

# Onsite

## ONTARIO ONSITE WASTEWATER ASSOCIATION NEWSLETTER

treatment | technology | innovation | reuse | recycle

CONFERENCE EDITION 2017

Ontario Onsite  
Wastewater Association

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## The New CAN/BNQ 3680-600 Standard

By Jason Ghawali, C. Tech, and Eric Gunnell, P.Eng, Gunnell Engineering Ltd.

As of January 1, 2017, all advanced treatment units must now be certified to the requirements of CAN/BNQ 3680-600. During the past few months, the Ontario Onsite Wastewater Association has been very active in providing education to our membership by conducting workshops throughout the Province.

Historically, all approved advanced treatment units that had Ministry of Municipal Affairs & Housing (MMAH) approval, were included in Ontario Building Code (OBC) Supplementary Standard SB-5. This standard has now been revoked.

In the past, the minimum requirements for inclusion into Supplementary Standard SB-5, was NSF40 certification, by achieving 10 mg/L CBOD5 and 10 mg/L TSS.

Treatment units meeting this requirement were referred to as 'tertiary' treatment units, as detailed in OBC Table 8.6.2.2. The reference to 'tertiary' treatment has now been renamed in the latest Building Code, as 'Level IV' quality effluent.

It has likely been determined that testing at the NSF facility in Waco, Texas, was not very representative of our Canadian climate. CAN/BNQ 3680-600 is a Canadian standard that requires 12 months of rigorous testing, including 6 months of

both hydraulic loading & stress testing, which is then followed by 6 months of seasonal reliability testing. CAN/BNQ 3680-600 testing facilities must be located in a plant hardiness Zone 3 or 4 Climate area of Canada, which does not include Southern Ontario. The MMAH have included the requirement for certification to CAN/BNQ 3680-600, with the exception that the sewage influent must either be unheated, or heated to 11°C (i.e. not heated to 17°C).

In addition to testing for CBOD5 and TSS, the CAN/BNQ 3680-600 standard also provides for disinfection treatment, phosphorous reduction and nitrogen reduction, although the latter items have limited application in Ontario at the moment.

The intent is that adoption of this new standard will ensure that under-performing advanced treatment units will no longer be in the market place, and will increase the credibility of our industry. However, the high cost of obtaining CAN/BNQ 3680-600 certification, which is estimated in the range of \$250,000 to \$300,000 +, will undoubtedly inhibit a number of smaller, but perhaps qualified manufacturers.

*continued on page 50*

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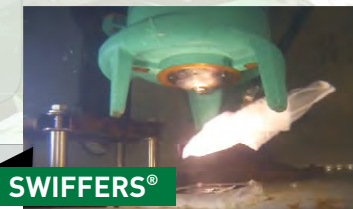
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## PRESIDENT'S MESSAGE

I am pleased to welcome those participating in our 2017 Convention and Expo in Niagara Falls. This year's event is not to be missed! Our trade show is the largest to date with over 25,000 square feet of exhibitor space. We are fortunate to have the most knowledgeable professionals in our industry lined up for the information sessions. This year we have also included Saturday training sessions to compliment the two days of information sessions. This will support our members looking to advance their knowledge and skills in particular technical areas. Those who are part of the In-Development stream of our Registered Professional Program will be able to count these courses toward the required aptitudes for their designation. Thank you to our amazing staff and many volunteers that make this event come together each year.

As I was writing this message, I was reflecting on the first OOWA conference I attended in 2003. I remember feeling somewhat intimidated, but at the same time excited and impressed by the number of knowledgeable speakers, and the ability to gather that many people into one room to discuss onsite wastewater. Being a relatively new professional to the onsite industry at that time, I was amazed that there were so many other people who shared a similar passion for onsite wastewater systems. This will be my thirteenth annual conference, and this event has never disappointed me. It has become

a place to learn, but also a time to catch up with old friends and network with new industry members.

The success of our annual conference is reflective of the professionalism and passion of our OOWA members. This is one of the primary reasons I love being a part of this organization. There is much to be said for being able to network with the best professionals in the industry; the potential for knowledge transfer is undeniable. We are members of OOWA because we want to be, and when we showcase this knowledge and our professional skills, we are contributing to moving the industry forward in a positive way. Keep up the good work!

Anne Egan  
President



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To submit an article or place an advertisement contact the editor at [outeach@oowa.org](mailto: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.*

CONVENTION SCHEDULE - Saturday March 25, 2017

10:00 am to 11:00 am	Board Meeting	Meeting Room 204
12:00 pm to 4:00 pm	Registration Opens	Main Lobby
12:00 pm to 6:00 pm	Exhibitor Set-up	Exhibit Hall A
1:00 pm to 4:00 pm	Training Sessions*	Session Rooms
4:30 pm to 5:30 pm	Annual General Meeting	Port Colborne Lounge
7:00 pm to 9:00 pm	Conference Welcome Reception	Port Colborne Lounge

