# ONTARIO ONSITE WASTEWATER ASSOCIATION NEWSLETTER

treatment | technology | innovation | reuse | recycle

**SUMMER 2016** 

# WASTEWATER TREATMENT SYSTEM INSPECTIONS: Inspection Cameras Shedding Light on Hidden Problems

By Jason Berry, Manager, Inspection Services, ESSE Canada

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Sewer-line camera inspection use in wastewater treatment system (WTS) inspections is steadily on the rise, and for good reason. Consider that the majority of wastewater treatment system components are not visible from the ground surface, and that there are meters and meters of subsurface piping and system components. It is then reasonable to infer that many deficiencies or outright component failures could go unnoticed if a camera inspection of at least a representative portion of these lines is not completed.

Reel-mounted video cameras for in-field use are quickly becoming more affordable and are an essential tool for anyone performing WTS inspections looking to provide value and confidence to their client and their brand. Photographic digital evidence is indispensable when substantiating any of your findings and assertions when determining the condition and performance of a system.

A recent experience of mine illustrates the significant value added to an inspection when a sewer-line camera is used. I had been hired by a potential buyer looking to purchase a vacation home for their family in southwestern Ontario. Upon my arrival onsite, she had disclosed to me that both the seller and her agent had tried to dissuade her from what was in their minds an 'unnecessary inspection' as the local township had completed their mandatory septic system re-inspection program the previoussummer and therefore had a report stating the WTS was "in good working order".

OntarioOnsite Wastewater Association

The report from the township was brief and to the point, noting the approximate working volume of the septic tank, the date of the last pump out and the basic conditions within the tank (i.e. presence of baffles, effluent filter and condition of concrete) along with a succinct statement that the tank structure and effluent levels appear to be normal.

The cover letter from the township had stated that the information contained within the report "does not constitute any guarantee of operational fitness or condition of the sewage system" and that it is "only a compilation of known information and observations obtained on the inspection date through a non-invasive inspection process."

continued on page 29

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# PRESIDENT'S MESSAGE

The theme of this edition of OnSite is "Optimization".

When we look to optimize a situation or process, it requires critical thinking to come up with a way to improve or do more with the same amount of resources. We know there are many onsite wastewater systems throughout Ontario that are all going to require some sort of retrofit, upgrade, or complete replacement in coming years. In the face of more stringent regulation, challenging site conditions, and limited resources, we will need to focus on optimizing and working with what we have to improve these situations.

As you conduct your day to day work this season, take a moment to question why you are doing something in a certain way. Could it be done better? Smarter? More efficiently? Take the time to challenge the process - don't be satisfied with the status quo, with doing things the same way you've always done them. By its very nature, the status quo means we are stagnant, we are maintaining existing conditions. The world is changing rapidly all around us; we need to embrace change and move forward with it, and have our voice heard in order to push change in the right direction.

Our industry is facing changing regulations, not to mention the continuously evolving and improving technologies and products available to us. Our OOWA Registered Professional Program is up and running. I would encourage you to take the time to review the information, and apply to become an OOWA RP. It's a great way to stay informed and to be a leader in our industry.

There are exciting times ahead for our industry. Yes, there will be challenges. Change is not always easy, but imagine where we would be today if no one ever challenged the status quo. Imagine where we would be today if the answer to "why do we do it this way?" was always "because that's the way we have always done it". Nothing can change without first undergoing some form of stress or strain; we must continue to move forward together. As an association, we must be ready to lead, not follow; to push forward, not rest in place (or worse, pull backwards); to collaborate, not divide. What type of legacy do we want to leave for our children and grandchildren? I want to leave a legacy of smart, sustainable and well-managed solutions for wastewater servicing, with onsite and decentralized systems as a key component of providing these services to Ontarians.

nor lgas

Anne Egan President





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To submit an article or place an advertisement contact the editor at **info@oowa.org** 

The opinions expressed in this newsletter by contributing authors are not necessarily the opinions of OOWA's Board of Directors or the Association.



# Early Bird full convention pass pricing starting at \$295 Hotel rooms at The Marriott on the Falls starting at \$129

Exhibitor packages now available! Ask about our new variety of booth spaces and layouts





# OOWA's 2017 Convention and Expo Saturday, March 25th- Monday, 27th, 2017

The Ontario Onsite Wastewater Association is excited to announce that we will be returning to Niagara Falls for our annual gathering, this time hosted at the Scotiabank Convention Centre. Our annual conference and trade show is now the OOWA 2017 Convention and Expo.

The 2017 Convention and Expo is putting our exhibitors front and centre! The Expo floor will be the largest OOWA has had in recent years, allowing us to invite a broader range of vendors and to showcase a wider cross section of technologies and equipment. The Expo floor will have increased booth space options and configurations, will serve as the central hub for food and refreshments and will also offer informal meeting and gathering space to connect with clients and colleagues.

You will notice that we have changed the week days on which the event is held, now spanning Saturday to Monday. We've done this to make it easier for our vendors to attend and to ensure a good representation from our various member groups and stakeholders.

OOWA's conference has always been the best go-to event to learn about regulatory updates and industry trends. In 2017, the Convention and Expo will also be the place to get 'on the ground' training. A series of training sessions will be available on the Saturday afternoon that will focus on technical skills and best practices and also will provide opportunities for members to fulfill some of the requirements in achieving their OOWA Registered Professional Program (RPP) aptitudes. Sunday's sessions will continue with skills training and development sessions, with Monday featuring content related to policy and industry updates.

Early bird pricing will be available for OOWA member delegates. Additionally, the organizing committee has worked hard to keep exhibitor package fees low despite the newer and larger venue. Watch for news about open registration, exhibiting details and sponsorship opportunities in upcoming editions of Ontrack (E-newsletter), the Fall/Winter edition of Onsite and our on-line Events Calendar (www.oowa.org/events/).

Many of the things you have come to expect from our annual event will remain the same, such as the range of featured speakers and the pertinent content of the sessions. However, we also have a few new activities planned to maximize attendance value and event experience. Stay tuned!

We look forward to bringing you this 'bigger and better' annual event and are confident that our 2017 Convention and Expo will set a new standard for Ontario's onsite and decentralized industry. Save the date and join us!

# OOWA IS A PROUD SUPPORTER & PARTNER OF:



# **OOWA'S 2016 REGIONAL MEETING SERIES**

OOWA's Regional Meetings will provide our members with professional and skills development along with the networking opportunities that will strengthen connections and raise awareness about industry best practices.

The topics that will be covered in each of these Regional Meetings are:

- Pump Chamber and/or Filter Bed Best Practices
- Filter Sand: Sourcing and Ensuring Quality Material for Installations
- Engineer, Designer or Installer? Who Should Address What and When.

