VOLUME 18 | ISSUE 2

Onsite

ONTARIO ONSITE WASTEWATER ASSOCIATION NEWSLETTER

treatment | technology | innovation | reuse | recycle

Ontario Onsite Wastewater Association

INSIDE

WaterTAP and OOWA Partnership Aims to Address Barriers on Decentralized Issues with Industry Input

While overcoming challenges and fears associated with onsite and decentralized systems isn't going to be easy, we can do it if we start by working together with partners. And when we add the right information and tools to the mix, we can create an environment in which innovative solutions and communal systems can thrive in small towns.

In 2017, WaterTAP's Change Leaders Lab and OOWA partnered to address the barriers to implementing onsite and decentralized wastewater systems in small towns. This partnership also aims to overcome associated challenges by working with key stakeholders to provide education and drive positive change.

In November 2017, WaterTAP and OOWA hosted their first stakeholder consultation session, a workshop titled *Delving Further into Decentralized Issues* to identify the challenges, as well as potential solutions and actions.

More than 40 technology providers, planners, installers, consultants and government representatives participated in the full-day workshop. When asked about what needs to change to support decentralized innovation, the group identified the need for more:

- Financing and management options
- Data and information to inform decision-making

Participants at the Delving into Decentralized Issues consultation session hosted by WaterTAP and OOWA in November 2017. *Photo: WaterTAP*

- Clarification around the Provincial Policy Statement (PPS) and Municipal Responsibility Agreements (MRAs)
- Streamlined and modernized approvals for small system innovation
- Increased coordination between stakeholders to bring issues forward to government.

Following this consultation session, Trish Johnson, Small Municipal Practice Lead at WaterTAP's Change Leaders Lab, chaired a panel on *Delving Further into Decentralized Issues* at OOWA's Annual Convention and Expo (ACE) in April 2018, bringing together three industry experts who elaborated on the findings of the first workshop.

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OOWA
Board of Directors

PRESIDENT'S MESSAGE

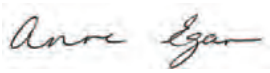
Summer is upon us! It feels like Mother Nature decided to skip Spring this year, and we went directly from winter to summer, from the ice and snow that (not-so-conveniently) decided to arrive for our mid-April conference, to one of the hottest and driest summers in recent memory. From my discussions with many of you, it seems everyone is very busy with no signs of it slowing down anytime soon.

Our staff and committee volunteers at OOWA are just as busy these days, moving forward with various initiatives and events. I would like to take a moment to express my gratitude to our board of directors for their commitment to OOWA. I am humbled (or perhaps a bit crazy? I haven't decided yet…) to be taking on a second two-year term as your OOWA President. Leadership of a volunteer association is not always smooth sailing, but it is made easier with the support of such a dedicated team of volunteers, supported by our competent staff. We have come a long way thanks to the dedication of many individuals who have participated on the board and the various committees over the years.

Speaking of which, we will be celebrating 20 years as an association in 2019! Planning is well underway for our 2019 Annual Conference, when we will be celebrating 20 years of OOWA. Mark your calendars for March 17 to 19, 2019 at Deerhurst Resort and stay tuned for details. If you have ideas of how you would like to see us celebrate 20 years, please reach out to Mike and Kelly in the office and they will pass along suggestions and ideas to the conference planning committee. All members are welcome to join any of our committees at
any time – this is your association, if you have ideas and would like to get involved, join a committee!

We are also planning our Fall Regional events for 2018. Traditionally, our Regional Meetings have had a focus on the speaker series to provide our members with an opportunity for training, as well as networking with other members in our local areas. We recognize that fall is a busy time for everyone, with the push to get projects complete and in the ground before the weather turns or before the calendar turns over. We are listening to the feedback from our members; you have asked for some changes to the format and the timing for our fall meetings. We hope that this will provide our members with more opportunities to attend. This year's meetings will feature a brief panel discussion, with a focus more on networking and connecting with other local members. Watch for details in our upcoming email communications and on our OOWA website.

Keep up the great work, and I hope you all manage to fit in a bit of family time to enjoy such a beautiful summer we are having.



Anne Egan
President

Ontario Onsite Wastewater Association

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To submit an article or place an advertisement contact the editor at **outeach@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.

WaterTAP and OOWA Partnership Aims to Address Barriers on Decentralized Issues with Industry Input

Continued from page 1

Rick Esselment, President and CEO, ESSE Canada; Mike Dwyer, CAO, Township of Rideau Lakes; and Michael Keene, Director of Development, FoTenn Consultants Inc., shared their opinions on three questions. Here are their responses.

Question 1: What's the main barrier presented by the current PPS and the MRA process?

Rick Esselment: The biggest challenge is differentiating between risk of financial solvency of the system ownership and the risk of system or component failure, according to Esselment. "We are conflating these risks," he says. "For this reason, clearly articulating system functionality, performance, and life-cycle costing is critical when we educate decision-makers and policy-makers about the value that onsite and decentralized systems can provide for local communities and economies. Education needs to happen in advance of applications for treatment systems or MRAs."

WaterTAP's Trish Johnson at the OOWA's ACE in April 2018. *Photo: WaterTAP*

Mike Dwyer: "The PPS directs the focus of future growth and development to settlement areas, which are usually rural villages and hamlets, but the provincial regulatory landscape that surrounds services doesn't actually facilitate this vision. Until this dichotomy is resolved, the future of rural Ontario is in question."

Michael Keene: According to Keene, the challenges start with municipal Official Plans, particularly ones that incorporate a clause that doesn't allow for management of communal systems. "In my experience, some municipal Official Plans will say no to communal servicing due to history and fear," he says. "In the past, some municipalities have been required to take over inadequate communal systems at a significant cost to the municipality."

Question 2: How are current initiatives addressing these challenges?

Rick Esselment: According to Esselment, collaboration is necessary to effectively address existing challenges. "Typically, these challenges have been addressed on a case-by-case basis, leaving the owner, consultants, municipalities and Ontario's Ministry of the Environment, Conservation and Parks (MECP) to sort out the details," he says. "I think that there's been progress thanks to the work that WaterTAP and OOWA have been doing to bring together experienced people who want to see a continued, environmentally rigorous program that has the ability to adopt innovation and best practices."

Mike Dwyer: The Township of Rideau Lakes is undertaking a study in the village of Delta, Ontario with a goal to identify opportunities for servicing innovation, Dwyer says. "This second phase of work builds on earlier work that established conceptual support for a 'Main Street' focus. The Township sees decentralized systems as one of the keys to livable, diverse and economically flexible rural villages," he says. "The Township is also advocating for provincial regulation and policy changes that would facilitate opportunities to streamline, simplify, and innovate servicing implementation."

Michael Keene: There are very few municipalities that are amending their official plans to remove existing clauses that ban communal systems, Keene says. "As far as I know, there are two municipalities in Ontario that are taking action on this issue," he says. "It's not that every municipality in Ontario is banning these services, but we are concerned that of the ones that don't allow them, there are only two that are looking into the issue. Both of these municipalities are currently undertaking servicing studies and applying for grants to encourage communal systems in their townships."