Sunday March 26, 2017

7:45 am to 8:30 am	Registration & Networking Coffee	Exhibit Hall A
8:30 am to 4:30 pm	Expo Hours	Exhibit Hall A
8:45 am to 9:00 am	Opening Remarks	Ballroom C & D
9:00 am to 10:00 am	<b>Keynote Address: Dave Gustavson - University of Minnesota</b> <i>Getting the Most out of Your Neighborhood &amp; System: A Lifetime of Value</i>	
10:00 am to 10:45 am	<b>Dale Thompson &amp; Karen Fields - Construction Workplace Safety</b> <i>Protect Yourself and Your Company from Charges and Claims</i>	
10:45 am to 11:15 am	Expo and Morning Networking Break	Exhibit Hall A
11:15 am to 11:45 am	<b>Session 1: Clark Thomas - Purves Redmond Limited</b> <i>Does Your Insurance Cover You for the Activities You Perform?</i>	Session Room A
11:45 am to 12:30 pm	<b>Session 2: Panel Discussion</b> <i>Non-Residential Design Under the Building Code - Challenges and Best Practices</i>	Session Room C
12:30 pm to 1:30 pm	Networking Lunch	Exhibit Hall A
1:30 pm to 2:00 pm	<b>Session 3A: Kelly Galloway - Engineering Technologies Canada Ltd.</b> <i>Use of Constant Head Permeameters and its Relationship to Percolation Time</i>	Session Room A
	<b>Session 3B: Coralie Lamaire-Chad &amp; Eric Bard - Bionest</b> <i>Improving Performance in Aerated Lagoons Using Fixed Film</i>	Session Room C
2:00 pm to 2:30 pm	<b>Session 4A: Jason Berry - ESSE Canada</b> <i>Challenging Real Estate Inspections: Advanced Treatment Units</i>	Session Room A
	<b>Session 4B: Derk Maat - Maat Enviornmental</b> <i>Performance Enhancement to Meet Nitrogen Criteria</i>	Session Room C
2:30 pm to 3:00 pm	<b>Session 5A: Bill Muirhead &amp; Chris James - Waterloo Biofilter</b> <i>System Maintenance – Performance Requirements &amp; Optimization under the new OBC</i>	Session Room A
	<b>Session 5B: Robin Wakelin - Bishop Water</b> <i>Ammonia Control Using BioCord</i>	Session Room C
3:00 pm to 3:30 pm	<b>Session 6A: Doug Niles - Trenchless Utility Equipment</b> <i>The Science of Locates, Tips and Tools: An Interactive Q&amp;A Session</i>	Session Room A
	<b>Session 6B: Katherine Rentsch - R.J. Burnside &amp; Associates</b> <i>Challenging Design on a Small Lot</i>	Session Room C
3:30 pm to 4:00 pm	Expo and Afternoon Networking Break	Exhibit Hall A
6:30 pm to 7:30 pm	Pre-Banquet Reception	Prefunction Space (Entrance to Ballroom)
7:30 pm to 9:30 pm	Annual Awards Dinner	Ballroom C & D
9:30 pm onwards	Convention Sponsor Hospitality Suites	Marriott on the Falls

## CONVENTION SCHEDULE - Monday March 27, 2017

7:45 am to 8:30 am	Registration & Networking Coffee	Exhibit Hall A
8:30 am to 4:00 pm	Expo Hours	Exhibit Hall A
8:30 am to 8:45 am	Opening Remarks Aubrey Leblanc - OBOA	Ballroom C & D
8:45 am to 9:45 am	<b>Keynote Address: Eric Casey - NOWRA</b> <i>How NOWRA is Representing the US Onsite Wastewater Industry</i>	
9:45 am to 10:30 am	<b>Keynote Address: Peter Gallant - WaterTAP</b> <i>Better Best Practices to Support Small Communities</i>	
10:30 am to 11:00 am	Expo and Morning Networking Break	Exhibit Hall A
11:00 am to 11:30 am	<b>Session 7A: Stephanie Worrone &amp; John Fitzgibbons - University of Guelph</b> <i>Management Tools for Rural Water and Wastewater Systems in Rural Ontario</i>	Session Room A
	<b>Session 7B: Chris Jowett - Waterloo Biofilter</b> <i>Anaerobic Digester Pretreatment Tank</i>	Session Room C
11:30 am to 12:00 pm	<b>Session 8A: Joe Witlox - Newterra</b> <i>Modular Wastewater Treatment Plants in the Decentralized World</i>	Session Room A
	<b>Session 8B: Bassim Abassi - ORWC</b> <i>Bench Test of Steel Suction Lysimeters for Onsite Wastewater Applications</i>	Session Room C
12:00 pm to 12:30 pm	<b>Session 9A: Duncan Ellison - National Sanitation Foundation</b> <i>Can Effectiveness be Standardized?</i>	Session Room A
	<b>Session 9B: Allan Hazelton - Great Lakes Clean Water LP</b> <i>Innovation &amp; Reuse for Onsite Wastewater Installations</i>	Session Room C
12:30 pm to 1:45 pm	Afternoon Networking Break	Exhibit Hall A
1:45 pm to 2:30 pm	<b>Session 11: Marie Christine Belanger, Bill Muirhead &amp; Francois Cote</b> <i>Certification Norms and Their Implications: The Road to Certification</i>	Ballroom C & D
2:30 pm to 3:00 pm	<b>Session 12: Rick Esselment - ESSE Canada</b> <i>Divide &amp; Conquer: Why Public Policy Loves the Big Pipe</i>	Ballroom C & D
3:00 pm to 3:45 pm	Expo and Final Afternoon Networking Break	Exhibit Hall A

## Saturday March 25, 2017 Training Session Details\*

\*3 Registered Professional Program aptitude courses are open and available to all delegates:

### Training Session #1

Basic Electrical  
Safety Training

(Ontario Electrical Safety Code Basics)

