VOLUME 19 | ISSUE 2

Onsite

ONTARIO ONSITE WASTEWATER ASSOCIATION NEWSLETTER

treatment | technology | innovation | reuse | recycle

INSIDE

Mandatory Skills Training for Onsite Professionals?

YES TO MANDATORY TRAINING

Importance Of Lifelong Learning in the Septic Industry

By Terry K. Davidson, P.Eng.

At the 2019 OOWA Annual Conference in Huntsville Ontario I participated in a panel discussion with topics ranging from what has been successful for OOWA and what programs need additional work and refinement. At one point in the discussion I indicated that I believed that it should be mandatory for continuing education to keep certified as a licensed septic Installer which was met with both positive and negative feedback; therefore, it is time to clear the air on my message.

One of the first objectives of the Ontario Onsite Wastewater Association when it was first established back in 1999 was to promote onsite servicing as a...

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NO TO MANDATORY TRAINING

Training is Key but Not With More Regulations and Bureaucracy

By Rick Esselment

Following OOWA's conference this past spring, I have been asked to formalize thoughts around a point of discussion on the president's panel – why is mandatory training for OOWA members a good idea?

Before I get into it, I would like to provide some background that helps to explain my position. My somewhat unique perspective comes from having been both a regulator and now a small family business owner. I strongly believe in the importance of professional development and continuing education for all of us participating in the industry, but we need to train the right people for the right reasons.

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OOWA
Board of Directors

PRESIDENT'S MESSAGE

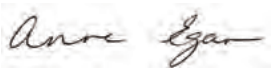
It appears that summer has finally arrived after a long, wet wait. The spring of 2019 has been a challenging one with historic flooding in many parts of Ontario, Quebec and Eastern Canada. All this rain and these unpredictable weather events have set many of us back in a time where being ahead of the game is critical for a productive and profitable season. The extreme nature and unpredictability of the weather conditions of the past few springs may be a new normal because of our changing climate, one which creates challenging working conditions for our industry and other construction related sectors.

If you attended our 2019 Convention and Expo, you will recall the engaging conversations that came out of our Past President's Panel Discussion. The point of the panel discussion was to have past OOWA presidents reflect on the past 20 years to see how far our industry has come and to consider what we need to do to move the industry forward over the next 20 years. The topic that generated the most interest and comments from the audience was continuing education and ongoing skills development for onsite system installers and regulators. There were different perspectives from the panelists as to whether or not ongoing training should be mandated by the government -as is the case in many other provinces- or if any additional formal training beyond the MMAH licensing exam is required.

OOWA feels strongly that providing training is critical to the success of our industry in the face of advances in system technology, regulatory changes, challenges related to an objective-based building code, staff retention, career development and the impending loss of a generation of onsite installers and regulators to retirement. We follow up on this discussion in this edition of our association newsletter with articles from two past OOWA Presidents; Terry Davidson, Director of Engineering and Regulations at the Rideau Valley Conservation Authority and Rick Esselment, President of ESSE Canada.

Though the summer is a relatively quiet time for the association, our staff and committee volunteers continue planning for our Fall regional meetings, training sessions and of course, the annual convention. Having been graciously hosted by Deerhurst Resort for the past two years, we're back on the road to make sure that members in all parts of the province have an opportunity to attend. We are excited to announce that the 2020 Convention & Expo will be taking place at the RBC Place in London, Ontario from Sunday, March 1st – Tuesday, March 3rd. Delegates will find special convention room rates at the Double Tree by Hilton which is connected to the RBC Place. The organizing committee looks forward to assembling a top rate agenda again this year that will appeal to all members, and to making this annual gathering another one for the books! See you there!

The association hopes that everyone has a great summer season and that you will keep an eye on your Inbox for your monthly OOWA emails that will keep you updated on upcoming events, news and articles of interest.



President

Ontario Onsite Wastewater Association 20 YEARS

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

Ontario Onsite Wastewater Association 20 YEARS

SAVE THE DATE!

OOWA's 2020 Convention and Expo

Sunday, March 1st to Tuesday, March 3rd

RBC Place London, 300 York Street, London, Ontario

"YES" to Mandatory Training

continued from page 1

to achieve this objective. To achieve a level of professionalism that is needed in this industry all stakeholders must be educated. Some people would argue that by writing the exam to get a BCIN for Part 8 of Ontario Building Code is all that they require. As a facilitator that teaches adults to prepare for MMAH's Part 8 exam, I would argue that the current course material and exam is only one part of the equation when it comes to identifying yourself as an Onsite Wastewater Professional. Anyone can quote "code" to look educated to their clients but to understand the intricacies of onsite wastewater treatment processes a Professional must continually explore educational opportunities.

The current OOWA Registered Professional Program (RPP) was an attempt to profile individuals that are involved in the Ontario Septic Industry who have elevated their education and experience. However, participation has been slow since its inception. I would suggest that the dedicated members of the OOWA RPP committee should refocus on mandatory education for all individuals. Since the Ontario Building Code Division C, Section 3.3.3.8 refers to Knowledge Maintenance for Septic Installers, it would be the role of the Professional Development Committee to convince MMAH to provide alternatives to having the requirement for a knowledge maintenance exam as currently described for Septic Installers as follows:

3.3.3.8. Knowledge Maintenance

(1) The director shall give notice of a knowledge maintenance examination administered or authorized by the Ministry of Municipal Affairs and Housing in respect of changes described in Sentence (2) that relate to the subject matter of an examination program referred to in Clause 3.3.3.2.(1)(a) to every person who is registered under Sentence 3.3.3.2.(1).

These knowledge maintenance exams are also applicable to Inspectors (Division C, Section 3.1.5.1), Designers (Division C, Section 3.2.5.2), and Registered Code Agencies (Division C, Section 3.4.3.8).

The committee could review the system used in Ontario for other Professionals referred to as continuing education unit (CEU) or continuing education credit (CEC). It is a measure used in continuing education programs to assist the professional to maintain his or her license in their profession.

The credits could be received by taking a short course or attending a conference, but would not require an examination, therefore, no reason not to participate if you want to work in the Septic Industry in Ontario.

Education is regarded as a lifelong process, and constant development and change of our environment, which requires people to keep learning to adapt to the changes in the outside world.

I believe that continuing adult education experiences have various purposes, whether they be to enrich knowledge, improve technical or professional qualifications, or facilitate personal, social, economic, and cultural development.

As a Professional Septic Installer do you not want to be competing against your fellow septic installers that are up to date on the Code, Technology, Best Management Techniques, and talking the same language when they're talking to your client?

As I mentioned early, the reason I believe the industry needs mandatory continuing education is to benefit all Professional Members of OOWA and fulfil the vision of the original OOWA Board of Directors which was to have onsite wastewater treatment considered a Permanent Servicing Solution in Ontario.

The Septic Industry must understand the definition/role of a professional association (which OOWA is aspiring to become): "A group, of people in a learned occupation who are entrusted with maintaining control or oversight of the legitimate practice of the occupation; and a body acting "to safeguard the public interest." - Wikipedia

How can anyone not get onboard with mandatory continuing education? Comments welcomed.

"NO" to Mandatory Training

continued from page 1

A mandate for training for contractors or service providers proves to be a difficult to justify concept if the training requirement targets them specifically, and not others within the professional community and OOWA membership. It is a slippery slope towards formalizing trades within the industry for installation and service, which could eventually lead us down the bureaucratic and counterproductive path to unionization of workers. Given that most businesses are small family businesses, this industry in particular would be challenged to survive mandatory training as such an expensive and misguided undertaking.

Such a move for our industry would create substantial challenges in expanding or even maintaining their work force and productivity. It would seem regressive to create new barriers to work force entry and business expansion, by creating more qualifications and bureaucratic involvement, ultimately an expansion of government and delays. Basically if there is to be mandatory training for contractors, who in that business is supposed to be trained? The owners? The Workers? The supervisors? Everyone? Who? And how does this get paid for?

The problems that we presently see in the installation, repair and service of onsite wastewater systems in Ontario are not definitively a result of a lack of mandatory training for legitimate contractors and service providers. If the business community within the wastewater industry needs support, it isn't for mandatory training; it is in the actions of the regulatory community to consistently enforce the building code. This enforcement, including identification of illegal installations and repairs, is a function that can only be served by government. It is here, at all levels of government, that training and continuing education should be most encouraged given that they form policy, set standards, and provide enforcement for industry.

To be clear, I do not intend to diminish the importance of training, or OOWA's role in training and education. Training needs to be accessible, voluntary, and low (or no) cost in order for it to be most effective.

