VOLUME 19 | ISSUE 1

Onsite

ONTARIO ONSITE WASTEWATER ASSOCIATION NEWSLETTER

treatment | technology | innovation | reuse | recycle

CONFERENCE EDITION 2019

INSIDE

Ontario Onsite Wastewater Association 20 YEARS

20TH ANNIVERSARY

OOWA
Board of Directors

PRESIDENT'S MESSAGE

Spring is just around the corner and we are entering what appears to be yet another busy season across our industry. For those joining us for our 2019 Annual Conference, welcome! Thank you for taking the time out of your schedule to join us as we celebrate our 20th year as an association. This is quite a milestone and we should be proud of our growth and accomplishments over the years. As usual, our staff and committee volunteers have worked hard to put together two full days of information sessions, including technical talks and panel discussions, in addition to offering our popular Sunday afternoon training sessions to complement the rest of the conference program. Our trade show floor will once again be full of dedicated suppliers to bring you the latest information on their products and technologies. We hope you find the opportunity to connect with industry colleagues, get up to date information and industry news, and advance your professional skills.

We have some special 20th Anniversary celebrations planned for the conference. This is a good opportunity to reflect on where we started, where we are today, and where we want to be in the future. As I reviewed some of the historical conference proceedings and newsletters over the last few months, I observed that OOWA has made great progress on many issues over our twenty years. However, there are also many things that have not changed all that much. We are still discussing a lot of the same topics, such as improvements in nutrient removal, impacts of nutrient loadings on surface water bodies, and decentralized systems versus big pipe systems. We know we have made great progress in available technology and in some cases legislative changes, but there is still work to be done, and OOWA is in a good position to continue in a leadership role on many of these issues.

Do you think the organization is headed in the right direction? Do you think there are other things we can be doing for our members and for the industry? What kinds of initiatives do you think we should take on? Are there changes to you want to see? OOWA is a member-based organization, so we want to hear from our members! We welcome feedback and input; we are listening. If there is something you feel passionate about, there are many opportunities to become involved on one of our committees to help move our various initiatives forward.

As we grow our membership base across the province, we must continue to work together for the betterment of the industry as a whole. Each of you has an important role to play, so I would encourage you to speak up and get involved. Together we can keep our industry moving in a forward direction, on a path of continuous improvement in all aspects of our industry: policy and regulation, design, technology, installation, service and maintenance. With your help OOWA will continue the strong advocacy work that was initiated 20 years ago to continue to position the onsite wastewater industry as a viable and sustainable alternative to big pipe systems.

Anne Egan
President

Ontario Onsite Wastewater Association 20 YEARS

Ontario Onsite Wastewater Association
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www.oowa.org

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.

Ontario Onsite Wastewater Association 20 YEARS

PAST EDITION ARTICLE

On-site Wastewater Industry Association Underway

In January of 1999, a meeting in Guelph was held between the University of Guelph and stakeholders from the septic industry. The purpose of this meeting was to introduce the industry to the initiative under taken by the University of Guelph to establish On Site training centres in Ontario (the Ontario Rural Wastewater Centre). At this and previous meetings industry representatives expressed a need for an association that would represent all sectors of the industry. Discussions with the two existing associations in Ontario concluded that the Ontario On-Site Wastewater Association would work to represent the entire industry and would work in close coordination and cooperation with both OASE and the Concrete Precasters Association of Ontario. To ensure this end, both OASE and the Precasters are represented on the Board of Directors. The new association will draw its members not only from installers, haulers and precasters but from regulators, government officials, engineers, designers, soil scientists and researchers.

The advantages of one organization representing all stakeholders in the on-site wastewater industry can be far reaching. The January meeting concluded with agreement on the following summary list of association objectives:

- Act as a liaison with the provincial government to affect changes with the regulations governing the on-site wastewater industry.
- Educate the public concerning the value and role of their septic systems.
- Provide a communication forum between all stakeholders concerned with the on-site wastewater industry.
- Establish standards for personnel involved in the installation and maintenance of on-site systems.

An interim board of directors has been established (see side bar). Elections will be held at the Ontario On-Site Association's first general meeting to be held in April 2000 at a conference being organized by the Ontario Rural Wastewater Centre (ORWC).

The membership fee could be used to provide numerous services to its members such as:

Regular Member — [illegible]

Regulator Member — [illegible]

Associate Member — [illegible]

January 6, 1999 meeting of on-site industry members

- this quarterly newsletter
- annual conference (reduced rate for members)
- government lobbying for changes to the Code
- professional accreditation for the industry
- press releases for public education
- an annual directory of suppliers, manufacturers and installers
- membership in the "National Onsite Wastewater Recycling Association, Inc.", the international organization for the onsite industry.

The membership fee for this association will be used for numerous projects as determined by the Board of Directors.

The development team is proposing that you join free of charge (enclosed application form), until January 1, 2000. Creation of the organization will help everyone involved with the industry. Its success depends on your involvement - please join! If you have any questions, please contact:

Terry Davidson
Rideau Valley Conservation Authority
1127 Mill Street Manotick, ON K4M 1A5
(613) 692-3160 ext. 107
tdpenny@rideau.on.ca

Interim Board of Directors

Jim Aitkin
Al Brown
Alex Campbell
David Cooke
Terry Davidson
Craig Jewett
Doug Joy
Philippe Massy
Doug Robinson
Bill Swalbrook
Ahmed Sherif

2019 CONVENTION SCHEDULE
SUNDAY, MARCH 17 – TUESDAY, MARCH 19 2019

SUNDAY, MARCH 17, 2019

10:30am to 11:30am	OOWA Board Meeting	J.E.H. MacDonald Room
12:00pm to 4:00pm	**Registration Opens**	Guest Service Foyer
12:00pm to 6:00pm	Exhibitor Set-Up	Legacy Hall
1:00pm to 4:00pm	**Training Sessions*** – See Page 2 of the agenda for the course options	Waterhouse 1, 4 & 5
4:30pm to 5:30pm	Annual General Meeting	Waterhouse 4
7:00pm to 9:00pm	Town Hall Meeting, Convention Welcome Reception and 20th Anniversary Social	Legacy Hall
9:00pm to 11:00pm	Hospitality Suites	Legacy Hall

MONDAY, MARCH 18, 2019

7:30am to 8:45am	**Registration & Networking Breakfast**	Guest Service Foyer and Legacy Hall
8:45am to 9:00am	**Welcome & Opening Remarks** *Andrea Kahnjin, MPP Barrie-Innisfil, Parliamentary Assistant to the Minister of Environment, Conservation and Parks*	Peninsula Room
9:00am to 10:00am	**Keynote Address: Persepctives on a Water Planet** *Bob McDonald*	Peninsula Room
10:00am to 10:30am	**Networking Break & Exhibit Hall**	Legacy Hall
10:30am to 11:00am	**Session 1A: The Regulator Tells All: The Good, The Bad & The Ugly** *Terry Davidson, RVCA/OSSO*	Waterhouse 1
	Session 1B: The Top 10 Myths of Onsite *Dennis Hallahan, Infiltrator Water Systems*	Waterhouse 5
11:05am to 11:45am	**Session 2A: Evolution and Progression of Decentralized Wastewater Treatment** *Craig Kennedy, newterra*	Waterhouse 1
	Session 2B: Surveying for Onsite System Installation *Andrew Sumary, Van Harten Surveying*	Waterhouse 5
11:50am to 12:20pm	**Session 3A: Evolution of Approvals, Treatment, & Maintenance for Commercial Wastewater Treatment Systems** *Brady Straw & Chris James, Waterloo Biofilter*	Waterhouse 1
	Session 3B: The Advantages of Working Closely with Your Local Equipment Dealer *Sean Madden, Church's Equipment*	Waterhouse 5
12:20pm to 1:30pm	**Lunch & Exhibit Hall**	Legacy Hall
1:30pm to 2:10pm	**Session 4A: OWTS - Consistency Between Certification & Field Results** *Marie Christine Belanger, Premier Tech Aqua*	Waterhouse 1
	Session 4B: Prompt Payment - How the Construction Act Works for Your Business *Eric Gionet, Dooley Lucenti, Barristers & Solicitors*	Waterhouse 5
2:15pm to 2:45pm	**Session 5A: Nutrients – The Unregulated Parameters that Everyone Assumes are Regulated** *Eric Kohlsmith, RVCA/OSSO*	Waterhouse 1
	Session 5B: Cannabis in the Workplace *Randy Dignard, Industrial Safety Trainers*	Waterhouse 5
2:50pm to 3:50pm	**Session 6A: Enabling Communal Systems in Ontario** Obstacles & Opportunities. *Trish Johnson* Saving Villages Through Communal Services. *Joe Gallivan, County of Frontenac* Engineering Best Practices for Communal Systems. *Caitlin Larwa, WSP Canada* Financial Considersations & Options. *Alec Knowles, WSP Canada*	Waterhouse 1
2:50pm to 3:20pm	**Session 6B: Effects of Water Softener Backwash on Onsite Wastewater Systems** *Chris Kingsley, University of Ottawa*	Waterhouse 5
3:50pm to 4:20pm	**Session 6A .5: Enabling Communal Systems Panel Discussion and Q & A** *Jane Zima, SimbiH2O. Moderator*	Waterhouse 1
4:20pm to 5:10pm	**Networking Break & Exhibit Hall**	Legacy Hall
6:00pm to 7:00pm	Pre-Banquet Reception featuring *Sawyer Bullock, "Magician Ordinaire"*	Peninsula Room
7:00pm to 9:45pm	Annual Awards Banquet and Magician Entertainment	Peninsula Room

*SUNDAY, MARCH 17TH TRAINING SESSION DETAILS

TRAINING SESSION #1
Biological Health & Safety Awareness Training
Rick Esselment, ESSE Canada
Waterhouse 1

TRAINING SESSION #2
Pumps, Dosing & Controls
Nico Nirschl, Liberty Pumps
Waterhouse 4

TRAINING SESSION #3
Design of Onsite Systems
Anne Egan, R.J. Burnside & Associates,
Waterhouse 5

TUESDAY, MARCH 19, 2019

7:30am to 8:45am	Registration & Networking Breakfast	Guest Service Foyer and Legacy Hall
8:45am to 9:00am	**Opening Remarks**	Peninsula Room
9:00am to 10:00am	**Keynote Address: Past President's Panel Discussion** How Far We've Come and What the Future Holds for the Next 20 Years *Terry Davidson, John Doner, Eric Gunnell, Don Krauss, Rick Esselment, Anne Egan*	Peninsula Room
10:00am to 10:30am	**Session 1: Experiences from the "Old World" – Lessons Learned from OOWA's German Association Counterpart, the"BDZ"** *Lars Bergmann, Bergmann North America*	Peninsula Room
10:30am to 11:00am	**Networking Break & Exhibit Hall**	Legacy Hall
11:00am to 11:30am	**Session 2A: History of Tertiary Treatment & CAN/BNQ Update** *Eric Gunnell, Gunnell Engineering*	Waterhouse 1
	Session 2B: Insurance for the Onsite Wastewater Industry - Are You Covered? *Scott McMullen, OOWA Insurance Program/Verge Insurance*	Waterhouse 5
11:35am to 12:05pm	**Session 3A: Building Permit Submissions for On-Site Sewage Systems** *Gerald Moore, RSM Building Consultants*	Waterhouse 1
	Session 3B: Why Your Organization Should Be Using Social Media *Emily Baillie, Compass Content*	Waterhouse 5
12:10pm to 12:40pm	**Session 4A: Reduction of Indicator Organisms in Dewatered Septage Using Geotube® Technology** *Kevin Bossy & Christine Gan, Bishop Water*	Waterhouse 1
	Session 4B: Business Planning Succession: What You Need to Consider When Passing the Torch *Julia Wood, Succession Matching*	Waterhouse 5
12:40pm to 1:30pm	**Networking Lunch & Exhibit Hall**	Legacy Hall
1:30pm to 2:00pm	**Session 5A: Exploring Best Practices for Onsite Wastewater System Re-Inspection Program Management** Septic Re-Inspection Programs: Best Practice Framework for Collaborative-based Management in the Lake Simcoe Watershed. *Cameron Curran, University of Guelph*	Waterhouse 1
	Session 5B: Septic Beds and Vegetation: What's Good and What's Bad *Sandy Bos, Township of Muskoka Lakes*	Waterhouse 5
2:05pm to 2:35pm	**Session 5A.5: Septic Re-Inspection Programs: Perspectives from the Field and the Power of Public Education** *Kathryn Stasiuk, WSP Canada*	Waterhouse 1
2:40pm to 3:20pm	**Session 6: OBC Part 8 Panel Discussion** *David Finch, Gord Mitchell, Katherine Rentsch and Brady Straw (Moderator)*	Peninsula Room
3:20pm to 3:25pm	**Thanks & Closing Remarks – Peninsula Room**	Peninsula Room
3:25pm to 3:30pm	**Networking Break & Exhibit Hall: Contest Awards & Prize Draws**	Legacy Hall

CONFERENCE SPEAKERS

KEYNOTE SPEAKER

PERSEPCTIVES ON A WATER PLANET

9:00AM–10:00AM, PENINSULA ROOM

BOB MCDONALD

Bob McDonald is one of Canada's best known science journalists, bringing science to the public for more than 40 years. In addition to hosting Quirks & Quarks, the award-winning science program that is heard by 500,000 people each week, McDonald is also science correspondent for CBC TV's The National and host and writer of the children's series Head's Up.

The host and writer of numerous television documentaries and more than 100 educational videos in Canada and the United States, Bob has also authored four bestselling science books, and contributed to numerous textbooks, magazines, and newspapers, including The Globe and Mail. In addition, he holds twelve honorary doctorates from Canadian universities.

In 2015, asteroid 332324 was officially named "Bobmcdonald" in his honour by the International Astronomical Union.

EMILY BAILLIE

Emily Baillie is a Digital Marketing Professor & Entrepreneur with 12 years of communications and marketing experience. She is a Chartered Marketer and Hootsuite Global Ambassador. She is a member of the Canadian Marketing Association and she currently teaches digital marketing courses part-time at Humber College & McMaster University.

Through her Toronto-based business Compass Content Marketing she has provided digital marketing strategy, training and social media marketing services to clients including GlaxoSmithKline, MasterCard, Northern Ontario Travel, Backyard Living Expo, Lou Dawgs Southern BBQ and TravelWeek.

LARS BERGMANN

Lars Bergmann is the CEO and Co-Founder of Bergmann North America Inc. (BNA). BNA is a German-Canadian Joint Venture that designs, builds and operates advanced onsite wastewater treatment systems for residential and commercial applications and provides control systems with remote monitoring. Prior focusing on BNA, he worked for his family-owned business, the Bergmann AG in Germany. During these 15 years, he was responsible for internationalization of their onsite wastewater products and services in more than 25 countries. Since 2005 he has been actively involved in OOWA's German counterpart – the "BDZ". Lars is the deputy spokesman of the Manufacturer's Chapter within the BDZ.

SANDY BOS

Having held a number of positions with the Ministry of Environment, consulting firms and the Township Muskoka Lakes, Sandy has almost 40 years of experience in the onsite wastewater industry.

KEVIN BOSSY

Kevin Bossy joined Bishop Water Technologies in October of 2008 as CEO. He has built on the success of the Bonnechere Valley Nutrient Processing Facility which utilizes Geotube® dewatering technology. Since Kevin's arrival, Bishop Water Technologies has grown exponentially, with projects and installations across Ontario.

Kevin worked at RBC Capital Markets for 13 years, he then moved to the commercial and personal side of banking, as a Commercial Account Manager. In his role he offered financial advice and products to a variety of businesses - from small home based operations to companies with multi-million dollar sales.

