portion of the heavy construction industry.



Bill Robinson:

No Bio Provided



Jordan Kuipers

Jordan Kuipers is the owner of Kuipers Construction, a company he founded in 2010. What started as a general carpentry business has since grown into one of the leading septic design and installation companies in Oxford County and surrounding areas. With a passion for quality craftsmanship and customer satisfaction, Jordan has built a strong reputation in the industry.

Dedicated to educating clients, Jordan ensures they understand how their septic system works and all available options for their project. Whether it's a new installation, an upgrade, or a repair, Jordan and his team take a hands-on approach, guiding clients through every step of the process. His commitment to excellence, reliability, and innovative solutions has made Kuipers Construction a trusted name in septic system services.



Dan Friesen

No Bio Provided

Tuesday, April 01, 10:30 am

Decentralized Panel Discussion

Join us for an engaging discussion that will highlight decentralized and communal sewage systems as a viable option in Ontario. Learn more about what decentralized systems are, why we need them, the challenges and opportunities they present, and the tools needed to operate them. Hear from industry representatives about the history of operations, how to mitigate challenges, and reasons why these systems aren't as popular as they could, and should, be.



Joe Gallivan: (Moderator)

Joe Gallivan is the Director of Planning & Economic Development for Frontenac County and a member of the County Planning Directors of Ontario and has been in that position since 2009. He has over 35 years' experience in planning with municipal, regional and provincial governments in both Nova Scotia and Ontario. Joe has a Master's Degree in Urban and Rural Planning from Dalhousie University.



John Levie:

John is a licensed Professional Engineer in Ontario, and the Vice President of Engineering at Clearford - a water infrastructure management company. He specializes in the delivery of designs, regulatory approvals and construction supervision for new and expanded water and wastewater infrastructure, as well as providing support and guidance to their Operations group.

Mr. Levie has Bachelor and Master of Engineering degrees in Chemical Engineering, with his M.Eng. focused on development of membranes for water treatment application. He has diverse experience spanning polymers and plastics processing, power generation, membrane filtration systems design and manufacturing, industrial zebra and quagga mussel control system design and installation, municipal, commercial and industrial water and wastewater treatment design and operations, construction of new and expanded infrastructure, and commissioning and troubleshooting of treatment systems.



Noelle Reeve MCIP, RPP:

During her 16 years as Manager of the Tay Valley Township Planning and Building Department in eastern Ontario, Tay Valley received recognition for: its leadership in lake water quality protection from the RVCA and MVCA; promotion of Tiny Homes for affordable housing from Algonquin College; Climate Change from Climate Network Lanark; and for its Age Friendly Community Plan from the province of Ontario.

Noelle's 30 plus year portfolio includes work as a Planner for the Regional District of Matsqui, B.C.; Transportation Demand Manager, BC Ministry of Government Services; and as Vice President of PlanSmartNJ working on the Statewide Smart Growth Economy Project, the Watershed Plan for the Central Delaware Tributaries, the US1 Regional Growth Strategy, and equity work with Isles, Trenton, New Jersey. Noelle received her MSc from the School of Community and Regional Planning, UBC, and an Hons.BSc from Trent University.



Chris Gerrits

Chris joined Crozier in October 2019 and manages the hydrogeology team. Chris has over 20 years of experience in hydrogeological engineering focusing extensively on communal groundwater supply exploration and testing in Ontario and Manitoba for municipal and First Nation clients. Following undergraduate and graduate degrees in Water Resource Engineering at the University of Guelph,

Panel speakers continued on page 16

Chris spent some time in engineering consulting before owning and operating one of the largest groundwater exploration and testing contractors in Ontario where he completed the installation of hundreds of municipal water supply production and monitoring wells providing millions of residents with safe reliable groundwater all across the province of Ontario.

Chris has also represented the Township of Amaranth as an elected official since 2014 and the County of Dufferin since 2018.

Chris was also previously 2nd Vice President, Secretary Treasurer and Board Member of the Ontario Ground Water Association, a Founding Director of the Canadian National Ground Water Association and a Research Associate with the University of Guelph's G360 Groundwater Research Group. Chris has been a licensed Professional Engineer for over 20 years in the Province of Ontario as well as a Ministry of Environment, Conservation and Parks (MECP) licensed well technician for over 25 years.



Brad Gaffney:

Brad Gaffney, P.Eng., is a dedicated professional in the water treatment industry, specializing in decentralized water and wastewater solutions. With over two

decades at Newterra, he has played a key role in advancing water technology through strategic territory development and the implementation of advanced treatment systems. His work includes the design and deployment of Membrane Bioreactor (MBR) systems, known for their efficiency in sewage treatment, sustainable reuse, and safe discharge solutions.

Brad has a diverse engineering background, having designed critical systems across various industries as an Embedded Controls Engineer and Product Design Engineer. At Newterra, he has held leadership roles, including Electrical Engineering Manager, Director of Project Management, and Vice President of Technical Operations.

He specializes in delivering high-quality, modular, cost-effective water treatment systems for high-density developments, helping maintain Newterra's reputation for innovation in water solutions.



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WHAT'S IN IT FOR ME?

Are you an engaged professional looking to expand your knowledge and expertise? Do you care about improving the onsite wastewater sector? Do you want to collaborate with some of the industry's leading experts? Consider joining one of our volunteer committees or board of directors to grow your influence in the industry.

WHAT'S EXPECTED?

Our committees and board meet once a month (or as needed) via ZOOM to discuss, plan, and implement initiatives stemming from our Strategic Plan. You don't have to commit right away - come as a guest to a meeting to test the (waste)water!



Board Member duties include:

- Provide financial oversight
- Ensure OOWA has adequate resources
- Oversee programs and policies
- Help advance OOWA's mission



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Redefining Rural Water Management in Ontario:

A Clearford and the county of Frontenac partnership

Continued from Cover Page

This approach was chosen to allow a municipality to streamline some approvals, reduce risks, and take a more active role in managing their water and wastewater services. Clearford has been selected as a key partner to help implement this collaborative and forward-thinking model, supporting Frontenac in more effectively managing servicing and maintaining development planning.