#### **REGIONAL MEETINGS SCHEDULE: SAVE THESE DATES!**

#### SOUTHWESTERN ONTARIO REGIONAL MEETING

November 4th, 2016 Location: Upper Thames River Conservation Authority

GOLDEN HORSESHOE REGIONAL MEETING

November 10th, 2016 Location: TBD

**PETERBOROUGH REGIONAL MEETING** November 18th, 2016 Location: TBD

**'NEAR NORTH'/MUSKOKA REGIONAL MEETING** December 1, 2016 Location: Port Carling Community Center

**CENTRAL ONTARIO REGIONAL MEETING** December 9th, 2016 Location: Innisfil Municipal Office

EASTERN ONTARIO REGIONAL MEETING Date: TBD Location: TBD



Jason Berry, Bill Muirhead and Anne Egan participate in a panel discussion at the 2015 Southwestern Ontario Regional Meeting



Anne Egan presents on phosphorous reduction strategies at the joint OOWA/OBOA Regional Meeting in Port Carling last year.

CHECK BACK TO OOWA'S EVENTS CALENDAR (www.oowa.org/events/) IN THE COMING WEEKS FOR REGISTRATION DETAILS AND SPONSORSHIP OPPORTUNITIES.



# ... work in the onsite industry?

Why don't you join the Ontario Onsite Wastewater Association! The onsite industry is at the front line of environmental protection. Only as a team can we build the profile and recognition that our industry deserves. We have discounts for corporate multiple memberships.

# **EVENT WRAP UP** SEPTIC SYSTEM INSPECTION WORKSHOP

On Friday, June 3rd, OOWA presented its Septic System Inspection Workshop in Barrie. With 62 attendees on hand, speakers addressed several best practices on locating systems and how to perform comprehensive investigations on both conventional and advanced systems. A lively panel discussion followed the afternoon sessions that allowed for further exploration of the activities that comprise a thorough system investigation. Session speakers included Doug Niles from Trenchless Utilities discussing old challenges and new solutions in locating septic beds for inspections, Jason Berry of ESSE Canada talking about the business of septic inspections in relation to the Ontario Building Code, Mark Goodman from Eisses Pumping addressing what comprises an effective and professional septic inspection and Chris James of Waterloo Biofilter exploring the special considerations involved in inspecting treatment units.

Go to OOWA's Regional Meetings webpage to check out the presentations: www.oowa.org/eventsmenu/oowa-regional-meetings/



Chris James of Waterloo Biofilter talks treatment units.

# THANKS TO OUR SEPTIC SYSTEM INSPECTION WORKSHOP SPONSORS



# MEMBETZ PROFILE

Bill Muirhead Waterloo Biofilter Systems

**SERVICES:** Advanced Treatment Manufacturer & Service Provider

SERVICE AREA: Canada and some northern US States

FEATURED EXPERIENCE: 2 years as President

# What got you started in the onsite wastewater industry?

I wish I could give you a great story like it is been part of my family heritage or I had gone to University to study in this area, however it is nothing that profound.

I have a love for cottage life as my wife and I have been cottage owners for the last 22 years, and as such, I had a general understanding of septic systems and the importance of them to the health of our lakes. I had recently divested myself and my interests in a Wealth Management company and I was looking for a business to be involved with. My children decided that they needed to give me some advice and suggested I look for a company which could assist in improving our environment... which I actually thought was some good advice. Just around that time, through a mutual friend, I had the opportunity to meet with Craig and Robin Jowett, the founders of Waterloo Biofilter. I was intrigued by their company, their product, the reputation that they had in the industry, and the potential they had looking forward. So one thing led to another and I am now part of the onsite wastewater industry.

#### Give us one reason/secret for your success.

That is a difficult question because I never really thought about it. I guess the recognition that to be successful in life you can't do it alone. Building a team, recognizing their talents and then giving them the ownership and responsibility to carry out their tasks is essential for growth and success. I have been fortunate in the past to have a very strong team around me and I am amazingly fortunate to have such a strong team around me currently at Waterloo Biofilter.

#### Where do you see the onsite industry going?

I believe that the industry is on the cusp of some really exciting opportunities, however I would also note that as an industry, we do not move or change very quickly. I do believe in time there will be a recognition that traditional ways of looking at wastewater treatment (like most things in life) needs to evolve.



BILL MUIRHEAD Waterloo Biofilter Systems

This may be forced on us as different levels of government recognize that traditional big pipe is not financially practical in some situations. I also think that there will be a healthier recognition that there are innovative technologies in onsite wastewater and that we should embrace those technologies for the health and safety of the residents in Ontario.

#### What can the onsite industry do to improve?

When one asks about the "onsite industry", I think most people naturally think about the companies and businesses involved in the onsite industry. I think it is fundamentally essential for us to change that paradigm and broaden the definition of "the onsite industry" to be all stakeholders - government, academia and business. For this industry to fully reach its potential, all stakeholders need to collaborate together. I will say that after a relatively short time in this industry, I have been a little surprised and somewhat disappointed by the lack of collaboration between all of the stakeholders.

I will say, however, that OOWA has done an admirable job in trying to foster a more collaborative environment within the wider industry. I think it is essential for any industry to evolve and to improve they need a strong industry association. I have been impressed with the direction and the efforts of OOWA and we are all very fortunate for the many volunteers and the leadership they have given this industry. While there is a lot of work ahead of us, I believe OOWA will play a vital role in creating a more collaborative culture.

Breaking down the silos that have been built up between government, academia and business, and to increase collaboration between these stakeholders is essential to profoundly improving our industry.

# ADDING HEAVY VEHICLE OPERATORS TO YOUR COMMERCIAL INSURANCE VEHICLE POLICY

Scott McMullen, Verge Insurance



Over the past number of years we have seen a clamp down by insurance companies on the rules and requirements in adding new drivers to vehicle policies. More specifically the rules in adding Class A or Class DZ licensed drivers has become difficult for business owners who have heavy commercial vehicles as part of their fleet. In the septic industry this would be dump trucks, pumpers and tractors.

Below is a list of items you should provide your insurance company to make the addition of these drivers as smooth as possible.

- 1. Ask any new hire to bring a Commercial Vehicle Driver Report to the interview
- 2. Ask (if possible) for a letter from the employees previous employer stating the amount of years and what type of vehicles that person operated
- 3. Our office provides our clients with a driver profile to fill out with employees that gives the insurance company the necessary information in assessing a potential driver Our office has found that if we receive this information, adding a driver has been a painless experience for our clients.