The Registered Professional program, along with the Association's professional development efforts, is an integral part of advancing our industry. Professional development, as a concept, should be offered by OOWA at little to no additional cost to its members. Core competencies should continue to include Wastewater Basics, Biological Safety and Awareness training, Pumps Dosing and Controls, Site Assessment and Soils, and should continue to grow and develop the subject matters and course offerings to remain relevant. OOWA needs to provide education, educational opportunities, and the development of programming and course offerings need to be volunteer-based in order to keep costs low and readily available to the membership. A second important function of OOWA for Professional Development should be to provide relevant materials, support, training and resources for its members on strategies on how to effectively educate their community, clients and the public. Its advocacy should focus on the value, costs, and importance of onsite wastewater treatment and technological advancements that protect our water resources. We need to do a better job of teaching and educating our communities, municipal counsels and planning staff on the importance and value of our work, and OOWA members need to be supported in how to best do that.

OOWA's role in advocacy for a more knowledgeable industry needs to start with providing high-value education and training for industry members that are specifically involved in design and permit approval. They are essentially the 'gate-keepers' to permits, decision-makers for what actually goes in the ground, and how it's constructed. Well-informed professionals doing designs and permit approvals provide a lot of value to the contracting community, and to their local communities, and so therefore need to be true experts in the subject matter. It is here where some of our biggest opportunities for advancement in industry lay.

This is because when true regulatory enforcement and support takes place, there will be more work for inspection, design, installation and service of septic systems than our industry could accomplish with the present work force.

The bottom line is, we need to focus on doing things right. As opposed to adding more administrative regulations and requirements for contractors and service providers, we need to ask them what OOWA needs to do for them.

I don't think we need more policy for contractors or small family businesses (those actually getting the work done). We do need the political will and competency to consistently and efficiently enforce the existing building code across the province in order to ensure outcomes and performance.

In summary, from my business perspective, the discussions around mandatory training have been initiated primarily by the regulatory and design community. I think it is incumbent on them to lead the way by advocating for mandatory training for themselves first. Lead the way – contractors and business people will follow if it makes a positive difference and economical sense.

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**

Ontario Onsite Wastewater Association 20 YEARS

OOWA CAN HELP YOU SET YOURSELF APART FROM THE COMPETITION

Does your company have a website or do you generate digital promotional material?

Promote the fact that you are a member of your industry's professional association by using OOWA's logo.

Contact us to be sent a high quality digital image file: 1-855-905-6692 or outreach@oowa.org.

MEMBER PROFILE

Kirk Hastings and Penny Brake

Onsite Septic Solutions

Kirk posing with his dad in front of his grandfather's truck that helped launch Hastings Construction.

Name of Business:
Onsite Septic Solutions

Owners:
Kirk Hastings and Penny Brake

Services:
Onsite Septic Solutions provides clients with design, installation and repair of onsite wastewater systems as the primary focus. In addition, Onsite Septic Solutions meets client's excavation, grading and aggregate needs. It provides clients with a "one-stop shop" experience for their below grade construction needs.

Service Area:
Simcoe County, primarily Tiny Township.

Number of Years in Operation:
18 years operating as Onsite Septic Solutions, but 30 years overall in the industry working with the family business.

What got you started in the onsite wastewater industry?
Onsite Septic Solutions, evolving from Hastings Construction, followed in the footsteps of my Father, Ross Hastings, sharing 60 years of family business in the industry. It was a natural transition to become part of something that was a constant throughout my childhood. I always struggled with having a business tied to a family name as being a wise choice. The name Onsite Septic Solutions was my brainchild in a school bus, turned into a "cool bus" we had converted to a snowmobile hauler, on our way to an ACDC concert in Toronto in the year 2000. Poof! My search for a more appropriate identity was born.

Give us one reason/secret for your success.
We continue to try and provide the service to the customers that the company was built on with Ross Hastings. Many times phone calls from customers will always start with "Ross Hastings put our septic in xx years ago." We try and look after the old clients from my Father's era and the next generation. We are diligent in seeing clients through on their jobs from start to finish. We take great pride in being able to service my Father's past customer list. They take precedence.

What was the most challenging onsite job you worked on or participated in?
One of our most challenging jobs was on an island located in Georgian Bay. The water was too shallow for barge access, so we had to float a ROTH polyethylene septic tank to the rugged shoreline of the island. We had to track a 4-ton excavator across the breakwater to the site. In order to backfill infiltrator chambers, we were forced to hand screen the native soil to remove the boulders in order to have suitable backfill material.

If you could change one thing about the onsite/ decentralized industry, what would it be?
If I could change one thing about the industry it would be to put better controls in place regarding the influx of fly by night people that are admitted into the "installers world". Many times we see people in our industry that are here today and gone tomorrow, leaving a path of carnage customers are left to deal with. More controls need to be in place, especially for the tertiary treatment systems, to ensure that customers are getting the service they deserve.

Where do you see the onsite industry going?
Down the toilet!!! Just kidding. As we are already seeing, with the concern over the environment there will be an explosion of new technologies which will produce effluent that will be very close to "clean water." Will this technology be the answer to the environmental concerns? Only time will tell!
Our lifestyles have changed with the introduction of anti-bacterial everything that are must haves in today's households. I am a firm believer that since the beginning of time, and for perpetuity, the earth has accepted the organisms we naturally produce with no harm to the environment. Maybe old school when it comes to the treatment of waste is the right answer. Let the bacteria do its job.

Separating Composting Toilets: An Emerging Issue

By Eric Kohlsmith,
Part 8 Building Official Mississippi Rideau Septic System Office

As a Part 8 Building Official for the Mississippi Rideau Septic System office, a partnership between Mississippi and Rideau Valley Conservation Authorities, we recently received applications for greywater systems with the intention of using composting toilets for blackwater treatment in vacation rental units.

During the application review, it was determined that the composting toilets were separating toilets. Separating toilets divert the urine from the feces, by a divided toilet bowl (pictured), with the urine discharging via piping and the feces captured in a container (approximately 23 L in volume) either under the seat or to a container remote from the unit. The advantage of a separating toilet is the feces is drier than conventional composting toilets (self-contained units where material is removed after composting), which reduces odour and composting time.

Manufacture of the proposed separating toilets provides three methods in which to deal with the feces:

- Remove the container from the unit, add soil to the container, vent the lid, let stand for 6 months and then either add to conventional compost pile or bury,
- Place material from container into a proprietary latrine composting (process description not provided), or
- Place contents of container into a proprietary incinerating woodstove (leaving nutrient containing ashes to be dealt with).

Although the manufacture provides some direction as to the composting of the material the Ontario Building Code (OBC) is silent except for sentence 8.3.2.1. (2) "*Where the sewage system is specifically designed for the biological decomposition of non-waterborne biodegradable kitchen wastes or requires the addition of small quantities of plant matter to improve the decomposition of human body waste, it may receive such wastes in addition to human body waste*."

When it comes to composting, the OBC doesn't provide regulatory direction, leaving regulators to either turn a blind eye or interpret operation and maintenance requirements for composting based on current code and best management practices.

Initially, we felt the best plan of action would be to require a Class 3 permit for both the urine and feces. Sentence 8.5.1.2.(2) of the OBC requires "*A Class 3 sewage system shall be designed to receive only the contents of a Class 1 sewage system or effluent from a Class 1 sewage system for disposal.*" The urine would drain to a pit and the feces would be deposited in a separate pit both meeting the requirements of a Class 3. The applicant felt that the requirement of constructing a cesspit for the compostable feces was not inline with current composting toilet practices.

Currently, conventional composting toilets contain the feces and urine within the unit, generally mixed with some kind of absorbing media (Sentence 8.3.2.1.(2) at work - peat moss, wood fiber/chips,...), allowed to dry, decompose, and eventually removed from the unit and applied to the land in an environmentally conscious manner (hopefully) with no Class 3 permit required.

Some units have heaters and fans to assist with decomposition and generally all will have an overflow (emergency or otherwise).

Our office has required any overflow from a composting toilet be directed to a Class 3 system and in Eastern Ontario, other Principal Authorities seem to require the same when we know composting toilets are being installed.

Back to the separating toilet: the container for the feces is essentially the composter, similar to the conventional units, so why would we require the container to be emptied and material placed in a Class 3 system when conventional composting systems are left to there own devices?