2019 CONVENTION WELCOME

MONDAY MARCH 18TH, 8:45AM-9:00AM IN THE PENINSULA ROOM

ANDREA KHANJIN — MPP BARRIE-INNISFIL

Parliamentary Assistant to the Minister of the Environment, Conservation and Parks

Andrea graduated with honours from the University of Ottawa with a Bachelor of Arts Degree in Political Science. As a student, Andrea was a constituency assistant for a Conservative MP in which taught her how to cut through the government red tape. Being in Ottawa; Andrea was able to work for three cabinet ministers in which she learned great policies, including how to balance the budget and provide opportunities for all of our citizens.

As a Member of the Ontario PC Caucus Services, Andrea knows what it takes to help focus on the things that affect our communities including the continuation of cleaning up Lake Simcoe. Andrea's care and desire to help create a better community and habitat landed her the title of Parliamentary Assistant to the Minister of the Environment, Conservation and Parks.

MARIE-CHRISTINE BÉLANGER

Marie-Christine Bélanger is the current Product Director and Government Relations at Premier Tech Aqua (PTA). Ms. Bélanger joined PTA in 2002. Her functions at PTA have brought her to play key roles on several steering and advisory committees throughout North America, namely with the BNQ, CSA, NOWRA, NSF, local provincial and state organizations. She has taken part in the development and advancement of industry-wide regulations and standards leading to better protection of the environment and the public's health. Ms. Bélanger holds a Physics Engineering degree from Laval University and a Master's degree in Chemical Engineering from L'École Polytechnique de Montreal.

CAMERON CURRAN

Having spent many hours on the lake, Cameron became fixated on the concept of stewardship at a young age. This led him to achieve a Bachelor of Environmental Studies from the University of Waterloo. Since graduating, Cameron has worked on contract for the Ontario Ministry of Natural Resources and Forestry and the Nature Conservancy of Canada. Now pursuing a Master of Science degree from the University of Guelph in Rural Planning and Development, he is completing his thesis on the topic of septic reinspection programs in Ontario. Specifically, looking at multi-stakeholder collaboration as a mechanism for improving water quality in the Lake Simcoe watershed.

RANDY DIGNARD

Randy is one of the senior safety consultants at Industrial Safety Trainers, a company that teaches over 35 safety training programs all over Ontario. He spends much of his time advising businesses how to comply with Ontario Safety laws. Randy has been the recipient of many awards over the years which includes his proudest, a Provincial Award of Merit, recognizing his longstanding commitment to teach safety to high school students. His true passion lies in volunteering his time to teach youth about safety and has taught over 13,000 students to date.

CONFERENCE SPEAKERS

DAVID FINCH

David Finch from Wes Finch & Sons Excavating Ltd. located in Bracebridge serving the Muskoka area, running a 3rd generation family business. Received Bachelor of Business from Wilfred Laurier University, has 30 years' experience in onsite industry. David has been a OOWA member for 18 years with 3 years on OOWA Board of Directors. David is also a director with the Muskoka Shrine Club.

JOE GALLIVAN

Joe Gallivan is the Director of Planning & Economic Development for Frontenac County and a member of the County Planning Directors of Ontario.

He has over 30-years' experience in planning with municipal, regional and provincial governments in both Nova Scotia and Ontario.

Joe has a Master's Degree in Urban and Rural Planning from Dalhousie University.

CHRISTINE GAN

Christine has a Master's degree in Chemical and Environmental Engineering from Queen's University, where she worked to improve wastewater treatment in Canada's rural and northern communities.

Christine researched low-impact methods of biological treatment to augment existing facilities, and she believes in the importance of creating innovative technologies to help create sustainable solutions to water accessibility and wastewater treatment.

Most recently, Christine has been researching the increased pathogen reduction achievable in wastewater sludges by dewatering with Geotubes, the topic of her presentation.

ERIC GIONET

Eric is a partner at Dooley Lucenti LLP located in Barrie, Ontario. Eric's practice focuses exclusively on commercial litigation with an emphasis on construction law. Eric received his B.A. from York University in 1993, his LL.B. from the University of Ottawa in 1996 and was called to the Ontario Bar in 1998. For the past 20 years Eric has provided construction law advice to owners, mortgage lenders, engineers, architects, contractors, trades and surety (bonding) companies involved in all aspects of construction projects. Eric has presented numerous seminars on construction related issues, including the new Ontario Construction Act which contains prompt payment provisions.

DENNIS F. HALLAHAN

Dennis F. Hallahan, P.E., is the Technical Director of Infiltrator Water Technologies. Dennis has over thirty years of experience with the design and construction of on-site wastewater treatment systems. He has authored several articles for on-site industry magazines and has given numerous presentations nationally on the science and fundamentals of on-site wastewater treatment systems. Dennis also oversees a department that is responsible for product research and testing for both Universities and private consultants. He received his MS in civil engineering from the University of Connecticut and his BS in civil engineering from the University of Vermont. He has been with Infiltrator Water Technologies for over 18 years and in his current position as Technical Director, he is responsible for the technology transfer between Infiltrator and the regulatory and design communities. Dennis also holds several patents for on-site wastewater products.

CHRIS JAMES

Chris has a technologist diploma from Sir Sandford Fleming College, and has over 15-years of onsite wastewater industry experience. He is currently the head of the operations and maintenance department at Waterloo Biofilter, with a primary focus on the construction, start-up, and optimization of commercial systems. Chris is also heavily involved in research and development, with extensive first-hand experience incorporating new technologies, treatment processes, and maintenance procedures to improve wastewater treatment.

TRISH JOHNSON

Trish Johnson has over 30 years of environmental management, policy and planning experience with all levels of government.

Most recently, Trish was the Small Systems Practice Lead at WaterTAP Ontario. Prior to WaterTAP, Trish was an Associate and the Small Solutions Strategic Advisor for R.V. Anderson Associates Ltd. At RVA, she was an environmental advisor to several small towns and also worked extensively for Indigenous and Northern Affairs Canada (INAC), including senior support on the National Assessment of First Nations Water and Wastewater Systems in Canada and the policy path forward.

Trish is a long-standing member and previously served on the Board of Directors for the Ontario Onsite Wastewater Association. Trish is known for her passionate promotion of decentralized systems as a means of sustainable environmental protection and affordable growth for small towns and rural areas.

CRAIG KENNEDY

Craig has been part newterra's seasoned water and sewage treatment team since even before receiving his mechanical engineering degree. Working in many roles throughout the business from hands-on shop experience, to design engineering, to sales operations. He now brings his manufacturing and design knowledge direct to the customer with newterra's customized decentralized water and wastewater solutions.

CHRIS KINSLEY, PH.D.

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

CHARLES-EDOUARD MCINTYRE

Charles-Edouard McIntyre is currently the Regional Sales Manager at Premier Tech Aqua for Ontario, Western Canada and Atlantic Canada. He started out his career as a small business owner, starting several companies in the fields of painting, landscaping, sports retail and leadership consulting. He then embarked on a successful corporate career holding various sales and executive management positions. Charles-Edouard also holds a Bachelor's degree in management from the Université de Moncton.

ALEC KNOWLES

Alec Knowles is a Senior Consultant in the Advisory Services group at WSP. Alec has broad experience working with both the public and private sectors, with a focus on operational, economic, and financial data modelling, municipal water rate-setting, wastewater capital project benefit-cost analysis, utility forecasting, and municipal financing studies. Alec's ongoing work includes analysis of reserve fund financing, evaluation of various rate structures, and rate stabilization, incorporating rate equity and predictability.

Alec has a Master's of Applied Science in Transportation Engineering from the University of Toronto, and Bachelor's degrees in Civil Engineering and History from Queen's University.

ERIC KOHLSMITH

Eric has been a Part 8 Building Official for the Rideau Valley Conservation Authority since 2008 working in Tay Valley Township in eastern Ontario. Over the last 10 years he has administered sewage system re-inspections programs in up to 5 local municipalities, and is a member of the OBOA Golden Triangle Chapter Part 8 Committee. Eric was instrumental in developing OOWA's regional meeting template and was part of the initial organizing committee. Eric is also an instructor with the Ontario Rural Wastewater Centre delivering courses related to onsite sewage systems and is also a member of the Technical Advisory Committee for the last round of proposed code changes for Part 8.

CONFERENCE SPEAKERS

CAITLIN LARWA

Caitlin Larwa, P.Eng. is the Lead for the Rural Development Team, Environment at WSP Canada Inc., a Canadian-based engineering consulting firm. Caitlin specializes in all aspects of on-site wastewater system design, including inspections and investigations, design, construction supervision, troubleshooting, and ongoing monitoring. She works with clients across Canada, and has most recently worked on wastewater projects in Alberta and Nova Scotia. Caitlin is a past member of the OOWA Board of Directors, and is looking forward to being involved with OOWA in the upcoming year.

SEAN MADDEN

Sean Madden has been involved in equipment dealerships for 30 years. His first taste with dealerships was traveling with his father during the summers as he called on dealers as the Melroe Bobcat factory representative. After completing his education at Fleming College in the business program he secured a position to sell the Bobcat product line with L.W Matthews Equipment. With a commitment to integrity and customer satisfaction he sells Kubota, JCB and Case equipment with Church's Equipment in Innisfil.

GORD MITCHELL

Gord graduated from Ryerson Polytechnical Institute in 1986, and has been employed at Kingston Frontenac, Lennox and Addington Public Health since then as a Public Health Inspector. Gord has been an onsite sewage system regulator for 33 years, initially under the Environmental Protection Act, and currently under the Building Code Act, as an Inspector with the powers and duties of a Chief Building Official. Currently Gord's role is that of an Environmental Health Facilitator, insuring the smooth application and delivery of the Onsite Sewage Program for the nine municipalities the Health Unit represents as their Principal Authority.

"As a regulator our duty is to society, we work with homeowners and installers, insuring that the regulation is applied in a proper, fair and consistent manner. We are not for or against any particular development, our only goal is the installation of the appropriate system which meets the needs of the user, and ultimately society."

Gord is a firm believer in separation, both horizontal and vertical as the way to protect both Public Health and the Environment, until zero discharge becomes an affordable reality.

SCOTT MCMULLEN

I have worked in the insurance industry for the past 18 years, specializing in commercial insurance for contractors. Which includes business insurance, fleet, bonding, pollution and professional liability. I also provide fleet management, loss control services and insurance articles that pertain to my customers specific industry.

I hold a Canadian Accredited Insurance Broker designation and a Canadian Professional Insurance Broker designation. I have also worked with the Ontario Onsite Wastewater Association for the past 10 years in providing insurance solutions to members.

GERALD MOORE, CET, CBCO, CRBO

Gerald Moore is a consultant who specializes in building code support for municipalities. This support is provided through chief building official and inspector staff transitions, appointment for large or complex projects or review of alternative solutions. In addition, he offers training to municipalities and other professional firms on the application of the building code. He brings with him over 20 years of experience in the application of the building code in both the private and public sectors.

Gerald has worked as a building inspector, plans examiner and chief building official in several municipal environments. Gerald is also a past director to the Ontario Building Officials Association.

He has an advanced diploma in Construction Engineering Technology at Conestoga College and is a Certified Engineering Technologist and Certified Building Code Official.

NICO NIRSCHL

is the Regional Sales Manager in Eastern Canada for Liberty Pumps, Inc. Prior to joining Liberty Pumps, Nico worked several years in the industry building his skills and knowledge related to wastewater.

Nico's greatest strengths are his creativity, drive, and positive personality. His ability to speak to people in multiple languages and in a variety of levels in the industry make him a very valuable asset for any business.

Nico graduated from Lambton College in Ontario as a mechanical engineering technician. He has obtained several certificates throughout his career and has continued with significant technical training whenever possible.

KATHERINE RENTSCH

Katherine is a Project Engineer at R.J. Burnside & Associates Limited specializing in on-site sewage system design. Katherine assists clients with the design of new and replacement sewage systems of all sizes, guiding them through the permitting and construction phases of the project. Katherine also served as the Project Coordinator at the Ontario Rural Wastewater Centre (ORWC) for ten years. Katherine continues to teach courses for the ORWC on a contract basis. She has also recently been appointed to the Building Code Commission as a panel member with expertise in Part 8 of the Ontario Building Code.

KATHRYN STASIUK

Kathryn Stasiuk is an Environmental Consultant working with WSP Canada Inc. in their Aurora office location. Ms. Stasiuk has acted as Project Co-ordinator for four large-scale Septic System Re-Inspection Programs completed in the Town of South Bruce Peninsula, Township of Springwater, Wellington County, and most recently the Township of Algonquin Highlands. Kathryn is a member of the OOWA External Relations Committee and has been involved in the on-site industry since her involvement in the re-inspection programs beginning in 2015.

BRADY STRAW

Brady is a graduate of the University of Guelph with a bachelor's degree in Environmental Science (Environmental Economics & Policy). As the head of the engineering department at Waterloo Biofilter, Brady works primarily on commercial wastewater treatment systems and loves the challenge of designing systems for unique and difficult sites. An OOWA participant for most of his years in the industry, Brady is in his second term as the OOWA Vice-President, is the association Membership Committee Co-Chair, and is an Onsite Designer in the OOWA In-Development Professional Program.

ANDREW SUMARY

Andrew Sumary graduated from the Environmental Engineering program at the University of Guelph and has been working as a Junior Engineer at Van Harten for 2 years. He specializes in residential sewage system design and lot grading development. He enjoys his job as it gives him the unique opportunity to work with both engineers and surveyors. The combination of surveying and engineering has allowed for a full and thorough look at site plans.

JULIA WOOD

Julia Wood is the Manager of International Business Accounts at SuccessionMatching. Her professional experience is rooted in Economic Development and Stakeholder Relations, having held past positions in both private and public sectors in Canada and abroad. Julia specifically has experience in business development in the rural and agricultural sectors. She understands the unique opportunities facing rural Canada and she believes that small businesses play an important role in strengthening community. Julia holds a Bachelor of Business Administration from Brock University and a Bachelor of Science (Management) from the European Business School in Germany.

JANE ZIMA

Jane is an avid promoter for sustainable onsite and decentralized solutions and responsible community growth. She is a passionate advocate for water and energy resource management, and responsible consumerism.

Jane is founder of SimbiH2O, an innovative drinking water and wastewater management and education platform designed for service providers, technology manufacturers and rural homeowners. She is also co-founder of Ampersand Media Co., a media and distribution company supporting businesses that positively impact the planet. Ampersand Media Co. generates awareness and impact through social channels and media technology, and features sustainably designed and responsibly sourced products and packaging.

CONFERENCE SPEAKERS

KEYNOTE: PAST PRESIDENT'S PANEL DISCUSSION

HOW FAR WE'VE COME AND WHAT THE FUTURE HOLDS FOR THE NEXT 20 YEARS

TUESDAY MARCH 19TH, 9:00AM—10:00AM, PENINSULA ROOM

ANNE EGAN, R.J. BURNSIDE & ASSOCIATES (2016-PRESENT)

Anne Egan, M.Sc. (Eng.), P.Eng. is a Professional Engineer and Onsite Wastewater Specialist with the consulting firm of R.J. Burnside & Associates Limited, where she has spent the last fifteen years developing expertise in wastewater system design for Burnside's private sector, public sector, and First Nations clients.

She is involved in all project phases, from planning studies to conceptual design, detailed design, procurement of approvals and construction, for residential, institutional, commercial and recreational land uses. Her experience includes all aspects of sewage system design for a wide range of daily flows, including collection and conveyance, various types of treatment, nitrogen and phosphorus removal, constructed wetlands, and disposal systems for subsurface and surface discharge of treated effluent. Anne earned both her B.Sc.E. and M.Sc.(Eng.) in Civil Engineering from Queen's University.

RICK ESSELMENT, ESSE CANADA (2014-2016)

Rick is the President and Founder of ESSE Canada, a water resource management firm providing warranty, operation, maintenance, inspection and management services for drinking water and wastewater treatment clients in Ontario and Nova Scotia. He is a Past President of OOWA and has held a Director position with the Association for the past 8 years, serving as Chair on several committees.