Frontenac as a reflection of Clearford’s vision

With decades of experience delivering decentralized water and wastewater solutions, Clearford remains committed to sustainable development—a core principle of the Frontenac project. What makes this initiative significant is its potential to serve as a replicable model for other municipalities. Clearford brings a broad range of in-house expertise to the project team—spanning engineering, regulatory compliance, business development, operations, and project management—and will collaborate with FMSC to deliver integrated services. From the early planning stages to operational implementation, Clearford will actively support the various projects initiated through the FMSC, ensuring they remain efficient, scalable, and aligned with community goals and environmental standard.

“This initiative is about improving how rural municipalities approach water and wastewater servicing,”

says Joe Gallivan, the Director of Planning & Economic Development for the County of Frontenac. *“By working closely with the MECP and our private-sector partner, Clearford, we are working to streamline approvals and building a model that prioritizes efficiency, sustainability, and long-term community growth—not just in Frontenac, but potentially across rural Ontario.”*



Back Row, From Left: John Levie, VP Engineering (Clearford); Wilf Stefan, COO (Clearford). Third From Right: Joe Gallivan, Director of Planning & Economic Development (County of Frontenac).

Promoting environmental responsibility

The Frontenac project highlights the role of decentralized systems in support of sustainable growth in rural communities, while achieving treatment performance comparable to larger municipal facilities and protection of the natural environment. Treating water closer to its source and users while also reducing infrastructure demands improves resource management and groundwater protection—key priorities for both Clearford and the County of Frontenac.

Through its structured utility model—including Economic Feasibility Analysis (EFA) and long-term capital planning—and in collaboration with private-sector partners like Clearford, the FMSC framework strengthens economic resilience through sustainable infrastructure investment and improved financial stability over time. Aiming to provide more predictable costs and reduced financial risk, the model helps municipalities to build sustainable infrastructure to accommodate long-term growth. By maintaining responsibility for operations and maintenance, the County can leverage funding options under the Municipalities Act. As an implementation partner, Clearford supports this model by providing operational expertise and long-term environmental stewardship, helping Frontenac design, construct, and manage its infrastructure more effectively.

Faster, more accessible solutions for rural areas

The FMSC approach represents a significant departure from traditional developer-led infrastructure models by shifting responsibility to municipalities. It addresses long-standing challenges such as funding uncertainties, operational oversight, and delays in approvals—partially by removing MRA/financial assurance requirements, while recognizing that certain MECP regulatory timelines remain unaffected.

Clearford’s role supports this streamlined development process, reducing overall costs and empowering small and rural municipalities to take a more active role in shaping their infrastructure.

For these rural communities, the implications are significant. The work with Clearford and FMSC demonstrates how innovative governance models can help municipalities overcome traditional barriers to expanding small rural communities while delivering practical, cost-effective, and accessible solutions for water and wastewater management.



Waste water testing

Looking ahead: A framework built for scalability

One of the most exciting aspects of this FMSC project is the scalability. The FMSC framework provides a “copy-and-paste”

model that can be applied to other rural municipalities facing similar challenges. Combining municipal oversight, private-sector expertise, and collaboration with the MECP, the County of Frontenac is creating a potential roadmap for infrastructure development across rural Ontario.

The Frontenac project marks the beginning of a new chapter in municipal water and wastewater management, showcasing the power of a municipal-private sector collaboration and a shared commitment to meeting community goals. As the first model of its kind in Ontario to focus on these services, demonstrates how smaller municipalities can take control of their infrastructure while ensuring efficient, accessible, and environmentally responsible solutions.

Clearford’s expertise and experience ensures this framework can be tailored to address unique fiscal, operational, and environmental concerns in different regions. As more municipalities adopt this model, Clearford’s role will remain focused on supporting communities with effective, long-term solutions.

You can learn more about Decentralized Wastewater Systems by attending our Panel Discussion on Tuesday, April 01 at 10:30 am as part of our Annual Convention & Expo.

This article first appeared online at Clearford.com on February 18, 2025. It is reprinted by permission. Read the original article here: <https://www.clearford.com/blog-general/rural-water-management-ontario-clearford-frontenac-partnership/>



Author Information:

Jessica Sweeney is a creative strategist with a passion for blending design, marketing, and digital communications. Originally from a small town in Vermont, she has a deep understanding of the unique challenges rural communities face. This background heightened her interest in writing about the supportive partnership between Clearford and Frontenac—a municipality dedicated to creating a sustainable framework for growth within their rural communities.

As the Digital Marketing & Design Lead at Clearford for the past 6 years, Jessica excels at transforming industry insights into engaging content, visually compelling designs, and digital experiences that foster meaningful connections. Her work ensures that Clearford’s initiatives are not only communicated effectively but also resonate with the communities they serve.



Code Change – Composting Toilets Are Out.

By Matthew Wesley, Municipality of Trent Lakes.

Code Change - Required Facilities in Dwelling Units – 9.31.4.1 – Division B

With the recent issuance of a new Ontario Building Code (which will come into full force during this year’s OOWA conference) there has been a significant code change that may have flown under the radar for many Wastewater Professionals that tend to stick within the confines of Part 8. This change mostly affects northern rural areas within cottage country, where remote properties used to see a combination of a Class 2 system with a Composting toilet as an alternative to installing a Class 4 system.

Background – There Used to Be Options

The 2012 code provision read as follows:
9.31.4.1 Required Facilities (2012)

1. A dwelling unit with a water distribution system shall contain,
 - (a) a kitchen sink,
 - (b) a lavatory,
 - (c) a bathtub or shower stall, and
 - (d) a water closet or a drainless composting toilet

Many regulators in northern/rural areas of the province have run into the composting toilet option being pitched by owners who have hard to access properties. There seems to have been a belief that this option meant they will not have to install a sewage system. They were most often pitched to reduce costs to develop mostly hard to access lots. A way

to get plumbing but not need an expensive on-site sewage system. Once owners were informed that a class 2 is still required for grey water, and that many units were not in fact drainless as the code required, the option was a little less of a magic bullet for a remote lot.

For any owner looking to more affordably re-develop the old water access family cottage, the conversation often became discouraging. If dreams were not crushed, they were quickly proved to be more expensive than anticipated. While these toilets may serve a niche for very remote lots that get limited use, many installations are as the only toilet at a busy family cottage. What looked good on paper, very much was not ideal in real world application.