Some of the following concerns, questions, and thoughts regarding Class 1 systems were arose with the submission of these greywater applications:

- Of the 5 Classes of Sewage Systems, Class 1 is the only one with 9 variations in terms of capturing and treating sanitary sewage.
  - 8.1.2.1. "*a) Class 1 — a chemical toilet, an incinerating toilet, a recirculating toilet, a self contained portable toilet and all forms of privy including a portable privy, an earth pit privy, a pail privy, a privy vault and a composting toilet system*,"
- Out of those 9 systems, only 4 systems are defined by the OBC and provide construction requirements which lends to how the system meets the objectives and functional statements of the OBC which ultimately ensure the system will protect the environment and human health.
- The other 5 types of Class 1 systems (chemical toilet, incinerating toilet, recirculating toilet, self contained portable toilet, composting toilet system) are not defined by the OBC and do not have construction requirements.
- It is left up to the manufacturer to provide "best management practices" for the use of their systems and the **operator to properly identify when the treatment process is complete**.
- The 5 undefined, non "regulated" Class 1 systems are the only sanitary sewage treatment system that **requires human interaction to determine if the treatment process is complete**.
- Statistically, there is no way to determine if the use of Class 1 systems is increasing as they are exempt from permitting (Side note: It doesn't really matter since the province does not track the installation of permitted systems).
- Anodically, the interest in Class 1 systems, practically composting toilets, seems to be on the incline, based on conversation with property owners and an increase in the issuance of Class 2 permits (Greywater pits).
- Class 1 systems are seen to be a cheap and easy alternative to full sewage systems, until the property owner realizes that their greywater pit may be larger than a Class 4 Filter Media system.
- Should Class 1 systems that are not defined and lack construction requirements under the OBC require a permit?
- Should all Class 1 systems require a permit?
- Are conventional composting toilets providing adequate treatment prior to "compost" removal?

In the end, the applicant provided Class 3 systems for the urine and a descriptive composting maintenance plan for the feces.

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March 9th, 2019 to July 3rd, 2019

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Adrian Greco, Greenwood Excavating
Tom Matthews, Northumberland County
Brett Murray, Metropolitan Pump Co. Limited
Adam Peloso, City Of Quinte West
Jocelyn Penfold, Town Of Innisfil
Kris Rivard, North Bay-Mattawa Conservation Authority
Brenda Waltham, Student - Carelton University

RENEWED MEMBERS

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Steven Barrie, Steve Barrie Backhoe & Equipment Rental
Dan Beaton, J.H. Cohoon Engineering Ltd.
Ivan Beauchamp, Clearwater Builders
Marie-Christine Belanger, Premier Tech Aqua
David Bettschen, O.Bettschen Construction
Robert Bezaire, Underground Specialties
Brad Billings, Billings Construction
Ryan Bos, Bos Engineering
Art Bos, Bos Engineering
Mark Bunker, AAAA Sanitation
Darren Bunker, AAAA Sanitation
Brent Bunker, AAAA Sanitation
Howard Clark, P. Medley & Sons Ltd
Brad Code, Lockwood Brothers Construction
Kevin Cooney, Cooney Construction & Landscaping Ltd.
Arnie Coulson, Coulson Bros Scow Service
David Cousens, Kinburn Plumbing & Heating
Nicole Couvrette, City of Quinte West
Craig Cox, Town of Innisfil
Morgan Crane, MTE Consultants Inc.
Robert DeAcetis, Deson Construction
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Larry E Dedrick, Dedrick Bros. Excavating Ltd.
Ryan Dobie, Town of Innisfil
Mike Esselment, Sweers Water Inc.
Ray Foster, ESSE & Associates Inc
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Adam Gebarowski, City of Quinte West
Paul Greer, Paul Greer & Son's Exc Ltd.
Todd Grier, Todd Grier Excavating
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Christine Reist, McIntosh Perry Consulting
Darryl Robins, Darryl M. Robins Consulting Inc.
Todd Rumble, Rumble & Associates
Frank Salaris, Insight360 Home Inspections
Kim Shelswell, Morris Shelswell & Sons Excavating & Grading Ltd
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Jason Steacey, JDS Enterprises
Dale Thompson, Construction Workplace Safety
Brendon Underwood, Underwood Construction Ltd.
Brent Underwood, Underwood Construction Ltd.
Hendrick Van de Glind, Paterson Group Inc
Brent Van Herk, BVH Excavating & Septic Inc
Rob Vander Doelen, Chung & Vander Doelen Engineering Ltd
David Wemyss, Mysson Residential Consultants
Robert Whyte, Calder Engineering
Dave Wilhelm, MTE Consultants Inc.
Ross Zwierschke, Zwierschke Bros. Ltd.

Flows across the Nation — How does Ontario Compare?

Doug Joy and Katherine Rentsch, ORWC

The rules which cover the design and installation of on-site systems in Ontario have remained relatively unchanged for the past three decades. One might ask then, is the code used in Ontario up-to-date? To look at this question we begin a series of articles comparing the requirements of the *Ontario Building Code* with codes used in five other jurisdictions — two in Canada and three in the U.S. Since the codes cover a wide range of conditions from design flows, tank requirements to leaching bed design, we will begin by looking at flows and tank requirements and go on in subsequent articles comparing other aspects of the code.

For comparison we will use the Provinces of Quebec (1995) and Alberta (1999) and the States of North Carolina (2001), Massachusetts (1996) and Arizona (2003). These jurisdictions were selected partly because of the availability of their codes, but also because they have large numbers of on-site systems and have relatively up-to-date codes. The dates of the codes used are given in brackets behind each state above.

Before beginning the comparison we also need to keep in mind that while we may be examining a single aspect of the design of an on-site system, it is the overall design and how all the components work together that is most important. This we'll tackle in the final instalment.

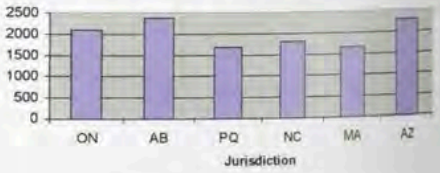
The essential starting point for all on-site designs is the flow used for design. As we all know this will depend on the size, type and use of the building. To keep the comparison relatively straightforward, we'll look at a single family home, with four bedrooms and 210 m² in area. In Ontario, for residential homes, design flows are based on the number of bedrooms, area and fixture units. Let's assume that the fixture units are less than 20 so they do not change the flows over those dictated by the flow area and number of bedrooms. Ontario's code results in a design flow of 2,100 L/day.

Table 1: Design Characteristics for 4 Bedroom, 210 m², Residential Home

Jurisdiction	Design Flow (litres per day)	Tank Volume (litres)
Ontario	2,100	4,200
Quebec	1,680	3,900
Alberta	2,400	2,700
North Carolina	1,800	3,800
Massachusetts	1,700	5,700
Arizona	2,300	4,800

For Quebec their code does not use design flows directly, rather, they use the number of bedrooms to dictate the design of the various components. Of course the number of bedrooms suggests the number of occupants, which in turn suggests the flows. Digging a bit deeper into the Quebec code a suggested flow per bedroom is given and this results in suggested design flows. Design flows for these and the other jurisdictions are listed in Table 1 and graphically in Figure 1.

Figure 1: Design Flow Comparison



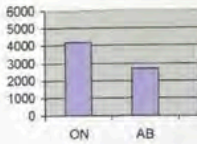
The design flows for this situation vary significantly from a minimum of 1,700 L/day in Massachusetts to a maximum of 2,400 L/day in Alberta. Ontario is about the average for this four bedroom case. Of note, Ontario is the only jurisdiction in which the size of the dwelling, beyond the number of bedrooms, factors into the calculation of the design flows. A few of the others use fixture units, but for the most part the focus is what is the number of bedrooms in the home and this dictates the design flows.

In our code the design flows are then used to determine the sizes of all components of the system, such as tank volumes, size of treatment units and soil absorption requirements. For this article we'll just look at tank sizes.

Some jurisdictions (e.g., Quebec) do not use the design flows to determine tanks sizes but go directly from the number of bedrooms to the tank volume. Others use the design volume with ratios of 1.5 to 2 times the daily flow. Figure 2 shows the comparison of the tank volumes that would be required for the 4 bedroom under consideration.

For our case Ontario would require a tank size of 4,200 L (2x2,100 L) and this of course exceeds our minimum size of 3,600 L. For the other areas the required volumes range from a minimum of 2,700 L in Alberta to a maximum of 5,700 L in Massachusetts. This is exactly the opposite trend observed in

Figure 2: Ta



the flow comparison, which
we use 2x the design flows
bedrooms to indicate tank s
Massachusetts the 5,700 L

In all jurisdictions but Al
two-chamber septic tank.
only applies for larger syst
3800 L/day and would not

As with the design flows
average for these six jurisd

So what does this all m
Ontario? Well, it suggests
tank sizing for single family
regulations across the cou
variable. We are unusual in
the size of the home since
the other jurisdictions go b
considerations of bedroom
one case, fixture units. It w
interesting to see if data co
today would support the n
we should base our flow c
on house area in addition t
number of bedrooms. Of c
have not looked at non-res
applications and difference
may be quite a bit larger. W
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Next issue we'll look at
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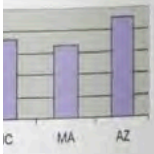

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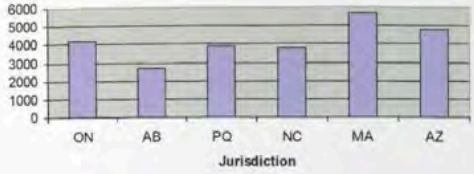
Figure 2: Tank Comparison



the flow comparison, which may come as a surprise. Although we use 2x the design flows, Alberta uses the number of bedrooms to indicate tank size and in the case of Massachusetts the 5,700 L is the minimum tank size allowed.