From left to right: Mike Dwyer, Township of Rideau Lakes; Michael Keene, FoTenn Consultants; Rick Esselment, ESSE Canada. *Photo: WaterTAP*

Question 3: What more needs to happen to overcome these barriers?

Rick Esselment: We need to showcase Ontario-based pilot projects that have mitigated risk and solved the problem for existing users and municipalities, according to Esselment. "This is going to take some time, but we want to avoid pushing for competition of developers wanting onsite and decentralized approaches so that they don't have to buy into sewer and

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development charges," he says. "When this happens, I think it slows or stops our progress because it pits developers against municipalities that have existing plans for development that utilize their centralized services."

Mike Dwyer: We need more information about servicing innovation in Ontario, Dwyer says. "This issue does not have much visibility. We need case studies that showcase what has worked, as well as what hasn't worked and why," he says. "It's difficult because the municipal sector doesn't share a lot of case studies. From the perspective of developers and engineers, there is also the issue of commercial proprietary information that they may not be willing to share."

Michael Keene: Communication between stakeholders is key, says Keene. "Municipalities, as the front-line implementers of provincial policy, have the power to allow the installation of communal systems," he says. "The PPS or the MRA process isn't going to change in the near future, so we need to work with municipalities and service providers through the system that's in place."

What's next for WaterTAP and OOWA?

"We have formed an official Working Group to continue addressing and educating stakeholders on issues related to MRAs," says WaterTAP's Johnson. "What we have learned so far is that many small towns are not examining innovative, cost-effective options for communal servicing that would help meet their provincial growth goals and offer environmental protection. Small towns need help with understanding the policy path and reasons for the MRA process. Without that knowledge, they might abandon the solutions they need to provide the most appropriate servicing solutions."

Further, industry stakeholders and MECP staff have recommended that WaterTAP and OOWA take the lead on municipal MRA education. "I think that a partnership between OOWA and WaterTAP is a logical one," Dwyer says. "OOWA has a tremendous wealth of 'on the ground' and technical knowledge, and WaterTAP is a growing facilitator of uncovering and articulating the wide range of public interest that this topic touches."

As a next step, WaterTAP will present on a panel, *Digging into Communal Servicing*, at the Ontario East Municipal Conference in Cornwall, Ontario with the following experts:

- Trish Johnson, Small Municipal Practice Lead, Change Leaders Lab, WaterTAP
- Nadia De Santi, Senior Project Manager, WSP
- Joe Gallivan, Director of Planning and Economic Development, County of Frontenac.

Be sure to mark your calendars for September 13, 2018 and register for this important conference!

JOIN AN OOWA COMMITTEE!

Want to really make an impact in the industry?

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

PART 7 vs. PART 8 OBC Violations

By Ella Bird, Sewage System Inspector, North Bay Mattawa Conservation Authority

Occasionally the conservation authority will receive complaints about discharge to the ground surface for things such as: trailers discharging water from a sink onto the ground, outdoor showers, cottages which are not hooked into sewage disposal systems.

As the governing body over the proper treatment of sewage, it used to be common practice to take these complaints and turn them into occurrence files and deal with them from the Part 8 (Sewage Systems) perspective. However, after re-assessing what was being read in the code to be a Part 8 violation, we realized that a lot of these violations were actually Part 7 (Plumbing) violations.

Section 8.9 from the OBC below dictates that sewage shall not discharge to the ground from any part of the sewage system. Because sinks, outdoor showers and other violations that include direct discharge from plumbing fixture onto the ground surface do not include sewage from a sewage system, it cannot be enforced by Part 8 of the OBC.

Section 8.9. Operation and Maintenance

8.9.1. General

8.9.1.1. Scope

(1) This Section applies to the operation and maintenance of all sewage systems.

8.9.1.2. General Requirements for Operation and Maintenance

(1) Every *sewage system* shall be operated and maintained so that,

(a) the *sewage system* or any part of it shall not emit, discharge or deposit *sanitary sewage* or *effluent* onto the surface of the ground,

(b) *sanitary sewage* or *effluent* shall not emit, discharge, seep, leak or otherwise escape from the sewage system or any part of it other than from a place or part of the *sewage system* where the system is designed or intended to discharge the *sanitary sewage* or *effluent*, and

(c) except as provided in Sentence (2), *sanitary sewage* or *effluent* shall not emit, discharge, seep, leak or otherwise escape from the *sewage system* or any part of it into a piped water supply, well water supply, a watercourse, *ground water* or *surface water*.

In such an instance a building inspector could enforce such a law under the following section of Part 7 of the OBC.

7.1.5. Service Connections

7.1.5.1. Sanitary Drainage Systems

(1) Every *sanitary drainage system* shall be connected to a public *sanitary sewer*, a public combined sewer or a *private sewage disposal system*.

Connecting with Members Where They Are

OOWA's Regional Round Ups

This year we're trying something different! We will continue with our popular OBC Part 8 Panel Discussion and Open Forum but will be holding these round ups after your work day has ended just in time for happy hour. Join us!

South Western Ontario

Thursday, October 4
5:00pm-8:00pm

Cowbell Brewery
40035 Blyth Road
Blyth, ON N0M 1H0

Peterborough Region

Thursday, October 11
5:00pm-8:00pm

Smithhaven's Brewery Company
687 Rye Street, Unit 6
Peterborough ON K9J 6X5

Greater Golden Horseshoe

Thursday, October 18
5:00pm-8:00pm

The Powerhouse Restaurant
21 Jones St
Stoney Creek, Ontario L8G 3H9

Near North & Muskoka

Thursday, October 25
5:00pm-8:00pm

Sawdust Brewery
397 Muskoka Rd. N
Gravenhurst, ON P1P 1G3

Eastern Ontario

Thursday, November 1
5:00pm-8:00pm

Location: TBA

Central Ontario

Thursday, November 8
5:00pm-8:00pm

Redline Brewery
431 Bayview
Barrie ON, L4N 8Y2

SPONSORSHIP OPPORTUNITIES

Support OOWA by sponsoring one or more events and boost your profile amongst our members. If you are interested in supporting more than one Regional Round Up, contact us for multi-event package rates!

GOLD LEVEL SPONSOR: $350

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SILVER LEVEL SPONSOR: $250

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BRONZE LEVEL SPONSOR: $200

1 attendee, info table, event announcement, website, print newsletter, E-News Update and social media features

Central Ontario Networking Group's Burgers and Beer Event

On Thursday, August 23rd, Bill and Dianna Robinson of SepticCheck.ca and Robinson Excavating hosted 'Burgers and Beer' at their shop in Cookstown. Twenty-five attendees came out to connect with other local area OOWA members.