Every jurisdiction that I have been a regulator for has had water access properties. Where these properties were located, generally a limiting layer of shallow bedrock was present. The cost of many composting toilets is much more than a septic tank. Where a significant amount of fill was required to construct a Class 2 system, there generally were no significant savings. Sometimes a Class 2 and composting toilet was more expensive than a Class 4 system which more people are familiar with. Not to mention, composting toilets have limits to how much waste they can receive. Any use exceeding their operating parameters is problematic. Also, if the unit has an overflow drain, it needs to go to a sewage system that can receive black water. More on that below.

I personally have seen several units, or reviewed units for new owners of these toilets, that have an overflow drain. The code did specify these units have to be “drainless”, and if they have a

drain, they are discharging human waste, which needs to go to a permitted Class 3, 4 or 5, requiring a sewage system for the toilet that is believed to need no septic system. When these units are too often discovered in the field, an overflow tube is found discharging directly to the ground under the building. For obvious reasons this is unsafe, and most unsavory.

Being unfamiliar and possibly smelling when overused, when a property changes hands, one of the first things a new owner does is remove the composting toilet. This is a problem where there is an old grey water pit, or even a permitted Class 2 if a new water closet is installed and hooked up to the existing plumbing system. Water access properties can fly under the radar of regulatory oversight, and a DIY weekend warrior can unknowingly create a pretty significant issue.

Unfortunately, weekend warriors that do know what should be required may also try to make a toilet work with an existing Class 2 – as proven by the photo provided, found out in the wild. When caught they tell you only liquid is going in there. Right. When that adventurous meal choice hits in the middle of the night and the clock has already started, are you really running to the Privy up the hill? Will your guests? Will your wife or kids? Sure they will.



Class 2 Conversion

Code Change

In the new Ontario Building Code, all Dwelling Units with a water distribution system are still required to contain certain plumbing facilities...

The 2024 Code now reads as follows:

9.31.4.1. Required Facilities (2024)

- (1) A kitchen sink, lavatory, bathtub or shower, and water closet shall be provided for every *dwelling unit* where a *water distribution system* is available.

Something is Missing.

While this seems like a small code change, it is conspicuous in that it would serve to eliminate any option for what sanitary fixture must be provided in a Dwelling Unit. While this change may not affect all jurisdictions, it very much changes the landscape for rural properties that may only have limited or restricted site access, such as islands and other water access only lots.

Each regulator may interpret the code differently. All words in italics within the code are defined terms, and one can go to Division A of the code for their meaning to assist with interpretation.

1.4.1.2 – Defined Terms

Water distribution system means an assembly of pipes, fittings, valves and appurtenances that convey potable water to water supply outlets, fixtures, plumbing appliances, and devices from the water service pipe or from a point of entry treatment unit located in the building.

If a building is provided with water, and a potable water test is required documentation for the project, it has a water distribution system as defined by Division A. Where I work, this covers most residential projects involving plumbing. For me this means I’m interpreting 9.31.4.1 as written.

Where a dwelling unit is provided with a water distribution system, only a water closet is allowed. Therefore, if you want/ have plumbing and an on-site sewage system is required, a Class 4, or perhaps a class 5 in very limited circumstances, is now your only option for new construction. If you disagree, the code does have avenues to appeal, but your permit will wait for these appeals to play out.

Alternative Solution

The provisions of Division B are described as Acceptable Solutions for construction in Ontario. These regulations are accepted as meeting the bare minimum for health and safety.

Section 2.1 of Division C does allow for individual Chief Building Officials to entertain Alternative Solutions to substitute for any Code provision. It is up to how an AHJ chooses to apply the code, and how open a regulator is to code interpretation.

Installers and designers should also be aware of the regulation change. Installers that I have regularly dealt with are very good at educating potential clients where significant amounts of fill are required, and steering owners away from the composting toilet/Class 2 combination. Where it may be a very challenging site, installers will need to familiarize themselves with the Alternative Solution process for the jurisdiction they are working in if an owner really wants to push for an alternative to a Class 4. There may be

added application costs and up front costs for the installer/designer's time to produce an appropriate and detailed proposal for an alternative solution.

Applicants should be aware that no AHJ or building official is obligated to accept any proposed alternative solution.

Moving Forward

Based on my own experience, I feel composting toilets have been removed as an option from 9.31.4.1 for a reason. They're generally unfamiliar, each one operates differently, overuse often leads to unappealing odors and each unit has its own installation standard. Being a Class 1 and not needing a permit, many do discharge human waste directly to the environment when not installed properly, and too often they are removed without any oversight, potentially creating a terrible situation at an inconvenient later date.

If you have remote or water access properties, I encourage regulators to explore the code path for this small, but impactful code change.



As composting toilets were usually only installed in areas where on-site sewage disposal is the only option, this change is positive. Cost saving acting as the only consideration for any project, and the belief that anything is cheaper than a class 4 can become a smelly disaster.

An appropriate Class 4 as the code proscribed method of safe residential sewage disposal should always be the first choice.

Now the Part 9 code provision as written clearly supports this.

See page 25 to learn more about the author.

MEMBER
Profile
Questionnaire

Matthew Wesley

Deputy Chief Building Official

Name of Organization: Municipality of Trent Lakes

Owners: N/A

Services/Mandate: Permitting and inspecting your on-site sewage systems in Trent Lakes.

Service Area: Trent Lakes - Northwestern Peterborough County.

Number of Years in Role: 9 years in building code enforcement.

What got you started in the onsite wastewater industry?

When my local health unit divested Part 8 to the municipalities, I took courses and became certified in Part 8 with the ministry. Part 8 was my foot in the door to transition my construction experience into becoming a building inspector. I was a licensed carpenter building custom homes, but was always interested in how the sewage system could least impact the lakes, and how better fit into the lot. Hand surgery required a career pivot, and Part 8 provided the opportunity to make it happen.

Give us one reason/secret for your success.

Always making time to field questions and educate home owners. No one wants to spend tens of thousands of dollars on something they never see. Stressing the importance of proper sizing of a system, and to always consider future needs in a system design. Most of our properties are on sensitive lakes, and almost universally, owners are very protective of their lake. Highlighting they are spending massive amounts of money on counter tops, but appearing to cheap out on their sewage disposal usually makes owners think more of their responsibilities.