In all jurisdictions but Alberta there is a requirement for a two-chamber septic tank. In the case of Massachusetts this only applies for larger systems with flows greater than 3800 L/day and would not apply in this case.

As with the design flows, Ontario's tank size is about the average for these six jurisdictions.

So what does this all mean for the design of systems for Ontario? Well, it suggests that for design flows and septic tank sizing for single family homes, Ontario is typical of regulations across the country — although they are highly variable. We are unusual in that we make adjustments for the size of the home since none of the other jurisdictions go beyond considerations of bedrooms and in one case, fixture units. It would be interesting to see if data collected today would support the notion that we should base our flow calculations on house area in addition to the number of bedrooms. Of course we have not looked at non-residential applications and differences here may be quite a bit larger. We'll look at that at another time.

Next issue we'll look at sizing of soil absorption systems.

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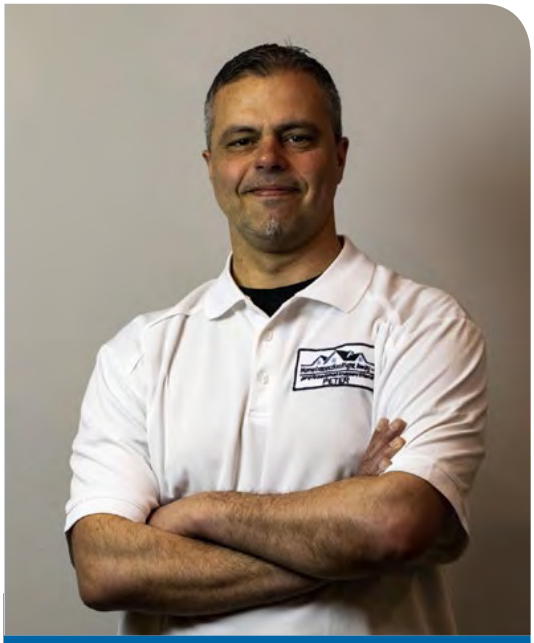
Peter Libicz
Home Inspection Right Away



PETER LIBICZ
Home Inspection Right Away

Name of Business:
Home Inspection Right Away

Services:
Home And Septic Functionality Inspections

Service Area:
Grey – Bruce, Collingwood, Grey Highlands and surrounding areas

Number of Years in Operation:
4 years

What got you started in the onsite wastewater industry?
After spending over two decades in the home construction and renovation industry, I moved into the field of helping home buyers with their real estate purchases. Working in the service industry combines my passion to help others, my interest in connecting with people and my need to work outside. Since septic systems are important to all rural property owners, I pursued training in the onsite wastewater industry. Inspecting septic systems have become a growing part of my business. I enjoy expanding my working knowledge of onsite and have attended a number of OOWA regional meetings and the training sessions provided at the annual convention. I was inspired to take on septic inspections as part of my business by fellow home inspectors who were also members of OOWA. OOWA's goal of improving the performance of the industry continues to inspire me and I can't imagine my business growing without the support of OOWA.

Give us one reason/secret for your success.
I contribute the success that my business has experienced so far to the passion for helping others instilled in me by God and on the opportunities He has presented to meet mentors who selflessly provided me with guidance. In the area of septic inspections it was Murray Parish, member of OOWA and former President of Ontario Association of Home Inspectors, who has served as a great source of advice and direction.

What was the most challenging onsite job you worked on or participated in?
It may sound funny looking back on it but it wasn't so when it happened a few years ago. A distressed home buyer called and asked for a septic inspection. They told me that there was no rush, but the home purchase conditions expired at midnight (!). Since everyone else was booked up that day -including me- the inspection had to be arranged well after my regular business hours and in the dark.
The seller warned us that he could not remember location of the tank and that the only thing he remembered was that the tank is in a really weird and unusual spot. Did I mention that it was a very large property? The buyer brought helpers and we brought several flood lights to help in the search. After some 90 minutes of investigating and probing, we finally found it! It was deep but a few men with shovels and looked after the excavation (there was no time to bring in equipment). The system turned out to be functioning as intended, which we established well after 11 pm!

Where do you see the onsite industry going?
I see the onsite wastewater industry advancing towards increased levels of safety for users and professionals involved. I see this happening through public education geared at home owners and other users of septic systems. I also see the need for ongoing training and education for all professionals and support staff involved in the industry. I believe we can make even more of a difference as we diligently expand our knowledge and implement solutions that have proven themselves elsewhere.

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Perkopolis is a discount program with **hundreds of available discounts** across the country on things like entertainment, car rentals, hotel stays, electronics, flights, food, wellness and attractions. To sign up, visit www.perkopolis.com and use your OOWA Member ID to create an account.

Park N Fly is providing a **Corporate Discount** to OOWA Members (Toronto Self Park $15.95 per day, $59.95 weekly. Toronto Valet $17.95 per day, $79.95 weekly. More locations available) Call Krista for the special discount code. 1-888-905-6692 ext. 102

The OOWA Insurance Plan is administered by SeptiGuard, a company within the Verge Group. Coverage includes: General Liability, Pollution/ Environmental, Impairment/ Underground tank policies, Contractors Equipment, Barging and Waterborne Risks, Professional Liability for inspectors, designers etc., Vehicle/ Fleet coverage and Discount Home and Auto rates. Contact Scott Mullen: 905-688-9170 ext. 132 or email at: mcmullen@vergeinsurance.com

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OOWA members save **10% at Mark's Work Warehouse** on the following items and more; Carhart merchandise, Dakota workwear, coveralls and overalls, casual wear, work gloves, and all CSA footwear. Present your card at any location to receive your discount.

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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 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/

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Applicable Law: Is it Really Applicable?

By Julie Ingram, Public Health Inspector,
Safe Sewage Disposal Program, Peterborough Public Health

As a regulator for on-site sewage systems within Peterborough County, I do a lot of driving. I am frequently rushing site-to-site attempting to arrive on time to my scheduled inspections and consultations. Typically, there is a designated geographical region that I am responsible for as the *area inspector*. This is helpful because it allows me to become familiar with the roadways, properties, topography, soil conditions, and the lay of the land.

Making these drives on a daily basis, I typically see the same things over and over, with minor changes. There might be two ducks in the pond one day, and a few ducklings with them the next; that rusted out car is still hiding in the forest beside that fire route; that store still hasn't fixed the light in the south-west corner of the parking lot; and of course…POTHOLE! But this year, things have been quite different.

I have seen water everywhere. Standing water, drainage ditches that look like flowing rivers, flooded roads, and surface water levels to extents that have never been seen before. But it wasn't just this area, flooding happened across the province.

We've all probably heard about the "100-year flood". This describes the chance of an area experiencing a severe flooding event; it does not mean that it will only happen once in one hundred years.[1] Unfortunately, communities may receive back-to-back extreme flooding events, or events several years apart.

Flooding has multiple causes including natural weather-related and human-driven elements. Flooding also seems to be happening more frequently, which could be linked to heavier precipitation events, quicker snow-melt and more severe storms, all of which, are linked to climate change.[2]

When it comes to on-site sewage systems, we need to be aware that flooding events are happening more frequently and becoming more severe. A flood can cause serious damage to a sewage system and, a sewage system that becomes flooded can have detrimental impacts on the environment including the leaching of untreated sewage and nutrients in waterways.

We should all have a common goal of protecting human health and the environment, we certainly do as regulators. Anything that we can do to mitigate the effects of flooding on sewage systems and to reduce the impact of sewage systems when it comes to flooding events must be considered. This is where *applicable law* becomes important.

The Building Code Act indicates that a chief building official shall not issue a building permit if the proposed building, construction, or demolition will contravene the Act, the building code or any other *applicable law*.[3]

This applies to the installation of on-site sewage systems. It is the applicant's responsibility to determine whether or not the project is subject to applicable law however, it is also the regulator's responsibility to confirm the presence or absence of applicable law and hold the application until compliance is demonstrated. Ultimately, an application for a permit for an on-site sewage system is considered to be incomplete without demonstrating such compliance.

You may be asking yourself – "What exactly is applicable law?" To find that answer, I'd advise you to consult the extensive list that is outlined in the OBC, Division A, section 1.4.1.3. In Peterborough County, there are several common aspects of applicable law we routinely encounter when it comes to on-site sewage systems.

Our local municipalities have a 30-metre development setback in place, which also applies to on-site sewage systems; the specifications vary from area to area and depending on whether the system is being installed as a replacement or to accommodate new construction.

However, if a 30-metre setback cannot be obtained for the on-site sewage system but one can be installed that meets the OBC 15 metre (or more) setback, then an applicant may apply for relief to the by-law through the municipality by way of a zoning by-law amendment or a minor variance. The health unit is asked to provide comments to the municipal council regarding the application.