Martin Kuzma, Economic Development Officer from the Nottawasaga Community Futures Development Corporation, came out and spoke about the services and opportunities for small businesses through his office and Bill arranged to have some heavy equipment on hand for attendees to try out. Thanks to Chris Lea of Lewis Motor Sales, Steve Dobson of Battlefield Rentals and Derek Griffiths of Bobcat of Barrie for making their equipment available to our event. Another thank you to Dave O'Malley of Brooklin Concrete for the $25 Tim Hortons gift card that was raffled off to Andrew Faris of Faris Excavating. Thanks also to our sponsors for their generous contributions which allowed us to offer this event to our members for free!

Stay tuned for more Burgers and Beer events coming up!

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Member PROFILE

Jazmyne Woolley
B.Sc., Dip. Environ. Technol.

JAZMYNE WOOLLEY
R. J. Burnside & Associates Limited

Name of Business:
R. J. Burnside & Associates Limited.

Services:
Our services include detailed design of new and replacement sewage systems, consulting, system assessments, procurement of approvals and construction, for residential, commercial and recreational land uses.

Service Area: Province of Ontario.

Number of Years in Role:
I am new to the industry with just over a year of experience. I have been lucky enough to have amazing mentors that have taught me the ins and outs, and what it takes to be successful in the industry.

What got you started in the onsite and decentralized wastewater industry?
I have always wanted to work in the environmental field and so I was excited when the opportunity came to work at Burnside in the Onsite Wastewater group. With my biology background from university, the science behind onsite wastewater treatment is what really appealed to me. Going into the position with no experience in onsite systems I didn't know what to expect. I soon realized that this was the career path for me.

Give us one reason for your success:
I think that enjoying the work you do and continual education is key to success. I believe that when you enjoy your career, it reflects positively on your clients and the quality of your work. Because of the wide range of projects we work on, I believe that keeping your knowledge and skills up to date in the industry is a critical key to success.

Where do you see the onsite and decentralized industry going?
With the increasing concern for the environment and protection of groundwater, I believe the onsite industry will continue to grow and become more complex. Regulatory agencies are setting higher standards with regards to discharge and system certifications so the onsite industry needs to continue developing innovative technologies that address these ongoing updates.

What can the onsite and decentralized industry do to improve?
I think it's important to educate young professionals about onsite and that it's an industry that can provide a successful and enlightening career path. The onsite wastewater field is seldomly taught in post-secondary schools. I believe if students can be educated about the importance and opportunities in this field, it may drive the younger generations to pursue a career in onsite wastewater. Better education for both residential and commercial users of onsite systems also needs to improve. Onsite systems play a huge role in rural Ontario and providing extra information to homeowners could potentially increase the lifespan of a system and provide less of an impact to the environment.

NEW & RENEWED MEMBERS LISTING

April 6th - August 24th, 2018

NEW MEMBERS

Gemma Charlebois, MTE Consultants Inc.
Nicole Couvrette, City of Quinte West
Morgan Crane, MTE Consultants Inc.
Tom Ellis, Northumberland County
Adam Gebarowski, City of Quinte West
Scott Gerrie, 1000 Islands Septic & Construction Inc.
Tony Gill, Ace Landscaping Construction
Riley Nicole, Henderson University Of Waterloo - Student
Jeremy Lightheart, WMI & Associates
Adam McLellan, J.J. McLellan & Son
Cheikh Mor Mbacke, DBO Expert Inc
Lance Perrault, Ladcon Construction
Nolan Ritter, Student - Ryerson University
Reed Russell, Town Of Whitchurch-Stoufville
Graham Seggewiss, MTE Consultants Inc.
Hendrick Van de Glind, Paterson Group Inc
Corey Watman, Diggin It
Amanda Willis, City of Belleville

RENEWED MEMBERS

Robin Allen, North Bay-Mattawa Conservation Authority
Crystal Barnes, North Bay-Mattawa Conservation Authority
Steven Barrie, Steve Backhoe & Equipment Rental
Ivan Beauchamp, Temagami Trucking Ltd
Brad Billings, Billings Construction
Ella Bird, North Bay Mattawa Conservation Authority
Terry Brinks, Muddy Men Construction
Katie Burley, Muddy Men Construction
Patricia Clifford, Gibson Engineering
Jean-Pierre Corriveau, DBO Expert
Craig Cox, Town of Innisfil
William Dainty, Calder Engineering
Robert DeAcetis, Deson Construction
Derek Demaine, Aqueous Operational Services
Dennis Dick, D&B Construction
Ryan Dobie, Town of Innisfil
Dave Dobinson, Dave Dobinson Excavating Inc
William Drummond, Ontario Environmental Services
Bill Drury, Drumax Construction
Darren Drury, Drumax Construction
Rick Esselment, ESSE & Associates Inc
Juanita Evans, City of Quinte West
John Faris, Faris Excavating Ltd
Andrew Faris, Faris Excavating
Graham Fisher, Haddad Geotechnical
Ray Foster, ESSE & Associates Inc
Sasha Fredette, North Bay-Mattawa Conservation Authority
Kai Fu, R.J. Burnside & Associates
Walter Gibson, Gibson Engineering
Richard Gionette, Algoma Bio-Septic Technologies
Kevin Grant, Waste Water Solutions
Paul Greer, Paul Greer & Son's Exc Ltd.
Todd Grier, Todd Grier Excavating
Robert Hall, Muddy Men Construction
Stephen Hamilton, Morris Shelswell & Sons Excavating
Seth Harder, Tamarack North Ltd.
Mark Hernandez, Orbit Excavating
Peter Heywood, Oxford County Public Health
Darlene Hoogenes-Stastny, ALS Environmental
Marla Howard-Hogan, Hogans Excavation & Landscape
Rick Howden, Core Earthworks Limited
Kirk Johnstone, Northumberland County
Daniel Kern, HomeWorks Inspection Services
James Knechtel, Aqueous Operational Services
Joe Kuipers, City of Belleville
Phillip Lappan, City of Quinte West
Terri-Lyn Latimer, Latimer Excavating Ltd
Glen Luciano, Real Landscaping Plus Inc.
Bozena Manowski, Ministry of the Environment
Keith Marenger, Gerry Leroux Excavating
Todd McCulloch, Town Of Innisfil
Lauren McGregor, McMaster University Student
Jamie McLellan, J.J. McLellan & Son
Jamie McMaster, Norton Construction
Kelly Mercer, OOWA
Dale Moak, David Brown Construction
Nancy Montgomery, The Septic Store Ottawa West
Natalie Moroz-Cornell, City Of Quinte West
Doug Niles, Trenchless Utility Equipment
Jim Oakley, Township of Severn
Brendan O'Connor, Isaacs Glen Contractors
Timothy O'Connor, Isaacs Glen Contractors
Dave Parent, Septic Consulting & Design Services
William Pottruff, Thunder Bay District Health Unit
Nick Preikschas, MTE Consultants Inc.
Richard Raison, R R Equipment Rental
Laura Reavie, Skootamatta Environmental Consulting Inc
Norman Rivington, NS Rivington Cartage
Darryl Robins, Darryl M. Robins Consulting Inc.
Kim Shelswell, Morris Shelswell & Sons Excavating & Grading Ltd
Brian Shepherd, George Burnett Ltd.
William Sikkema, City of Quinte West
Robin Smith, Robin Smith Engineering
Mark Steele, Town of Innisfil
Dawn Talarico, Ministry Of The Environment And Climate Change
Albert Van Schie, Paterson Group Inc
Rob Vander Doelen, Chung & Vander Doelen Engineering Ltd
Peter Vanderboom, Alpha Excavation
Jim Walls, R.J. Burnside & Associates
Todd Webb, Lodder Brothers Limited
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Jane Zima, SimbiH2O
Mike Zollner, Muddy Men Construction
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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 it at any location to receive your discount.