What was the most challenging onsite job you worked on or participated in?

There was a postage stamp sized lot that was serviced by a class 5. The owner had severe mobility issues and needed a circular driveway, but he also wanted to get away from the holding tank.



MATTHEW WESLEY
Municipality of Trent Lakes

There was no loading area to speak of. The new cottage was bigger than the old one, much due to the fact that the dwelling had to be barrier free. I was able to steer the owner towards advance treatment, and was able to approve a design and install that worked. This really opened my eyes to what advance treatment could achieve.

If you could change one thing about the onsite/ decentralized industry, what would it be?

To have more installers learning about, and becoming certified in, advance treatment options.

Where do you see the onsite industry going?

The increase of options for advanced treatment is very exciting. More options and more innovation will hopefully reduce the price for these systems, making them a more affordable option for owners that wish to leave a smaller footprint on the lot, both literally and figuratively. More options also means more potential solutions for hard to develop properties.



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Designing for Treatment Performance in Winter Conditions



Why Worry About Sewage Temperatures?

When designing on-site sewage treatment systems, it is crucial to consider cold temperatures, especially for systems aimed at reducing Biochemical Oxygen Demand (BOD) and nitrate concentrations. Cold temperatures can significantly impact the efficiency of microbial processes essential for treating wastewater. For instance, heterotrophic bacteria responsible for BOD reduction become less active at temperatures below 15°C, leading to slower degradation of organic matter. Similarly, nitrifying bacteria, which convert ammonia to nitrate, experience reduced growth and activity below 12°C, and their efficiency drops sharply below 10°C. This can result in incomplete nitrification, leaving higher levels of ammonia in the effluent.

In Ontario, temperatures of sewage effluent in uninsulated tanks can routinely drop to between 5-10°C during the frigid winter months, degrading the performance of otherwise well-designed and operated systems.

Design and Installation Tips to Improve Performance

- **Plan for Insulation:** During the design phase, if the requirements include advanced sewage treatment for BOD and/or nitrogen, choose high-quality rigid insulation materials like extruded polystyrene (XPS) or expanded polystyrene (EPS) with an R-value of at least 10.
- **Depth and Coverage:** Design for the insulation to reach a minimum depth of the expected frost line. Ensure the top and sides of the tanks are covered. An insulation thickness of 2 inches is recommended. Products such as Polylock provide pre-cut insulation panels for tank lids to minimize heat loss from these important locations.

What Will the Outcome Be?

Insulating an on-site sewage treatment system can result in a noticeable temperature difference in the sewage, especially during the winter months. While the exact temperature difference can vary based on several factors, including the initial temperature of the sewage, the residence time of the sewage in the tanks, and the heat generated by biological processes, you can expect the sewage temperature to be several degrees warmer compared to uninsulated tanks. This can have a significant impact on treatment performance and compliance with regulatory requirements.

By considering these factors and incorporating insulation into the design, you can ensure more stable and effective wastewater treatment even in colder climates.



This learning article has been submitted by Michael Varty, EnVision Consulting, and an OOWA Professional Development Committee member.

We welcome members to contribute their own "Onsite Bites" to the newsletter.

If you are interested in submitting a topic, please contact Kelly Andrews at executivedirector@oowa.org.

Husky Oil Truck Stop in Belmont, Ontario Re-Use Sewage Treatment Plant

By: David Harsch, P.Eng. K.Smart Associates Limited

Iggy Ip, Craig Jowett, Kyle Straw, Heather Millar, Waterloo Biofilter Systems Inc.

Introduction

This paper profiles a sewage treatment system at a Husky Oil (www.huskyenergy.ca) truck stop on Highway 401 near London, Ontario, that uses the treated effluent immediately inside the facility for toilet and urinal flushing. The expansion of the facility included a larger restaurant and increase in design flow from 19,000 L/day to 56,000 L/day, thereby requiring decommissioning of the existing facultative lagoon and the construction of a new wastewater treatment system.

Space limitations, nitrogen loading, and lack of groundwater supplies required innovative design by K. Smart Associates www.ksmart.on.ca, which resulted in re-using treated sewage inside the new truck stop for toilet and urinal flushing.

The sewage design (Figure 1) included a Waterloo Biofilter (WBS) (www.waterloo-biofilter.com) and slow sand filtration (www.msfilter.com), which was a scaled-up version of CMHC's Toronto Healthy House, in which wastewater is re-used for showers and toilet flushing (<http://www.cmhc-schl.gc.ca/popup/hhtoronto/water.htm>).

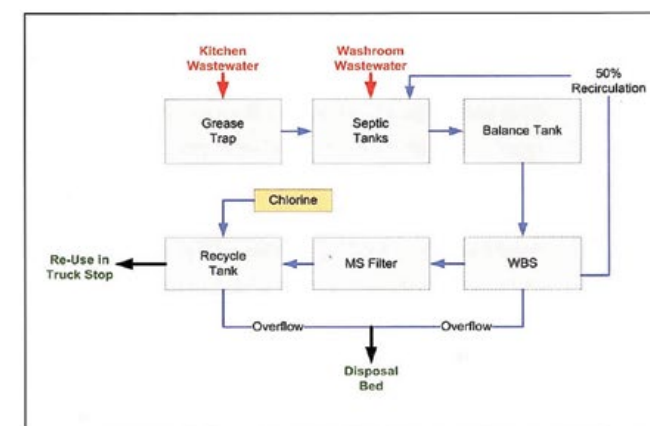


Figure 1

Husky Oil Belmont re-use system process

Grease traps intercept kitchen wastewater and prevent fats, etc. from entering the treatment system. Toilet wastewater enters the septic tanks, providing solids separation and anaerobic fermentation before exiting out into the balance tank. The balance tank is sized to store peak flows and allows the Biofilter to be dosed evenly throughout the day, providing more efficient removal of organic matter, suspended solids, and ammonium. Half of the treated Biofilter effluent is re-circulated to the septic tanks for improved treatment and denitrification.