For more information or to get a quote on your insurance needs:

Ontario Onsite Wastewater Association Insurance Program Scott McMullen, B.A., CAIB, CPIB contact@oowainsurance.com 1-866-717-7889 www.oowainsurance.com

# **NEW OOWA MEMBERSHIP OFFERING!**

#### OOWA is proud to announce its new Associate Member designation.

As OOWA continues to collaborate with other affiliated provincial associations and organizations, we want to strengthen these relationships and increase information sharing. The Associate Membership allows current members of associations like the Ontario Building Officials Association (OBOA), the Ontario Association of Sewage Industry Services (OASIS), Ontario Society of Professional Engineers (OSPE) and the Ontario Association of Home Inspectors (OAHI) to join OOWA at the special rate of \$150.00. These members will receive OOWA's digital information products and can access some of the same benefits as our regular members. Please share news of this new membership option with your colleagues in any of the above associations and with those in organizations who have a peripheral interest in onsite and decentralized wastewater treatment.

Go to www.oowa.org/membership/join-oowa/ to download the Associate Membership Package.

# Packaged Treatment Systems: Viable Solutions for Small Communities and Municipalities

Irene Hassas, Director, Strategic Planning & Partnerships, Aslan Technologies Inc.

There are many community settings across Canada that are remote or are too small to warrant a conventional water and wastewater system. Barriers such as geographical location, accessibility, climate conditions, operation and maintenance, or even operator training limitations are all challenges for providing stable water services in these locations. There is also an increasing need for new norms and standards in water management processes to address climate change issues in relation to water and energy resources. To achieve an integrated approach to water management in these communities, financial, technological, and operational and maintenance challenges need to be considered, with the goal of enabling communities to be independent and sustainable.

#### A COMMUNAL APPROACH

Typically, when a small community's conventional water system approaches the end of its lifespan, the community either has to replace it with a water treatment system in every household (e.g., septic systems), or implement the 'big pipe system' to service the community as a whole. One of the key objectives for decision makers is to put in place a cost effective and easy-to-operate facility that will meet effluent quality standards, but can also be operated and serviced by the existing staff, to minimize third party involvement. As such, "communal", "distributed", "decentralized," or "cluster systems" are buzzwords that are gaining popularity among the consultants, engineers, developers, and decisionmakers who understand the advantages of these systems.

In the past couple of decades, there has been advancement in the technologies, but the real key to success has been in the development of sophisticated levels of automation within a number of different types of packaged plants. Minimizing the



SBR Sewage system in construction by Aslan Crew (underground tank)



Shakespeare under construction

requirements for the operator and the lower cost of HMI and control systems have finally made the use of communal and prepackaged treatment systems practical for small, remote communities. From a design point of view, location and accessibility, availability of energy sources, elevation, and temperature are some of the parameters that need to be considered when designing systems for such communities.

When the Town of Shakespeare – located in the county of Perth East, Ontario and home to approximately 1,000 people – hired a consulting firm to identify the best solution for delivering future wastewater services, a decentralized approach was recommended. The community's septic systems were reaching the end of their effective life span, compounded by flooding and a variety of other technical issues which moved council to search for a solution that fit the town's limited capital. "Being an off-grid, small municipality, the options were limited, forcing people to either replace their existing septic systems or implement the big pipe concept with a pump station connected to another county," said John Donders, project manager at Aslan Technologies."

This was the first wastewater system that Perth East had considered to meet the effluent standards and accommodate projected growth. All available options were reviewed from technological, financial, operational, maintenance, and site considerations.

The decision was made to move ahead with an Aslan Technologies integrated solution that utilized an SBR system as the core treatment, "saving the town approximately \$2.4 million in avoided costs of \$9.1 million for the piping extension to connect the town to a larger centralized municipal system," said Wes Kuepfer, manager of Public Works for Perth East. By installing a local communal system, it also meant that user fees were retained in Perth East.

"Recent stats show that there are close to 300 small and remote communities across Canada, and most of them could benefit from simple, turn-key and easy to operate water systems," said Mike Myers,



Shakespeare sewage treatment system building

president of Aslan Technologies. "The advantage is that many of these systems can be designed, built and transferred to the site in an enclosure such as a container, prefabricated structure or made ready to install into an existing building" said Myers. For small communities and municipalities, the small systems are often equipped with sophisticated automation and monitoring systems that are crucial for ease of operation, maintenance and any unforeseeable challenges resulting from accessibility, climate or site conditions.



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# **2016 OOWA MEMBERSHIP BENEFITS**























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 xt. 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 follow items and more; Carhart merchandise, Dakota Workware, Coveralls and Overalls, casual wear, work gloves, and all CSA footwear. Present it at any location to receive your discount.

Peak Benefits Solutions provides comprehensive employee benefits packages that offer exclusive rates and access to savings not found with any other programs currently available. Peak's goal is to make individual plans rewarding for OOWA members by delivering quality products with excellent customer service. Contact Chad Donnelly at 1- 877-426-2704 for a personal consultation and quote.

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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 has redeveloped the Registered Professional Program to address the needs of ongoing training and continuing education demands from our members. OOWA Professional Designations include: Project and Administration Professional, Technical Sales Consultant, Wastewater Service Technician, Designer, Installer, Private Inspector, Regulatory Inspector and Residuals Transporter.

OOWA has been working closely with the Ontario Society of Professional Engineers to develop a convenient course schedule that allows you to easily plan your required courses and to secure your designation in a timely manner. For more information on the RPP go to our website: www.oowa.org/education-training/oowa-rpp/.

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 know that you can access membership rates for events and resources provided by our association partners:

- The Ontario Association of Septic Industry Service
- The Ontario Building Officials Association
- The Ontario Ground Water Association

To get more information on these member benefits please visit our website at: www.oowa.org/about/join-oowa/

# **8 WAYS TO STAY IN BUSINESS AFTER A DISASTER**

By Caroline Sabourin, LegalShield

It is estimated that 25 percent of businesses fail to reopen after a major disaster. Developing a solid recovery plan will give your business a chance to bounce back. There are additional steps you must take to ensure your plan is effective. You will need to evaluate your insurance coverage and train employees before disaster strikes. The following information will help you create the right plan for your business.

1. Understand the most common threats to your business. Many disasters are difficult to predict but you are probably more likely to encounter certain types of disasters based on where you live. For example, if you run an online business you may be more likely to experience a data loss or cyber extortion. If you live in a coastal region you may be more likely to face a major storm or flood damage. Consider the types of disasters you may face and take particular care in how to protect your business and recover your business.