Session Room A  
ROOM 201 & 202

### Training Session #2

Pumps, Dosing  
and Controls

Session Room C  
ROOM 203

### Training Session #3

Wastewater Process:  
Terminology and  
Sampling Techniques

Session Room B  
ROOM 207 & 208

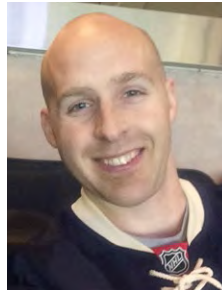
# CONFERENCE SPEAKERS



## **Bassim Abbassi**

Bassim Abbassi joined the School of Engineering at the University of Guelph as a full time faculty member in 2015. Currently he is the director of the Ontario Rural wastewater centre at the University of Guelph. Bassim has a PhD in Environmental Engineering from the University of Bremen in Germany. Over the past years, he has been working on developing technologies for on-site wastewater treatment. He cooperated closely with research institutions and industrial partners in Germany to test and calibrate several

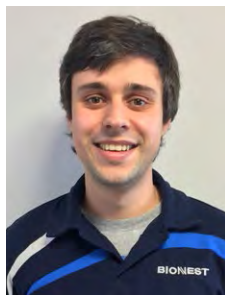
technologies that are available in the market. Bassim has also participated in several workshops and international conferences, where he presented his works related to decentralized wastewater management.



## **Jason Berry**

Jason completed his Bachelor of Science with honors in Earth Surface Science from the University of Guelph. Jason joined the team at ESSE Canada in 2009 has been actively helping to develop the Property Services division as a technologist and senior inspector. He currently manages the Inspection and Design Services program, working hard to develop training programs and developing the team's skill sets.

Jason has obtained and actively maintained his certifications as an Onsite Sewage Systems Inspector, Installer and Designer, and is committed to constantly furthering his knowledge and qualifications on an ongoing basis.



## **Eric Bard**

Eric Bard, Jr. Eng., studied Civil Engineering at Laval University, before completing a Business Administration Certificate, also at Laval University. He began working at Bionest early 2015. His experience includes concrete mix design and R&D, as well as Finite Element Analysis. Mr. Bard joined the Bionest Sales team as Technical/Commercial Project Manager. He now acts as an Advisor to Engineers from various firms, in selecting the most appropriate wastewater treatment chains for their projects.



## **Bruce Bolduc**

Bruce Bolduc, CHSC, CRSP, P.GSC, is a consultant and president of Construction Workplace Safety Training Ltd. for over 16 years. Bruce and CWST have been providing professional Health and Safety assistance to businesses in central Ontario and across Canada. Bruce brings over 30 years of experience in the construction industry to his clients.

This experience gives Bruce the ability to relate to both the employee and employer health & safety issues that arise on a site. He also serves on several committees and boards and he is a member of various Associations.



## **Marie-Christine Bélanger**

Marie-Christine Bélanger is the current Product Director and Government Relations at Premier Tech Aqua (PTA), a Canadian company and world leader in the Onsite Wastewater Treatment industry. She accumulated over five years of professional experience as a Project Manager for the development and implementation of decentralized wastewater treatment systems for GSI Environnement before pursuing a career as Project Development Director at Group Celdex, a firm specializing in the development

of integrated Waste Management programs in emerging countries. 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, etc. where 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.

She was first elected as OOWA's director in 2010 and was re-elected in 2011 and 2014. She is chairing the Onsite Technical Committee since 2012 and was co-chairing the Government Relation from 2010 to 2013.



## **KEYNOTE SPEAKER**

### **Eric Casey**

Eric Casey has served as the Executive Director of the National Onsite Wastewater Recycling Association since June 2010. In that capacity he has day-to-day responsibility for the management and operation of the association. His responsibilities include

- Policy development and strategic planning
- Development and implementation of conferences, publications, websites and new products
- Membership relations and liaison with state onsite associations
- Representing NOWRA's interests before outside stakeholder groups.

Casey is a member of the USEPA Decentralized Wastewater Workgroup, the NSF International Joint Committee on Wastewater, and the Water Environment Federation Small Communities Committee. He has an undergraduate degree in government relations from the University of Virginia, and an MBA from The George Washington University.





### **Coralie Lamaire Chad**

Coralie Lamaire Chad graduated from Sherbrooke University in 2008 as a Chemical Engineer. She is currently completing a Water Engineering Master's thesis at Laval University with Professor Peter Vanrolleghem. In her research, both modeling and real time controls were used to identify the best strategies towards increasing Copenhagen, DK's wastewater treatment plant capacity, with no addition of new equipment. Coralie has been working for Bionest since 2014, where she began as R&D Project Manager. She is presently responsible for Product Certification.



### **T. Duncan Ellison**

Throughout his career, and continuing in his retirement, he has been active in public and environmental risk assessment and management, and in standardization activities. He became the Executive Director of Canadian Water and Wastewater Association in 1993 when he retired from the federal public service. He retired from that

position in 2012 but continues to work in standardization activities. He currently chairs three Canadian ISO Mirror Committees related to water, several national and US-based standards Committees. He is an Honorary Member of CWWA and the Canadian Institute of Public Health Inspectors and a member of the AWWA Hall of Fame.



### **Rick Esselment**

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 also founded ATA Resources, an investment company with equity positions in several water and wastewater businesses in Ontario.

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.