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OOWA members get guaranteed and discounted rates on car and trunk rentals.

OOWA has redeveloped the **Registered Professional Program (RPP)** to include an 'In-Development Stream' that addresses the needs of ongoing training and continuing education demands from our members. OOWA Professional Designations include: Wastewater Service Technician, Designer, Installer, Private or Regulatory Inspector, Residuals Hauler, Project & Administrative Professional and Technical Sales Consultant. Go to www.oowa.org to see the new Find an Expert directory and to learn how you can enroll and get placed on the directory.

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**

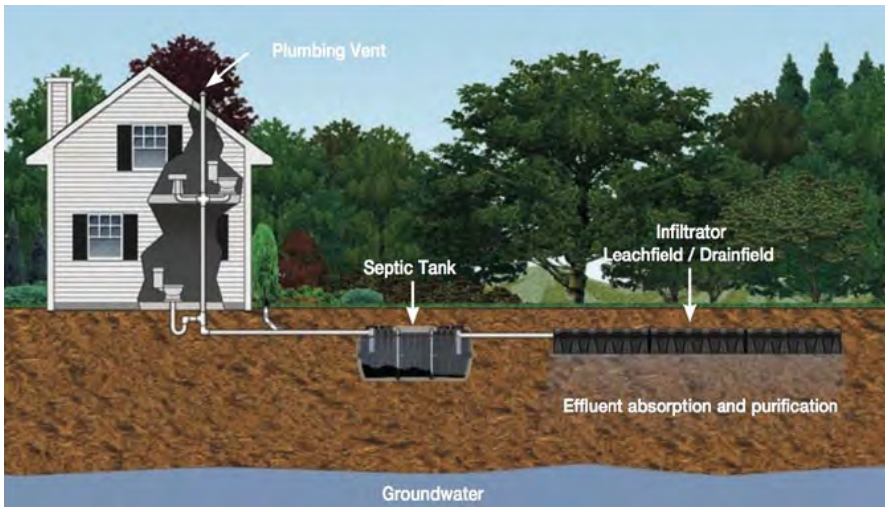
To get more information on these member benefits please visit our website at: www.oowa.org/about/join-oowa/

It's All About the Soil

By Dennis F. Hallahan,
PE, Technical Director, Infiltrator Water Technologies

Good onsite wastewater treatment combines proper soils evaluation, siting and installation with a homeowner who will maintain and not abuse the system.

Even with the significant advancements in technology, new products, and installation approaches, in most situations it is the soil right under our feet that does the real work. As treatment technologies proliferate, it is easy to take for granted that in virtually all systems; natural processes provide the assurance that we protect the public health. Whether we build a conventional septic system or one of the many advanced treatment and distribution systems, the soil is the workhorse.



Elegant simplicity

The most common onsite wastewater treatment system is simply a tank and leachfield. When properly designed and installed these systems provide highly effective treatment. Unlike sewering, which takes water away from the site requiring much energy for pumping and treatment, onsite treatment relies on the soil's surface area, oxygen-holding pore spaces, and abundant microbial life to process and treat the effluent and return it to the groundwater. It is also a passive system, requiring no outside energy. In our technological world, it can be hard to accept that something can function well without constant attention.

In the onsite profession, it helps to understand that the soil – and not the drainfield media – does the treatment.
The media – no matter what kind – is there simply to help distribute the water to the soil and to provide storage for those times of higher usage.

Here is how the soil does its work:

Effluent partially treated by the septic tank is delivered to the leachfield through a piping network. The leachfield consists of individual trenches or a bed, depending on the site and state or local code.

As the effluent enters the leachfield, it is still rich in organic matter, with possible viruses and pathogens, that requires treatment. The organic matter is food for microbes ("bugs") that exist naturally in the soil and in the effluent itself. Each tiny particle of the soil has a tremendous amount of surface area on which the bugs can take up residence.

When effluent enters the field, the bugs are happy to be getting all this free food. As they thrive and multiply, they form what is called a "biomat" at the surface where water infiltrates the soil. The biomat formation is caused by anaerobic bugs (those that live and thrive without oxygen) producing slimes. The biomat slows down the infiltration rate of water into the soil.

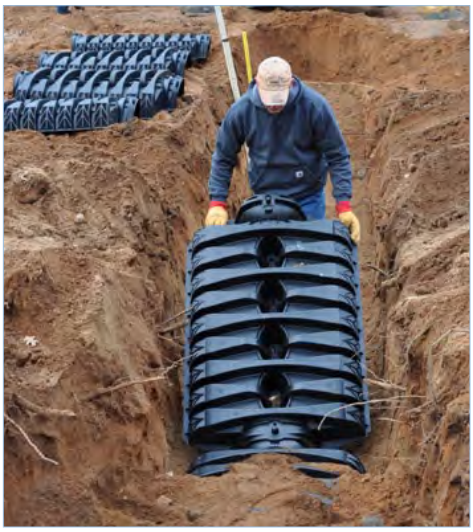
Although that may not sound like a good thing, it is! The reduced infiltration rate causes excess effluent to travel down the length of trench, and more biomat forms. The biomat eventually progresses down the length of the entire leachfield. In time, the entire bed or system of trenches is covered by the biomat, and effluent then becomes equally distributed throughout the system.

Once the biomat has formed over the entire bottom surface, water begins to pond in the trenches. This is not the same as ponding on the ground surface that can signal a system failure. It is another natural process that is a boon to treatment.

Ponding exposes the effluent to the trench sidewalls – another huge area where water can enter the soil and be treated.
As effluent flow progresses up the sidewalls, a biomat forms on those surfaces, as well. The biomat does not seal off the soil in the trench bottom and sides, it allows water to penetrate at a characteristic rate, known as the Long-Term Acceptance Rate (LTAR) of the soil. When designed properly, drainfields are sized so that they can accommodate the expected flow from the house at the LTAR of the soil.

Soil goes to work

After passing through the biomat, the effluent moves down through soil that is not saturated and therefore contains oxygen. Most of the treatment takes place in this oxygen-rich (aerobic) zone. This is where more efficient aerobic bacteria do their processing work to clean up the effluent.