Rick has a Bachelor of Science in Microbiology, Bachelor of Applied Science in Public Health, Post-graduate Diploma in Occupational Health and Safety, and is a certified public health inspector.

TERRY K. DAVIDSON, OTTAWA SEPTIC SYSTEM OFFICE (2000-2002)

Terry K. Davidson, P.Eng., graduated in Engineering Science from the University of Guelph in 1987. As Director of Regulations at Rideau Valley Conservation Authority (RVCA), his responsibilities include Chief Building Official for Part 8 (Sewage Systems) for the City of Ottawa and Tay Valley Township. He has been active in providing advice to the Province with respect to the transfer of the septic approvals function to the Ontario Building Code as well as on Code compliance issues related to site servicing. Terry was instrumental in forming the Ontario Onsite Wastewater Association and was the inaugural President.

JOHN DONER, WESCOR WASTEWATER AND ENVIRONMENTAL SYSTEMS (2008-2010)

John Doner was acting President of the association for almost 2 years and then fulfilled his role as President for 2 additional years. John has been in the industry for 20+ years, in various sales roles. John sits on three CSA technical committees and continues to contribute to the industry in his present role as Account Executive for WESCOR Wastewater & Environmental Systems, an equipment manufacturer and representative based in London Ontario. John and his wife Sherri live in St. Thomas where they are currently awaiting a wedding and post-secondary graduations from their combined 6 sons and one daughter.

KEYNOTE: PAST PRESIDENT'S PANEL DISCUSSION

HOW FAR WE'VE COME AND WHAT THE FUTURE HOLDS FOR THE NEXT 20 YEARS

TUESDAY MARCH 19TH, 9:00AM—10:00AM, PENINSULA ROOM

DON KRAUSS, INFILTRATOR WATER TECHNOLOGIES (2012 -2014)

Don has been the Eastern Canadian Sales Manager for Infiltrator Water Technologies for over 15 years covering Ontario, Quebec and the Atlantic Provinces. His experience and knowledge of the industry has earned him several sales and industry achievement awards over his tenure. Don has also been a part of the OOWA as a Board of Director of 12 of those years and has held positions like V.P and President. He also is a member of the Canadian Standards Association (CSA) for the B-65 Standard for onsite wastewater systems participating on the Technical Advisory Committee for that standard development. Before his Infiltrator career he resided in Saskatchewan where he led the initiative for the onsite wastewater division of a national wholesale company in that province. In the 11 years in that position he conducted training workshops and worked with Sask. Health to improve regulations and installation practice. His combined experience in the decentralized wastewater industry is almost 30 years.

Don has his installer license in 3 provinces including his BCIN in Ontario. He has actively participated in advisory groups for change and development of provincial onsite wastewater regulations.

Don is passionate about the industry; cross-networking of industry stakeholders from across the country, learning as well as teaching and sharing what has been proven to work in one province with areas that are looking for solutions. His work across Canada and training he has received in parts of the USA has helped him in this quest. Don spends a great majority of his time in the field with installers and designers.

ERIC GUNNELL, P.ENG, GUNNELL ENGINEERING (2010-2012)

Eric Gunnell is a professional engineer, specializing in the design of on-site wastewater systems. Eric is the president of Gunnell Engineering Ltd., which provides a range of rural engineering services.

Eric has extensive design experience with both Part 8 Ontario Building Code on-site sewage systems, as well as Ministry of Environment, Conservation & Parks Environmental Compliance Approvals for Sewage Works. His area of expertise includes the design of new and replacement septic systems, site investigations, troubleshooting new and existing systems, investigation of failed systems, and assessment & upgrading of distressed or undersized systems. In addition, Eric has acted as an expert witness on behalf of clients in Ontario Court of Justice, Ontario Municipal Board (OMB) and Environmental Tribunal hearings.

Eric is a past president of OOWA and served as a board member for many years. Eric also served two terms as a member of the Building Code Commission, for Part 8 sewage systems, and is a member of Professional Engineers Ontario. Eric has presented at past OOWA events, as well as at other onsite sewage system industry events.

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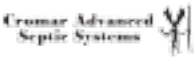



PAST EDITION ARTICLE

ONSITE
WASTEWATER NEWS
ONTARIO ON-SITE WASTEWATER ASSOCIATION NEWSLETTER

InSide

Volume 1 Issue 3
May 2000

OnSite is published quarterly by the ORWC for the Ontario On-Site Wastewater Association. To submit an article or an advertisement, contact Terry R. Davidson at (613) 692-0160 ext. 127.

Technical Review Process

Mail us at

Ontario Rural Wastewater Centre: Conference

After five months of hard work by many volunteers and ORWC staff, the first annual Ontario Wastewater conference was held in Mississauga. The inaugural event attracted 24 exhibitors and 220 conference participants. The overall turn out exceeded our expectations and we were thrilled at the level of participation by all members of the industry. The mix of designers, installers, manufacturers, regulators, researchers and other contractors created a great forum for the exchange of ideas and information that was definitely a benefit for everyone involved.

Participants listened to topics that ranged from approved technologies for difficult sites to the use of wetlands to treat landfill leachate and nutrient management and biosolid issues. During coffee breaks and lunch time people could browse the exhibit areas and talk to the exhibitors. There was a wide variety of exhibitors, some of which had travelled from as far away as Delta, B.C. and Fort Wayne Indiana. The terrific quality and number of exhibitors was a real asset for the conference participants.

We were very lucky to have Mike Hoover of North Carolina State University as our first keynote speaker. His talk on the issues surrounding national standards for on-site wastewater technologies generated many interesting discussions on the first day of the conference. The keynote address on the second day by Susan Barrington of MacDonald College on issues and solutions to agricultural waste management was entertaining and informative. Both speakers did a great job!

Now that it is all over and we've had the opportunity to sit back, reflect and congratulate ourselves on a successful conference we are getting ready for the next one. This time we are going into the planning phase with more experience, more time and most importantly with the feedback from returned evaluation forms.

Thank you to everyone that attended the conference and to members of the conference organization team. We look forward to seeing you again next spring at the second annual Ontario Wastewater Conference.

Doug Joy of the ORWC proudly presents the draw prize generously donated by Ed Kovacs of F.E. Meyers to George Eastwood

MEMBER PROFILE

Danielle Ward

Adams Brothers Construction

DANIELLE WARD
Adams Brothers Construction

Name of Business: Adams Brothers Construction

Owners: David and Gord Adams

Services:
Our company takes pride in septic design and installation, septic pumping and servicing, as well as on-site consultations and troubleshooting

Service Area:
Parry Sound and surrounding area

Number of Years in Role: 1 year

What got you started in the onsite wastewater industry?
An opportunity arose for the position within our company to become the designer and head of the on-site wastewater systems department. Having experience in the installation, troubleshooting, and pumping of septic's, it was an endeavor that couldn't be refused. A position like this offers the opportunity to continually learn as well as help the environment and the community in our area.

Give us one reason/secret for your success.
My success would have to be dedicated to my coworkers and mentors. My coworkers put in the hours everyday to make the designs become a reality in the installation process and do all the frontline labour wok. Without them we wouldn't be as successful as we are today!

Where do you see the onsite industry going?
I see the on-site waste water industry being driven even further into the technological world that we live in. With several systems in existence that use different ways to treat waste water, I can only imagine what we will see in the coming years!

What can the onsite industry do to improve?
I believe if there was more education for the general public and users of the systems, it would be very helpful. Often, we meet many customers that have no knowledge of the systems as they are accustomed to municipal treatment, or just generally have no knowledge of something they have been using for years. We see their systems being damaged by lack of knowing what is proper practice for the system and in the long run have financial impact as well as environmental impacts.

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

6 Steps for Growing Your Onsite Business

Growth doesn't happen by accident. You have to be deliberate about the steps you take if you want your dreams to become reality.

By Mike Agugliaro

Most onsite professionals want to grow their business. Sure, you may not want to grow in exactly the same way as the next installer, but some form of expansion is likely on your mind.

Some want to expand by adding employees; others want to remain the same size and grow into greater revenue and profitability; others want to simply solve the challenges that prevent them from finding the balance they want to achieve in life.

You want to grow. Problem is, many installers aren't sure how and so the "wish" never becomes "reality." Rather than grow by design, business owners end up allowing their companies to evolve by default — the unintentional victim of customer requests, employee hassles and economic pressures.

Here's a simple six-step path to follow to improve your ability to grow by design. No advanced business degree necessary.

Step 1. Pick an area to grow.

It starts with being specific. What do you want to grow? Yes, you want to grow your business, but that is too vague. Narrow it down. Do you want to grow revenue? Profit? Number of employees? Number of trucks? Service area? Number of customers? Average ticket?

Pick a few areas that are related, but try not to do too many. Realize that there might be spinoffs as well: Instead of focusing only on growing your number of trucks, you'll probably want to focus on growing the number of employees, which will force you to increase the number of trucks.

Step 2. What should it look like?

Next, decide what this area should look like at the end of the year. Don't just think something like "I want more employees," because not all employees are created equally. Another example: You could double your customer base overnight, but they may not be the type of customers you want to have.

Instead think very specifically about what the ideal version of that growth area looks like. Happy, loyal customers who spend a specific amount? Hard-working "A-player" employees who show up on time? Double-digit profit from fewer services? It's up to you, but you need to know exactly what you want.

Step 3. Create steps.

Change occurs over time and rarely happens all at once, so create steps to follow that take you down the path of growth you've established. If you want to add 12 new employees in a year, that's one a month. Even if you ultimately end up hiring two in one month and none in another month, at least you know what you should be averaging. Therefore, in this example, you need to build the steps required to hire one employee each month.

Think about what actions are required to complete that step. Is there marketing that needs to be done? What resources are required? Are there others you can delegate some of the work to? How long does each step take so that you know when you have to start?

Step 4. Create metrics.

Look at each step you have to take (or that you are delegating to someone else) and figure out how to measure it. How do you know when it's done and that you can cross it off your list?

If you want to grow, you need to measure the actions you take and the results of those actions to ensure progress. Over time, those actions and results add up to the growth you want to achieve. Track your progress with real numbers so you can course-correct regularly.

Step 5. Get help.

Stop trying to figure it out on your own. Get help. This might be something as simple as reading more articles in a trade magazine, reading a book on the topic or heading to YouTube for some educational videos. Or it might mean investing in a mentor, coach or trainer who can help you understand what you need to do.

Many septic pumpers are hands-on, DIY people, so this is probably how you learn everything. Problem is, trying to figure it out yourself can be time-consuming, costly and error-prone. That's not how you want to grow your business. If your results will have a positive impact on your business, then it's worth making an investment of time and money to learn the right way to do something from someone who has the experience of doing it before.

Step 6. Assess, course-correct and keep going.

Continually assess your progress by looking at the steps you outlined and watching your results. Course-correct as needed to keep yourself on track. Yes, it may mean adjusting the steps you need to take as you realize you're not hitting goals like you thought you would.

Most important, keep going because some of the best results don't appear right away but rather take time to show up after you've diligently built up a foundation of successful actions.

This article first appeared on February 21st on the Onsite Installer website, published by COLE Publishing Inc., www.onsiteinstaller.com. It is reprinted by permission.

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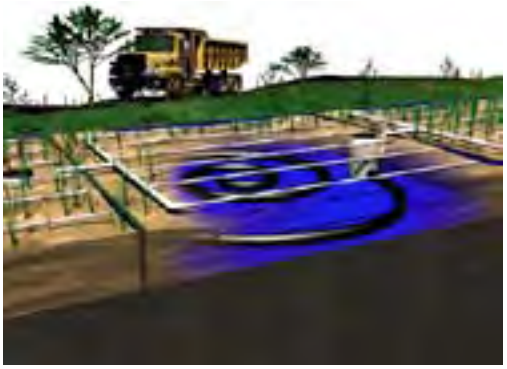

Our sub-surface, vertical flow constructed wetland consists of sand & gravel beds planted with moisture tolerant plant species. Water is pumped vertically from cell to cell. There is no open or standing water and the system is designed to operate winter and summer. Treatment of wastewater occurs through physical filtration & biological degradation. Plants shade & insulate the cells, preventing algae growth.

Our wetland systems have received approval by the Ontario Ministry of Environment and Health Canada for treatment of many types of wastewater, including sanitary sewage, mushroom farm, winery and cider mill process water.

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AQUA WETLAND SYSTEMS

Contact: Lloyd Rozema at 905-327-4571 or lrozema@aqua-tt.com
Aqua Treatment Technologies Inc.
4250 Fly Road, Campden, Ontario, Canada, L0R 1G0
www.aqua-tt.com

2019 OOWA Membership Benefits

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

A **new** CAA Plus membership is reduced to $99.00 for the first year ($39.00 savings!) or a CAA Plus Associate Membership is reduced to $75.00 for the first year. Contact CAA's Corporate Representative at 800-267-6394 ext. 6394 to sign up.

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

Grand & Toy is your one stop shop for all your office needs including ergonomics, furniture, computer supplies, PPE, Janitorial/Sanitary. OOWA's partnership with G & T provides preferred pricing on 240 commonly consumed essentials, **plus 10% off market competitive web pricing**. Each member can add a customized price list of up to 25 items reflecting your business needs. Your savings could easily offset OOWA membership dues!

With access to over 250 Goodlife Fitness Clubs across Canada, OOWA Members can enjoy state-of-the-art equipment for less! **Receive up to 40% off an annual membership** for you and up to 4 additional family members. Benefits can include towel service, child minding, 24 hour locations, Goodlife Fitness Rewards Program, and world-renowned Group Fitness classes.

ALS Laboratory Group provides a **30% discount** on all your wastewater and soil testing needs. Contact Darlene Hoogenes-Stastny at 519-886-6910 or email at: Darlene.Stastny@ALSGlobal.com

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/

NEW & RENEWED MEMBERS LISTING

November 28th , 2018 – March 8th, 2019

NEW MEMBERS

Brandon Aitchison, Cottage Country Environmental Services
Matthew Aldom, Township Of North Kawartha
Debbie Anderson, Municipality Of Grey Highlands
Dominic Bauer, Gunnell Engineering Ltd.
Jamie Blakely, Blakely Property Services
Colin Bos, Waterloo Biofilter Systems Inc
Jarett Brown, Southpaw Contracting
Richard Bucknell, Richard Bucknell
Carl Burke Burke, Stonework and Excavating
Brett Cavanagh, Township Of Rideau Lakes
Lisa Courtney, B M Ross
Hillary Craggs, Waterloo Biofilter Systems Inc.
Ashley Dennis, Seneca College- Student
Bob Dickie, Flue To Footing Home Inspections
Jordan Dixon, Township Of Centre Wellington
Kathryn Dukelow, Ricor Construction
Anne Elmhirst, City Of Kawartha Lakes
Amanda Ferrante, Town Of Huntsville
Caroline Garbutt, Town Of Huntsville
Julia Gobran, Waterloo Biofilter Systems
Mark Green, The Septic Store
Ken Hanes, Peto MacCallum Ltd.
Karen Holt, Municipality Of Grey Highlands
Warren Hyde, Haldimand County
Sarah Kelly, Tamarack North Ltd.
Lue Lau, Fleming College- Student
Amanda Lim, University of Waterloo
Dan Long, Goulet Septic Pumping & Design
Del McIntosh, Near North Supply
David McPherson, Haldimand County
Ashley Metzger, Waterloo Biofilter Systems Inc.
Don Mitchell, Ministry Of The Environment
Andre Moura, C.C Tatham & Associates
Jennine Nedellec, Fleming College Frost Campus
Justin Noort, Niagara Region
Dylan Panek, Sco-Terra Consulting Group Ltd.
Victoria Rozema, Aqua Treament Technologies Inc.
Lloyd Rozema, Aqua Treatment Technologies Inc.
Rui Sousa, City Of Vaughan
Deborah Steele Leeds, Grenville & Lanark Health Unit
Anne Stewart, Environmental Health Consulting Inc/
Telly Thomson, Valley Sanitation Services
Barrett Tinney, Tinney's Septic Service And Construction
Josh Wagner, Haldimand County
James Walken, Onsite Septic Solutions
Danielle Ward, Adams Bros Construction
Chad Welch, Waterloo Biofilter Systems Inc.
Sean Welsh, Near North Supply
Taylor White, Ken White Construction Ltd.
Nancy Zhou, University Of Waterloo