### **John FitzGibbon**

John FitzGibbon has been a faculty member at the University of Guelph for the past 31 years prior to that he was faculty at the University of Saskatchewan for 10 years. He is a registered Professional Planner. His doctoral research was on Snowmelt hydrology and flood modeling under the supervision of Tomas Dunne at McGill University. His M.Sc. was on coastal sediment modeling at the University College of Wales. He teaches Water Resources Planning and Management as well as Environmental and

Planning Law at the undergraduate level. At the Graduate level he teaches: Policy Planning, Water Resources Management, Planning Methods and Planning Theory. His current research is on: Source Water protection implementation and the role of collaboration in management of rural municipal water services in Ontario, Inter-municipal Collaboration for water services provision, Private Water and Waste water Management and Phosphorous Loss Management in Agricultural operations.



### **Karen Fields**

Karen completed her undergraduate and law degrees at Western University in London Ontario and was called to the Bar of Ontario in 1993. Karen began her career with a leading management-side labour and employment law firm in Toronto, Ontario. She practiced as an associate and partner with the firm, increasing her province wide reputation in Occupational Health and Safety defence work.

In February 2004, Karen joined Crawford Chondon & Partners LLP (CCPartners) as a partner to expand the H&S focus of the firm.

Karen has been consistently recognized by her peers for her work in occupational health and safety and has been included in Best Lawyers in Canada for her work in this area. She provides advice and representation as counsel in occupational health and safety work for corporations, their officers and directors and supervisors under the OHSA. She has appeared at all Ontario levels of court including the Court of Appeal on OHSA cases and regularly attends at Labour Board hearings on Order appeals and section 50 reprisals.

Karen also assists clients in Coroner's Inquest hearings, and has been one of a small number of lawyers asked to provide a coroner's inquest seminar to lawyers across Canada for the Canadian Association of Counsel to Employers. She has appeared as counsel at Inquests for individual corporations as well as Police Services, Ambulance and Fire Services. In addition to litigation and advice, Karen provides proactive advice and training to employers.

# CONFERENCE SPEAKERS



## KEYNOTE SPEAKER Dr. Peter Gallant

Dr. Peter Gallant is a serial entrepreneur with extensive experience in the global water technology sector. As the founding President and CEO of Kingston, Ontario-based Pathogen Detection Systems Inc. (PDS), he led the development of a novel automated microbial detection system. In 2009, PDS was acquired by Veolia Water Solutions and Technologies, a division of the world's largest environmental services company – and became ENDETEC – the global water quality sensor platform for Veolia Water.

From 2009 until April, 2015, Dr. Gallant served as Vice President, Business Development and Regulatory Affairs of ENDETEC, notably leading the team that secured the first-ever US EPA approval for an automated microbiological testing system for regulatory compliance testing of drinking water samples under the Total Coliform Rule. Over his career he has founded and led a start-up in the software industry, has served in several advisory roles for government agencies and start-up companies, and he currently serves as co-Chair of the Steering Committee of the American Water Works Association's committee on barriers to innovation in the water sector.

He has authored or co-authored numerous technical publications, is a co-inventor on several patents on innovative water quality sensor technologies, and is a frequent speaker at industry events worldwide.

Dr. Gallant is also an adjunct faculty member in the internationally ranked Queen's School of Business, where he lectures on entrepreneurship, strategy, innovation and new venture finance at the undergraduate and MBA level. Dr. Gallant holds B.Sc., M.Sc. and Ph.D. degrees in Electrical and Computer Engineering from Queen's University in Kingston, Ontario, Canada.

Prior to joining the WaterTAP management team, he served as a Director of WaterTAP from its inception until March 2015, including most recently a term as Vice Chair of the Board. Previously, he had been appointed by the Provincial Government to serve on the Ontario Council on University Affairs.



## Kelly Galloway

Kelly Galloway, P.Eng., is a Civil Engineer with 25 years experience, 20 years with her own firm, Engineering Technologies Canada Ltd. based in PEI. Kelly has received multiple awards for excellence in engineering and sustainable design, including a 2011 FCM Sustainable Community Award.

Known by many in the onsite industry as the "Queen of the Throne", Ms. Galloway's areas of consulting activity include: design of small community, commercial and residential sewage systems, soil evaluations and planning studies. She has consulted on technical aspects of guidelines for NB and BC.

Kelly is a voting member of the CAN CSA B65-12 Technical Committee for decentralized wastewater systems and chaired the Soil Absorption Systems Task Force.

Ms. Galloway delivers training to installers, regulators and engineers, and is a frequent speaker at major industry conferences. Kelly holds two patents for inventions for the on-site industry.



## KEYNOTE SPEAKER Dave Gustafson

Dave Gustafson, PE is a registered Engineer working in the Water Resource Center at the University of Minnesota. He has been dealing with sewage for over 25 years in municipal scale systems and backyard treatment technologies. He has been educating and assisting onsite treatment professionals in MN, nationally and internationally for over twenty years. His position allows him to be active in the troubleshooting and evaluation of systems in MN and Nationally. He has learned through the years that we can learn from each other and getting your hands dirty helps to keeps your thoughts clear.



## Allan Hazelton

Business Development Manager, Great Lakes Clean Water – Limited Partnership (GLCW-LP). Allan is a graduate of the University of Western Ontario with a BA in Science. He has been an active member of resident associations in the Georgian Bay area championing environmental matters for over 35 years. In these roles he has been active in and leading discussions with the Township of Georgian Bay, The District of Muskoka, the Federation of Ontario Cottagers' Associations (FOCA), and the Georgian Bay

Association (GBA). He has also participated in OMB hearings to defend environmental matters.

He has been a sales professional for over 35 years in the high tech solutions marketplace selling Customer Service and Customer Experience solutions to large enterprises.