The other major aspect of applicable law that we encounter, which is what most people are familiar with, is when an on-site sewage system is located within an area that is regulated by a conservation authority. Locally, we are fortunate to have an excellent geographic information system (GIS) operated by the County of Peterborough. This system allows us to search for a property and determine whether or not it is located in a "regulated area".

Additionally, as projects become larger in scope and scale, we

find that we are speaking with our local conservation authorities more often about projects which has helped to streamline the process of determining whether or not a parcel of land is regulated.

Building this relationship between ourselves as regulators for on-site sewage systems and the conservation authorities has proven to be valuable for many reasons, but especially when it comes to failing sewage systems when the applicable law process needs to be expedited.

Conservation authorities are mandated to ensure the conservation, restoration and responsible management of Ontario's water, land and natural habitats.[4]

In Ontario, conservation authorities play a significant role in the protection of people and property when it comes to flooding.[5]

As we all begin to recognize that flooding is a significant threat to sewage systems, and sewage systems are a significant threat to public health and the environment when they are impacted or damaged by flooding, we should be relying on the expertise and knowledge of conservation authorities with respect to local watersheds and flooding risks.

Remember, our common goal when it comes to on-site sewage systems should be designing, approving and installing safe systems that will perform as expected with respect to the treatment and disposal of domestic sewage and will not be impacted or have impacts on the environment during severe flooding events.

This means relying on the expertise of all parties involved including the designer, installer, property owner, regulator, and the conservation authority.

Let's work together to protect and conserve our environment and maintain a positive reputation for the on-site sewage system industry.

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Municipal Responsibility Agreements, Requesting Revisions to D-5-2

By Trish Johnson

Trish is a member of OOWA's Board of Directors and Chair of the External Relations Committee. She is an independent consultant specializing in environmental policy, planning, approvals and project management for small systems.

For the past several years, OOWA has been delving into the challenges facing decentralized and communal systems through special consultation events and by hosting a panel comprised of planning and engineering experts at our annual conference. Through these activities we have learned that the main barrier to more small system implementation is the (1995) Ministry of Environment, Conservation and Parks (MECP) D-5 Series Guideline. Specifically, the D-5-2 requires a signed responsibility agreement for private communal servicing from small town councils. This requirement has been refused in numerous cases and has stopped some private development projects from proceeding.

For well over a year we have been told that the D-5 Guideline is due for revision by the MECP. As yet, we do not have any confirmation that this review is officially in process, or what timing we can expect for the much needed modernization of the D-5-2 requirement for signed MRAs.

To raise awareness and gather support for change of this old guideline, OOWA drafted a petition and collected signatures from attendees at our 2019 conference. The petition was presented to the MECP at a meeting in March, with a request for action on the D-5-2 Guideline.

OOWA would like to continue to raise awareness about this important issue. Please see the petition below. If you would like more information, please contact trishjohnson.canada@gmail.com

---

Petition Request for modernization of the MECP's D-5 Guideline as part of Ontario's Open for Business initiative

Communal servicing is identified in the Provincial Policy Statement's infrastructure servicing hierarchy; and the use of communal systems is needed to meet provincial density targets for future rural growth.

However, the Ministry of Environment Conservation and Parks (MECP) D-5 Guideline for Planning for Sewage and Water Services, specifically, Procedure D-5-2 Application of Municipality for Communal Water and Sewage Services (1995), is outdated and presents an obstacle to the implementation of private communal services. Increased activity in the communal wastewater sector has the potential to create small business jobs and accelerate rural economic development activities. Modernization of D-5-2 is important to support efficient rural sector growth and should be a priority for Ontario's Open for Business initiative.

OOWA believes that private communal servicing is important for cost-effective rural development and sound environmental protection for Ontario's future. OOWA respectfully requests that the Procedure D-5-2 be immediately revisited and that this process include stakeholder consultation. "

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Effects of Water Softener Backwash on Onsite Systems

By Chris Kinsley, Ph.D., P.Eng.,
Assistant Professor, Civil Engineering Department, University of Ottawa
& Associate Director, Ontario Rural Wastewater Centre

The impact of water softener backwash on onsite systems is a topic of interest to all stakeholders in the onsite wastewater industry. Do you design and build systems to accept the backwash or do you divert the backwash to the basement sump?

How Does a Water Softener Work?

A water softener is designed to reduce hardness in water by removing calcium (Ca++) and magnesium (Mg++) ions, which have a +2 charge. This is accomplished by an exchange resin which is saturated with sodium (Na+) or Potassium (K+) ions, which have a +1 charge. When Ca++and Mg++ ions in the well water flow through the water softener resin they replace either Na+ or K+ ions on the resin due to their higher charge. When the resin is saturated with hardness ions a backwash cycle is initiated which flushes the resin with very high concentrated salt solution (either NaCl or KCl), reversing the process and flushing out the Ca++ and Mg++ ions with the backwash water.

There are two types of water softeners. The older models tend to be time based, are inefficient, use excessive salt and produce excessive backwash waters. The newer models are Demand Initiated Regeneration (DIR) water softeners, which are much more efficient. *It is strongly recommended to use an NSF/ANSI Standard 44 efficiency rated DIR water softener.*

A water softener backwash will typically occur 1-2 times per week and will produce 190L per backwash. This additional flow will need to be included in the design flow calculation if the backwash is being discharged to the onsite system.

What are the Potential Impacts of Water Softener Backwash on Onsite Systems?

The potential impacts related to water softener backwash will be discussed below based on the existing research literature.

Hydraulic Loading

Water softener backwash discharges up to 190L once or twice a week. The volume is similar to that of a washing machine and is usually programmed to discharge at night, when household water use is low. Additionally, the backwash flow should be included in the onsite system design flow (Q). Therefore, hydraulic loading should not an issue.

Septic Tank

The potential issues of water softener backwash on septic tank performance are: 1) salt toxicity to anaerobic microbes (methanogens), 2) concrete corrosion and 3) TSS settleability.

1) Sodium is moderately harmful to anaerobic microbes at 3.5 to 5.5 g/L and very harmful at 8 g/L (Roberts Alley, 2000). Sodium in septic tank effluent (STE) receiving water softener backwash in two studies was 0.6 ± 0.4 g/L (Kinsley, 2006) and 0.3 ± 0.2 g/L (Tyler et al, 1977), suggesting that water softener backwash does not impact the anaerobic microbes in septic tanks.

2) Hydrogen sulfide (H2S) is produced from the anaerobic decomposition of organic matter in the septic tank. H2S converts to sulphuric acid (H2SO4) under contact with oxygen and is the primary cause of concrete corrosion. The salt from water softener backwash is not responsible for corrosion of concrete tanks.

Is water softener backwash responsible for concrete corrosion?

3) A comprehensive lab and field study funded by WQRF (2013) found that the addition of water softener backwash from efficiently operated DIR water softeners helped to promote settling with lower effluent TSS from the septic tank. Furthermore, diversion of backwash water away from the septic tank increased effluent TSS.

Aerobic Treatment Units

The impact of water softener backwash on the performance of aerobic treatment units has been a concern, with many treatment unit manufacturer's recommending that water softener backwash be diverted from the onsite system (with warranty implications).

An NSF Study in 1978 found that water softener backwash improved biological action and reduced BOD in aerobic systems. However, Novak reported that an imbalance of the ratio of sodium and potassium ions (+1 charge) to calcium and magnesium ions (+2 charge) of greater than 3 can lead to poor settling (WERF, 2011). This suggests that backwash from older, inefficient water softeners could lead to reduced settling in aerobic treatment units.

Leaching Bed

Sodium can cause clay to swell and possibly reduce soil hydraulic conductivity. This could impact leaching beds installed in clay soils. A study by the University of Wisconsin-Madison found no impact of water softener backwash upon soil hydraulic conductivity and that Ca++ and Mg++ counteracted the impact of Na+ (Cory et al, 1977). Therefore, backwash water should not be diverted away from the leaching bed.

Conclusions

In conclusion, the backwash from modern efficient DIR water softeners can and should be discharged to onsite systems with no observed negative, and possibly positive effects on water quality. Older, inefficient time initiated water softeners should be replaced with an NSF/ANSI Standard 44 efficiency rated DIR water softener.

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MEMBER PROFILE

Katie Dukelow
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KATIE DUKELOW
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Name of Business:
Ricor Construction (1492708 Ontario Ltd.)

Owners: Richard Bucknell

Services:
Commercial and residential on-site sewage system installation, grading, excavation, maintenance, repairs, design and consultation, GPS field to finish stakeout service, sewer, culvert and catch-basin installation.

Service Area:
Durham Region, York Region, Kawartha Lakes, Peterborough, Simcoe County

Number of Years in Operation: Ricor Construction has been in operation since 2004. I have been with Ricor since November 2018 and involved in the on-site wastewater industry since 2016.