The remaining Biofilter effluent passes through the MS Filter (ozonation, up-flow charcoal and down-flow sand filtration) located inside the treatment building and is further disinfected with chlorine before being re-used for toilet flushing inside the truck stop (Figure 2a, 2b). This polishing process removes traces of solids, disinfects, and removes the brown colour that occurs in re-used sewage due to build-up of recalcitrant lignins and tannins. To keep plumbing free from bioslime, ~0.2 ppm chlorine residual is added, and back-flow preventers are installed in the facility to operate the toilets with potable water in an emergency.

When recycled water demand is low or when the MS Filter is being overloaded, treated wastewater overflows are pumped to a disposal bed, with less water and less nitrogen than normal.



Figure 2a

Treatment plant consisting of two SC-40 Biofilter units adjacent to the building housing the MS Filter.



Figure 2b

MS Filter ozone generation unit.

Ontario Ministry of Environment Requirements

The re-use system was approved by the Ontario Ministry of the Environment (MOE), who were open to this innovative concept which alleviates several problems. It reduces the size of the in-ground disposal, reduces nitrogen loading in the ground water, and reduces the demand for potable water supply by an estimated 60-70 percent saving of water supply. A comparison of the daily mass nitrogen loading onto the environment of three systems (traditional septic system, WBS without re-use and a WBS with re-use) is shown in Figure 3.

For this toilet re-use, the MOE effluent criteria are cBOD and TSS <10 mg/L, and fecal coliforms <5 cfu/100mL. No phosphorus or nitrogen limitations are required, except to monitor the discharge to the disposal bed for nitrogen loading.

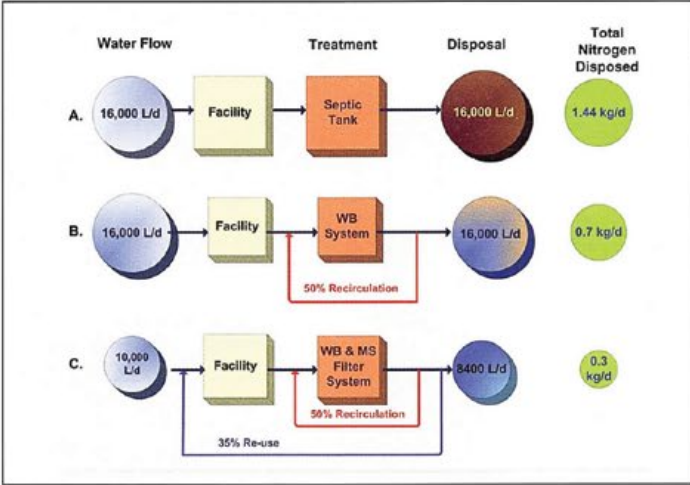


Figure 3
Re-using wastewater means that a lower volume is disposed of, lessening the mass nitrogen loading on the environment. Compared to a traditional septic system and a WBS without re-use, ~79% and ~57% less nitrogen is entering the ground, respectively.

Operations and Maintenance

Rockwood Geological Engineering operates and maintains this treatment system with regularly scheduled pump-outs of grease traps and septic tanks; inspecting system components; taking weekly samples of sewage and effluent; tracking wastewater and recycled flows; and optimizing treatment performance.

A key feature for the client is that the recycled wastewater must be aesthetically pleasing for customer satisfaction, and this in turn requires consistent treatment. This implicit safeguard increases cooperation between the owners and the operators. When owners have more at stake, they

ensure that cleaning procedures and kitchen practices are optimized to minimize stress on the treatment system. This holistic approach to O+M where optimization consists not only of 'tweaking' the mechanical components, but also the in-house practices, ensures that the influent wastewater is easier to treat and the practice of re-use is successful.

The future of Re-Use in Canada

With proper design, O+M, and a progressive and contentious user, the Belmont Husky Oil is an example that re-use is a viable component that can be incorporated into sewage system designs for large commercial applications. The implicit nature of a re-use system not only decreases the impact on the environment but also provides safeguards ensuring that the system is thoroughly optimized to protect public health and safety, through consistent treatment performance.

continued from page 1

learning takes place, it's not all work. We all managed to sample some of the nicer restaurants and pubs of downtown Cleveland in addition to talking about wastewater. Next year's conference is booked for New Orleans (venue currently under reconsideration) so put it on your calendar.



Seeking Articles for future editions of the Onsite Newsletter.

Have you worked on an interesting project that presented challenges you were proud to overcome? Do you have technical news to share? Have you been involved in a research project related to onsite sewage systems?

OUR MEMBERS WANT TO HEAR FROM YOU!

We are seeking articles on education, advocacy, case studies, technical updates, success stories and more. OOWA's focus is onsite and decentralized wastewater treatment, but greywater systems, holding tanks, incinerating toilets, etc. would also fall within our scope.

Each edition of our newsletter features 1 to 3 OOWA Member Profiles. If you are interested in being one of our featured members, or featured installers, get in touch with us!



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Landscaping Part I – Cover and Vegetation Over the Soil Treatment Area

This article was originally written for Cole Publishing and has been reprinted with permission from the author Sara Heger. To learn more about Sara, see page 9.

To ensure a properly functioning soil based septic system a suitable vegetative cover must be established. Proper plantings on soil treatment systems will minimize negative impacts and promote positive outcomes. The right vegetative cover helps keep the soil in place preventing erosion, helps the septic system function optimally by removing moisture and nutrients from the soil treatment area, provides an insulating layer when needed, and makes the area more attractive.



Soil Cover

The type of soil over a soil treatment area (STA) is critical to getting establishment of appropriate vegetation. In general, the cover material needs to allow air and oxygen to get into the system and not be compacted during installation or landscaping. The soil cover should be sloped to shed rainfall and support the growth of vegetation. Property owners should not add soil cover over their system without consulting with the designer, installer or permitting authority. Do not put down plastic sheeting over the STA as air/oxygen transfer into the system is critical.

What not plant over the over the STA

Soil treatment areas include trenches, beds, mounds, at-grades, drip irrigation/distribution, and spray irrigation. Do not place trees or shrubs on the septic system; roots may invade the piping and cause damage Water-seeking trees such as poplar, birch, beech, walnut, maple, willow, linden, and elm should be planted at least 50 feet from the STA. The rule of thumb is to keep a distance equal to the anticipated height of the tree at its maturity, plus 20 percent. Thus, a tree 30 feet tall at maturity should be kept 36 feet away. In general, choosing smaller ornamental trees is advisable such as cedars, cherry, crabapples, dogwoods, cotinus, cercis, snowbell, acer palmatum, acer grisem and acer amur. Many properties may have existing trees that are closer to the septic system than these recommendations. During construction of the septic system the tree root structure should be protected from compaction typically with a temporary fence. If the trees are influenced by the water from the septic system this may also tress the trees due to the increase in moisture which is not positive to many varieties.