His passion for water quality and environmental matters has led to him joining GLCW-LP to help to bring the WATERCLEANTM system to the marketplace. In his role of Business Development he has led discussions with many of the organization that impact approvals for new technologies including: MOECC, Federal Ministry of Environment, MMAH, OCETA, ETV, LSRCA, municipal governments, and WaterTAP.

Allan has been a member of OOWA since 2011 and a board member from 2013 to 2015. He has also been a member of NOWRA since 2015.



## Chris James

Chris is the head of the operations and maintenance department at Waterloo Biofilter Systems Inc. He has 10 years of field experience servicing, installing and troubleshooting a variety of treatment systems throughout Ontario. Chris is also involved in the design process, construction & commissioning.





### **Christopher Jowett**

Christopher Jowett is Head of Business Development at Waterloo Biofilter Systems Inc. where he has worked for the past 10 years. He holds a BAsC in System Design Engineering from the University of Waterloo and an MBA from Wilfred Laurier University. Christopher is a member of the technical committee for the CSA B65 Installation Code for Decentralized Wastewater Systems Standard.



### **Doug Niles**

Doug Niles is involved in sales, support, training - education and a huge array of locate technicians from nuclear generator plants to roofers and waste water /septic /plumbers for past 20+ years.

It will be a pleasure to discuss the issues and best practices of tracer wire installation placement , set up and protection then finally why and how the locate happens at this years conference.



### **Derk Maat**

Derk Z. Maat M.Eng., P.Eng. is President & Chief Executive Officer MAAT Environmental Engineering Corp and environmental engineering and consulting company and SCICORP International Corp. a company producing environmentally sustainable products to enhance wastewater treatment plant performance mitigate odors from a wide variety of organic sources.

Mr. Maat is recognized expert in the field of waste water treatment and odour control and has over 45 years of professional engineering experience in this area. He has been involved in research and development, consulting, design, construction engineering, technology development for biological wastewater treatment and odour mitigation technology.



### **Katherine Rentsch**

Katherine is a Project Engineer at R.J. Burnside & Associates Limited in Guelph and Mississauga, specializing in on-site sewage system design. As a project engineer, 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 undertakes assessments of existing systems for proposed expansions or additions. Before coming back to Burnside (she previously worked there from 2002 – 2005) Katherine was the

Project Coordinator at the Ontario Rural Wastewater Centre (ORWC) for ten years, where she was responsible for coordinating, developing and delivering workshops, courses, and information sessions to various groups within the on-site wastewater community. Katherine continues to teach courses for the ORWC on a contract basis.



### **Bill Muirhead**

Bill Muirhead is the President of Waterloo Biofilter, which is a Canadian-owned and operated company that develops designs and maintains advanced onsite wastewater treatment systems. Prior to joining Waterloo Biofilter he was a partner with Stacey Muirhead Capital Management. Bill has experience in the manufacturing industry as he owned and operated Waterloo Bedding for 14 years. Bill has a Honours Bachelor of Business Administration degree from Wilfrid Laurier University and holds

a CPA., CA designation. He is a past President of the Kitchener Grand River Rotary Club and currently is the Chair of the Investment Sub-committee and is a member of the Board of Governors at Wilfrid Laurier University.



### **Clark Thomas**

Clark's experience in the insurance industry can be dated back to 2002 however over the past 10 years he has focused primarily on environmental & construction risks. With a belief of being proactive in the industry, Clark is involved with various Association's including acting Board Member at the Hamilton Halton Construction Association, as well as the Toronto Construction Associations' Young Construction Leaders Club where he is a Committee Member.

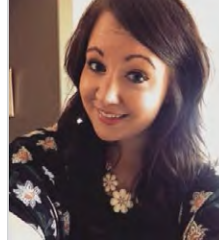
His approach differs from most other insurance brokers with respect to risk management. Not only does he produce the most competitive quotes amongst his peers time after time, he also offer solutions which the common traditional insurance broker does not; such as developing core risk competencies, full contract reviews, prequalification of Owners/General Contractors/Sub Contractors, and benchmarking.

# CONFERENCE SPEAKERS



## Robin Wakelin

Robin graduated from McMaster University with an Honours Bachelor of Environmental Science degree in 2013. Joining the Bishop Water team in April 2016, she has become an integral team member involved with research coordination and technical sales.



## Stephanie Worrone

Stephanie Worrone is a Master's of Science Candidate in the Rural Planning & Development program at the University of Guelph. Prior to attending the University of Guelph, she completed her undergraduate degree in Environmental Studies at Trent University.

Stephanie has now spent three years researching rural water and wastewater system policy

frameworks and management practices across Ontario including many case study locations in northern Ontario. After graduation in April, Stephanie hopes to pursue a career in Environmental Planning where she can utilize her theoretical and technical knowledge of rural water and wastewater systems accordingly.



## Joe Witlox

Joe compliments newterra's seasoned water and sewage treatment team with a unique combination of experience in the land development sector – from field service to engineering to project and operations management. Since joining the company in 2013, Joe's technical background and problem-solving acumen have allowed him to advance newterra's focus on robust, operator-friendly treatment solutions. He is also applying his significant expertise in plant optimization and process refinement to our sustainable communal and decentralized treatment offerings.