2. Develop a disaster recovery plan. Your first priority is the safety of customers and employees. Your plan should include evacuation or shelter-in-place guidelines in the event of a disaster. You should develop a plan for communicating with employees, customers and vendors \during and after a disaster. You will also need to identify your critical business functions and set a plan for getting them back online. Your plan should be a path towards temporary short-term recovery and ultimately sustained long-term recovery. Keep copies of the plan, both physical and electronic, in multiple locations. Review and revise your plan every year or whenever your business undergoes major changes.

3. Train employees on your disaster plan. Your plan is useless if your employees do not know what to do. Everyone in your business should understand his or her role in the recovery process. Train all new employees and periodically review procedures with existing staff. Personally manage the most vital recovery aspects or assign them to your most trusted employees.

4. Familiarize yourself with IT threats and back up your business data. Use offsite computer backup and storage to make sure all of your vital data is recoverable in the event of a cyber-attack or natural disaster. Keeping your data in only one location is asking for trouble. Offsite cloud backup allows you to easily retrieve your data if your main office or data storage is destroyed.

5. Evaluate your business insurance. Not all business insurance covers natural disasters and some types of coverage can be prohibitively expensive. It is important to consider the needs of your business and the likelihood of a disaster affecting your business. You may also consider purchasing data breach insurance, which may provide coverage if your business is hacked or your systems are sabotaged. The loss of client data could be a public relations nightmare and may lead to fines or expensive litigation.

6. Review your lease and talk to your landlord. If your business rents office or retail space it is important to understand the responsibilities of the landlord and their plan for recovering from a disaster.

7. Talk to your vendors. Without key vendors many businesses would quickly sink. You should keep an open line of communication with your vendors and understand their own disaster recovery plan.

8. Make sure you have access to the necessary capital to recover. Many businesses fail after a disaster because they do not have the money to make it through even a brief shutdown. If your business needs assistance after a disaster you may be eligible for a short-term low interest business recovery loan.

To find out how LegalShield can support your business' legal needs contact: Caroline Sabourin 905-235-0656 carolinesabourin@legalshieldassociate.com





# MEMBETZ PROFILE Tanya Killins

Niagara Region

**POSITION:** Private Sewage System Inspector

**SERVICES:** Under the Planning & Development Services Division, the Region is the regulatory agency responsible for enforcing Part 8 of the OBC for private sewage systems within the rural area of Niagara. My daily activities include; issuing permits, conducting installation inspections, investigating complaints and reviewing planning applications.

**SERVICE AREA:** Responsible for 9 of the 12 municipalities located within the Region, Niagara has a total area of 1,852 km<sup>2</sup> with a population of 427,421. The Niagara Region is bordered by Lake Ontario and Lake Erie to the north and south, with the City of Hamilton to the west and New York State to the east. The Niagara Escarpment runs east-west through the Region with many environmentally sensitive sites which creates restrictions for the approval of septic systems in these areas. Most of Niagara has poorly draining clay soils, including swamps located in the south, although sandy soil is found along both lakefronts and in the centre of the Region.

#### NUMBER OF YEARS IN ROLE: 7

# What got you started in the onsite wastewater industry?

I was looking for work after staying home for a couple of years to raise my two boys. My father-in-law at the time was a retired Health Inspector, who had started his own business working as a private septic inspector. I started helping him in the office and since the idea of working outside appealed to me, he started teaching me about conducting septic inspections. My background was in environmental studies and I had a diploma from Sir Sandford Fleming College in Lindsay for Environmental Resource Management. I wrote my exams for the Ministry and worked with him for a year or so before the opportunity at the Region became available. In my position at the Region, I was trained by another former Health Inspector who had over 30 years of experience. In the beginning it was sometimes a challenge to communicate with contractors when a design did not meet Code or if an installation was incorrect, especially when they had been doing things a certain way for many years. But I had a good foundation behind me, which taught me to be confident in what I knew and to not be intimidated. Once they realized that I was doing my job without trying to make theirs more difficult, things were easier. Today I always make sure to be polite and helpful, especially when having to explain changes in the Code, and try to keep communication open to avoid any problems. I also strive to act professionally at all times and make it clear that I'm there to ensure everyone is following the rules. I find it helpful to have healthy working relationships with



Tanya Killins Niagara Region

the installers so we can work has a team when determining the best solution for a complicated site.

#### Give us one reason/secret for your success.

I'm not sure I would call it success exactly, more like accomplishment. Since I'm in a role of enforcement, I have to deal with people when they are in tough situations, like when their system is found to be defective and they now have the unwelcome expense of having to replace it. We also sometimes end up in court when we can't resolve a situation and that is always stressful for everyone. If I can get through my day knowing that I gave someone helpful information to let them move forward with a project or was able to come to an agreement with someone without having to issue an order to comply, then I feel like I have accomplished something that day. My job is to ensure that the rules of the Building Code are being met to ensure that we have a safe environment when it comes to on-site sewage disposal but I try to stay positive and friendly with everyone I deal with and to help them get what they need as easily as possible.

#### Where do you see the onsite industry going? What can the onsite industry do to improve?

I believe the regulations governing septic systems will only get stricter as the connection between drinking water sources and septic systems becomes fully recognized. I feel that the importance of checking where and how septic systems are installed is sometimes lost within the Building Code because the environmental concerns can be easily overlooked if there is not another agency (i.e. Conservation Authority) highlighting areas of protection. We need to remember that having septic systems regulated under the Building Code may not last forever and I can see a time when the MOECC takes back the small systems. There are too many sites currently using old, unsafe systems in areas of environmental sensitivity (i.e. half acre lakefront lots using dug wells) but people always want to build bigger, giving these sites the potential to become real disasters. Because of this, we will look to technology to reduce the risk to the environment but I think it needs to be done in a way that makes compliance easy to achieve. There are always new technologies and products being marketed for the onsite industry, but I think a key factor to remember is that sometimes the simple choice can be best for a site. You can have the newest system on the market but if there's much more to it than just pushing a button, it will be hard for people to use and use properly.

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# Want to know more?

Contact OOWA's Outreach Coordinator, Mike Gibbs: 855-905-6692 ext. 101 or via email at outreach@oowa.org.

# The Martyr and the Intimidator

By Ellen Rohr

The following story is true. The names have been changed to protect the innocent. If you think this story is about you...you are probably right.

Leslie is the owner of a roofing company, a business she inherited from her father. Back in the day, her father managed a small crew and operated with handshakecontracts and stacks of cash. Now that her dad has retired, ambitious Leslie sees a different future. She wants to grow her company so that she can make a fortune... and provide career opportunities for her beloved team. And she wants to build on her (and her father's) reputation for taking great care of her customers.