After the effluent passes through this zone, it has been treated to such an extent that it can be safely returned to the groundwater, replenishing losses from natural drainage and man-made activities.

There are a host of media options that can be used in leachfield trenches to help apply the septic tank effluent to the soil. In the past, stone aggregate was widely used because its abundancy but that has changed due to environmental concerns and better available options. Today, plastic leaching chambers, geosynthetic aggregate bundles, or drip systems are readily available. To decide which medium best serves the site, the designer should consider the type of soil, system capacity, and special environmental needs. In every case, the goal is to disperse the effluent so that it can infiltrate into the soil and be treated.

Long and reliable life

Some claim that all septic systems are "destined" to clog and fail. Systems that are properly designed, maintained, and installed are extremely effective treatment centers that can operate for a very long time. It is not uncommon for a septic system to have a 20-30-year design life. While systems can operate efficiently for many years, misuse or lack of maintenance can compromise their operation. If that happens, the drainfield may need to be rested or replaced, or an advanced treatment technology could be installed.

Conclusion

Due to the natural treatment capacity of the soil, onsite systems have been and will continue to be the mainstays of wastewater treatment, available to the public where there are no other options, and at a cost that is difficult for a competitive technology to match.

Onsite systems will continue to protect community health. Better science, better understanding of processes, higher standards for installers, updated codes, and more thorough site evaluations will help to raise the bar in this growing field. But whatever else may change, the soil will still be working on our behalf.

About the Author

Dennis F. Hallahan, PE

dhallahan@infiltratorwater.com

Dennis Hallahan has over 30 years of experience with onsite wastewater treatment systems' design and construction. Currently Technical Director at Infiltrator Water Technologies, he is responsible for technology transfer between Infiltrator and the regulatory and design communities and consults on product research and testing for universities and private consultants. Hallahan received his MS in civil engineering from the University of Connecticut and his BS in civil engineering from the University of Vermont. He is a registered professional engineer in Connecticut and holds several patents for on-site wastewater products.

Ontario Onsite Wastewater Association

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OOWA'S REGISTERED PROFESSIONAL PROGRAM (RPP)

What is it?
The RPP is OOWA's skills and professional development program available exclusively to our members. The RPP provides special designations that cover all job descriptions in the onsite and decentralized industry. Depending on your experience and aptitudes acquired through formal study and course completion, members can apply directly to get any one of these designations. Another pathway way to an RPP designation is by registering in the In-Development Program. This program gets you on our exclusive on-line 'Find an Expert' directory and gives you three years to take the courses you need to meet your chosen designation requirements.

What's in it for me?
We know that onsite system owners want to hire only the best people. Your RPP designation tells potential clients that you are a qualified professional, that your skills and knowledge are current and that you are engaged with and care about your industry.

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Below are the designations available through the RPP:

- Designer
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- Private Installer
- Project & Administrative Professional
- Regulatory Inspector
- Residuals Transporter
- Technical Sales Consultant
- Wastewater Service Technician

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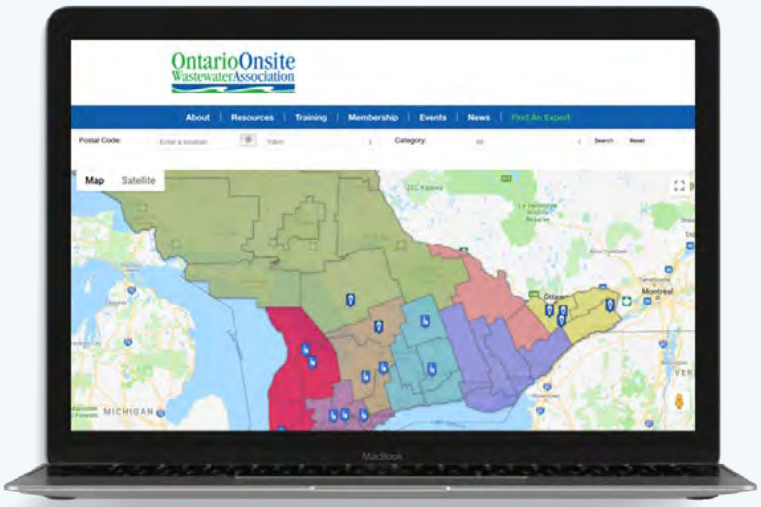
Go to OOWA's website and then find the 'Training' tab at the top of the home page. For the documents mentioned below, scroll down to the 'RPP Documents and Resources' page where you can download them for your reference.

1. Review the RPP How to Apply document.
2. Review the RPP Background document.
3. Select one or more RPP designations that apply to you and review the Aptitudes by Designation document to see what courses/aptitudes you still need of if you can apply directly to your chosen designation.
4. Check out the FAQ document to help with some specific program requirements.
5. Download the In-Development Registration Form if you need to acquire more skills or courses to secure your desired designation.
6. Download the full RPP Application Package
7. Contact us with any questions at 1-855-905-6692 ext. 101 or via email at outreach@oowa.org.
8. Begin the process today!

OOWA'S "FIND AN EXPERT" DIRECTORY

Where the Public Goes to find Dedicated Septic Professionals

One of the big benefits of being a participant in OOWA's 'In-Development Stream' of the **Registered Professional Program** is being featured on our website's interactive "Find an Expert" directory. This listing is separate and apart from our Membership Directory. All of our RPP graduates and 'In-Development'participants are highlighted here so that members of the public can find the onsite professionals who are committed to ongoing professional and skills development. Get more information about the 'In-Development Stream' of the RPP on our website under the 'Training' tab and set yourself apart from your competition!



MEMBER PROFILE

Michael Zollner
Muddy Men Construction

MICHAEL ZOLLNER
Muddy Men Construction

Name of Business
Muddy Men Construction
(A Division of RSM Construction Group Ltd.)

Owner
Michael Zollner

Services
Complete septic service including; Septic CAD Designs, Septic Installation, Maintenance Contracts and Repairs.

Service Area
100km radius from Beaverton & Mt. Albert, ON.

Number of Years in Operation
2.5 years as President

What got you started in the onsite and decentralized wastewater industry?
As a builder of custom homes and additions I required a septic system firm to sub-contract septic system work to. I was offered an opportunity to purchase Muddy Men Construction Corp. who had been our septic system sub-contractor. After much consideration, it made a lot of sense to purchase a septic installation company that had a good reputation established. Not only could I now do our own septic systems, it offered another source of income instead of just new construction.

Give us one reason for your success
Customer Service and quality work is a must. I am fortunate that our office manager, Katie Burley, is also BCIN licensed and can do CAD designs for permit applications. This allows her to answer client inquires regarding septic system installations, cost, maintenance, repairs and regulations.

Often, a construction job through our general contracting business leads to a septic job and vice versa. The two businesses compliment each other well as we are more versatile in our scope of work.