Any woody perennial including bamboo, vines (wisteria, bittersweet, morning glory, campsis and hops), shrubs (low woody perennial plants 3-15 feet in height) should NOT be planted on top of the STA, but can be planted with caution within five – teen feet of the edge of the system. Vegetable gardens should not be planted in the STA as disturbing the soil with these annual crops is not good for septic system and most vegetable gardens need frequent irrigation.

What to plant over the STA

In general, herbaceous plants such as turf grasses, wildflowers, and native grasses are the best cover for septic systems. Recommended plants include drought-tolerant plants with short, fibrous root systems chosen for hardiness in your climate and in sun and shade conditions as required. Turf grasses have root systems that hold soil in place, require maintenance like a lawn, and are available in a variety of mixes designed to suit site conditions. Wildflowers and native grasses are an attractive alternative to turf grass while providing many of the same benefits including fibrous roots, low maintenance (once established), and tolerance of dry soil conditions. Match the plant’s sun requirements and USDA Plant Zone to the site before planting. When planting perennials space the plants close to each other to control erosion, suppress weeds, and get an adequate survey as soon as possible.

Planting Grass

There are two primary methods of establishing a new lawn: seeding and sodding. Erosion control is important when establishing vegetative cover. An erosion control blanket should be laid down after the seeds have been distributed (this will help retain moisture and protect the seeds and soil.) Another product available in landscape supply stores is an erosion control blanket with grass seeds attached. This product makes protecting and seeding a one-step process. The following are advantages and disadvantages to seeding and sodding.

Seeding

Advantages	Disadvantages
More grass types and varieties available	Initial establishment takes longer
Less expensive than sodding	For best results, seeding is limited to late summer and early fall
Stronger root system development	Moisture is critical for the young seedlings

Sodding

Advantages	Disadvantages
Rapid establishment and relatively weed-free in the beginning	Smaller selection of grass species, especially shade or drought tolerant varieties
Good for slope or areas prone to erosion	Expensive
Can be laid anytime during the growing season	May take longer for root structure development

Plant Establishment

Until the vegetation is established the soil needs to be protected with either an erosion control blanket or mulch such as straw, hay, or leaves. If perennials are being planted, it can take up to 2 years to have the area covered. If a system is being installed in the late fall, an erosion control blanket or mulch should be applied to help protect the topsoil as well as to insulate the system in cold climates. Erosion control blankets are often composed of straw or coconut fiber layers between two jute mesh layers. The blanket is staked in place, covering the entire surface and holes are cut through the layers to create openings for the plants. The blanket is biodegradable, so it does not need to be removed. This material can be purchased at landscape supply stores. The area should be reseeded if there is no seed germination after four weeks. While the vegetative cover is getting started, the area will need to be weeded to help the desired plants out-compete the weeds.



Watering/ Irrigation and Fertilizer

If the correct vegetation is planted watering is only necessary within the first few weeks

after seeding, sodding, or planting. Once the vegetation is established water only when the vegetation shows extreme signs of stress. STA areas take 100s of extra gallons of water per day than the soil previously infiltrated and the added stress of excessive watering or irrigation could stress the septic system. All surface drainage from structures and the surface should be directed away from all septic system components. Fertilizing over the STA is not advisable as human wastewater contains significant amounts of nitrogen and phosphorous and fertilizing may cause over-accumulation or leaching.

Mowing/Maintenance

Regular mowing with a sharp mower blade at the proper height will help keep grass growing vigorously and maintain adequate density to completely cover the soil surface. This will cut down on the amount of water lost from the grass, thereby conserving moisture, and reducing the need for additional watering. The general rule of thumb for mowing grass is to mow high, mow frequently, and allow the clippings to return to the lawn. With native vegetation on the soil treatment area it is critical that weeding of invasive or woody vegetation occur on an annual basis and that borrowing animals are controlled.

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Installing Onsite Systems with Maintenance in Mind

By: Todd Stair

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One of the best ways a person can increase the longevity of their onsite system is by proper maintenance. How a system is installed can help or impede proper maintenance. The following are quite simple tips, but without these, proper maintenance could be harder to perform.

1. Location of septic and pump tank access covers.

If tank access covers are 300 feet behind a house and downhill 20 feet, how is the pumper supposed to pump the system or clean the filter?

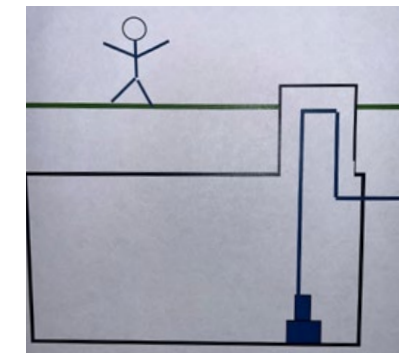
When possible, design and install systems with access covers as close to the road or driveway as possible. Vertical elevation is an important factor as well. Tanks located far downhill will be harder to pump, take much longer to pump, and in some cases not be able to be pumped. Pump trucks have vertical limits based on their pumps. I personally know of a pump truck that imploded while trying to pump too much vertical lift.

2. Tank access covers exposed.

Do not bury tank access covers. Optimally, access covers should be at least 4 inches above grade to prevent stormwater from flowing into the tank. Covers flush at grade could allow stormwater in hydraulically overloading a system. Onsite system emergencies almost never happen on a Wednesday in July at 10 a.m. It seems that emergencies always happen on a Saturday night at 11 p.m. in January in minus 30 degree weather. If covers are buried that means (depending on your location) they are now under frost. Digging through frost to find a buried cover is ridiculous. Keep access covers exposed. Make certain all exposed access covers are chained and locked to prevent unauthorized access.

The other reason exposed access covers are so important is because out of sight is out of mind. Once covers are buried routine maintenance is forgotten. The next person buys the house and doesn't know there is a tank buried there. It is critical to have tank access covers exposed.