RENEWED MEMBERS

Larry Acchione, Allto Construction
David Adams, Adams Brothers Construction
Leanne Addicott, KFLA Public Health Unit
Imad Aouli, WSP Canada Inc
Randy Armstrong, Amstrong Pumping Ltd
Lorne Bagshaw, Lorne Bagshaw Excavating
Clark Ballantyne, City Of London
Kevin Baltessen, Baltessen Excavating
Eric Bard, Bionest Technologies
James Barnes, Geo Barnes & Sons
Andy Bauman, FlowSpec Engineering Ltd
Dave Bell, B M Ross & Associates
Gord Bell, Acton Group Uxbridge Inc.
Doug Bingham, Newmarket Precast
Jeff Binnie, G.E. Binnie Haulage & Excavation Inc.
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Jeff Blackburn, B. Blackburn Ltd.
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Randy Bossence, Township of Centre Wellington
Anthony Boyko, City of Markham
Penny Brake, Onsite Septic Solutions
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Bruce Brisbois, Leroy Construction
Ryan Brown, Randy Brown Excavating
Randy Brown, Randy Brown Excavating
Paul Bruinsma, Bruinsma Excavating Ltd.
Darrell Brunton, Darrell Brunton Excavating
Teresa Buckman, MakeWay Environmental Technologies Inc.
Howard Burns, Howard Burns Equipment Rentals
Joseph Burns, Howard Burns Equipment Rentals
Brenda Burrows-Rabb, Rabb Construction Ltd
Mel Bursey, Township of Rideau Lakes
Hayley Cahill, WSP Canada Inc.
Brian Campbell, Wyevale Concrete Products Limited
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November 28th , 2018 – March 8th, 2019

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Nancy Carpenter, Leeds, Grenville & Lanark Health Unit
Madeline Carter, C.F. Crozier & Associates
Robin Charette, Biobite
Frank Charlebois, S Charlebois Haulage And Excavating LTD
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Louie Chiarappa, Hernandez Sanitation Services
Dorian Chlopas, Rowan Environmental Consulting Inc.
Patricia Clifford, Gibson Engineering
Stephen Cobean, Cobide Engineering Inc.
Robert Cook, Township of Guelph/Eramosa
Howard Cook, Howard Cook Drainage
Greg Corman, Waterloo Biofilter Systems
Dwayne Coulas, Town of Petawawa
Charles Courchesne, Guy Courchesne Excavation Ltd
Ron Cousins, Cousins and Johnson Inc
Eric Cousins, Cousins and Johnson Inc
Elmer Covill, Elmer`s Construction
Clay Crepin, Gerry Crepin Cartage
Brock Cross, Gunnell Engineering
James Cuming, Allto Construction
Michelle Dada, Ortiz MNT Consulting Group Inc.
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David Denstedt, Muskoka Barging & Construction
Joe Dibbits, Dibbits Excavating
Dennis Dick, D&B Construction
Adam Dillon, Ottawa Septic System Office
Tammy Dobie, Municipality of Meaford
Ryan Dolderman, Pioneer Septic Solutions Inc
Lisa Dolderman, Pioneer Septic Solutions Inc
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David Fondevilla III, FlowSpec Engineering Ltd
Laura Freeland, Durham Region Health Department
Dan Friesen, Exact Septic Installations
Peter Froehlich, Brooklin Concrete
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August 25th – November 27th

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Patricia Johnson
Andy Jones, Town Of Gravenhurst
Christopher Jowett, Waterloo Biofilter Systems
Levi Junop, Town of Petawawa
Keith Karl, Caledon Excavation & Grading
Thomas Keane, Gunnell Engineering
Dan Keeble, Septic Tertiary Systems
Craig Kennedy, Newterra Ltd
Bob Kennedy, Newterra Ltd
Dean Kerr, Willis Kerr Contracting Ltd.
Willis Kerr, Willis Kerr Contracting Ltd.
Tanya Killins, Niagara Region - Planning & Development
Melissa King, Peto MacCallum Ltd
Josef Kloepper, Gunnell Engineering
Randy Knight, J.A. Porter Holdings Ltd
Bert Knip, MakeWay Environmental Technologies Inc.
Gerry Knoop, Denby Environmental Services
Eric Kohlsmith, Ottawa Septic System Office
Robert Koopmans, CMT Engineering Inc.
Rick Kraemer, Thunder Bay District Health Unit
Don Krauss, Infiltrator Water Technologies
Douglas Krysko, Gunnell Engineering
Terry Kuipers, Town of Minto
Coralie Lamaire-Chad, Bionest Technologies
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Kevin Lehan, Town of Gravenhurst
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Veronica Linares-Krauss, Infiltrator Systems Inc
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Mat Maclean, C.C. Tatham & Associates
Kevin MacLellan, Moose Creek Cement Products
Rob MacLellan, Moose Creek Cement Products
Andrew Maguire, L.M.Ent Water
Thomas Mahon, T.M. Mahon
Cathy Marcellus, Wyevale Concrete Products Limited
Keith Marenger, Gerry Leroux Excavating
John Martin, Cromar Advanced Septic Systems
Frank McAughey, Villages Inc.
Dean McDonald, Township of North Glengarry
Paisley McDowell, WSP Canada Inc.
Andrew McGarvey, B M Ross & Associates
Joanne McGurn, KFLA Public Health Unit
Lynn McIlwaine, Gunnell Engineering
Phil McKee, Vacutrux Ltd
Richard McKee, Vacutrux Ltd
Dominic Mercier, Enviro-Step Technologies
Kim Millen, Norfolk County
Gerry Mitchell, Peto MacCallum Ltd
Gord Mitchell, KFLA Public Health Unit
Dale Moak, David Brown Construction
Adrian Molloy, Molloy Contracting Inc
Wayne Moore, Cottage Country Environmental Services
John Moore, Town of Bradford West Gwillimbury
Cody Morden, Charles Morden Construction Inc.
David Morlock, FlowSpec Engineering Ltd
Kevin Morris, C.F. Crozier & Associates
John Moudakis, JM Consulting
Bill Muirhead, Waterloo Biofilter Systems
Archie Mulder, The Rideau Group
Clifford Murray, Edgar Howden & Sons
Caroline Newby, Caroline's Septic Designs
Nico Nirschl, Liberty Pumps
David Oatman, Kirwin & Oatman Excavating
David Oliver, Concord Engineering
Cody Pearson, Edgar Howden & Sons
Gary Pearson, Pearson Engineering Ltd.
Matthew Pearson, B M Ross & Associates
Richard Pellerin, Sco-Terra Consulting Group Limited
Glenn Pembleton, Waterloo Biofilter Systems
Duane Porter, J.A. Porter Holdings Ltd
Doug Post, D.F.Post Contracting Inc.
William Pottruff, Thunder Bay District Health Unit
Michael Rahme, Home Pro Central Ont. Inc
Jason Rail, The Septic Store
Matthew Rainville, Gemtec Consulting Engineers and Scientists
Doug Rankin, Slagter Construction
Greg Reimer, O'Hara Trucking & Excavating
Katherine Rentsch, R.J. Burnside & Associates
Steve Ritsema, Liberty Pumps
Scott Robinson, Unit Precast
Bill Robinson, SepticCheck.ca/Robinson Enterprises
Robert Robinson, Robinson Haulage Inc
Stephen Ropp, Percon Excavating Inc
Stephen Ropp, Percon Excavating Inc
Scott Roswell, Roswell Concrete Products
Will Rounds, City Of London
Eric Rozema, Rivercourt Engineering Inc.

NEW & RENEWED MEMBERS LISTING

August 25th – November 27th

Brian Rudak, Rudak Excavating Inc.
Robert Rudak, Rudak Excavating Inc.
David Ruppert, Ruppert Haulage
Tim Salter, CMT Engineering Inc.
Rob Sanna, Boyd Brothers
Pierre Savard, Dimensional Analysis
Stuart Saville, Zoeller Canada
Brad Schildroth, FlowSpec Engineering
Jason Schoenfeld, Boyd Brothers
Mark Schroeder, Twsp of Bonnechere Valley
Doug Schultz, Township of Whitewater Region
Randall Secord, Wood Environment & Infrastructure Solutions
Dan Sharina, Township of Guelph/Eramosa
Glen Sharp, Francis Thomas Contracting Company Ltd
Kathleen Shepherd, Peterborough Public Health
Barbara Siembida-Losch, Fleming College - CAWT
Charles Smith Second to None Inspections Inc.
David Smith, Herns Sand & Gravel
Graham Smith, Septic Tertiary Systems Inc
Mike Smith, Smith Excavating, Grading & Septic Services
Edward Smith, Ted Smith Construction
Glenn Snow, Snow Brothers Contracting
Nick Snyder, Township Of Muskoka Lakes
Roger Souligny, Biobite
Brigitte South, Pinestone Engineering Ltd.
Chris Spencer, Gay Lea Foods
Tracey Spragg, Eisses Bros. Excavating
Mathew St Denis, Peto MacCallum Ltd
Craig Stainton, Ontario Ground Water Association
Kathryn Stasiuk, Riddell WSP Canada Inc
Jason Stephens, Stephens Excavating
Robert Stevens, Waterloo Biofilter Systems Inc.
Brady Straw, Waterloo Biofilter Systems
Paul Studholme, Professional Home Inspections
Andrew Sumary, Van Harten Surveying
Sandra Swanton, K Smart Associates Limited
Katelyn Sysiuk, Student - University Of Guelph
Mark Tardif, Township Of Wainfleet
Wayne Teel, Wayne Teel Septic Services
John Teixeira, Teixeira Construction
Keith Thomas, Francis Thomas Contracting
Scott Thompson, MTS Environmental Inc.
Bob Thomson, Valley Sanitation Services
Don Thomson, Valley Sanitation Services
Simon Thoume, James Thoume Construction Ltd
Michael Tinney, Tinney's Septic Service & Construction
Terry Tompkins, Township of Tay
Travis Toms, Township Of North Kawartha
Mark Van Alstine, Herns Sand & Gravel
John Vanden Hoven, JVH Consulting
Jacob Vangerven, Van Gerven Excavating
Andrew Vangerven, Van Gerven Excavating
Michael Varty, WSP Canada Inc
Mark Visser, Rock Solid Septic
Joseph Voisin, Pinestone Engineering Ltd.
Sam Vreugdenhil, MakeWay Environmental Technologies Inc.
Steve Walmsley, Township Of Tay
Eric Watkin, C.C. Tatham & Associates
Ryan Weddel, Newmarket Precast Concrete Products Ltd.
Kyle Wetherall, Waterloo Biofilter Systems
Shawn Wheatley, CMT Engineering Inc.
David White, Ken White Construction
Marianne Willson, Waterloo Biofilter Systems
Robert Wilson, Unit Pre-Cast
Jazmyne Woolley, R.J. Burnside & Associates
Ed Yohanna, Rural Water & Septic
Jennette Zimmer, Huron County Health Unit
Geanine Zuliani, Waterloo Biofilter Systems Inc.

PAST EDITION ARTICLE

OOWA Board of Directors August 2006 meeting at John Doner's cottage August 2, 2006.

2006/2007 OOWA Board of Directors

Redesigning Septage Lagoons to Accept More Loading in Less Space

By Kevin Bossy and Christine Gan, Bishop Water Technologies

Septage lagoons, or waste stabilization ponds, haven't changed significantly for generations in design, operation or expansion. As communities grow, a common approach to try and handle the increasing septic volume is to just add more lagoons or increase the size of existing ones.

But what if the opposite could happen and septage receiving facilities could accept more solids, more effectively reduce contaminants in treated effluent and operate more cost-effectively within the existing footprint, or even a smaller one? Not only would efficiency increase, but potentially revenue might too. A more efficient septage facility could enable haulers to dispose of septage locally—generating income for regional receiving facilities—rather than travelling the great distances that many are forced to do to reach a disposal site that can accept the load.

Keep septage solids out of the lagoon

Septage lagoons require sizeable land area to accommodate the large volumes of domestic and commercial sewage that is disposed into them. However, a simple, easy-to-operate two-step process from Bishop Water Technologies enables septage receiving facilities to change the way the lagoon operates -- instead dewatering and consolidating solids on land and allowing only filtrate to enter the lagoon.

The Bishop Solids Management Solution uses Geotube® containers to accept septage directly from the truck, or a holding tank, bypassing the lagoon altogether. Geotube® containers are made from a high-strength, tightly woven polypropylene fabric that provides both containment and filtration. As the septage is pumped in to the container, it first passes through a 1/2-inch bar screen to separate unwanted solids such as trash and other debris. Then, a specially selected polymer is added, which enables the solids to begin dewatering and filtrate to flow through the container's tiny pores almost immediately.

A specially selected polymer is added as septage is pumped into the Geotube® container enabling dewatering to begin almost immediately. Once complete, dewatered solids are more like soil than septage and are often suitable for land application.

The polymer and the filtration provided by the Geotube® container work together to retain up to 100 percent of the chemicals and metals that may be present in the septage.

Geotube® containers are available in various sizes to fit the available space and volume requirements of the septage receiving facility. They can also be sized to fit in a roll-off bin, which further simplifies transportation and disposal of the dewatered solids.

Using this approach, the septage receiving facility could dramatically reduce or eliminate septage solids from being pumped into the lagoon, as well as the associated costs of periodic dredging or digging to remove the sludge.

Dewatered solids are often suitable for land application as a soil amendment following a period of consolidation, which also helps reduce the pathogen content due to the composting effect of holding the waste in the container. Solids content can be as high as 40% and emits no significant odour, simplifying the handling and reuse of the solids as a soil nutrient.

Treat the filtrate with simple, low-energy BioCord™ Reactors

The Bishop Solids Management System incorporates a specially designed lay-down area for the Geotube® containers that uses a non-permeable membrane to collect filtrate and direct it into an adjacent treatment lagoon.

Septage can contain high levels of contaminants and nutrients that, even after the Geotube® dewatering and filtration process, may still be too highly concentrated for the lagoon to reduce in a reasonable amount of time.

Bishop BioCord™ Reactors offer a simple, low-energy solution to achieve enhanced biological nutrient and BOD removal. The modular reactors provide a high density, vertically oriented surface area—like a condominium for bacteria—that functions as an ideal medium on which to establish a stable, concentrated

A closeup of a BioCord Reactor shows the media prior to installation (left) and after a concentrated biofilm of preferred microorganisms has been established (right).

BioCord reactors are installed directly into the treatment lagoon , helping to reduce capital costs and operator oversight.

biofilm. This robust population of microorganisms is resistant to high hydraulic and organic loadings and dramatically improves the performance of the lagoon under normal and upset conditions.

Each Reactor is equipped with a fine-bubble aeration system that supplies the optimum level of oxygen transfer and mixing to support bacterial growth and nutrient removal.

he BioCord Reactors are installed directly into the treatment lagoon, which helps reduce capital costs by avoiding expansion to the lagoon footprint or adding sidestream process tanks. Once installed, the BioCord system is self-regulating, uses very little electricity and requires almost no operator oversight to achieve its performance targets.

Both the Bishop Solids Management Solution and BioCord have been successfully used to develop a municipal septage management facility and to enhance the performance of a privately operated septage receiving lagoon.

Case Study: Eganville Biosolids/Septage Dewatering Facility; Eganville, ON

The Eganville Wastewater Treatment Plant has operated a septage receiving and dewatering facility since 2008 using the Bishop Solids Management Solution. This innovative, award-winning facility provides septage haulers with a local, year-round disposal site for residential and commercial septage that complies with municipal regulations.