Leslie called me one day, after reading one of my articles. She described the vision she has for her company and her intent to build an empire. In response to my questions, she shared that...

• She knew how much she had in Accounts Receivables, but only saw financial statements once a year... at tax time.

• She didn't understand how the financial statements related to what she did every day...sales, payroll, materials... so she pretty much ignored the reports anyway.

• She knew that she was in debt...but wasn't sure how much. She just secured another line of credit to keep the cash flowing.

Sigh. I confronted Leslie about her lack of financial literacy. "It's your company and your assets on the line. You need to KNOW. Tell me who is in charge of the accounting at your company."

For the last fifteen years, her mom has been the Bookkeeper. Mom does the books as "a favor" to Leslie. She works 40 plus hours a week but nothing is ever really finished or ready for Leslie to look at, so Les has quit asking for day-to-day financial information. Everyone else in the office avoids Mom, who seems to have a different set of rules from the rest of the team. While Mom is responsible for paying bills, who she pays and when is a mystery. Once, when Stan the warehouse man had a question about his paycheck, Mom flew out of the office sobbing, "And THAT'S the thanks I get?" It took Leslie three apologetic phone calls to woo her back.

At the end of the year, Mom hands whatever it is that she assembles for financial information to a fellow named Art. Art is an Accountant who files the tax return. Leslie has asked Art for help understanding the balance sheet and income statement he prepares for the return. She called and set up an appointment to meet with him. His secretary scheduled a date to meet...in six weeks. At that meeting, Art leaned over his massive mahogany desk and patted Leslie's hand. "You worry about running the business. I'm a professional. I will take care of the accounting," he said dismissively...then escorted her to the door. For the money she pays him to be treated like this?

Martyr Mom is holding Leslie back. Art the Intimidator is holding her hostage.

I advised Leslie to fire both of them.

"But, then what?" Leslie sputtered in response to my suggestion. "Where do I find another Accountant? Who else would I trust with my money? Where do I start? And, by the way, my mother will disown me."

I responded, "Leslie, you can do this. You can get to a known financial position. You can create a clean, accurate set of financials. You can build a team of financial pros who will help you get timely, accurate data...in a format you understand...so that you can make good business decisions. "And, Leslie, your mom will get over it."

Bookkeeping is a part time position. Enter Sales, make the Deposit, pay Bills...and you are 90% there. Find a smart, savvy Bookkeeper and have her or him help you set up your accounting program and learn basic accounting. It's not hard...it's just that you haven't been taught this stuff.

Then, enlist a CPA – Certified Public Accountant – to check your work...and handle your tax responsibilities. Unless you are a VERY big company, you just don't need an in-house CPA.

These professionals do NOT relieve you of the primary stewardship of your company. Your assets are on the line. You have to pay attention. A good financial team can help you make good decisions. You direct them...they don't direct you.

I went through this process myself when I realized that we weren't making any money and no one was going to figure out how to fix that for me. It was MY responsibility. Finding the right financial team to help you build your empire may appear to be a daunting task. Take heart and take my advice: Do NOT put up with the Martyr or the Intimidator. Fire them! Learn to do the duties yourself if you must. Do NOT be held hostage. Know there are people out there who LOVE bookkeeping and accounting and determine to find them.

Do you recognize yourself in this article? I thought you might. If I can become a financial powerhouse, you can too. It's your money, your responsibility...and it's easier than you might be making it.

"Do what you love, and keep track of the money!" ~ Ellen Rohr

#### **About Ellen Rohr**

Ellen nearly sank her husband's plumbing company after his partner died unexpectedly. Boy was she humbled! In desperation, Ellen figured out how to make lots money and turned the business around. She inspires thousands, in workshops, presentations and online, to make business un-complicated and live life un-leashed.

Ellen is also a successful franchisor, helping launch a plumbing franchise to 47 locations and \$40 million in sales in under 2 years. Now, she is the president of Zoom Drain and Sewer, LLC. Ellen is a popular, high-energy speaker and TV Celebrity who has been on over 60 news programs, encouraging people to make their own money. Business UN-Complicated...Life UN-Leashed!

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Why not contribute to our collective efforts in getting onsite and decentralized recognized as viable and critical rural infrastructure? OOWA is looking for enthusiastic and engaged individuals to help move the industry forward.

Contact Mike Gibbs to find out how to join our ranks! outreach@oowa.org

# ONSITE TECHNICAL COMMITTEE SHALLOW BURIED TRENCH TASK FORCE

The Onsite Technical Committee is developing a best practices document for Shallow Buried Trench (SBT) leaching beds similar to those developed for Sand Filter Beds and Pump Chambers. The committee has compiled a list of six areas of interest and is looking to our members and friends of the association for comments.

Shallow Buried Trenches – Areas of Interest for a Best Practices Document

- 1. Code Interpretation: Can Shallow Buried Trenches be Installed in Fill, and if so, what are the code requirements and best practices?
- 2. Dosing Chamber (for SBT leaching bed) Sizing Guidelines this would include a discussion on the types of controls required to dose the SBT leaching bed.
- 3. Pump Sizing Considerations for SBT's
- 4. Should SBT's be installed in soils with a T-time greater than 50 min/cm, even though allowed by the code. What are the implications and suggested best practices?
- 5. What is the best practice for assessing T-times greater than 50 min/cm
- 6. Best practices for installation including but not limited to: installation along the contour, installation in dry soil conditions, piping installation methods, use of and type of pipe supports, use of orifice shields, spacing of orifices, spacing of drain orifices, configuration of pressure (squirt) test ports, use of filter fabric, etc.

Please submit your comments to: Marie-Christine Belanger or Anne Egan, Onsite Technical Committee Co-Chairs info@oowa.org

*Thank you in advance for your support.* The OOWA Technical Committee

# A Case Study in Odour Reduction

By Michael Varty, P.Eng., WSP Canada Inc.

The pursuit of system optimization is something that nearly all designers, engineers, installers, and manufactures engage in on a routine basis. Often we will evaluate components of a sewage collection, treatment and disposal system and try to mitigate issues that we may have seen or heard of through our past experiences or second hand. For larger sewage systems, Inflow and Infiltration (I&I) can be a serious concern; the more I&I allowed into a system the more resources are wasted treating clean water. Mitigating I&I would certainly optimize the any wastewater treatment facility.

Recently the WSP Air Quality team was brought into review a large system servicing a trailer park in south western Ontario. The residents of the park had suffered through numerous years of foul odours both outside of and within their trailer units. The odours were not typically identified in consistent locations, or during any specific wind patterns etc. They were also not typically identified near the common septic tanks or the sanitary manholes.