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# 2017 CONVENTION EXHIBITORS



# MEMBER PROFILE

## Dave Dobinson

Dave Dobinson Excavating

**Name of Business:** Dave Dobinson Excavating Inc.

**Owners:** Dave Dobinson

**Services:** Residential and Commercial Septic Systems Designs and Inspections: • Installation • Service • Repair

- Video Drain Services
- Excavating : Basements, pools
- Sewer and water lines
- Municipal infrastructure repair
- Trenching
- Haulage
- Site Servicing
- Driveways
- Grading
- Demolition
- Commercial Snowplowing / Snow Removal

**Service Area:** Simcoe County

**Number of Years in Operation:** 23 years

### What got you started in the onsite and decentralized wastewater industry?

I spent my teen years working in the family business where I learned about excavating, trucking and installing septic systems. After a couple of years exploring other career options, I came back to the onsite and wastewater industry. This is the field where my expertise, skills and passion are utilized to their fullest. I enjoy helping our customers by being up to date on the latest regulations, grants, safety gear and technology.

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

Integrity, commitment and passion have brought us success. My family of which some are involved in my business and some are not, are all supportive and committed to working together to create ongoing success. As well, all our staff have the same hard working ethics and are proud of their workmanship and professionalism.



**DAVE DOBINSON**  
Dave Dobinson Excavating

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

OBC code changes are happening quickly so we must keep current with them to have full awareness of the changing technology and legislation. Important changes will keep coming from regulation and legislation and they may come swiftly. This is a good thing. It is up to us as the professionals in this field to stay on top of these changes. I see OOWA being instrumental in educating our stakeholders (home owners, installers, regulators and manufacturers) in a proficient and effective fashion.

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

Educate all industry stakeholders to ensure that wastewater treatment processes are clearly understood and accessible while still maintaining a focus on environmental responsibility. We can create programs that employ clear language of how onsite and decentralized wastewater systems can work and should be maintained. We need to continue with educating the public and our own professionals to ensure wise decision making for our industry's future. The more informed we all are, the better the outcomes will be.

# 2017 OOWA MEMBERSHIP BENEFITS



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

**Life-side Assistance**



OOWA members save **10%** at **Mark's Work Warehouse** on the follow items and more; Carhart merchandise, Dakota Workware, Coveralls and Overalls, casual wear, work gloves, and all CSA footwear. Present it at any location to receive your discount.



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



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](mailto: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/](http://www.uoguelph.ca/orwc/) . Contact Bassim Abbassi at 519-824-4120 Ext. 52040 or via email at [babbassi@uoguelph.ca](mailto:babbassi@uoguelph.ca).



OOWA has redeveloped the **Registered Professional Program (RPP)** to address 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.



OOWA has been working closely with our education partners to ensure that our members have access to courses that will provide them with the aptitudes they need to achieve their chosen RPP designations. Members enrolled in the 'In-Development Stream' of the RPP can now get special recognition for their dedication to skills and professional development on our new Find an Expert directory while working towards their RPP designations . Go to [www.oowa.org](http://www.oowa.org) to see the new directory and to learn how you can enroll and get placed on the directory now.



- 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/](http://www.oowa.org/about/join-oowa/)



# NEW & RENEWED MEMBERS LISTING

December 15th, 2016 - March 1st, 2017

## NEW MEMBERS

**Michael O'Toole**, Fernco/Source One Environmental  
**Rick Brear**, Adams Bros Construction  
**David Adams**, Adams Bros Construction  
**Andrew Fetter**, Niagara Region - Public Works  
**Adam Doran**, Aclarus Ozone Water Systems  
**Phil McKee**, Vacutrux Ltd  
**Mirelle Lisi**, Township of Lake of Bays  
**Hamza Furmli**, Student, McMaster University  
**Kyle Wetherall**, Waterloo Biofilter Systems  
**Jason Snell**, Township of Centre Wellington  
**Mathew Csordas**, Student, McMaster University  
**Josef Kloepper**, Gunnell Engineering  
**Jason Ghawali**, Gunnell Engineering  
**Teresa Buckman**, MakeWay Environmental Technologies Inc.  
**Sara Catherine Atherley**, Student, St. Edmund Campion Secondary School  
**Nick Snyder**, Township of Muskoka Lakes  
**Don Oliver**, Construction Workplace Safety  
**Steve Doucette**, Tecvalco Ltd  
**Douglas Krysko**, Gunnell Engineering  
**Brent Van Herk**, BVH Excavating & Septic Inc  
**Randy De Guire**, Township Of West Lincoln  
**Kevin Ruttan**, Ruttan's Rock Inc  
**Brandon Aitchison**, Mysson Residential Consultants  
**Randy Brown**, Randy Brown Excavating  
**Eric Bard**, Bionest Technologies  
**Maxime Dery**, Bionest Technologies  
**Simon Thoume**, James Thoume Construction Ltd  
**Greg Cherniak**, Municipality Of Dysart Et Al  
**Jason Stephens**, Stephens Excavating  
**Dave Mehlenbacher**, David Mehlenbacher & Sons