Where do you see the onsite and decentralized industry going?
As regulations continue to change I feel that we must keep on top of these changes. Manufacturers are constantly coming up with new systems to treat effluent more efficiently. These new systems allow for a smaller footprint which creates more construction opportunities. My hope is that these systems can be made more affordable, so they can be utilized in as many applications as possible.

What can the onsite and decentralized industry do to improve?
Educating the public about septic systems is an area I believe the onsite industry can improve upon. It is very common for clients to be surprised about the cost of a new or replacement septic system. Many people are unaware of the various septic system types and purposes that are now available. The septic system is often an afterthought when purchasing or building a new home. When homeowners understand the reasoning for strict standards they realize the importance of a properly functioning septic system.

OOWA IS A PROUD SUPPORTER & PARTNER OF:

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OGWA

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SPECIAL OOWA EDUCATION SCHOLARSHIP FEATURE

OOWA caught up with our 2018 University Education Scholarship recipient Cameron Curran to get an update on his research and activities. OOWA is excited to see that Cameron is utilizing our contribution to help his research that will help to provide a road map in determining uniform standards for reinspection programs in Ontario. OOWA is proud of all of its scholarship recipients and looks forward to awarding its College and University Scholarships in 2019 at our Annual Convention and Expo at the Deerhurst Resort on March 18th. Contact us if you know of a student who is interested in pursuing studies geared to a future career in onsite and decentralized wastewater treatment or go to our website to download the 2019 application form: *www.oowa.org/education-training/annual-education-scholarships*

Best Practices for Onsite Wastewater System Inspections, Maintenance and Record Keeping in the Lake Simcoe Watershed

By Cameron Curran, University of Guelph

Onsite wastewater systems can pose serious threats to the health and functionality of lakes and aquatic systems if effluent is not sufficiently treated.

Excess nutrients entering a waterbody contributes to eutrophication, or an imbalance of water quality, with negative implications for life in and around the lake. To ensure onsite wastewater systems are functioning at respectable levels, regular inspections and maintenance are required. Understanding how rural onsite wastewater system programs are managed with priority for protecting lake health could help sustain the life lakes support for generations to come.

I'm currently a student in the accredited Master of Science (Planning) program in Rural Planning and Development within the School of Environmental Design and Rural Development at the University of Guelph. Exploring the avenues of watershed conservation through the onsite wastewater industry has led me to pursue research related to the natural environment and healthy rural communities. In April 2018 at the OOWA Convention and Expo I was honoured to receive the Ontario Onsite Wastewater Association's University Scholarship for my thesis project focused on the Lake Simcoe watershed.

With support from the Ministry of Environment, Conservation and Parks (MECP) the objective of my thesis is to focus on capacity building and best practice development for Principal Authorities that administer onsite wastewater system inspection programs in Ontario.

This study is focused on vulnerable areas within the Lake Simcoe watershed (100 metre buffer of watercourses). It will take a community-based approach to identifying best practices for the inspection, maintenance and record keeping of onsite wastewater systems. The main tasks associated with my thesis are: **1.** A jurisdictional scan of best practices; **2.** Pilot assessments of best practice implementation **3.** Stakeholder workshops for best practice framework development.

The information gathered from these various research phases will collectively be used to inform the development of a final proposed best practice framework for completing onsite wastewater system reinspection programs in Ontario, including a provincially standardized approach to organizing inspection data.

In late fall 2018, approximately 15 pilot assessments will take place within the Lake Simcoe watershed with the goal of determining optimal best practices for inclusion in onsite wastewater system inspection programs within Ontario.

Following the compilation of results from the jurisdictional scan and pilot studies, two workshops will be facilitated to gain feedback from industry professionals and stakeholders. The best practice framework to be developed from this study will result in a proposed standardized approach to organizing data pertaining to onsite wastewater system inspections for consistency across Ontario.

The final outcomes of my thesis will be available on a project website which will be shared in the coming months. To assist with this study, I am looking to connect with onsite wastewater inspection program managers at municipalities and conservation authorities to learn more about existing regional or sub-regional inspection programs within Ontario.

If you are interested in learning more or would like to contribute to this study, I can be reached through email at ccurra02@uoguelph.ca.

Tricks for a Perfect Record of Level Tank Installations

Laser levels ensure level excavations and help establish a good relationship with tank delivery crews.

By Ken Wysocky

At Winters Septic Service in Iowa Falls, Iowa, owners Trent and Amanda Winters pursue meticulous, detail-oriented septic system installations. Key tools in their pursuit of perfection are laser levels made by Spectra Precision/Trimble.

"We take great pride in the fact that when a tank is delivered and dropped into place, it's level — no need to lift it back out so we can level the hole some more," Amanda Winters says. "It's a respect thing for the tank company; we don't want them waiting on us. If they're sitting there waiting for us to get things level, they're not making money. We want them to be able to back up, drop it in and be out of there in half an hour so."

Moreover, a poorly excavated tank hole can lead to uneven settling, which can cause problems down the road, she adds.

Winters says the company's three Spectra Precision/Trimble laser levels (models LL300N and LL500) are durable and easy to use. They're mounted on a tripod and guide backhoe operators by emitting audible alerts. Faster beeps tell operators to go deeper; slower beeps indicate they've gone too far.

Winters says the units are well worth the investment. "We strive for tanks being completely flush, front to back and side to side," she says. "If the hole is too deep on the inlet side, waste can flow back into the pipe and toward the house. And if it's too deep on the outlet side, it can push material through the filter openings that normally wouldn't pass through. Overall, it's the little things that make a difference."

As an example of how the company goes the extra yard in terms of details, Winters says they mount handles on all effluent filters so they're easier to remove. "Some people clean the filters themselves, and we don't want them leaning over into the tank opening to reach down and remove it," she explains. "So we install a handle that sits 3 or 4 inches below the tank lid."

The Spectra Precision/Trimble levels also help determine the winner of a friendly ongoing contest between Winters and her brother-in-law, Tony Winters. While Trent does most of the excavating, Tony or Amanda make sure it's the proper depth in relation to the inlet pipe and using a Spectra Precision/Trimble level to ensure the bottom of the hole is level.

"Tony and I battle it out," she says. "It's a silly game we play, taking turns to see which tank installation is more level." After the tank is set in the hole, a level is placed atop the tank to ensure it's completely level, from front to back as well as side to side.

"This is the ultimate step in our contest, which determines who created a hole with the proper conditions for a perfectly set tank," Winters explains. To date, Winters is the leader in the competition with a perfect record of level tank installs. Tony is just a smidgen behind with 95 percent of his tanks perfectly level after installation. "The contest keeps things fun and ensures a properly set tank," she says.

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MEMBER PROFILE

Roddy Bolivar
Bolivar=Phillips

RODDY BOLIVAR
Bolivar=Phillips

Name of Business:
Bolivar=Phillips

Owners: My partner Jennifer Phillips, also a planner, retired in 2015.

Services:

Water resource and infrastructure strategy, policy and planning.