A program was put into place to capture/ sample the odours for future analysis to determine what the odour type was and thus where the source may be originating from. After a series of sampling events the determination was made that the odour was sewage related and thus would most likely be associated with the on-site wastewater treatment and disposal system.

The WSP Rural servicing group was brought in to help track down the source of the odour, as well as cause. Naturally the first place to look was the on-site sewage treatment and disposal system. The system was a conventional system with two large septic tanks outfalling to a large pumping station. The pumping station relayed the sewage up a hill to the leaching beds. The system serviced about 50 trailers.

The pumping station was opened and the rotten egg smell was immediately noticeable; but even more striking than the smell was the degree of hydrogen sulphide corrosion throughout the pumping chamber. The concrete walls of the chamber were heavily degraded with additional corrosion on the metallic components. Although there was a passive vent on the top of the pumping station it appeared to be homemade and in a questionable state of repair. At this point we thought we had found the source, but how were the smells traveling back up the system, being spread throughout the property, including into the trailer units themselves? After all, the complaints related to the smell were only infrequently noted to be near the pumping tank itself. We continued working our way back up the system; next stop was the septic tanks.

When we removed the sewer lids over top of the septic tank, we encountered something that the rural servicing team hadn't seen before on an on-site sewage treatment and disposal system; manhole inserts. The idea behind a manhole insert is to reduce sewage treatment costs by eliminating inflow, as well as to protect the system from grit, road oils, chemicals etc. We didn't think much about it at the moment other than to note to the client that they probably weren't necessary for raised manhole lids associated with an on-site sewage system. Rather our attention was immediately drawn to the state of the septic tank.

The septic tank itself was again heavily impacted by hydrogen sulphide degradation with the associated odours. To ensure there was no doubt about the cause of the degradation, we continued to open all four of the lids associated with the septic tanks, to find similar conditions in each location; the corrosion reducing marginally the further we got away from the pumping tank. What seemed unremarkable at the moment was that each of the manhole lids had an associated manhole insert.

An inspection of the sanitary collection system was next on the agenda. The collection system itself was a typical sewer system with about 10 manhole locations. Each manhole was opened up to evaluate the condition of the manhole and to note any odours. When we opened up the first manhole again we found that under the metal lid was a manhole insert. The manhole itself again a showed signs of corrosion on the concrete and the metal access ladder.

At this point the problem became all too apparent; the system was in a relatively anaerobic state leading to the production of hydrogen sulphide gasses. The sewage system, having no operating ventilation system, had no way of purging these gasses and they became trapped in the system. They were migrating back up into the septic tanks (with additional gasses likely being produce in these tanks as well) and further up into the collection system. The manhole inserts intended to optimize the system by reducing the inflow and protect the system were virtually airtight and trapping the gasses in the system. The reason that odours were not typically noted around the collection network was because no odours could escape the collection network.

We inspected all of the manholes associated with the collection system to verify that similar conditions existed and to rule out finding other possible causes. All but one of the manholes inspected showed signs of deterioration related to sewer gasses; the one manhole



Manhole in good condition



**Degraded Manhole** 



Degraded Septic Tank Riser



Degraded pumping station

that didn't show signs of degradation was the only one that did not have a manhole insert under the lid. It was the first manhole along one of the collection networks and was in pristine condition. The recommendation to the client: remove the manhole inserts and upgrade the ventilation system in the pumping tank. The \$50 HDPE inserts that were intended to optimize the system were slowly destroying it. Since advising the Client to remove the manhole inserts WSP has not been notified of any continuing odour issues at the site.

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# MEMBETZ PROFILE

# Glenn and Lucy Imrie

The Imrie Group

**SERVICES:** Septic Installation, Haulage, Excavation and Landscape

**SERVICE AREA:** City of Kawartha Lakes, Lake Simcoe and Region, Durham Region

#### NUMBER OF YEARS IN OPERATION: 23

# What got you started in the onsite wastewater industry?

We owned a gravel pit and then got started in haulage. When Glenn's parents built a new house, a septic system was required. With the help of another installer we put the system in and after that, one system led to another and to another and so... a septic business was born.

#### Give us one reason/secret for your success.

Lots of hard work, constant promotion of the business, educating the public, and always learning new ways to be more efficient and proactive.



THE IMRIE GROUP

#### Where do you see the onsite industry going?

More and more people want to get out of the city and into the country where onsite septic systems are a must. We, as an industry, need to educate the general public and be proactive. There are positive steps being taken to bring all the aspects of the onsite industry together, which will benefit us as a whole. OOWA is doing just that and we would love to see it grow!

#### What can the onsite industry do to improve?

We live in an area where there are a lot of lakes and waterways. Taking care of our water is so important and that includes our wastewater footprint too. Many do not see the value of tertiary systems over the conventional systems when near the water. We would really like to see more education for the general public in this area.





# MEMBETZ PROFILE

**Caitlin Larwa** WSP Canada Inc.

**SERVICES:** Design, Inspection, and Monitoring of Onsite Wastewater Systems

SERVICE AREA: Southern Ontario, based out of Aurora

NUMBER OF YEARS IN ROLE: 5

# What got you started in the onsite wastewater industry?

I have always had a passion for environmental protection, and was fortunate enough during my time in the Civil Engineering program at Queen's University to work alongside a professor who specialized in decentralized wastewater systems. My research at that time focused on sourcing nutrient pollution of a stormwater management pond at a golf course in Kingston, Ontario. The professor, who was also an active OOWA member, ended up recommending me for a position at an engineering firm in the rural servicing group working on the design of onsite wastewater systems.

I have fond memories of dragging my mother out on a cold, wet day to collect litter from the banks of the Don River in Toronto for a school project on water quality in Lake Ontario. I think it was inevitable that my interest and passion for the environment followed me in my career. Just over 13 years later, I am a volunteer with the Toronto and Region Conservation Authority (TRCA) promoting watershed management and environmental conservation to the public.



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#### Give us one reason/secret for your success.

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#### Where do you see the onsite industry going?

During my time at consulting firms, I have found that onsite and decentralized solutions for servicing are sometimes met with hesitation and resistance from governing bodies. I hope that the onsite industry will move towards more education and collaboration between industry professionals and governments to shape policies and regulations in the future.

#### What can the onsite industry do to improve?

Getting more young people involved in the industry to bring fresh ideas, innovation and energy. I'm still quite new, but I can certainly appreciate how far the industry has come and how much more work we have to do.



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# How are you Managing Prescription Drug Costs?

Chris Zelasko, CEBS, Peak Benefits



For many, a benefits plan is measured on the value (and reimbursement level) of the prescription drug benefit. Many employers are finding it harder and harder to maintain the current benefit coverage due to rising utilization and prescription drug costs. In order to ensure the longevity of the plan, they are looking for alternatives to protect the company from future high cost claims.