## RENEWED MEMBERS

**Robin Allen**, North Bay-Mattawa Conservation Authority  
**Giles Ardiel**, Ardiel Septic Services  
**Randy Armstrong**, Armstrong Pumping Ltd  
**James Barnes**, Geo Barnes & Sons  
**Crystal Barnes**, North Bay-Mattawa Conservation Authority  
**Ivan Beauchamp**, Temagami Trucking Ltd  
**Marie-Christine Belanger**, Premier Tech Aqua  
**Dave Bell**, B M Ross & Associates  
**David Bettschen**, O.Bettschen Construction  
**Ella Bird**, North Bay Mattawa Conservation Authority  
**Jamie Blakely**, Paterson Group Inc  
**Bruce Bolduc**, Construction Workplace Safety  
**Janis Bortolotti**, LaSalle Backhoe Service  
**Sandy Bos**, Township of Muskoka Lakes  
**Art Bos**, Bos Engineering  
**Randy Bossence**, Township of Centre Wellington  
**Ray Boyd**, Premier Tech Aqua  
**Penny Brake**, Onsite Septic Solutions  
**Frank Charlebois**, S. Charlebois Haulage and Excavating LTD  
**Dorian Chlopas**, Rowan Environmental Consulting Inc.  
**Howard Clark**, P. Medley & Sons  
**Patricia Clifford**, Gibson Engineering  
**Brad Code**, Lockwood Brothers Construction  
**Howard Cook**, Howard Cook Drainage  
**Greg Corman**, Waterloo Biofilter Systems  
**Matthew Cosby**, Cosby Septic & Excavating Services  
**Imer Covill**, Elmer's Construction

**Clay Crepin**, Gerry Crepin Cartage  
**Brock Cross**, Gunnell Engineering  
**Terry Davidson**, Ottawa Septic System Office  
**Robert Davis**, EcoEthic Inc.  
**Joe Dibbits**, Dibbits Excavating  
**Dennis Dick**, D&B Construction  
**Paul Dimitroff**, Waterloo Biofilter Systems  
**Josh Doornekamp**, Aarde Construction  
**Sherry Du**, Student, McMaster University  
**John Duffy**, Van Harten Surveying Inc.  
**Scott Dundas**, Dundas Septic  
**Anne Egan**, R.J. Burnside & Associates  
**Scott Everton**, Contractors Rental Supply LP  
**Matt Faris**, Peterborough County City Health Unit  
**John Ferris**, Ferris Trucking & Excavating  
**David Finch**, Wes Finch & Sons Excavating  
**Jim Firth**, C.F. Crozier & Associates  
**Dwaine Fisher**, Fisher Excavating & Grading  
**Nick Folkerson**, Contractors Rental Supply LP  
**Sasha Fredette**, North Bay-Mattawa Conservation Authority  
**Jameson Gallinger**, Waterloo Biofilter Systems  
**Andrew Garland**, B M Ross & Associates  
**John Garrah**, Ottawa Septic System Office  
**Carl Gauthier**, Bionest Technologies Inc.  
**Terry Gerber**, Township of Wilmot  
**Walter Gibson**, Gibson Engineering  
**Susan Gordon**, Novatech Engineering  
**Rene Goulet**, Goulet Septic Pumping & Design  
**Jessica Goulet**, Goulet Septic Pumping & Design  
**Brent Green**, Township of Centre Wellington  
**Todd Grier**, Todd Grier Excavating  
**Kathy Grier**, Todd Grier Excavating  
**Eric Gunnell**, Gunnell Engineering  
**Daniel Hagarty**, Township of Centre Wellington  
**William Handley**, Handley Home Inspections  
**David Harsch**, K Smart Associates Limited  
**Kirk Hastings**, Onsite Septic Solutions  
**Catharine Hoare**, EcoEthic Inc  
**Cliff Hobbs**, Can-Mech Agencies  
**Darlene Hoogenes-Stastny**, ALS Environmental  
**David Hull**, Roth Global Plastics  
**Jason Hutton**, Ottawa Septic System Office  
**Julie Ingram**, Peterborough County City Health Unit  
**Atul Jain**, Peterborough County City Health Unit  
**Chris James**, Waterloo Biofilter Systems  
**Gary Jansen**, Township of Centre Wellington  
**Christopher Jowett**, Waterloo Biofilter Systems  
**Craig Jowett**, Waterloo Biofilter Systems  
**Keith Karl**, Caledon Excavation & Grading  
**Thomas Keane**, Gunnell Engineering  
**Tom Keeble**, Complete Septic Systems  
**Dan Keeble**, Septic Tertiary Systems  
**Greg Keith**, Matrix Property Inspections  
**Pat Kelly**, John Brooks Company  
**Tanya Killins**, Niagara Region - Public Works  
**Randy Knight**, Glen Knight Septic Service  
**Bert Knip**, MakeWay Environmental Technologies Inc.