What got you started in the onsite wastewater industry?
In the summer of 2016 I was hired as an administration assistant for a small septic system company which had recently undergone a change in ownership. I began educating myself on building code and maintenance requirements in order to better assist clients who phoned the office looking for information. My role progressed into estimating, organizing and scheduling installation projects. I obtained my BCIN in the spring of 2018 and began designing residential on-site sewage systems for the company. I enrolled in the in-development registered professional program with OOWA to further my education and expertise which led me to my current position with Ricor Construction.

Give us one reason/secret for your success?
I genuinely enjoy learning and educating myself about things that interest me, such as the wastewater industry. I am passionate about finding out the 'whys and hows' of the world. I have been able to develop skills through education which have led to new and expanding career opportunities.

What was the most challenging onsite job you worked on or participated in?
I haven't experienced a specific job that has been more challenging than others but recently I have been estimating projects with larger scopes of work and complexity than I have in the past which has been challenging but rewarding. I enjoy building upon my experience and honing my expertise. In the future, I hope to become even more involved with our projects.

If you could change one thing about the onsite/decentralized industry, what would it be?
I believe homeowner education needs to be addressed regarding on-site sewage system use and responsibilities. As industry professionals we must ensure the end user is operating and maintaining the systems we manufacture, design and install as they should be. Educating existing and future septic system owners may help them better understand the costs involved and the impact a malfunctioning system can have on the environment and our drinking water.

onSITE treatment • technology • innovation • reuse • recycle

Ontario Onsite Wastewater Association Newsletter

11th Annual April 11–14, 2010 | Onsite Wastewater Conference & Exhibition Hilton London Hotel, London, Ontario

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Volume 11/Issue 1
Spring 2010
Conference Edition

To submit an article or place an advertisement contact Denis Orendt at dorendt@yahoo.ca.

OntarioOnsite WastewaterAssociation
Visit us at www.oowa.org

Beaverton Tim Hortons and Gas Bar Rural Service Project

by Michael Varty, P.Eng. Project Engineer, Environment, GENIVAR

By nature, most engineers thrive on projects that pose a challenge. It is when faced with challenges where the results are not pre-determined and where doubt can be found among peers, that we perform at our best and where we find the most satisfaction upon completion. GENIVAR's recent Beaverton Tim Hortons and Gas Bar Rural Service Project began in 2008 when we were retained to address a variety of interests related to a one-hectare parcel of land in central Ontario. There were many issues with this proposed development, as the location had no municipal sewage service near the site, resulting in the requirement of private water and wastewater systems. The project was a challenge from the outset and the team was well aware that they would be required to "think outside of the box" on this assignment.

The Client was informed that the sewage system needed for this development concept would require Ministry of the Environment (MOE) approval as opposed to municipal health department approval due to the sewage flows for the development exceeding 10,000 L/day. This level of sewage flow would classify the system as a large sewage disposal system under Section 53 of the *Ontario Water Resource Act*.

The effluent from Tim Hortons restaurants also posed a great challenge to the team due to their unique high strength treatment requirements, with some treatment parameters, such as BOD5 and Total Suspended Solids existing in concentrations up to 10 times greater than that of domestic sewage.

Effluent from fast food restaurants is notoriously hard to treat, and often requires highly

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expensive practices in order to adhere to provincial standards. Typical restaurant effluent strengths; secondary treatment levels (which are recognized as an advanced treatment level, and in some cases will reduce the size of the required leaching bed); and our effluent objectives as per the Certificate of Approval from the MOE are shown in Table 1.

GENIVAR was required to design a sewage treatment system that could treat this effluent stream to a tertiary treatment level, which is the highest level of treatment recognized in Ontario. The MOE also required a significant level of de-nitrification in order to protect the local shallow groundwater resources. As more and more treatment systems in Ontario are requiring de-nitrification, it is becoming clear that de-nitrification of sewage can pose significant design challenges.

At the outset of the project, GENIVAR was in contact with Tim Hortons corporate staff in search of typical water usage and effluent strength information. This data proved critical when specifying and sizing the various components of the system. The effluent quantity, quality, and site specific geologic and hydrogeologic information was provided to the MOE for their review and comment, and it was agreed that the approach GENIVAR was taking seemed reasonable.

Although there is considerable sentiment within the industry that the coffee, grease, sugars, and chemicals within this waste stream make it "untreatable," GENIVAR felt that the alternative of using holding and "dead end" tanks to store this waste for future municipal treatment was undesirable from a cost and operational standpoint.

Knowing that this waste stream was going to require special attention, GENIVAR set out to design a system that would be very robust and effective in meeting the requirements of this site, while also being a cost effective solution for the Client.

Balancing of the sewage was provided prior to the treatment system in order to remove the peak flows, thus providing a more consistent effluent stream. The treatment system itself involved the use of two separate treatment processes. The first process being a custom engineered hybrid of a fixed film and suspended aeration system called a moving bed bioreactor, and the second being two pre-engineered moving bed bioreactor units in parallel. These pre-engineered units would typically be found in residential applications, however given that the sewage effluent had already been treated to domestic levels, it was appropriate and cost effective to use them in this application.

The first treatment unit was provided to reduce the high effluent strength to more reasonable domestic levels. The second stage of treatment was provided to further reduce the effluent strength to the MOE objective criteria. Ultimately the sewage would be disposed of in a fully raised area bed after treatment.

This design concept was implemented, and GENIVAR supervised the installation to assess adherence to our design, and to ensure where deviations were required that they were made with good engineering practice. Where adherence to the design was not possible, GENIVAR provided prompt alternative solutions to ensure a seamless construction schedule, saving the Client time and money.

Engineering supervision of the installation process helps to ensure that installation errors will not hamper the treatment process, and that there will be a record of all of the installed components. Ultimately, GENIVAR provided a certification letter to both the Client and the MOE, confirming that the installation was completed appropriately.

A third party was retained to monitor the results on a monthly basis and GENIVAR has been retained to analyze these results and write the required reports to the MOE detailing the findings. There were a total of four sampling events at the development site. Somewhat expectedly, the first two did not meet our objectives, which is common in treatment plants, as they require time to grow microbiological organisms within the

Table 1 — Effluent Information

Parameters (mg/L)	Typical Restaurant Strength	Secondary Effluent Quality	Effluent Objective		
Sampling Date				August 26, 2009	October 1, 2009
$CBOD_5$	500–2,200	30	10 (1)	4.3	**13.8**
TSS	400–1700	30	10 (1)	9.3	**27.0**
Total Phosphorous	10–15			12.9	11.2
TKN	20–85			8.58	11.1
Ammonia-N	12–50		—	4.12	3.43
Nitrite	—		—	<1.0	<0.5
Nitrate			10 (1)	**39.6**	**15.2**
Nitrite and Nitrate	—		—	39.6	15.2
E. Coli (CFU/100mL)	—		—	350	90
pH*	—		—	7.69	7.80

* pH is unit less
(1) As measured prior to entering the subsurface sewage disposal system (treated effluent)
Bold concentrations indicate an effluent objective was exceeded
Blanks indicate parameter was not analyzed

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treatment facilities. The final two san
promising treatment results.

Average results for the final two
the following:

- CBODS = 9 mg/L
- TSS = 13 mg/L
- TKN = 10 mg/L
- Ammonia – N = 4 mg/L
- Nitrate = 22 mg/L

from page 9

treatment facilities. The final two sampling events showed very promising treatment results.

Average results for the final two sampling events of 2009 yielded the following:

- CBOD5 = 9 mg/L
- TSS = 13 mg/L
- TKN = 10 mg/L
- Ammonia – N = 4 mg/L
- Nitrate = 22 mg/L

As displayed, the treatment system is performing extremely well given the sewage characteristics, although some additional work, possibly including the addition of an external carbon source, may be required to aid in the de-nitrification process.

GENIVAR will continue to monitor the performance of the system and provide recommendations to the Client and the treatment system manufacture in the future.

It must be noted that the developer deserves a great deal of credit for the success of the project thanks to the support they provided. For more information on this project, please contact Michael Varty at michael.varty@genivar.com.

Beaverton Rural Service Project

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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.

An OOWA RPP designation also sets you apart from your competition and can serve as an effective marketing tool. Pursuing this designation also builds your career by positioning you as a desired individual for new opportunities.

What designations are available?
Below are the designations available through the RPP:

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

How do I enroll?
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!

Key Toxins to Keep Out of Septic Systems

Tell your customers to avoid these 5 cleaning products to keep their onsite system working

By Sarah Heger, Onsite Installer Magazine

There are many products your customers use in their homes and commercial properties that can harm the bacteria in a septic system. Below are five key ones to tell them to avoid in order to keep the bacterial community as healthy as possible.