For many employees, the prescription drug benefits can provide a lifeline to the much needed therapies that exist today. The coverage can be the difference between being able to come to work or being absent. For the employee, the plan is also key in protecting family financial security.

In order to understand which risk management strategies to use, we need to understand the types of prescriptions that are available. They can be classified into 3 categories:

- Acute
- Maintenance
- Specialty/Biologic

Acute medications are for immediate and sudden illnesses, a throat or ear infection are examples. They tend to be a relatively low cost and you need them right away. Once health has improved, you no longer need to take them.

Maintenance medications are often for the long term. Many are used to maintain a lifestyle or health level, cholesterol and diabetes are controlled by maintenance medications. These medications vary in price and the cost is on-going for the employee and the benefits plan. Specialty medications are used for often serious or rare conditions. These medications can be life changing. They wield tremendous power and help people with serious conditions like Cancer or rheumatoid arthritis live closer to a normal life. However, that power can come at a substantial cost.

There are a number of solutions that can help employers manage their prescription drug benefit. Some options include:

- Prescription drug formularies
- Use of Preferred Provider Networks
- Prescription drug maximums
- Coordination of Benefits
- Proper stop loss or catastrophic claim coverage

At Peak Benefit Solutions Inc. we work with plan sponsors to find the best solution for you and your employees to ensure that the plan continues to have value while maintaining long-term sustainability through the implementation of risk management strategies.

> For more information contact: Chad Donnelly cdonnelly@peakbenefitsolutions.com 1 877-426-2704 www.peakbenefitsolutions.com



# Improving Onsite Wastewater Treatment Plant Performance Using Recirculation and Micronutrient Addition to Meet Stringent Total Nitrogen Criteria

Derk Maat M.Eng., P.Eng. President, Maat Environmental Engineering/Scicorp International Corp & Bert Knipp, President, Make-Way Environmental Technology

#### PROJECT BACKGROUND

A school in Ontario featured an existing waste water treatment plant that was treating wastewater from the school prior to subsurface discharge to an engineered tile bed. The existing system was undersized due to increasing flows and was unable to meet the MOECC's discharge criteria for subsurface discharge. The system consisted of a septic tank followed by a three suspended growth aerobic reactors/clarifier units known as WhiteWater ATUs. The discharge from this system was then conveyed to the subsurface drain field. A new treatment plant was required to treat the increased flows and to provide nitrification/denitrification in order to reduce Total nitrogen to the new MOECC criteria.

#### DESIGN BASIS FOR NEW TREATMENT PLANT

The design parameters for the new treatment plant are summarized as follows:

- Flow 18,300 liters per day
- BOD 250mg/l
- TSS 250mg/l
- Ammonia 55mg/l

The treatment objectives set by the MOE are summarized as follows:

- cBOD 10mg/l
- TSS 10mg/l
- Total Nitrogen 5 mg/l

# PLANT DESIGN AND TECHNOLOGY SELECTION AND CONSTRUCTION

The turnkey system was designed, supplied and installed by Bert Knip of Make-Way Environmental Technologies who was assisted by Bruno Dobri of Dobri Engineering and Tim Smith from Delta Environment. Delta is the manufacturer of both the WhiteWater ATU and the Ecopod Advance Wastewater Treatment System. The system was designed for 18,300 liters per day. The design concept developed by the project engineers included the following components:

- The addition of two additional septic tanks resulting in a total storage/ balancing volume of 49,500 liters
- The addition of one WhiteWater unit resulting in the addition of a total of 4 WhiteWater units to provide aerobic reduction of the BOD, TSS and provide nitrification of the ammonia
- The addition of three Ecopod units to provide tertiary treatment, including further BOD/TSS reduction, nitrification and denitrification in order to meet the discharge standard prior to subsurface discharge. The first Ecopod was operated in an aerobic mode. The second Ecopod unit was operated in an anaerobic mode with carbon addition to facilitate denitrification. The third Ecopod was operated in an aerobic mode to provide polishing of the effluent. It should be noted that the Ecopod units consisted of fixed media reactors with or without aeration. MicroC liquid carbon was added to the anaerobic Ecopod to provide a carbon source for the denitrifying bacteria.

The system was installed by Al White Construction and was commissioned on Dec 15, 2014.

#### SYSTEM OPERATION ACTUAL FLOWS TO TREATMENT PLANT

The actual flow turned out to be 6,000 to 7,000 liters per day much less than the design basis of 18,300 liters per day. The lower than expected flow caused a longer than expected retention time within the pretreatment septic and flow equalization tanks causing odours and more of the organic content of the waste water to convert to ammonia.

The actual incoming ammonia was between 175 mg/l to 311 mg/l which was

far in excess of the design basis ammonia concentration of 55mg/l. As a result, the treatment plant was unable to achieve the reduction of total nitrogen to the set criteria of 5mg/l.

Make-Way Environmental Technologies worked diligently to improve the performance of the plant given the much lower than expected flows and the much higher than expected ammonia concentrations. Make-Way then revised the operational parameters of the plant by:

- reducing air in one area while increasing the air in another,
- mixing water more aggressively in one of the tanks, and
- reducing the flowrate of equalization pumps to slow down the water flow through the system.

However, Make-Way was unable to produce an effluent from the treatment plant that met the MOECC criteria. The data from the plant during this period is summarized as follows:

- CBOD-5-50 mg/l with a significant number of exceedances above the criteria of 10mg/l
- TSS 3- 100mg/l with a significant number of exceedances above the criteria of 10mg/l
- Total Nitrogen 5-50mg/l with most of the data with values above the criteria of 5mg/l.

Make-Way contacted Maat Environmental Engineering and Scicorp International Corp for assistance to bring the plant into compliance.

#### PROCESS MODIFICATIONS AND BIOAUGMENTATION OF THE PLANT

Maat Environmental advised the following plant operational modifications in addition to what had already been modified by Make-Way:

1 continued on page 30

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## Wastewater Treatment System Inspections: Inspection Cameras Shedding Light on Hidden Problems

Continued from page 1

Furthermore, the cover letter asks the owner to become "familiar" with the septic system and "maintain it" as this will help to extend the life of the system and reduce the likelihood of unexpected and/ or costly problems in the future.

This is all very true and serves as good advice for anyone who owns or operates an onsite wastewater treatment system. The concerning issue is that the majority of purchasers who are provided with a document titled "Septic Inspection Report" by the seller at the time of a property transaction (especially those purchasers unfamiliar with septic systems), may be misled into accepting the conclusions of this non-invasive and limited process.