3. Install pumps for easy removal.



This might be common sense; however we find pump tanks all the time that require tank entry to remove the pump because the installer did not install the pump to be maintenance-friendly.

Instead of piping up from the pump and 90 degrees out of the tank

4 feet below the access cover, pipe from the pump up to within a foot of the access cover — 90 over, 90 back down to the outlet then 90 out of the tank. Typically the weep hole for drainback is drilled at the bottom of this last 90. This involves three 90 ell fittings but makes replacing the pump so easy. Have a separate float pole. Now to remove the pump just cut the PVC horizontal pipe with a Sawzall or hand saw. Lift the pump out and replace. Lower the new pump in and repair the PVC pipe with a pressure coupling or repair union. Some will say have the threaded union from day one. If the pump was sized properly it could be 20 years before the pump will need to be replaced. After replacing the pump do not connect the PVC pipe back together with a rubber hose clamp fitting. This pipe is under pressure — it needs a pressure PVC coupling or repair union. My company calls this the 'gooseneck' method.

Even our state plan templates show this correct method of installation, so why some still put them in requiring tank entry is unclear; but I suspect a combination of laziness and saving a few dollars in fittings.

4. Tracer wire.

The state I operate in does not currently require tracer wire for onsite systems. Why not? I am constantly called by people asking us to locate their buried in-ground onsite system distribution cells because they want to install an outbuilding, a second garage, or a pool. Their system was installed 10 or 20 years ago. Finding a long-lost distribution cell is expensive and time consuming, partially accurate and typically requires some excavating in the yard. Tracer wire eliminates this issue. If tracer wire is used when that customer calls it can be accurately located in minutes. Good, accurate as-builts could help also but I am not finding those for the majority of the systems that the owner wants located.

5. Flush-out valves.

This is becoming way more common, but I think flush-out valves that come to the surface at the end of each pressure lateral are excellent for troubleshooting. The key phrase there is 'come to the surface.' I keep finding even newer systems where the flush-out valves get buried. The cover of the valve box should remain exposed at the surface. If a pump is not pumping down, we like to open a flush-out valve or two and see if the pump pumps down with the flushout valves open. If the pump now pumps down normally, we know it's not a pump issue — the orifices in the laterals are plugged.

6. As-built plans.

Provide an accurate as-built plan and pictures taken during installation. Both of these are valuable pieces of information that can save time in the future. Some installers and counties are now doing the as-builts using GNSS technology that locates the system with pinpoint accuracy and elevations. I've even seen some as-builts using drone views of the system prior to backfill.



7. Filter handles.

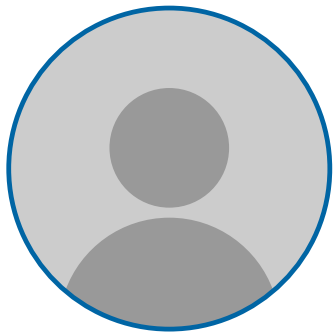
Make sure effluent filter handles are easily accessible just below the tank access cover. Leaving them too deep to reach is not helpful for maintenance.

8. Homeowner education.

The most important thing that can be done regarding planning for maintenance is to provide information to the owner of the system detailing the importance of properly maintaining their system and what exactly those steps are. Stress the importance of these steps and follow up again with the customer whether in writing, email or in person. Do not let them forget their system needs this maintenance for the longevity of their system and to minimize the potential for issues.

Install in a manner that makes proper maintenance of the system as easy and efficient as possible. I am certain there are more ideas where these came from, this is just the tip of the

This article first appeared online at OnsiteInstaller.com on July 15, 2024 published by COLE Publishing, Three Lakes, Wis. It is reprinted by permission.



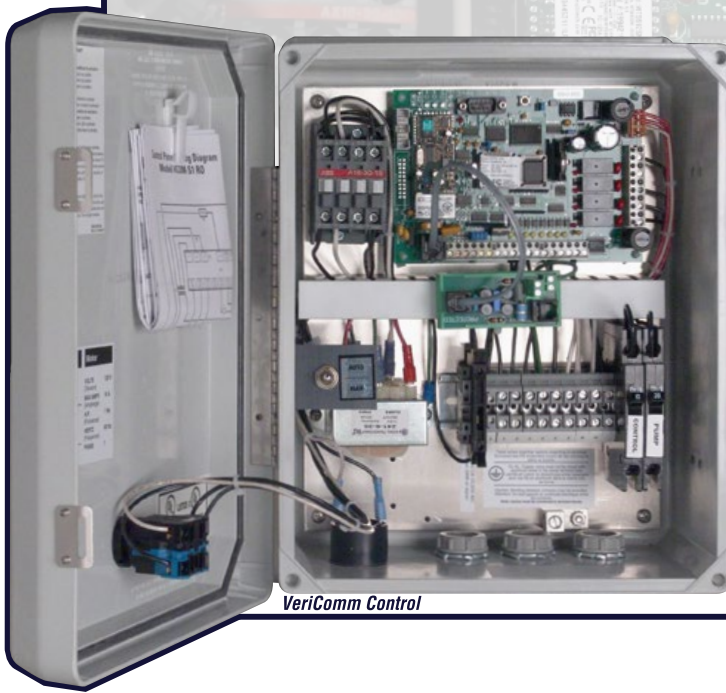
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Todd Stair is vice president of Herr Construction Inc., with 34 years' experience designing, installing, repairing, replacing and evaluating septic and mound systems in southeast Wisconsin. He is the author of The Book on Septics and Mounds and a former president of the Wisconsin Onsite Water Recycling Association.



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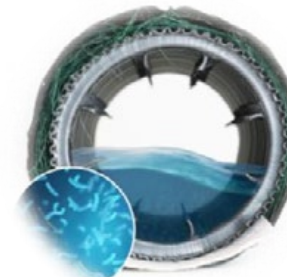
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Chambers versus Leaching Chambers for Shallow Buried Trenches – OBC Discrepancies Buried Trenches

By Anne Egan, Co-Chair, OOWA Onsite Technical Committee

Shallow Buried Trenches (SBTs) are a type of leaching bed that have been permitted by the Ontario Building Code (OBC) since 1998. An SBT leaching bed consists of pressurized distribution piping contained within a chamber and must be used in conjunction with a Level IV treatment unit. Treated effluent is sprayed inside the chamber on a time-dose basis and spread evenly over a 24 hour period. The minimum requirements for SBTs are prescribed by the OBC.