Service Area: East and south Ontario.

Number of Years in Operation: 11 years

What got you started in the onsite and decentralized wastewater industry?
I started working as an engineer in the mid 80's. At the time there was a Direct Grant program for small communities to rehabilitate private wells and septic systems. I managed 3 of those projects over 3 years inspecting over 1000 beds, doing design for most of those and managing contractors to get the work done. I have stayed involved in a number of ways ever since and today focus on Provincial and municipal growth planning and policies related to water resources and infrastructure including onsite servicing.

Give us one reason for your success:
On all my projects I work to show all involved—clients, designers, regulators, contractors, neighbours—that I understand their points of view, their objectives and their challenges. Success lies in balancing shared and competing objectives and being able to explain and justify the balance to all involved.

Where do you see the onsite and decentralized industry going?
There have been remarkable changes and improvements in onsite technology while at the same time changing attitudes towards water management and historical practices (including growing recognition of the very high cost of centralized services). Those will all continue to converge around important topics: low energy use, the hydrologic value of treating water close to source, low capital and O&M cost, opportunities for reuse, etc. That convergence has and will continue to improve opportunity in the onsite and decentralized industry.

What can the onsite and decentralized industry do to improve?
Today I work mostly at the policy and planning end of the industry. Educating provincial and municipal planners that onsite is not the cottage outhouse of their childhood or the small lot village where long neglected systems have failed is an uphill task. OOWA, along with individual designers and installers, can work to bring attention to successful projects – there are many of those and each can help build the correct image of today's industry.

Promote Your Product Information Sessions with OOWA

Let OOWA help promote your product info sessions through our E-newsletter and Training Bulletin that are emailed directly to 550+ individual members throughout the province every month. Contact Mike Gibbs at outreach@oowa.org or 1-855-905-6692 ext. 101 to get more details.

Using a Benchmark to Establish Septic System Elevation

How to use instrument height and backsight to specify elevations for septic system plans

By Jim Anderson, Ph.D.

A benchmark should be relatively permanent, which is why one is often set at a corner of a building, large boulder or some other location that will be there for a long time. If you were to work off a surveying post established by the U.S. Geological Survey, you would be working off a benchmark where the elevation is given in terms of elevation above sea level. In my part of the world, it means an elevation of approximately 1,100 feet above sea level. Obviously, we do not need to know how high above sea level we are to install a septic system.

When a benchmark is set on site, it is usually given an elevation of 100.00 feet. This is arbitrary and only for the convenience of not having to deal with negative numbers. The instrument (transit or level) should be set up to see all parts of the system if possible.

The first rod reading is taken by placing the rod on the benchmark. This reading is called the backsight, or B.S., as indicated earlier in the definition of terms. The height of the instrument is the rod reading plus 100.00 (the benchmark). If the rod reads 2.95, then the instrument height (H.I.) is 2.95 + 100.00 = 102.95. Let's say the plans call for the invert (bottom) of the pipe into the septic tank to be at an elevation of 96.45; the rod reading should be 102.95 (H.I.) - 96.45 (desired elevation) = 6.50. During installation of the septic tank, the invert of the pipe needs to be at a rod reading of 6.50 when the tank is set.

Similarly, if the installer knows that the dimension of the septic tank below the inlet invert is 5.35 feet, then the bottom of the tank excavation or the top of the aggregate material beneath the tank needs to be 5.35 feet (tank dimension) + 6.50 feet (depth to the invert) = 11.85 feet for a rod reading. If aggregate is needed to properly set the tank according to specifications, the excavation will need to be deeper than the desired bottom of the tank elevation. The elevation specified on the plans for the bottom of the tank should be 102.95 - 11.85 = 91.10.

If the elevation change across the site is more than the length of rod available, the instrument will need to be moved. When this occurs, a turning point elevation and new H.I. needs to be established. The rod would be set at the turning point and a reading taken (this is called the foresight, or F.S.). If the rod reading is 10.50 at the turning point and the instrument is moved so the rod reading is 3.88 at the B.S., the elevations are as follows: Turning point (T.P.) = 102.95 (H.I.) – 10.50 = 92.45 and the new H.I. elevation is 92.45 + 3.88 = 96.33. Subsequent elevations will be determined using the new H.I.

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Member PROFILE

Ryan Weddel
Newmarket Precast Concrete Products

RYAN WEDDEL
Newmarket Precast Concrete Products

Name of Business
Newmarket Precast Concrete Products

Services
Newmarket Precast is a leading manufacturer of precast concrete products specializing in the onsite wastewater industry. Our products include retaining walls, concrete storage sheds, well tile, steps, and concrete tanks for oil interception, fire/water suppression, septic and sewage holding ranging from 210L to 68,200L.

Service Area
Our service area includes, the GTA, Durham, Dufferin, Peel, Simcoe and York Regions as well as Kawartha Lakes and the Muskoka's to the North.

Number of Years in Operation
Although Newmarket Precast Concrete has been in operation since 1960, I started in manufacturing during the summer of 2004 and began working full time in 2015 in sales and scheduling. Currently, I am responsible for large projects and advanced treatment systems.

What got you started in the onsite and decentralized wastewater industry?
I was raised in the concrete industry but am new to the onsite wastewater side of things. It has been a steep learning curve but I've been able to utilize the vast knowledgebase our installers possess to show me the proper and practical ways to do things. I also found that organizations like OOWA with their training and valuable contacts help immensely to how much I have learned.

Give us one reason for your success.
The secret to Newmarket Precast's and my own success has been the relationships that we have with the installers, regulators, engineers and suppliers we deal with. We build trust with these people and organizations that have only grown bigger and stronger for three generations.

Where do you see the onsite and decentralized industry going?
I see the industry moving towards higher quality effluent by way of tertiary treatment as well as more customization when it comes to tank requirements. We have noticed an increase in deep burial, highway traffic and custom configurations led by lot restrictions and consumer needs.

What can the onsite and decentralized industry do to improve?
I believe the best way for the industry to improve would be for the different sectors of the industry to educate the homeowners about their systems. With a lot of movement from the city to the country, homeowners that have never dealt with septic systems need to be aware of what their system can handle and its location on their property.

When Should You Start A Succession Plan?

By Jason Vinck,
Director of Communications, SuccessionMatching

Have you ever thought about selling your business? Have you ever considered who will replace you as its owner? Have you written out a plan? Do you know how to start?

If you answered "no" to one or all of these questions, you're not alone. Despite the fact that every business owner will one day exit their business, a recent Business Development Bank of Canada study found that less than 10% of all business owners in Canada have a formal succession plan. While that statistic may encourage some owners to stay the course and leave planning for another day, it should encourage you to take action sooner rather than later.

"Generally speaking, business transitions take between 2-7 years," says Alison Anderson, Founder and CEO of SuccessionMatching.com, an online community of business buyers, sellers, and succession planning professionals. "Business owners who don't plan well enough in advance can be forced to divest for pennies on the dollar, or miss out on hundreds of thousands of dollars, if not millions, in tax savings and other opportunities. It's a very unfortunate situation to be in, which is why we work hard to help our members avoid it."