Experienced WTS inspection professionals with the right equipment can provide appreciably more value to the homeowner or purchaser, by performing a more comprehensive inspection.

All elements of the system which are reasonably accessible must be inspected and the functionality of the system needs to be tested.

Speaking plainly, professional inspectors are trained and educated in identifying signs of failure, and vulnerabilities to malfunction and failure, which may not be identifiable during a visual-only type of inspection.

Armed with the previous report, I was looking forward to dig deeper. Literally. Using a sewer-line camera in the outlet



Septic tank (background) and d-box (foreground)



Inside pipe between a tank and d-box



Camera view of d-box from inside pipe



Inside deteriorated d-box

pipe leaving the septic tank I discovered something that both the township inspection and current owner were unaware of: a concrete distribution box (D-box) which connected the septic tank to each of the 5 PVC distribution laterals of the leaching field. After excavating approximately 2 feet down to the D-box, I removed the lid and found the bottom of the box to be filled with sludge and deteriorated concrete, while the D-box itself was on the verge of collapse.

Due to the conditions of the D-box, a buildup of concrete "mush" had created blockages of varying degree at the outlet of the openings to most of the distribution laterals. This had resulted in unequal loading of three of the five distribution lines. The camera inspection of each line verified that three of the lines were full of water and sludge and that only two of the five lines were relatively free and clear of debris.

Needless to say, the considerable findings of this comprehensive WTS inspection would have never seen the 'light of day' had the buyer heeded the advice given by their realtor or the previous owner to forgo the inspection.

Working as an onsite wastewater treatment system inspector for several years, I have come across countless reasons that vendors, purchasers and realtors believe an inspection of the onsite system is not necessary or required. A few of the common justifications relate to the system being relatively 'new', the fact that the septic tank has recently been pumped out and everything was in "good condition", or that the local authority has just completed a mandatory re-inspection and the seller has a report to show there are no issues. Although on the surface these rationalizations make sense to the lay person or consumer, my experience is that all systems (as with all infrastructure) have the potential for deficiencies in design, site conditions, installation, operation and maintenance that could easily be identified with a more comprehensive inspection process. A partial inspection process leaves the system owner and the environment fully vulnerable.

# **Overcoming One of Our Oldest Adages:** "If it ain't broke, don't fix it."

By Jane Zima, Founder, SimbiH2O

An adage is a saying that is generally accepted to be true by most people. In the case of the well-known adage "if it ain't broke, don't fix it" however, we must pause to consider its effect on both our industry and onsite system owners.

Frankly speaking, this adage is terrible advice. It serves no positive benefit in the context of asset management or environmental stewardship. This language, this thought process, is pervasive within popular culture and has affected our ability to assess and evaluate onsite systems (and decentralized infrastructure) with an unbiased perspective. This is evident in the way municipalities conduct re-inspection programs: visual inspections seeking out only overt signs of unmistakable failure. This is also why the burden of pragmatic functional assessment lays on real estate inspections and has created an unbalanced dependency on a single high stress inspection service point within industry.

In theory, cursory inspections have the potential to do more damage than good. They may lead system owners with serious (but hidden) problems to believe their asset is in good working condition, or worse, to stop paying attention. It's as if someone were to visit the doctor's office over cholesterol concerns, receive a visual check-up for any indications of impending heart attack, and be sent back on their way because "everything looks just fine".

The solution for this situation with onsite systems is thankfully much simpler than it is for us human beings. Regular maintenance, and minor septic system upgrades such as access risers, effluent filters and optimization techniques are the keys to fostering a culture of management and awareness in the general public. Awareness and understanding are in turn the keys to improving individual stewardship and our collective impact. Through regular and informed interaction with onsite systems, it is much easier to identify problems and malfunctions as they develop. When they are found, it is our responsibility to deal with them as stewards of the environment, and not 'protectors of budget'. This being said, we absolutely need to exercise caution with the use of Part 11 (of the OBC) in replacing deficient and malfunctioning systems, with theoretically new but still deficiently sized and designed systems.

There truly is so much work to do, and adage and folklore to overcome. There is a tremendous opportunity to do the right thing in the right way; but it will take strength of character and confidence to tell people what they need to hear. We need more stewardship and less folklore and policy of administrative convenience. If you take a step back, you will see that our system of onsite management and renewal is far from optimal. Let's improve that.

### Improving Onsite Wastewater Treatment Plant Performance

Continued from page 26

- Recirculation plant effluent discharging from the WhiteWater units back to the initial anaerobic septic holding tanks
- Addition of 120 mls per day of a micronutrient known as Biologic<sup>™</sup> SR2<sup>™</sup> to a toilet in the school a very simple operation.

#### IMPROVED PLANT PERFORMANCE

The net result of these modifications was that after a significant acclimation period the effluent of the plant has improved dramatically. The new data that was consistent over the latest 3 month period is presented as follows:

- BOD reduced on average to below 10mg/l
- TSS reduced on average to below 15mg/l
- Total Nitrogen reduced on average to below 5mg/l.

The recirculation of WhiteWater unit effluent back to the septic tanks provided additional bacteria and nitrates/nitrites for denitrification to occur in the septic/ balancing tanks since sufficient carbon was available from the incoming sewage.

#### IMPACT OF MICRONUTRIENT ADDITION

The Biologic™ SR2™ micronutrient was able to:

- Stimulate the activity of anaerobic bacteria in the septic holding tank to denitrify the nitrates and reduce incoming BOD
- Inhibit the formation of ammonia in the septic tanks by inhibiting the urease enzyme that breaks down organic nitrogen to ammonia
- Inhibit the Sulphur reducing bacteria via competitive inhibition from forming H2S and odour issues
- Increase the hydrolysis of organic solids, fats, oils and greases in the septic/ holding tanks
- Improve and stimulate bioactivity

throughout the treatment plant and improve plant performance.

#### FINAL CONCLUSIONS

As a result of a combination of the Ecopod's ability to reduce total nitrogen, tweaking the air supply, adding recirculation and using the Biologic<sup>™</sup> SR2<sup>™</sup>, the plant was able to reduce Total Nitrogen to 2.6 mg/l (latest results from May 2016).

These results were achieved in a system designed to reduce total nitrogen from 55 mg/l down to 5 mg/l. Using Biologic<sup>™</sup> SR2<sup>™</sup> in combination with recirculation of effluent totally enhanced the Ecopod's ability to remove more than 300 mg/l of total nitrogen down to below 5mg/l. It should also be noted that no additional capital expenditures were incurred to achieve Total Nitrogen compliance in the plant effluent. The client is very satisfied with the current successful operation and performance of the plant.

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