The following are some relevant definitions in OBC Article 1.4.1.2., Division A.

- *Shallow buried trench* means an *absorption trench* that contains a *chamber* or *leaching chamber*.
- *Chamber* means a structure in a *shallow buried trench* that is constructed with an open bottom and that contains a pressurized *distribution pipe*.
- *Leaching chamber* means a formed structure with an open bottom and permeable sidewalls installed in a *leaching bed* for the purpose of distributing *effluent* from a *treatment unit* to the *soil*, as defined in Part 8 of Division B, or *leaching bed fill* in the *leaching bed*.

According to the OBC definition, an SBT can be constructed using a chamber or a leaching chamber. In the early days of SBTs, it was typical to use a 300 mm diameter Big-O corrugated PVC pipe cut in half lengthwise to create a chamber. As more leaching chamber product options have become available over time, it has become common to use prefabricated leaching chambers for SBTs. One could argue that the permeable sidewalls promote aeration in the SBT, and the prefabricated chambers include a stabilized base that is less prone to the type of settlement as observed with the cut Big-O)) chambers.

The requirements for shallow buried trenches have existed in the code since 1998, including prescribing the minimum pipe and orifice diameter for pressurized distribution pipe.

Sentence 8.7.3.4.(4) of the 2024 OBC (previously 8.7.3.3.(4) in the 2012 OBC) states that:

(4) Every pressurized distribution pipe shall,

(a) be not less than 1 in. trade size, and

(b) have orifices of at least 3 mm in diameter, spaced equally along the length of the pipe to provide even distribution of the effluent.



- SBT with pressurized distribution piping in a leaching chamber

The size of the pressurized distribution piping is dependent on the size of the bed and the associated head losses through the pressurized pipe network which are typically analyzed by the designer.

Prior to January 1, 2018, leaching chambers were approved on a product-specific basis through the Building Materials Evaluation Commission (BMEC), as an alternative to the construction of absorption trenches as required by Section 8.7 of the OBC. As of January 1, 2018, amendments to the 2012 OBC to effect to incorporate leaching chambers into the code, setting out the minimum requirements for their use in gravity flow or pressurized absorption trenches, filter beds and Type A Dispersal Beds. The amended OBC now includes provisions for the use of pressurized distribution piping within the leaching chamber. Sentence 8.7.3.5. (3) of the 2024 OBC (previously 8.7.3.4.(3) of the 2012 OBC) states that:

(3) Every pressurized distribution pipe within a leaching chamber shall,

(a) extend over the entire length of the leaching chamber,

(b) be not less than 1½ in. trade size,

(c) have orifices of at least 6 mm in diameter, spaced equally along the length of the pipe to provide even distribution of the effluent,

(d) be supported,

(e) be self-draining so as to prevent freezing of its contents, and

(f) have cleanouts installed at the downstream end of each line of leaching chamber to allow for servicing of the system.

This has created a discrepancy between the minimum requirements for pressurized distribution piping used within leaching chambers being used in either an absorption trench or filter bed setting, versus distribution piping being used within an SBT that contains leaching chambers.



- SBT with pressurized distribution piping in a chamber
(photo credit, SepticSmart! Booklet 2, 2011)

SBTs do not require the use of leaching chambers and can be constructed using a chamber that does not meet the definition of a leaching chamber. However, in reality, it is quite common to use products that meet the definition of a leaching chamber in SBT applications – they are prefabricated, widely available, and work well for the intended purpose.

It is not clear if this discrepancy between the two sets of requirements was an oversight, or an intentional differentiation between the two uses of leaching chambers. It would seem to me that the original requirements for SBTs, which are distributing Level IV effluent, should not necessarily



be overruled by a newly introduced leaching chamber requirement that could apply to a range of effluent qualities, from septic tank effluent through to Level IV. However, the current OBC wording is written in such a way that if the chamber used in an SBT happens to be product that also meets the definition of leaching chamber, the minimum pipe diameter and orifice sizing in 8.7.3.5. would overrule the minimum requirements for SBTs in 8.7.3.4.

While this may seem to be a minor issue, the practical implications of these two conflicting sets of requirements may be significant, in terms of the necessary pump capacity. The most significant is the requirement for a larger orifice diameter, because this will require a higher flow rate for the pump to be able to pressurize the entire distribution pipe network and maintain the necessary residual pressure head (600 mm) at the distal end of the pipe network. The minimum pump flow rate required for each orifice is calculated using the orifice equation. Doubling the orifice diameter will increase the minimum flow rate per orifice by a factor of four. This increase in flow rate results in the need for a larger pump to pressurize the pipe network, which has capital and operating cost implications for the owner. As the SBT bed increases in size, this four-fold pump capacity increase can become impracticable.

OOWA's Onsite Technical Committee is actively reviewing this issue, and it has been brought to the attention of the Ministry Municipal Affairs & Housing (MMAH) staff that there is a need to amend the current wording in the OBC to address this discrepancy. In my view, the issue could be resolved with an exception clause that Clauses 8.7.3.5.(b) and (c) do not apply to SBTs. The pipe diameter and orifice

sizing need to be dictated by the application in which they are being used, i.e., if the pressurized distribution is being used in a leaching chamber that it not a shallow buried trench application, the requirements of Article 8.7.3.5. would prevail. If the pressurized distribution piping is within a shallow buried trench, the requirements of Article 8.7.3.4. would prevail. The remaining Clauses 8.7.3.5. (a), and (d) through (f), could (and arguably, should) remain applicable to leaching chambers used in either application. SBTs have been successfully used for more than twenty years based on the requirements of 8.7.3.4. and this includes many installations where leaching chamber products were used.

Keep an eye out for further communication on this topic!



Notes:
Capture key insights and ideas during the conference. Use this space to jot down notes, questions, or anything that sparks your interest!



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Safety Star System

Per CSA Standard B66-2021 referenced in table 1.3.1.2 of the OBC, it is a mandatory requirement for all access openings of prefabricated septic tanks to have secondary safety screens. Effective January 1, 2025.