Haulers can quickly empty septage into an underground holding tank and immediately resume their business activities. Septage is pumped in batches into the Geotube® container, treated with polymer and left to dewater. The facility has a sizeable laydown area that can hold up to six 50-foot long dewatering containers, two of which are set up in an onsite greenhouse.

Septage haulers can easily empty trucks at the Eganville septage receiving facility (top right). The Bishop Solids Management Solution provides containment and dewatering of the septage, producing high quality filtrate that is sent to the wastewater plant (bottom left) for final treatment and discharge.

Campbell and Sons uses the Bishop Solids Management Solution to remove sludge from its lagoon, dewater and contain it until disposal. Filtrate is released back to the lagoon at significantly lower loading rates than septage.

The greenhouse maintains the indoor temperature above freezing and enables the facility to continue receiving and dewatering septage during the winter months. Two BioCord pilot experiments have also been conducted at the plant and have shown favourable results in providing, simple, low-energy treatment of the filtrate to discharge standards.

Typically, filtrate from the dewatering process is directed to the wastewater plant for treatment and then released into the local receiving body. Table 1 shows the effectiveness of the Geotube® containment and filtration process in retaining contaminants and reducing nutrient loads in the treated effluent. Each container takes several months to fill, which provides ample time for dewatering, consolidation and stabilization to occur. Once full, the solids can be removed and are suitable for use as a soil amendment.

Eganville continues to accept septage from local haulers on a fee-for-service model, which sustainably supports the operation and opens new revenue opportunities by extending the service to a wider area of haulers.

Table 1. Concentration of contaminants in raw septage vs. filtrate released from Geotube® container.

	RAW SEPTAGE	GEOTUBE® FILTRATE	
Parameter (mg/L)	**Average**	**Average**	**% Reduction**
Ammonia	132	125	5
TKN	480	166	65
Phosphorus	189	7	96
BOD	3761	413	89
Total Solids	16000	1400	91
TSS	9400	121	99
Metals (mg/L)			
Arsenic	0.024	<0.001	>96
Cadmium	0.30	<0.005	>98
Chromium	0.232	0.050	78
Cobalt	0.100	<0.005	>95
Copper	5.547	0.027	99
Lead	0.475	<0.02	>99
Mercury	0.011	<0.02	>81
Molybdenum	0.125	<0.02	>98
Nickel	0.211	<0.02	>91
Selenium	0.039	<0.002	>95
Zinc	10.905	0.056	99
Microbiological		**Dewatered (mg/Kg)**	
E-coli (c/1 g dry)	260,000 - 2,300,000	1,500 - 30,000	

Case study: Howard Campbell and Sons; Lyn, Ontario

Campbell and Sons is a septage hauler operating in south eastern Ontario that needed a simple, affordable way to remove and dewater sludge from its treatment lagoon and dispose of the stabilized solids at its convenience. The Bishop Solids Management Solution enables the company to do so, with the installation of four 100-foot long Geotube® containers in a laydown area and a polymer conditioning system. In this case, Campbell and Sons pumps septage from the lagoon into the Geotube® containers to increase treatment capacity in the lagoon, dewater sludge and contain it until disposal.

Filtrate from the dewatering container is returned to the lagoon. Since the container retains a significant amount of nutrients, contaminants and metals, the filtrate contributes significantly lower loading rates than what the lagoon would typically receive, making it easier to manage.

A laboratory analysis of the solids collected from the dewatering system at Campbell and Sons shows that the material is well within the provincial standard for land application.

For more information visit bishopwater.ca or contact us by e-mail, info@bishopwater.ca or by telephone, 343-361-0463.

5 LinkedIn Profile Tips for Installers

As a business owner, you need to carefully control the online image of both your company and your personal brand.

By Amanda Clark

As the owner of a small business, you're not just the one who signs the paychecks. You're the face of the company; you're its primary ambassador to the broader business community and to the public in general. As such, it's important to be conscientious about cultivating your own personal brand, in addition to your corporate brand. Simply put, it reflects well on the entire company when you're perceived as an authority figure within your industry.

One way you can cultivate that authority is by ensuring that your personal LinkedIn page has just the right level of polish. Start with these five guidelines and tips.

1. Create a summary that tells your story.

The summary area of your LinkedIn profile is a good place for you to set yourself apart. Use it to talk in broad strokes about your professional experience and to share some details about why you started your business, what it stands for, what you find meaningful about your particular industry and what kind of connections you're hoping to forge on LinkedIn. In other words, the summary shouldn't just rehash your resume; use this key piece of LinkedIn real estate to get a bit more personal.

2. Cultivate your work history.

A common misconception is that a good LinkedIn work history section is always fully complete. Actually, you probably don't want to include every single job you've ever had. Instead, focus on the jobs that relate to what you're doing today — jobs that are "on brand" for your industry. If you spent a summer delivering pizzas back in college, that's probably not something that really contributes to your broader career narrative, so feel free to leave it out of your profile.

3. Use keywords.

One of the reasons to have a LinkedIn profile is so you can be easily discovered by those who are searching for particular skill sets or areas of expertise — so think critically about some of the keywords you want to use in your profile. Ideally, your keywords will include a good balance of industry-specific terms and more commonplace words and phrases.

4. Ask for endorsements.

Word-of-mouth buzz is going to be important for the success of your small business, and one way to generate it is to simply ask your best customers, your most devoted partners, and your longest-running vendors and suppliers to leave you some endorsements and recommendations. Don't be too timid to send that LinkedIn message kindly asking people for their testimonials.

5. Join groups.

Finally, make sure you use LinkedIn to showcase your involvement in the industry. Prove you are an active participant in your field, not just a bystander. The best way to do this is to join some industry-specific groups.

With these tips, you can ensure a LinkedIn profile that speaks to your stature, your focus and your expertise — and that's something that's helpful not just for your career, but for the longevity of your business.

This article first appeared on March 4th on the Onsite Installer website, published by COLE Publishing Inc., www.onsiteinstaller.com (www.pumper.com). It is reprinted by permission.

Newterra *Sucks*!

By Bob Kennedy, CTO

Often overlooked when planning a development outside the serviced area or grappling with issues in an established small town or groups of homes is the sewage collection system.

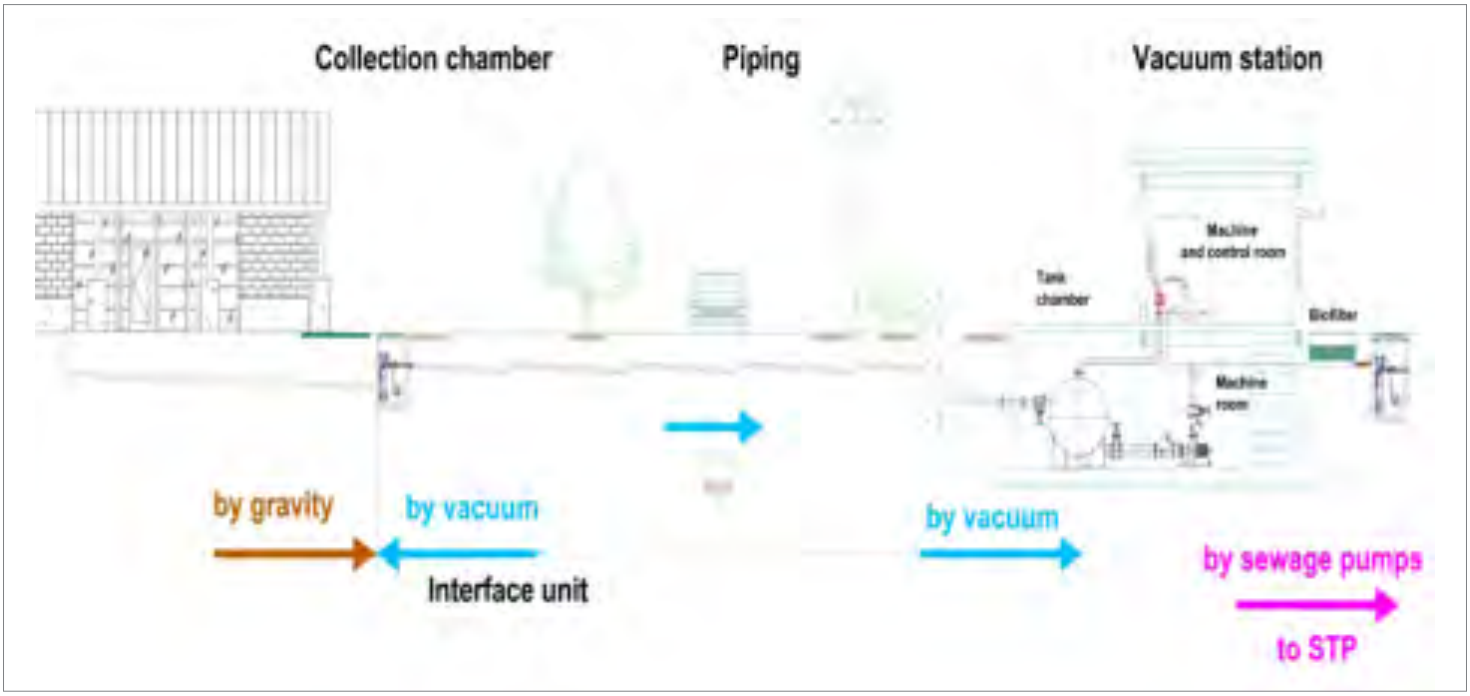
Traditional sewers rely on gravity, and here in Ontario, with areas of high water table, bedrock, long distances between homes and deep frost levels, installation of a traditional gravity sewer/lift station system can be very costly. Traditional gravity sewers rely on water velocity to move water and sewage through the piping system to the treatment plant. With the separation of storm and sewer piping systems, and the reduction in water usage in most homes due to the use of low flow fixtures, it is difficult to keep gravity sewers from collecting sediment without increasing the slope values that were previously used. In most communities, this would result in additional lift stations, more complex installation involving, for retrofit projects, the digging up and replacement of roads etc.

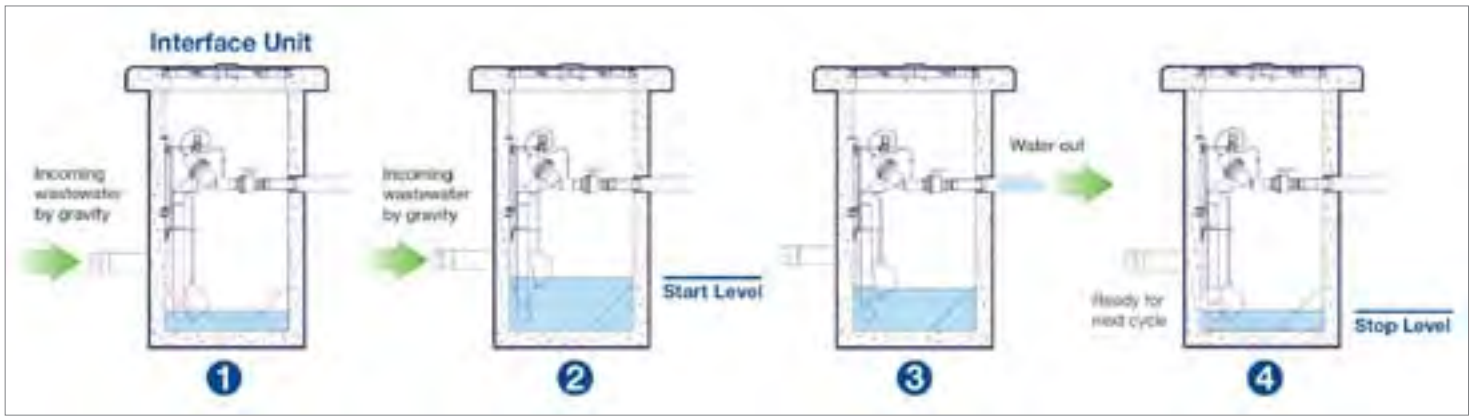
There are several alternatives available to gravity sewers to the developer or the town. Included in these are STEP systems and small bore piping systems with grinder pumps or septic tanks. These systems typically provide some preliminary sedimentation removal then effluent is pumped through pressurized lines or gravity drained to the treatment plant which often involves lift stations. Besides maintenance on the pumps, these systems require periodic cleanout of the septic tanks.

Another popular option is using negative pressure to provide the motive force for moving sewage to the treatment plant. These systems are known as Vacuum Sewer Systems. Newterra is the North American distributor of Vacuflow™ valves from QuaVac in the Netherlands.

The concept of using negative pressure for sewage transport is not new. In fact the earliest reports of vacuum sewers go back to the end of the late 18th century. It is not entirely clear who the very original inventor was. Proposals for vacuum systems were put forward in both the US and in Europe just before 1890. The first ones were installed to cover wastewater services in suburbs of Paris, Amsterdam and Berlin. In 1892 in Levallois-Perret, a North-Western suburb of Paris, the vacuum sewer system served 500 premises accommodating around 15,000 inhabitants. But despite excellent experiences the system somehow got forgotten. It was not until 1959 when a Swedish engineer picked up the technology and developed new improvements which led to increased interest in the vacuum sewer technology.

Since the 1960s vacuum sewer systems have again gained increased popularity. One of the driving factors for this is the comparative cost advantage (up to 30% less expensive to install than conventional gravity systems). In the USA the governments under the lead of the EPA created a stimulating environment for increased use of vacuum sewer systems by prioritizing public funding for vacuum sewers rather than conventional sewer systems. There are now over a hundred





vacuum systems installed in North America, with many thousands installed around the world. However, vacuum sewers are still not generally included in engineering education and many engineers are still cautious of implementing these 'new' concepts.

In contrast to conventional gravity flow or pressured sewer systems vacuum sewers use differential air pressure to transport wastewater which is generated by vacuum pumps located at the vacuum station.

This is typically a centralized unit and usually it is the only point of electricity consumption in the system, no transfer or grinder pumps or lift stations required. The pumps draw in atmospheric air through specific air inlets located at the wastewater collection points.

Sewage flows from the house(s) or other generator by gravity to a collection chamber. Typically up to four houses can feed one collection chamber depending on the distances involved. The collection chambers house the vacuum valve and controls. Newterra's Vacuflow™ valves from QuaVac use a simple float (think toilet float) to activate the valve. This is a very bulletproof system and makes Vacuflow™ unique amongst the competition, who use more complicated pressure valves that are prone to failure over time. Standard on the systems is also a manual clean out valve. If maintenance is required on the chamber or valve, the manual valve can be opened to immediately drain the collection chamber and allow work to proceed.

The valve is usually closed and opens after the float rises to a predetermined height. The pressure difference between the piping network and the valve pit causes the water to be sucked into the vacuum main where it is transported to the collection tank located at the central vacuum station.

The drawn air expands under the negative pressure conditions and drives the transport mechanism. One benefit is the very high flow velocities in the pipes, which automatically keep them clean and free of debris. On the way to the collection tank at the vacuum station the transported wastewater temporarily comes to rest at depressions within the profile of the pipe network due to friction and weight forces. This way the wastewater is transported in frequent intervals until it reaches the collection tank at the vacuum station which contains the pumps and control equipment. From here pumps, usually pressured sewage pumps, forward the wastewater towards the wastewater treatment plant.

Most configurations for collection chambers and valve units do not containany electrical equipment or wiring since the emptying mechanism is triggered pneumatically. However, the pits can be equipped with wired or wireless monitoring and data fed back to the central controller. The system can now monitor valve functionality, opening frequency and provide an immediate alarm for dispatch.

The differences between conventional gravity sewers and vacuum sewers are quite significant. In vacuum sewers the driving mechanism is air rather than water. Thus, less water is required to convey the sewage to the treatment plant. Besides requiring a significant amount of water gravity sewers rely on a constant slope > 2%. If the gradient cannot be provided because of local conditions,

excavations have to be very deep. Additional lift stations might be required to elevate the wastewater to higher levels into a new higher pipe section. This is a common problem in areas with flat terrain. High groundwater tables are also challenging since significant dewatering might be required during construction.