1. Quaternary ammonia

Quat compounds are exceptionally chemically stable water-soluble organic salts, and the chemical bonds are difficult to break so they have a long biocidal effect. The problem is that quats can be toxic to the microbes in our septic systems and in the soil. There are literally hundreds of quats in existence and in common use in home, commercial and industrial products. A review of the ingredients of many products will reveal their presence (www.householdproducts.nlm.nih.gov). The use of quats should be avoided. For in-home use, natural cleaners such as baking soda, vinegar and borax are preferred along with limited amounts of chlorine and/or other biodegradable cleaners. In commercial kitchens, oxidative sanitizers like bleach or iodine are recommended over quaternary ammonia.

2. Antibacterial soaps

The use of antibacterial or disinfectant products in the home can and does destroy both good and bad bacteria in the treatment system. Antibacterial products are not needed. A recent study found no difference in infectious disease rates in 228 households that used antibacterial items (hand-washing soaps, cleaners, laundry detergents) versus those that used regular products. In addition, several studies have suggested that triclosan — an ingredient used in many antibacterial items — may breed resistance to germs. Natural cleaners and small amount of bar soap are preferred.

3. Toilet bowl cleaners

Many commercial toilet-bowl cleaners contain bleach and some even use hydrochloric acid. While the acid does effectively dissolve the calcium carbonate deposits in the water, it is also a harmful chemical that will kill off the bacteria in your septic system. Every-flush toilet sanitizers should also be avoided. If cleaned regularly, a brush will keep the toilet clean. The best toilet cleaners for septic tanks are ones made from natural and plant-based ingredients since they are biodegradable and use cleaning agents that easily break down such as baking soda, vinegar and/or borax.

4. Drain cleaners

Drain cleaners work by dissolving the clog with harsh chemicals, but they can also kill the good enzymes and bacteria in the septic tank that help to break waste down and can be damaging to the tank itself. If the plug is in the elbow under the sink, taking apart the plumbing and cleaning it out will typically solve the problem. If not, first try plunging, hot water or baking soda and vinegar. Finally, a snake may be needed if the plug persists.

5. Bleach

Bleach works to keep white clothing white, but if overused, it can wreak havoc on septic tanks. Small amounts of these chemicals, such as the amount when washing one load of laundry, shouldn't be too harmful. However, using color-safe bleach in every load or overusing bleach across a home can cause serious damage to the bacteria in your tank. Avoid running multiple white loads back to back. Whenever possible, do not use bleach. Alternatively, baking soda is great for breaking down stains in the laundry.

Many chemicals can damage septic system bacteria. When customers are looking for alternative cleaners, a great resource is the Environmental Working Group website where they give varying products a grade of "A to F" based on their impact to public health and the environment.

This article first appeared in the June 13th Online Exclusive of the Onsite Installer Magazine website, published by COLE Publishing Inc., www.onsiteinstaller.com. It is reprinted by permission.

MEMBER PROFILE

Andrew Hellebust

Rivercourt Engineering (President),
Canadian Shield Consultants (Senior Engineer)

ANDREW HELLEBUST

Name of Business:
Rivercourt Engineering, Canadian Shield Consultants

Owners:
Andrew Hellebust (Rivercourt)

Services:
Design of on-site sewage systems and distributed water infrastructure.

Service Area:
Ontario

Number of Years in Operation:
25

What got you started in the onsite wastewater industry?
I was initially attracted by treatment wetlands and ecological engineering. I became the first employee of a new Canadian company initially called Living Technologies that was to design "living machines" based on the ideas of Canadian biologist John Todd. After designing a few greenhouse systems that reused treated effluent for toilet flushing (The Body Shop, Kortright Centre for Conservation, The Toronto Waldorf School), I concentrated more on outdoor treatment wetlands and particularly the Aqua Wetland System.

Give us one reason/secret for your success.
I have welcomed projects outside of domestic sewage treatment and tried to think outside the box when applying a wide range of technology options. We have been using wood chips to reduce nitrogen for over 15 years to meet groundwater impact objectives. We have taken on landfill leachate and wastewater from wineries, abattoirs, bakeries, greenhouses, cannabis facilities, remote workcamps and treated impacted stormwater. Technologies used have ranged from constructed wetlands taking up a lot of area to compact advanced oxidation reactors and membranes.

What was the most challenging onsite job you worked on or participated in?
Breweries produces high strength process water. Staff need time to become familiar with best management practices and extra hauling may be necessary initially. Bench Brewery in Niagara is working to export their water and organics as useful resources for the neighboring agricultural community. Sanitary sewage is handled through a Waterloo Biofilter system with nitrogen removal while brewery process water is treated by Econse with the goal of reusing water for clean-in-place processes inside the brewery and exporting water for irrigation. Spent grain is taken by farmers and solids from treatment are exported to a digester to produce electricity.

If you could change one thing about the onsite/decentralized industry, what would it be?
Regulations should be informed by field studies that provide feedback on how all on-site sewage systems are performing, whether treatment is from septic tank only or with additional technologies. Technology should be updated to reflect higher strength wastewater due to water efficiency and performance targets should take into account mass removal not just concentration. On-site and communal technologies are achieving better treatment levels than most municipal treatment and OOWA is working with the Ministry of Environment to identify and update policies that still discourage small communities from implementing these technologies.

Where do you see the onsite industry going?
I would like to see experts in on-site technology start to work more in communal and urban situations. Distributed water infrastructure, i.e. water management on a lot or cluster level, can be integrated with centralized water and wastewater infrastructure to accommodate more users and to delay investments in central plants. Systems that capture and concentrate nitrogen and phosphorus could become more widely used as we look to produce nitrogen fertilizer not dependent on natural gas and seek to avoid importing phosphorus fertilizer from unstable regions.

Bishop Water Technologies and Neo Chemicals & Oxides introduce a rare earth-based coagulant to help wastewater treatment plants affordably achieve ultra-low phosphorus limits

By Kevin Bossy and Christine Gan, Bishop Water Technologies

Bishop Water Technologies and Neo Chemicals & Oxides introduce a rare earth-based coagulant to help wastewater treatment plants affordably achieve ultra-low phosphorus limits

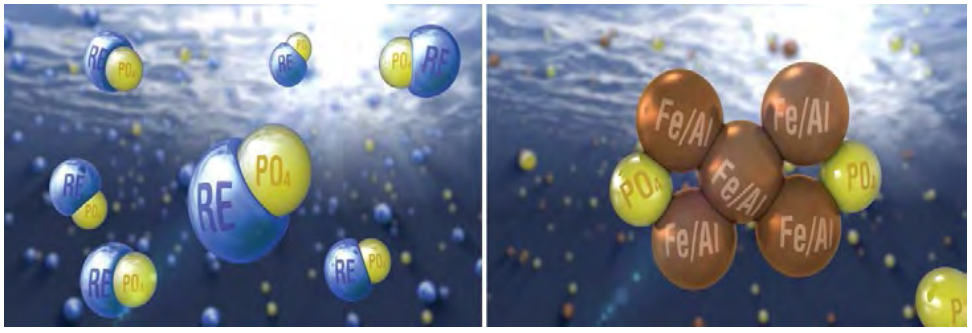
- New Neo RE300™ rare earth-based coagulant enables wastewater treatment plants to chemically achieve regulatory requirements for ultra-low phosphorus limits in treated effluent - as low as 0.07 mg/L.
- Operators can easily replace conventional ferric- or alum-based coagulants with RE300 to improve clarifier performance and potentially eliminate the need for costly tertiary filtration systems.
- Neo RE300 rare earth coagulant offers a simple, cost-effective method for wastewater plants to dramatically reduce phosphorus discharge to sensitive water bodies that are at risk of algae blooms or eutrophication.

Renfrew, ON, May 7, 2019—Bishop Water Technologies and Neo Chemicals & Oxides are introducing a new rare earth-based coagulant to the Canadian wastewater industry that can help wastewater treatment plants easily and cost-effectively achieve ultra-low phosphorus limits—as low as 0.07 mg/L—without the need for costly tertiary filtration systems.