Fortunately, many community organizations, government agencies, and business owners themselves are becoming aware of the need for succession planning. Businesses that shut down instead of transitioning to new ownership result in job losses, decreased tax revenue, and a scarcity of product and service provision that negatively affects everyone in the community. Retaining valuable businesses is in everyone's best interests, and it's quickly becoming a priority across the country.

"It's really important for owners to think about their exit strategy early on, to see the business as an asset they are one day going to sell," says Rick Esselment, President of ESSE Canada, a family owned Onsite Wastewater Maintenance company in Ontario. "Planning for that day early on makes the business stronger, more sustainable, and more profitable," he notes. "And for any industry, such as my own, that heavily relies on family owned businesses, it's absolutely critical. If business owners don't have a succession plan in place to pass on their knowledge, experience, and relationships with clients and suppliers, it could easily result in all sorts of service shortages, price gouging, quality control issues, and environmental degradation."

There are a number of reasons business owners put off developing a succession plan. One big reason is the negative perception it can often create. "A number of years ago, I worked as an Economic Development Officer, and I had a client who was preparing to retire and sell his plumbing business," says Anderson. "As I began looking into options for my client, it quickly became apparent that none of the traditional means would give the business owner the privacy required to sell the business in a swift and cost effective manner. The problem with this industry, like many others, is when you put up a for sale sign via online posting boards, brokers or classified ads, suppliers and customers have a tendency to get nervous."

It's for these reasons that SuccessionMatching has sponsored the SuccessionMatching Community Project (SMCP) which aims to bring together community leaders into a partnership that solves local succession planning problems. The Ontario Onsite Wastewater Association (OOWA) is one such partner and is eager to be proactive about succession planning in their industry. Like solving any other problem, having access to good information and resources is a necessary first step to finding a solution.

Members of the Community Project like OOWA receive an annual series of 10-15 live webinars on essential business transition topics which can be accessed from the privacy of a home or office. Each webinar features an industry expert who speaks for about 20-25 mins and then spends 5-10 mins answering questions online participants may have. The 2018 SMCP Webinar Series begins on Oct. 3 and will run 15 webinars on everything from tax planning to finding financing.

It's a great way for business owners at any stage of their ownership transition, including the very beginning, to get an overview of the process and learn more about next steps without sacrificing their privacy. Through the partnership, OOWA members will have access to these and other resources for free for a limited time. Registration to the webinar series can be found at SuccessionPlanCanada.com.

"The webinar series that is a part of the SuccessionMatching Community Project provided a diverse range of topics that were very relevant and spoke to our broad business demographic," says Parul Neufeld, Economic Development Officer in the City of Abbotsford. "The quality of the information presented by subject matter experts added depth to the webinar series, making it worth the time of our business owners," she adds.

Of course, there are a number of other ways to begin your succession plan and solve the problem of business retention in your community. Talk to your financial lender, accountant, lawyer, or local Community Futures Ontario officer to get some valuable information and assistance. These are all ways to begin thinking about who may be a likely candidate for your successor and learn how to begin that process as well as identify the other professionals you may want to involve.

Whether you've thought about it before or not, what's important is that you start thinking about it, and planning for it, now. You may be comfortable being part of the statistic of business owners who don't have a formal succession plan, but you don't want to be part of the statistic of business owners who lost out on the full value of their business when they finally exited. Start planning now, and in the future your community, your family, and you will be grateful you did.

Wastewater Treatment with Windmill Aeration

A recent study commissioned by Sask H20 and conducted by Springboard West Innovations estimated that of all the facultative municipal sewage lagoons in the Canadian Prairie provinces 58% were at or over their permitted capacity.

Pressures exerted by local growth, changing legislation, deterioration of aging wastewater systems, and unusual weather are putting ever increasing demands on these lagoons. Small municipalities are facing significant expenditures and loss of urban land area due to lagoon cell expansion.

Aeration facilitates wastewater treatment in a facultative lagoon by changing the bacterial population, which in turn, should speed up the process of reduction of BOD and suspended solids.

The aeration is provided by the installation of windmill-powered aeration systems into a primary lagoon cell. This added aeration increases the dissolved oxygen, enhancing microbial activity and improving the efficiency of the wastewater and sludge treatment. Increased aeration causes the bacterial community structure to shift from anaerobic and facultative to aerobic groups.

These aerobic micro-organisms speed up the treatment process, reducing the Biological Oxygen Demand (BOD), Total Suspended Solids (TSS) and nutrient levels, and reducing the loading of potential contaminants to the environment.

The aerobic bac-teria (measured using the HAB-BART test) in our Aerated Test Lagoon were 10 times higher than that in the control lagoon.

Aeration has a significant impact on the heterotrophic aerobic bacteria (HAB). There was a 54% increase in the HAB levels during the summer aeration period in the Test Lagoon, and a 10 fold increase during the winter aeration period. On the other hand, there was no significant change in the HAB populations in the Control Lagoon for the duration of the study.

Aeration also was significantly better at removing Ammonia-nitrogen and Total Nitrogen. Ammonia-nitrogen removal in the Test Lagoon was 67% compared to 37% removal in the Control Lagoon. Similarly Total Nitrogen removal in the Test Lagoon (24%) was higher than the Control Lagoon (15 %).

Important Conclusions of the NRC Study

Aeration had a significant impact on the heterotrophic aerobic bacteria[1] (HAB) in the Test Lagoon. There was a 54% increase in the HAB levels during the aeration period in the Test Lagoon.

The composition of the Test Lagoon was different between the pre-aeration and post-aeration periods for a wider range of parameters when compared to the Control Lagoon.

Aeration also was significantly better at removing Ammonia-nitrogen and Total Nitrogen.

Ammonia-nitrogen removal in the Test Lagoon was 67% compared to 37% removal in the Control Lagoon. Similarly Total Nitrogen removal in the Test Lagoon (24%) was higher than the Control Lagoon (15%).

This study reinforces the NRC report's conclusion regarding the growth and establishment of a healthy aerobic bacterial community. They observed that aeration over winter also aids in the early establishment and growth of the aerobic bacterial community. The Heterotrophic Aerobic Bacteria in the Test lagoon were an order of magnitude (10 times) greater than those in the Control lagoon.

If you believe that the Windmill Aeration System may be able to increase the efficiency and lengthen the service life of your facultative lagoons, just get in touch with us. We'll review your current situation, and provide additional information as required, including:

A full copy of the National Research Council Assiniboia Lagoon Aeration Report is available by request.

Contact RS Systems ON Inc.
email: rssystemsoninc@outlook.com
phone: 18443915753
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[1]Heterotrophic bacteria are found widely in soil, water, foods, and the bed soil of bodies of water. Heterotrophic bacteria take an active part in the natural recycling of substances.


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