Since vacuum sewers do not rely on gravity and differential pressure is the driving force of transportation they are very suitable for flat areas or rolling terrain. Vacuum lines can be placed in shallow depths just below the frost line which make them suitable for areas where high groundwater and rocky or sandy soil conditions pose challenges to deep excavation. Often in smaller installations, most of the piping can be installed with a ditch witch.

This advantage of shallower and less complicated excavations has a significant cost saving potential. Additional savings can be achieved through the shorter construction period. Municipalities which face budget constraints but require an investment in their wastewater infrastructure might find the option of a vacuum sewer attractive. Real world installations have seen a reduction in as much as 30% in the cost of vacuum sewer systems over gravity ones.

Vacuum systems are inherently environmentally friendly, as any leaks causing a loss of vacuum would be detected by the control system and notify the operator. Vacuum lines, in some jurisdictions are considered safe enough to be placed in the same trench as drinking water lines. Leakages in conventional sewer systems often go unnoticed and untreated sewage leaks into the environment. Elaborate and costly measures are necessary to minimize the risk of exfiltration for conventional systems. The environmental safety of the vacuum sewer makes it a good choice for ecologically sensitive areas as well as areas with protected groundwater resources.

In gravity sewers, infiltration of stormwater and groundwater is a frequent issue as well. Thus, clean water is mixed with the sewage and increases the costs for wastewater treatment significantly. Since a vacuum sewer system is totally sealed infiltration should not occur. These systems have great advantages in areas with high groundwater table and areas prone to flooding. Good applications include coastal or lakefront areas which are often characterized by flat terrain and high groundwater tables. In Florida after the hurricanes flooded vast areas, those cities with vacuum systems were up and running within days.

Another application can be found in seasonal projects such as recreation areas, camping sites etc. where the flow varies widely over the year. Gravity based systems face the problem of sedimentation if the lines are not flushed regularly. Due to the high transport velocities this is not a problem in vacuum sewers making it a good choice for seasonal operation. At the end of the season winterizing is as simple as opening all the manual valves in the collection pits and evacuating all water from the system back to the central plant.

In summary, these are the general conditions that are conducive to the selection of vacuum sewers. Many vacuum sewer projects exhibit one or more of these characteristics:

- Flat terrain
- Rolling land with many small elevation changes
- High water table
- Rock
- Constrained construction options (backyards, easements)
- New developments in rural areas
- Building out new development inside cities to feed existing sewer trunk
- Septic tank replacement programs
- Sensitive eco-systems
- Budget sensitive projects

Newterra is proud to be the North American distributor of the Vacuflow™ system by QuaVac. We can provide systems as standalone or in conjunction with our decentralized sewage treatment offerings. Please let us know if we can be of assistance.

MEMBER PROFILE

Crystal Barnes

North Bay-Mattawa Conservation Authority (NBMCA)

CRYSTAL BARNES
North Bay-Mattawa Conservation Authority (NBMCA)

Name of Business/Organization: North Bay-Mattawa Conservation Authority (NBMCA)

Owners: Governed by a 12 member Board of Directors appointed by the Councils of its 10 member municipalities.

Services/Mandate:
The NBMCA is a community-based not-for-profit organization mandated to conserve, restore, develop and manage renewable natural resources on a watershed basis. Core responsibilities are derived from the Ontario Conservation Authorities Act. Specialty roles have been delegated to NBMCA through other legislation including the Ontario Building Code and the Ontario Clean Water Act. NBMCA is 1 of 36 Conservation Authorities in Ontario and 1 of 5 located in Northern Ontario.

Service Area:
NBMCA is designated under the OBC Part 8 to conduct inspections, issue sewage system permits, and investigate violations across Nipissing District and the Parry Sound District (with the exception of the Township of the Archipelago). This includes unorganized territories within those districts and a portion of Algonquin Park.

Number of Years in Operation: North Bay-Mattawa Conservation Authority (NBMCA) was founded in 1972 by the Province of Ontario and the NBMCA's 10 member municipalities.

What got you started in the onsite wastewater industry?
I didn't see myself in this industry at first. Since I've been old enough to walk I've been fishing many lakes with my family and learned at a young age how important our resources are and how much we depend on them. It wasn't until I finished high school and went tree planting in BC that I got serious about wanting to preserve and conserve our natural environment. A few years after post-secondary school I saw the job ad for a Trout Lake Septic Re-inspector at NBMCA and applied. Even though it had nothing to do with Limnology (my passion at the time) I realized it was a different way of saving and conserving the health of our lakes...the rest is history.

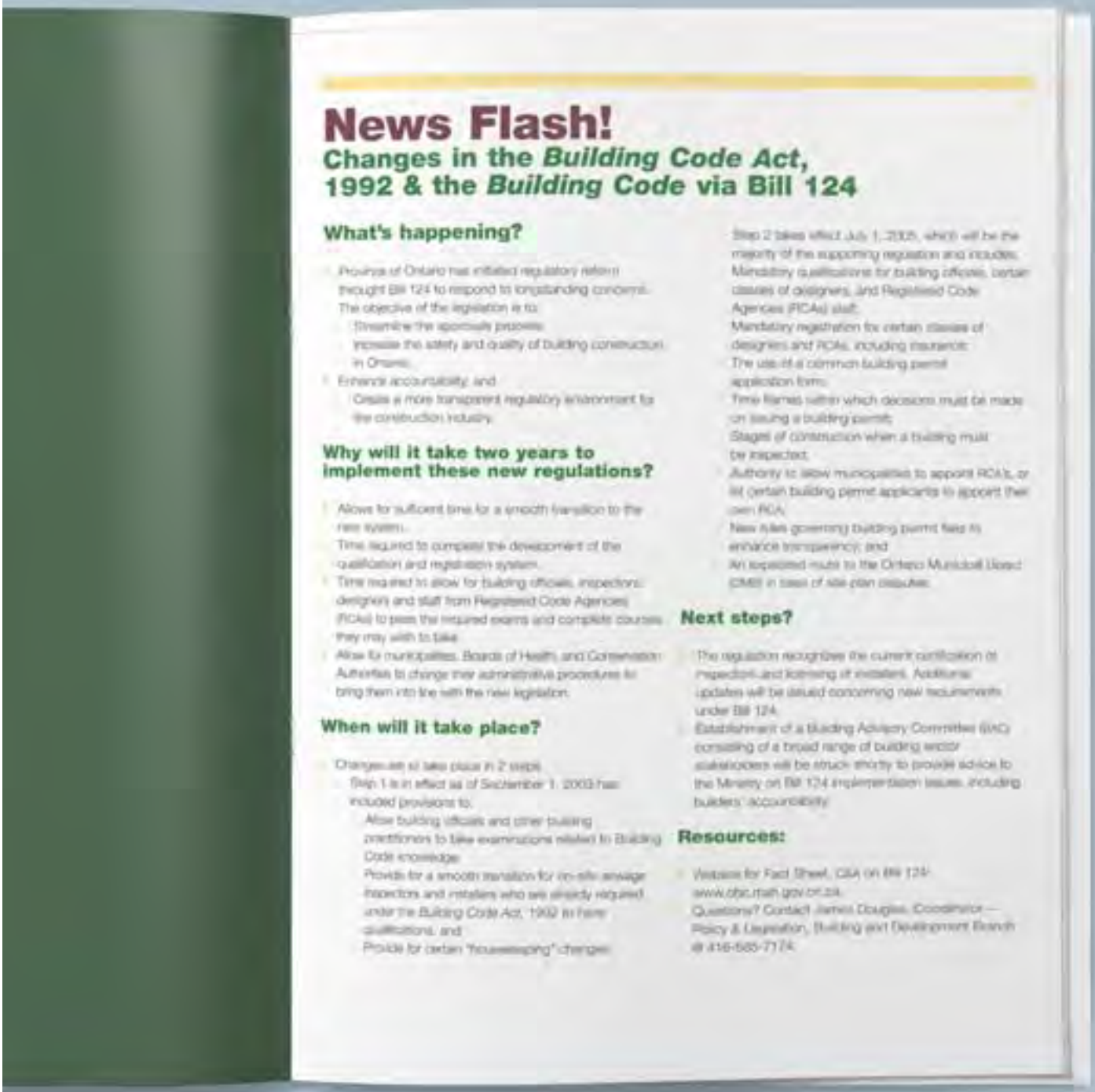
Give us one reason/secret for your success?
I would have to credit my success to all the wonderful sewage system installers I work with. Over the years I've managed to build close, professional relationships with them. Paying attention to their needs and being on time for inspections is something they really appreciate; it makes their business run smoothly and efficiently as well as ours. At the same time, I'm able to teach them the needs of the CA as environmental managers and regulators. It really is a two way street.

Where do you see the onsite industry going?
I'm not going to lie, I'm a little worried! Many of our very experienced installers are reaching retirement age or are already there. There is definitely a need for some fresh blood in the industry or at least in our area. We need more young individuals who won't be intimidated by the new technology to learn the trade.

What can the onsite industry do to improve?
In northern Ontario we have a large number of very simple cottages, cabins, trailers, and hunt camps creating a high demand for greywater treatment. The problem is these structures are in remote areas, typically with silty clay soils or bedrock making it impractical to build a monster greywater pit. This leaves the public to deal with their greywater in their own manner creating many problems for us as environmental regulators. I would like to challenge our innovative sector to create an effective, certified unit that would be easily transported and installed, with a small footprint.

Ontario Onsite Wastewater Association 20 YEARS

PAST EDITION ARTICLE



News Flash!

Changes in the *Building Code Act*, 1992 & the *Building Code* via Bill 124

What's happening?

- Province of Ontario has initiated regulatory reform thought Bill 124 to respond to longstanding concerns.
- The objective of the legislation is to:
  - Streamline the approvals process;
  - Increase the safety and quality of building construction in Ontario;
- Enhance accountability; and
  - Create a more transparent regulatory environment for the construction industry.

Why will it take two years to implement these new regulations?

- Allows for sufficient time for a smooth transition to the new system.
- Time required to complete the development of the qualification and registration system.
- Time required to allow for building officials, inspectors, designers and staff from Registered Code Agencies (RCAs) to pass the required exams and complete courses they may wish to take.
- Allow for municipalities, Boards of Health, and Conservation Authorities to change their administrative procedures to bring them into line with the new legislation.

When will it take place?

- Changes are to take place in 2 steps:
  - Step 1 is in effect as of September 1, 2003 has included provisions to:
    - Allow building officials and other building practitioners to take examinations related to Building Code knowledge;
    - Provide for a smooth transition for on-site sewage inspectors and installers who are already required under the *Building Code Act, 1992* to have qualifications; and
    - Provide for certain "housekeeping" changes.
  - Step 2 takes effect July 1, 2005, which will be the majority of the supporting regulation and includes:
    - Mandatory qualifications for building officials, certain classes of designers, and Registered Code Agencies (RCAs) staff;
    - Mandatory registration for certain classes of designers and RCAs, including insurance;
    - The use of a common building permit application form;
    - Time frames within which decisions must be made on issuing a building permit;
    - Stages of construction when a building must be inspected;
    - Authority to allow municipalities to appoint RCA's, or list certain building permit applicants to appoint their own RCA;
    - New rules governing building permit fees to enhance transparency; and
    - An expanded route to the Ontario Municipal Board (OMB) in cases of site plan disputes.

Next steps?

- The regulation recognizes the current certification of inspectors and licensing of installers. Additional updates will be issued concerning new requirements under Bill 124.
- Establishment of a Building Advisory Committee (BAC) consisting of a broad range of building sector stakeholders will be struck shortly to provide advice to the Ministry on Bill 124 implementation issues, including builders' accountability.

Resources:

- Website for Fact Sheet, Q&A on Bill 124: www.obc.mah.gov.on.ca.
- Questions? Contact James Douglas, Coordinator — Policy & Legislation, Building and Development Branch at 416-585-7174.

Communal Systems in Ontario: Obstacles and Opportunities

By Trish Johnson, Environmental Management Consultant

Thanks to twenty years of industry efforts in Ontario, important progress has been made to validate the benefits, such as cost-effectiveness and sound environmental protection, that communal systems offer. However, the growth of these systems has been slow in Ontario, a stark contrast to the United States where these small systems serve three million households and represent 33 percent of all future construction.

While communal systems have gained more acceptance, they are still facing challenges with the current approvals process for this type of servicing. These projects require a legal agreement between the local municipality and the developer. This requirement presents an obstacle to the implementation of more private communal systems that are needed for Ontario's rural growth.

The main culprit is the outdated D-5 Guideline for Planning of Sewage and Water Services, which was developed by the Ministry of Environment, Conservation and Parks (MECP) in 1995. More specifically, the challenges within the D-5-2 Application of Municipal Responsibility for Communal Water and Sewage Services (1995). This procedure requires a signed agreement from the municipality, including detailed financial securities, to ensure long-term management and operations of private systems.

Most small towns have little capacity or experience with managing and financing wastewater infrastructure, yet under D-5-2 they are expected to strike and own a legal agreement for servicing that spans well beyond the terms of their elected officials. Further, in order to meet the provincial planning targets of higher densities for growth, many more small towns will need to consider private communal systems for their future growth and economic development.

However, some already perceive the Municipal Responsibility Agreement (MRA) requirement to be too onerous. In these cases, elected official reluctance may stall or stop communal servicing solutions, even when their Official Plans (OP) have identified communal systems in their growth planning.

Given the lack of understanding, coupled with the municipal tendency for risk aversion, it is not surprising that some small towns are refusing to accept the responsibility that has been downloaded to them in D-5-2. In some cases, they simply do not understand that the MRA is a tool intended to provide them security against all project risks.

The Township of Amaranth, Ontario recently refused an Official Plan Amendment (OPA) for communal servicing, even though the local OP identifies communal systems for development. The concerns cited for the refusal relate to the density, financial assurance and signing the MRA. This decision has stalled a long-planned project and is being appealed by the developer.

However, an opportunity exists in the MECP's F-15 Financial Assurance Guideline (2011) for instances where a MRA for Communal Sewage Works is not obtained. Under F-15, financial assurance requirements are also based on the project's capital and operating costs. In these cases, the securities are held by the Province of Ontario and no signature is required from the municipality.

While the D5 series has been acknowledged as outdated and overdue for review, it currently places the burden of understanding and responsibility for financial assurances for new communal infrastructure on ill-equipped small town elected officials. Until the D5 is modernized, the option to utilize F- 15, should be considered by the province as an interim means to facilitate a smoother path for much needed communal system approvals.

The good news is that some forward-thinking small towns are already embracing communal servicing for their growth and addressing the requirements for management of communal systems in their planning process. The recent 2018 OP in Leeds and the Thousand Islands identifies areas for communal servicing and requirements for financial assurance through MRAs.

Additionally, Frontenac County has taken a leadership role to identify best practices for engineering and financing of communal systems. The county is working to develop a sound framework for future growth and prosperous economic development through private communal systems.

Meanwhile, the decentralized wastewater industry is flourishing in the United States and represents a $5 billion sector and 150,000 small business jobs. Similar to the United States, Ontario has an opportunity to develop a thriving communal/decentralized sector to offer small towns and rural areas cost effective growth, economic activity and sound environmental protection.

To turn this vision into a reality however, will require modernization of the D-5-2 Procedure and much needed education to address the current lack of understanding and capacity. Only by working together can we remove the approvals obstacles and realize sustainable growth for rural Ontario.

Trish is an independent Environmental Consultant with over 30 years of experience in environmental policy, planning and management for all levels of government. She is also a member of OOWA's Board of Directors. The views expressed herein are those of the author and do not reflect the position of the OOWA Board of Directors.

A Different Approach To Keeping Rural Ontario Vibrant And Healthy

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

Over the past seven years I have had the great fortune to lead a group of engineering and technical professionals in completing more than 8,000 unique septic system re-inspections; likely more than any other professional in Ontario over the same period.