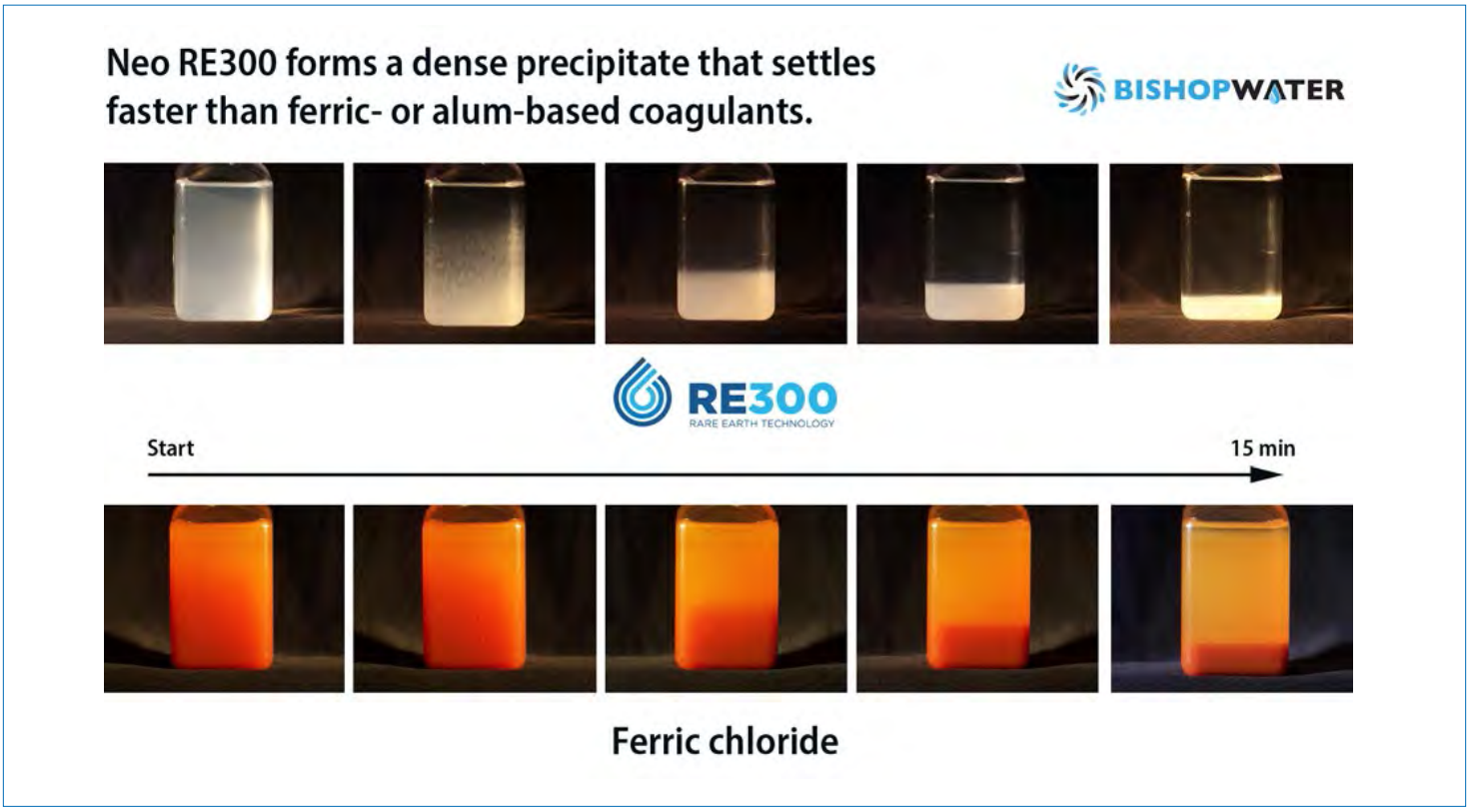
Neo RE300 is a rare earth-based coagulant that offers a simple, affordable way to achieve significant phosphorus reduction in treated effluent by simply replacing conventional ferric- or alum-based coagulants with this advanced treatment technology. Neo RE300 could also help to significantly enhance the efforts of regulators and conservation authorities working to protect sensitive water bodies from eutrophication and algae blooms linked to phosphorus discharge.

Neo RE300 outperforms conventional coagulants because the rare earth minerals it contains bond more tightly to phosphorus to form a denser, heavier precipitate that settles about two times faster than alternatives. This not only improves clarifier performance, but also dramatically reduces both the amount of coagulant used and the volume of sludge produced to achieve high phosphorus removal.

"Neo RE300 is a game-changing technology that could help communities achieve stringent phosphorus limits without spending millions in capital costs for filtration equipment and ongoing operating costs," said Kevin Bossy, CEO, Bishop Water Technologies. "Many wastewater treatment plants already have chemical feed equipment in place as part of their phosphorus reduction programs that are capable of delivering Neo RE300. Enhancing the performance of this equipment and achieving ultra-low phosphorus levels could be as simple as replacing the current ferric or alum-based coagulant with Neo RE300."



NEO RE300 binds tightly to phosphorus at a 1:1 molar ratio so much less is needed to achieve excellent phosphorus removal. Ferric or aluminum-based coagulants adsorb to the surface of phosphorus at about 5:2 molar ratio so much larger amounts are needed to reduce phosphorus levels in treated effluent.



RE300 forms a dense precipitate that settles faster than ferric- or alum-based coagulants, helping to improve clarifier performance and achieve ultra-low phosphorus limits without the need of costly tertiary filtration systems.

"Over 50 wastewater plants in the United States are already using Neo RE300 to achieve stringent phosphorus limits, optimize their treatment processes, and protect sensitive aquatic ecosystems from excess phosphorus discharge," said Alan Weber, General Manager – Water Technologies, Neo Chemicals & Oxides, an affiliate of Neo Performance Materials, Inc. (TSX: NEO). "We are confident that Neo RE300 will deliver the same benefits to Canadian wastewater treatment plants, and we look forward to working with Bishop Water Technologies as our representative in this important marketplace."

Neo RE300 rare earth-based coagulant provides a number of other benefits that can help wastewater treatment plants achieve significant operational efficiencies and cost savings over conventional coagulants, including:

- Reduce sludge production by up to 70%;
- Achieve up to 30% higher attained solids in dewatered sludge;
- Maintain chemical dosing and performance in temperatures as low as -40C;
- Inhibit the formation of struvite;
- Safer for the environment; consistently passes Whole Effluent Toxicity testing; and
- Safer for operators; rated non-hazardous.

OOWA's Best Practices Series:
How to Decommission an Existing Onsite Sewage System

Produced by the OOWA Onsite Technical Committee

Decommissioning Existing Onsite Sewage Systems

Decommissioning existing onsite sewage systems is an important part of our industry. When existing systems are repaired, upgraded or replaced, some or all components of an existing system may require decommissioning. It is important that onsite sewage system components are decommissioned properly in order to protect the safety of property owners and their visitors, as well as the ensure continued protection of the environment. Unfortunately, there are no provincial guidelines or regulations for this practice. OOWA has developed the following recommendations based on best practices currently used by industry members.

Tanks and Chambers

Existing tanks and chambers should be properly decommissioned in order to prevent future collapse, which could pose a significant safety risk. To decommission concrete tanks and chambers, the contents of the tank should be pumped out by a licensed sewage hauler, the inlet and outlet pipes should be disconnected and one of the following methods may be used:

a. Backfill the tank with clean sand or granular material. Ensure that inlets and outlets are plugged to prevent water from pooling in the tank; or

b. Crush the tank in place and backfill with native material or clean fill. Ensure during crushing that the bottom of the tank is broken to prevent water pooling; or

c. Remove the tank and dispose of the material according to local regulations. Backfill the excavation with native material or clean fill.

If option 1a) is preferred consideration may be given to pressure washing the tank and having the washwater removed by the hauler, prior to backfilling. Any backfilled areas should be compacted suitably to prevent future settling. Plastic access risers or lids should be removed prior to backfilling/crushing and disposed of in accordance with local bylaws.

For pump chambers or chambers with electrical components the power supply must be disconnected, and electrical devices should be removed and disposed of in accordance with local regulations. Devices containing mercury must be removed and disposed of at approved hazardous waste receiving facilities.

Leaching Beds

Leaching beds may be decommissioned in one of two ways, depending on the intended future use of the leaching bed area. If the area of the leaching bed is not required for the construction of a replacement system, or any other type of building or structure then the leaching bed may be abandoned in place, as follows:

1. Disconnect and plug at both ends any underground sewer piping leading to the leaching bed, for example the discharge pipe from the septic tank to the header pipe or distribution box. Sewer piping may be plugged with grout or another sealant, or capped. Sewer pipe may also be removed and disposed of according to local regulations.

2. If a distribution box is present, it should be removed or decommissioned according to the steps outlined above for tanks and chambers.

3. If inspection ports are present, the ports should be removed and backfilled. Any piping should be cut off and plugged prior to backfill.

4. Once all connections have been disconnected the remainder of the bed may be abandoned in place.

5. If any part of the leaching bed has failed at the surface material should be removed and replaced with at least 300 mm of clean soil to avoid human contact.

If the area of the leaching bed is to be used for another purpose (i.e. construction of a building, etc.), the leaching bed should be removed. All stone and pipe, as well as any underlying soil showing signs of biomat contamination. i.e. black clogging material should be excavated and removed. Material removed should be disposed of in accordance with local regulations. The area may be backfilled with clean sand or granular material suitable for future construction. If a replacement leaching bed is proposed in the same area, care must be taken to ensure that all clogging material is removed and underlying receiving soils are well scarified prior to the placement of any fill material.

To view all OOWA's Best Practice Documents, please visit our website at www.oowa.org/resources