These programs have been completed predominately to ensure that the septic systems are functioning properly and that they are not unacceptably impacting the natural environment. These programs are effective, with a significant portion (20-30%) of the systems requiring some form of remedial action. The hope is that by ensuring that the natural environment is protected, the vitality of the municipality can be preserved.

I can't help to think however, is there a different way to keep rural Ontario vibrant and healthy? One that isn't reactive to a problem that has existed for a long time. One that helps to solve the issues at hand rather than to reactively fix issues that have been identified as unacceptable. One that helps to contribute to the sustainability of our rural communities, rather than be satisfied with the status quo.

The County of Frontenac may have the solution. WSP has been supporting the County in the completion of a Communal Services Study to help promote new development on communal services, particularly in settlement areas, on main streets, and on waterfront lands. The County has identified that the installation of innovative, cost-effective, decentralized wastewater facilities across the County would enable increased opportunities for home-based businesses, reduce haphazard development, and create a sense of place.

As with most rural municipalities, the settlement areas and waterfront lots do not have municipal wastewater services. Consequently, development must usually proceed on private services. This results in limited potential for intensification in the settlement areas due to the minimum lot sizes required to support private services and low-density forms of development. Private services also significantly hinder a municipality's ability to achieve affordable housing targets and economic development objectives, as the number of residents who are able to live within a settlement area directly impacts the need and support for commercial services that contribute to economic vitality. Where private communal services may be contemplated to support higher density or multi-unit development, requirements for Municipal Responsibility Agreements (MRAs) often deter both municipalities and developers from proceeding with such development proposals.

The goal of this study was to not only identify communal wastewater servicing as an option for development; but to remove the barriers associated with this servicing type. One example of this was the creation of a financial plan. This plan was intended to reduce the financial risk accruing to the County and preclude placing a significant upfront financial burden on potential developers, particularly small-scale developers which may be unable to offer decentralized services if this financial burden is not mitigated.

Using communal wastewater servicing enables proper operations, monitoring, and remedial actions to be achieved (and enforced by the Ministry of Environment, Conservation and Parks [MECP]). The Municipality and the MECP can then understand how a system is performing and determine its impact to the natural environment, resulting in prompt remedial engineering decisions when required.

This position of encouraging communal wastewater servicing is in stark contrast to the position held by many upper and lower tier municipalities. Over my career, I have often been amazed by conscious decisions by many municipalities to force new developments onto exceedingly large lot sizes using conventional on-site sewage systems; closing the door on the communal servicing option. These decisions seemingly fly in the face of logic; when active living, land conservation, economic development, and affordable housing are all desirable outcomes of development. All of which are achieved through the densification that communal servicing can provide, but are lost when developments are forced onto individual private servicing.

So, as I enter into my 8th year of managing sewage system re-inspections programs, I can't help to think that the more viable approach is to have communal wastewater systems that are monitored and maintained wherever possible, rather than to re-inspect thousands of private individual systems once every 25 years or so. We can't go back and change the way development has historically occurred, however we can change the way we approach it moving forward. Hopefully the County of Frontenac's Communal Services Study can be used as a template to encourage smart rural development for the years ahead.

MEMBER PROFILE

Grant Parkinson
GM BluePlan Engineering Limited

GRANT PARKINSON
GM BluePlan Engineering Limited

Name of Business:
GM BluePlan Engineering Limited

Services:
GM BluePlan is a civil engineering consulting firm working in a diverse area of practice that includes master planning, environmental assessments (EA's), asset management, onsite and municipal water systems, onsite and municipal wastewater systems, pumping stations, structural engineering, land development, stormwater management, and environmental engineering services.

Service Area:
Most of our work is in Southern Ontario.

Number of Years in Operation:
GM BluePlan began operation in 2014 and is an amalgamation of Gamsby and Mannerow that started in 1966 and BluePlan that started in 2012.

What got you started in the onsite wastewater industry?
I began working as a full-time engineer in 1989. Working with onsite water and wastewater systems seemed to emerge naturally from the beginning of my career and fit well with the companies that I worked with and the type of work I enjoy doing.

Give us one reason/secret for your success.
The approach to our work focusses on the needs of the client and working together to develop the best solution for each specific project. Our firm is small enough to have personal contact with our clients for each project but large enough to have the expertise and resources to successfully deliver. Listening to clients is also important to ensure our work meets or exceeds their expectations.

Where do you see the onsite industry going?
I see the onsite industry continuing to thrive and grow. One of the main reasons is that it fulfills an essential need for basic sanitation and sewage treatment that society in general has needed in one form or another throughout history and will continue to be an essential long–term need. Although new technology always plays a role, there is no "App" for onsite wastewater systems. Certainly, there will continue to be a need for both municipal and onsite water and wastewater systems. As demographic trends in Ontario lead to more urban growth, there will also be a migration to small towns and rural areas where onsite, decentralized, and communal systems will be needed.

What can the onsite industry do to improve?
The onsite water and wastewater sector may not get recognition it deserves. It is hard to compete for public awareness with large scale municipal projects. Raising the awareness of our industry is not an easy task as most of us know. When is the last time we saw septic systems featured in a news headline or to receive a celebrity endorsement? The general public typically does not notice all the diligent hard-working people in our industry, (that is unless something goes wrong!). Engaging local politicians and people like CBC's Bob McDonald (who will be a keynote speaker are our 2019 Annual Convention) will definitely help. Our firm is active with local high schools, and community colleges at career fairs to inform young people to become the next generation of designers, installers, and operators.

OOWA Convention Presentation: Best Practices for Septic System Reinspection Programs in the Lake Simcoe Watershed

By Cameron Curran, University of Guelph

Lakeside septic systems, functioning at less than 10,000 litres per day, can pose serious threats to the environmental health and functionality of their adjacent waterbody, if effluent is not sufficiently treated.

Within the Lake Simcoe watershed this is no exception as excess phosphorus and other nutrients can impact the water quality. Areas within 100m of Lake Simcoe shoreline, tributaries or ponds are classified as vulnerable in the Ontario Building Code. To ensure septic systems are functioning properly and have minimal impacts on the natural environment, regular maintenance, reinspections, and record keeping are required under Section 8.9 of Division B of the Ontario Building Code.

In addition, the Lake Simcoe Protection Plan includes several policies and actions meant to reduce phosphorus loading from septic systems. Despite these guidelines being in place, septic systems in the Lake Simcoe watershed are estimated to contribute 4.4 tonnes of phosphorus to Lake Simcoe per year. To better understand the conversations and actions being taken to address this problem the Ministry of the Environment, Conservation and Parks is supporting our research at the University of Guelph.

Provincially, there is a need to better understand how septic system reinspection programs are being designed, implemented and received within the Lake Simcoe watershed, and abroad. Conversations are occurring across Ontario, at different levels, about the importance of mandated and discretionary septic system reinspection programs. This research takes experiences into account from septic system reinspection program managers, residents and cottage associations. Through semi-structured interviews, emergent themes will be analysed to inform a best practice framework for the future management of these critical programs. Further, it will include a provincially standardized approach to organizing inspection data.

This presentation is an opportunity to join the discussion about improving septic reinspection programs for the future. Ultimately, understanding how lakeside septic system programs are managed, taking participant feedback into consideration, and establishing best management practices could help sustain lake ecosystems for future generations.

OOWA EDUCATION SCHOLARSHIP UPDATE

OOWA reached out to our past scholarship recipients to see what they are up to, and to see how they are progressing in their studies or chosen career path.

GRAEME DAUGHERTY WOODSWORTH

COLLEGE SCHOLARSHIP AWARD RECIPIENT, 2018

Following my graduation from Fleming College I decided to pursue a gap year abroad and am currently doing private tutoring based in Shenzhen, China. Here I have been teaching Chinese highschool students how to understand academic writing. This is a short-term plan to generate as much income possible, as fast as possible so that I may pursue further studies. Next year come September, I am happy to inform you that I will be attending KU Leuven in Belgium in order to pursue a masters in Water Resources Engineering.

DAWN SMITH

UNIVERSITY SCHOLARSHIP AWARD RECIPIENT, 2017

Since I received the OOWA award in 2015 I finished my 3rd and 4th-year classes in 3 terms to graduate early on the dean's honour list. Since I graduated I have been working part-time while I apply to graduate school. I expect to be enrolled in a full-time urban planning graduate degree in fall 2019. I intend to study how we can create approval processes which would enable more net-zero water and energy buildings to be built.

OWTS: Consistency Between Certification and Field Results

By Charles-Edouard McIntyre & Marie-Christine Belanger

Introduction

Consistency of performance for certification should be a universal standard. Third-party product certification provides information to stakeholders which allows them to determine compliance with their regulatory and commercial requirements, and to verify general suitability of products commonly used in commerce. Use of certified products should streamline the design, specification, installation, and operational oversight of OWTS to ensure lifecycle performance.

Prior to adopting the CAN/BNQ certification protocol, approval of treatment units for Ontario was based essentially on evaluation of NSF Standard 40 certification results and some additional field testing performed in climate conditions similar to the Ontario ones. Once approved, performance of treatment units, had also to be monitored on a systematic and regular frequency that has evolved to actual Code requirements of sampling every treatment units installed every year.

It is the general disparity of field performance as compared to results obtained during certification that led Ontario authorities to require the annual monitoring of treatment units field performance. But this disparity came from the fact that approval process was based on certification results from an out-dated certification protocol less stringent and not anymore in sync and representative of conditions that prevails in actual field conditions, living habits, representative climate conditions, system usage, etc.

With the adoption of the CAN/BNQ standard in Ontario, is systematic field testing should still be required knowing that the CAN/BNQ certification protocol is demanding, stringent and representative enough of the conditions that prevail in the field to waive this requirement? Or, is there a better way of ensuring and assessing treatment unit field performance consistency? The more stringent the certification protocol is, and the more severe classes of treatment level are, the more likely it is that the certified technology will reproduce comparable performances in real conditions under normal operating conditions.

Applying a statistical analysis, Premier Tech Aqua wants to share its experience and knowledge acquired relative to what should be the factors and elements to consider to ensure consistency and reciprocity of results between certification and field results, and control and management over time of field performance.

Methodology

There are statistical methods for determining the likely concentrations that should be expected at the outlet of a treatment system, based on the results obtained from samples analyzed during tests. A method based on a US Environmental Protection Agency's (USEPA) approach has been applied in Quebec for several years to assess the discharge limits of "small community" wastewater treatment technologies, based on test results gathered and averaged over a one-year period, most often realized on a testing platform or controlled demonstration. This method takes into account the average of the results obtained for a tested technology, as well as their variation, to determine a statistical threshold associated with the technology, i.e. the highest concentration of a contaminant (MDL: Maximum Discharge Limit) that might be measured at the effluent of that technology in the field with a degree of certainty and a probability of not exceeding that value.

Using this type of statistical method, it is possible to make a link between the technology performances on a testing platform and the probability that this technology will meet the field discharge objectives prescribed by the various regulations, all in coherence with the proposed in situ monitoring. The method provides for the analysis of normal, lognormal or delta-lognormal data distribution to best reflect the possible variation of the datasets. For a normally distributed dataset, the maximum discharge limit (MDL) of a technology is equal to:

$$MDL = \overline{X} + (k_{\alpha,\beta} * S/\sqrt{m})$$

$\overline{X}$ = arithmetic mean of the results obtained on platform;

S = standard deviation of the results;

$k_{\alpha,\beta}$ = tolerance factor with a certainty percentage (α) (tolerance) and a probability (β) of not exceeding a field targeted value, given by the statistical tables considering the number of data collected on platform;

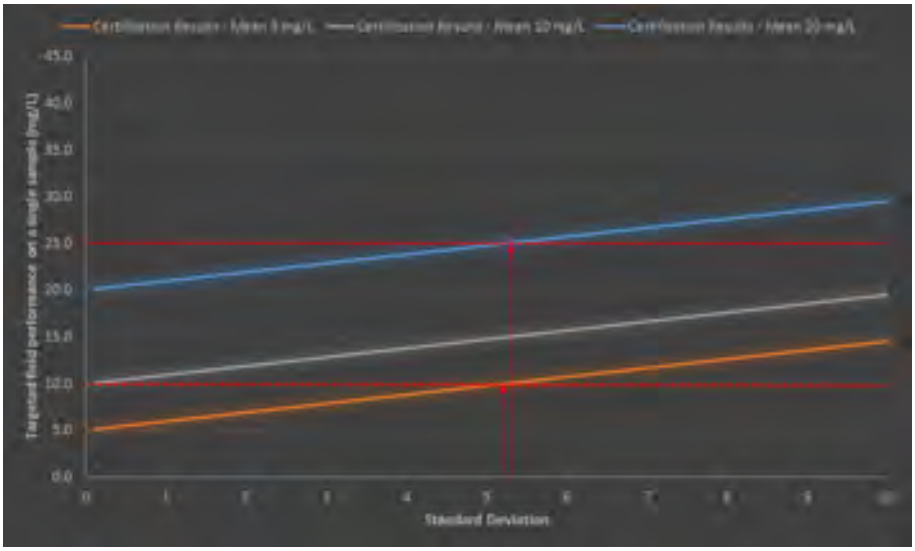
m = number of data values obtained each year during in-situ monitoring.

The calculated MDL value of a given technology thus corresponds to a concentration under which a percentage or more of the performance results (80% in the proposed approach but can be adapted to specific jurisdiction requirements) should be expected. The equation shows that several combinations of averages and standard deviations are possible for a given MDL. Thus, for a specific discharge objective in the field (e.g. 10 mg/L in BOD5 and TSS), several combinations of results obtained on platform could end up with a MDL meeting that specific objective.

Colored lines in figure 1 show possible MDL result ranges on certification/testing platform for different means, standard deviations and using single samples for auditing a given technology. In that example, a said system that obtained a mean of 5 mg/L on a certification platform (orange line) should present a certification standard deviation not exceeding 5.2 in order to meet a discharge target of 10 mg/L in BOD5 and/or TSS (red doted line) as prescribed in many jurisdictions, with a certainty of 95% and a probability of 80% of not exceeding that value in the field for a single sampling. It also demonstrates that a said system with a mean of 20 mg/L (blue line), the standard deviation must not exceed 5.4 mg/L to meet discharge target of 25 mg/L.

Nevertheless, such analysis remains reliable only if the certification protocol is representative of conditions that prevail in real situations. A less stringent protocol is more likely to decrease the performance variability of a given technology, whereas a more stressful protocol or measuring during and immediately after stresses is more likely to produce results with a variability representative of field conditions.

Figure 1: Expected MDL from performances on certification platform



This statistical analysis was applied, for the same technology certified under both ANSI/NSF standard 40 and CAN/BNQ 3680-600/2009 protocol. Both certifications share some common elements, CAN/BNQ protocol being based on the ANSI/NSF standard 40 protocol. NSF is a 6-month testing protocol in which sampling is only performed during the recovery period following the stress tests, and without consideration given to climatic conditions. On the contrary, the CAN/BNQ protocol is a 12-month test in which sampling is performed both during the stress tests and the recovery period, and has to be performed in cold climate conditions in an area with a plant hardiness level of 3 or 4.

Considering these elements, the statistical analysis was performed on the following sets of data obtained from a single technology, as summarized in table 3:

Table 3 – Details for data considered

Certification protocol	Duration	Stress test results	Average influent temperature	n
ANSI/NSF standard 40	The entire 6 months	Includes recovery period only	20 °C (68 F)	114
CAN/BNQ 3680-600/2009 no stress	First 6 months only – Annex A	Includes recovery period only	10.9 °C (51 F)	106
CAN/BNQ 3680-600/2009 stress only	Weeks 19 to 25 inclusively of Annex A	Stress tests and recovery period only	12.3 °C (54 F)	27
CAN/BNQ 3680-600/2009 Annex A	The entire first 6 months – Annex A	Includes stress tests and recovery period	11.2 °C (52 F)	123

For the sake of the example proposed in this paper, a probability (β) of 80% of not exceeding the field targeted value was retained, based on both NQ 3680-910/2000 and CAN/BNQ 3680-600/2009 field performance audit process, with a certainty (α) of 95%. A value of "1" was retained for the constant "m" to reflect site individual annual audit or sampling required in some jurisdictions. Notwithstanding class of treatment of the different certification program, the certified technology has been developed to achieve treatment objectives of less than 10 mg/L in terms of BOD5 and TSS.

MDL expected field performance calculated using those datasets were compared to field performance results for that same technology, obtained from BNQ annual field performance audit program from 2006 to 2016.

The NQ Standard 3680-910/2000 and CAN/BNQ Standard 3680-600/2009 include an ongoing fully third party annual field performance audit process to make sure that the performances of a technology in the field are consistent with results obtained on testing platform. This annual field audit is one of the conditions to be fulfilled to maintain the certification valid.

Results

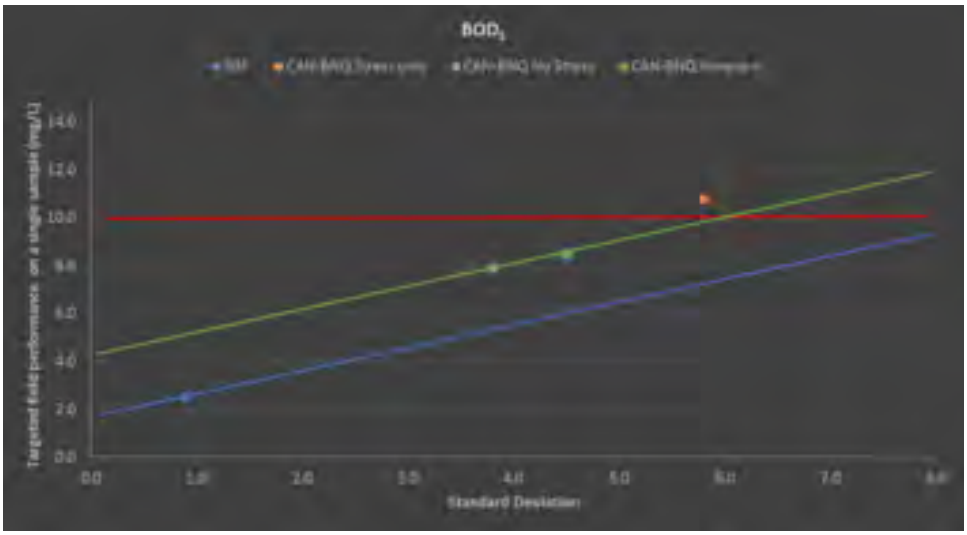
The application of this statistical method to the results obtained during certification allows the estimation of the expected value (MDL) of one sample collected from the effluent of a system operated under actual field conditions. For each certification data set presented in the methodology section, calculated MDL, considering a delta-lognormal distribution, are presented in table 4 and figure 2, with 95% certainty and 80% probability.

Table 4 – Calculation of MDL

Certification protocol			BOD5 (mg/L)			TSS (mg/L)				Influent temperature
Data set	**n**	**$k_{95,80}$**	**Avg**	**StDev**	**MDL**	**$k_{95,80}$**	**Avg**	**StDev**	**MDL**	
NSF	114	0.952	2.1	0.9	2.5	0.950	2.4	1.9	2.9	20 °C (68 F)
CAN/BNQ no stress	106	0.499	5.0	3.8	7.9	0.798	4.3	3.7	6.6	10.9 °C (51 F)
CAN/BNQ stress only	27	**1.011**	6.6	5.8	10.8	1.084	5.1	4.4	7.0	12.3 °C (54 F)
CAN/BNQ All Annex A	123	**0.578**	5.5	4.5	8.5	0.809	4.4	3.6	6.7	11.2 °C (52 F)

Figure 2 - MDL for BOD5 compared to certification results and targeted treatment levels

On the graph, each colored line represents the possible range of MDL values for different standard deviations, using the mean of the said dataset.



The first 6 months of the CAN/BNQ standard, excluding results obtained during the stress tests but only considering results obtained during the recovery period ("CAN-BNQ No Stress"), corresponds to the ANSI/NSF standard 40 in terms of test protocol and results retained for the certification, except for the climate conditions that prevailed during testing, allowing both datasets to be compared. Average influent wastewater temperature measured during the NSF standard 40 certification was 20°C (68 F) as compared to 10.9°C (51 F) for "CAN-BNQ No Stress" data. As expected for a biologically-based treatment technology, data suggest that water temperature on testing platforms had a significant impact on the treated water quality, with higher means and variabilities under colder conditions. Mean effluent concentrations of 5.0 ± 3.8 mg/L and 4.3 ± 3.7 mg/L were obtained under "CAN/BNQ No Stress" conditions whereas 2.1 ± 0.9 mg/L and 2.4 ± 1.9 mg/L were observed at the effluent during NSF certification for BOD5 and TSS, respectively. That led to calculated MDLs about 3 times greater under cold conditions, for both BOD5 and TSS.

This discrepancy is even more striking when NSF results are compared to CAN/BNQ data set obtained only during the stress tests and recovery periods ("CAN-BNQ Stress only"). Stress tests have a non-negligible impact on the variability of the results measured which is 1.5 to 1.2 time more important, respectively for BOD5 and TSS, when compared to CAN-BNQ results without stress tests - "CAN-BNQ No Stress". These results emphasize the importance of measuring system performance during not only the recovery period following the stress tests but also during the stress tests itself. Stress tests are very important determining factors for the representativeness of a certification protocol.

Of course, parameter sensitivity to stress test conditions will vary from one technology to the other and is impacted by the type of system tested, i.e. packed bed filter, attached growth aerobic treatment unit (ATU), suspended growth ATU, etc.

Table 5 presents a comparison between MDL expected field performance calculated for BOD5, acknowledging that other parameters such as TSS follow a similar trend, using all datasets described in the current study, and the associated field results of the same technology, obtained from BNQ annual field performance audit program from 2006 to 2016. The percentage of samples showing concentrations under each of the calculated MDL is then presented to illustrate the representativeness of each certification protocol relative to field performances.

Assume that a certification protocol is considered representative of field conditions, if the percentage of field results being under the MDL is higher than 80%, as for both BNQ and CAN/BNQ certification protocol, the analysis presented in Table 5 suggests that CAN/BNQ Annex A certification protocol would be representative of field conditions, with more than 92% of the field results being under the calculated MDL for BOD5. This percentage climbs to over 93% when MDL is calculated based on the "CAN-BNQ Stress only" dataset. In comparison, the percentage of field data below the MDL value calculated based on NSF dataset, is much lower, with 64%. These low percentages of consistency between field expected performances and real conditions results are essentially related to the fact that the NSF certification protocol does not take into account the impacts of stresses and system upsets that are more than likely to occur in the field, and is thus much less representative of real field conditions.

Conclusions

Based on the effluent results obtained during certification tests it appears that MDL statistical analysis is a good tool to evaluate the likely concentrations that should be expected at the outlet of a treatment system from field performance. This tool provides a degree of certainty and a probability of not exceeding that value. However, that analysis remains reliable only if the certification protocol is representative of field conditions.

A less stringent protocol is more likely to decrease the performance variability of a given technology, whereas a more stressful protocol or measuring during and immediately after stresses is more likely to produce results with a variability representative of field conditions.

Thus, beyond the results obtained during a certification, a good comprehension of the testing protocol is a very important determining factor. The more stringent is the certification program and the class of treatment, the more likely the system will meet treatment expectation under real conditions. Lower level of compliance of field results compared to calculated MDL based on NSF data set illustrates the lesser representativeness of real conditions of this standard. Sampling not only during stresses recovery period but also during stress tests period reveals to be an important determining factor for the representativeness of a certification protocol relative to field conditions and to demonstrate the reliability of certified systems. Climatic conditions have also a non-negligible impact on the variability of results during certification, impact that will also be reflected in real conditions. North America has a wide variety of climatic conditions and this element shouldn't be left aside when assessing certified system data.

The more stringent and representative will be certification protocols, the more robust and reliable the certified systems will be in the field and the more consistent the results. Consequently, less energy will be required in verifying field performance of certified technology nor site specific performance compliance. Energy could instead be put in better enforcement of systems design conformity and regular inspection and maintenance of those systems, which has been acknowledged by the industry as being a key to ensure long term performance of OWTS.

Promote Your Product Information Sessions with OOWA

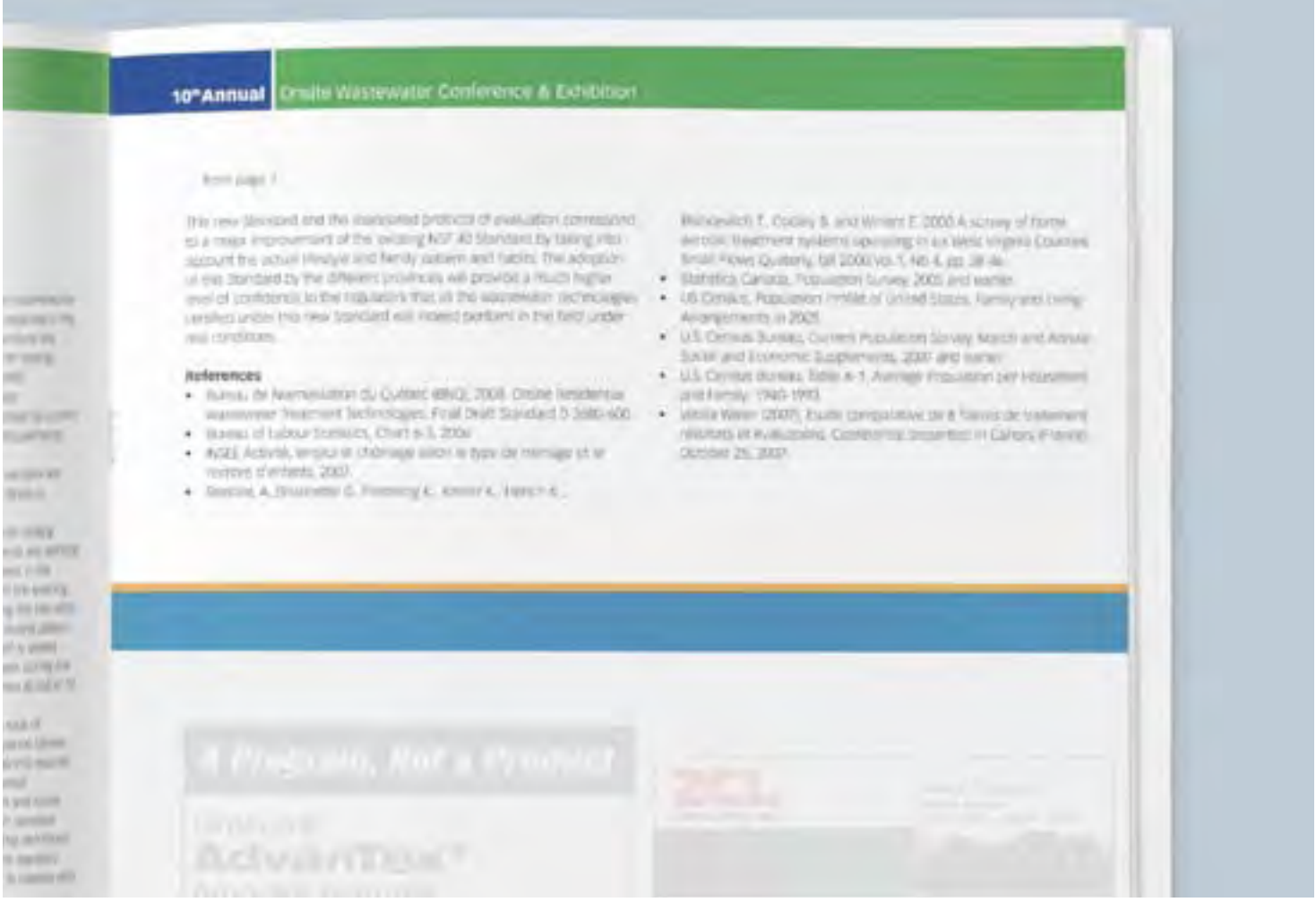
Let OOWA help promote your product info sessions through our E-newsletter and Training Bulletin that are emailed directly to 550+ individual members throughout the province every month. Contact Mike Gibbs at outreach@oowa.org or 1-855-905-6692 ext. 101 to get more details.

Ontario Onsite Wastewater Association 20 YEARS

PAST EDITION ARTICLE

Ontario Onsite Wastewater Association 20 YEARS

PAST EDITION ARTICLE



PAST EDITION ARTICLE

Frequently Asked Questions — About Septics and the Building Code

Q► Why does the OBC require that the mantle area for a raised bed or a filter bed be designed for a specified loading rate?

A► The OBC sets a loading rate to prevent effluent break-out from the sides of the leaching bed or mantle area where critical soil conditions exist. It has been the experience of enforcement agencies that the construction of raised beds and filter beds under such conditions may require that the mantle area be extended for more than the 15 metre minimum.

Q► I was denied a septic permit. Can I appeal?

A► Yes. If there is a dispute between an applicant for or holder of a building permit or a person to whom an order under the Building Code Act has been given and a sewage system inspector, either party can apply to the Building Code Commission (BCC) for a resolution of the dispute. The BCC deals with matters related to the interpretation of the technical standards in the OBC or the sufficiency of compliance with these technical standards.

Q► How can a sewage system inspector check that a septic tank meets the OBC's requirements?

A► The OBC requires that septic tanks conform with the requirements of CSA Standard CAN/B 66 — Prefabricated Septic Tanks and Sanitary Sewage Holding Tanks.

This standard requires that certain information be marked on the tank. In addition, building officials can require that certain tests be completed or documents provided to satisfy themselves that tanks conform with the OBC requirement and CSA standard.

Further information on septics can be obtained by visiting the Housing Development and Building Branch's home page at http://dbc.mmah.gov.on.ca/

MEMBER PROFILE

Rob Sanna
Boyd Bros Concrete Products

ROB SANNA
Boyd Bros Concrete Products

Name of Business:
Boyd Bros Concrete Products

Owners:
Jason Schoenfeld, Rob Sanna, Geoff Schoenfeld

Services/Mandate:
Precast concrete and complete Wastewater System Solutions

Service Area:
Ottawa & Surrounding Areas, Kingston, Greater Napanee, Eastern Ontario

Number of Years in Operation/Role:
Boyd Bros has been in operation since 1907 and with the Schoenfeld family since 1978.

What got you started in the onsite wastewater industry?
In the 1960's Boyd Bros Concrete was known for making Boyd Blocks. Their method of making blocks became far too labor intensive, so their focus shifted to septic tanks and other related products. In 1978 the Schoenfeld Family purchased Boyd Bros and from there Peter Sr. and Jr. carried on, eventually expanding into septic pumping as well. After partnering with advanced treatment companies, Boyd Bros quickly became the leader for complete septic systems in Eastern Ontario, which remains the case to this day.

Give us one reason/secret for your success.
Boyd Bros is committed to providing the highest quality precast concrete and wastewater system solutions. Our growing relationships with septic contractors and installers are a direct result of our ability to listen, respond and support these companies on a professional, as well as personal level. We use only the best suppliers and technologies on the market; Combined with our state-of-the-art batching plant and meticulously maintained forms, you get superior quality products that you can count on to last a lifetime.

Where do you see the onsite industry going?
Down the shitter! HA! Seriously though, with increasing government restrictions, environmental responsibilities, and the growing trend in automation, there are emerging opportunities for remote monitoring and 'smart septic systems' Current wastewater treatment facilities are already being taxed to their maximum. There should be a larger push for community septic systems as a hybrid of onsite and municipal services.

What can the onsite industry do to improve?
Consistent interpretation and enforcement of the OBC across the entire province, could and would spur innovation and acceptance. Continuing education, especially for homeowners, showcasing and highlighting the benefits of onsite wastewater treatment vs the Big Pipe.

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