*continued on next page*

# NEW & RENEWED MEMBERS LISTING

December 15th, 2016 - March 1st, 2017 - *continued*

**Eric Kohlsmith**, Ottawa Septic System Office  
**Rick Kraemer**, Thunder Bay District Health Unit  
**Lloyd Laidman**, Intuitive Water Systems Inc  
**Coralie Lamaire-Chad**, Bionest Technologies  
**Nathan Latchford**, MacGregor Concrete Products  
**Patrick LeBlanc**, McIntosh Perry Consulting  
**Joe Lemieux**, Goulet Septic Plumbing and Design  
**Elizabeth Lew**, Gunnell Engineering  
**Corey Lockwood**, Lockwood Brothers Construction  
**John MacGregor**, MacGregor Concrete Products  
**Rene Madere**, Black Water Excavating & Septic Service  
**Thomas Mahon**, T.M. Mahon  
**John Martin**, Cromar Advanced Septic Systems  
**Dan Masfrankc**, Dan Masfrankc Excavating  
**Philippe Masuy**, Premier Tech Aqua  
**Andrew McGarvey**, B M Ross & Associates  
**Lynn McIlwaine**, Gunnell Engineering  
**Richard McKee**, Vacutrix Ltd  
**Jamie McMaster**, Norton Construction  
**John Moore**, Town of Bradford West Gwillimbury  
**Wayne Moore**, Cottage Country Environmental Services  
**Stephen Morash**, WMI & Associates  
**Kevin Morris**, C.F. Crozier & Associates  
**Bill Muirhead**, Waterloo Biofilter Systems  
**Randy Murphy**, Containment Solutions  
**Clifford Murray**, Edgar Howden & Sons  
**Jeff Neil**, Neil Bros. Equipment Rentals  
**Peter John Oliveira**, Student, University Of Waterloo  
**Bill Ormsby**, Premier Tech Aqua  
**Steve Ott**, Ottawa Valley Home Inspections  
**Robert Palin**, North Bay-Mattawa Conservation Authority  
**Patricia Pearce**, D. Greenfield Associates Ltd  
**Ken Pearcey**, Township of Muskoka Lakes  
**Matthew Pearson**, B M Ross & Associates  
**Cody Pearson**, Edgar Howden & Sons  
**Taeke Peereboom**, Township of Lake of Bays  
**Richard Pellerin**, Sco-Terra Consulting Group Limited  
**Glenn Pembleton**, Waterloo Biofilter Systems  
**Doug Post**, D.F.Post Contracting Inc.  
**William Pottruff**, Thunder Bay District Health Unit  
**Marty Price**, MacGregor Concrete Products  
**Michael Rahme**, Home Pro Central Ont. Inc  
**Matthew Rainville**, Houle Chevrier Engineering  
**Michael Reid**, C.E. Reid & Sons  
**Greg Reimer**, O'Hara Trucking & Excavating

**Christine Reist**, McIntosh Perry Consulting  
**Katherine Rentsch**, R.J. Burnside & Associates  
**Steve Ritsema**, Liberty Pumps  
**Norman Rivington**, NS Rivington Cartage  
**Bill Robinson**, SepticCheck.ca  
**Peter Roque**, Acchione Brothers Construction Inc  
**Colin Rouzes**, Acchione Brothers Construction Inc  
**John Roy**, Bionest Technologies Inc.  
**Frank Salaris**, Insight360 Home Inspections  
**Troy Sampson**, Thunder Bay District Health Unit  
**Stuart Saville**, Zoeller Canada  
**Pam Sayne**, Know Your Home Inspections  
**Kathleen Shepherd**, Peterborough County City Health Unit  
**Graham Smith**, Septic Tertiary Systems Inc  
**Charles Smith**, Second to None Inspections  
**Ken Sommer**, Shirecrest Homes Inc  
**Brady Straw**, Waterloo Biofilter Systems  
**Sandra Swanton**, K Smart Associates Limited  
**Dawn Talarico**, Ministry Of The Environment And Climate Change  
**Mac Taylor**, Mac Taylor Corp  
**Keith Thomas**, Francis Thomas Contracting  
**Clark Thomas**, Purves Redmond Limited  
**Dale Thompson**, Construction Workplace Safety  
**Bob Thomson**, Valley Sanitation Services  
**Don Thomson**, Valley Sanitation Services  
**Michael Tinney**, Tinney's Septic Service & Construction  
**Jessica Trela**, R.J. Burnside & Associates  
**Albert Van Schie**, Paterson Group Inc  
**John Vanden Hoven**, JVH Consulting  
**Rob Vander Doelen**, Chung & Vander Doelen Engineering Ltd  
**Andrew Vangerven**, Acchione Brothers Construction Inc  
**Stephen Watson**, Township of Lake of Bays  
**Marianne Willson**, Waterloo Biofilter Systems  
**John Winkup**, LaSalle Backhoe Service  
**Caitlin Wood**, Niagara Region - Public Works  
**Ed Yohanna**, Rural Water Wastewater Engineering Inc.  
**Jane Zima**, SimbiH2O  
**Jennette Zimmer**, Huron County Health Unit  
**Duane Porter**, J.A. Porter Holdings Ltd  
**Randy Knight**, J.A. Porter Holdings Ltd  
**Jordan Hoekstra**, Dig'R Wright Excavating Inc  
**Travis Toms**, Township of North Kawartha  
**Paul Bruinsma**, Bruinsma Excavating  
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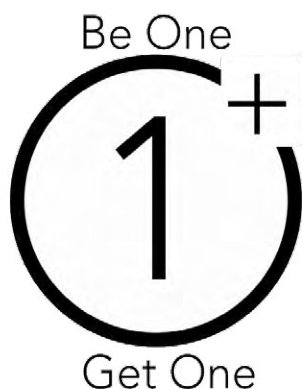
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The Be One, Get One recruitment initiative helps OOWA strengthen its representation, better deliver services and better serve Ontario's Onsite and Decentralized needs.

There is strength in our numbers!

For further details and additional information, contact OOWA's Membership Committee, Operations Coordinator or Outreach Coordinator





# Does Your Insurance Cover You for the Operations You Perform?

*Clark S. Thomas, CIP, CRM, Senior Broker, Complex Risks, Purves Redmond Limited*

Without conducting an in-depth review of your currently procured insurance policy and broad description of your operations it is difficult to determine if your insurance policy is accurately covering you for the operations you perform. What I can tell you is that the majority of insurance companies did not obtain sizable balance sheets by running around with their cheque books offering to pay claims. In my personal opinion, if there is a large enough claim, some insurance companies may even deny the claim citing that the loss is excluded from what the policy covers.

This article is not intended to create fear or the perception that the insurance industry will not be supportive if and when a loss occurs, but rather the opposite. It is to highlight the importance of selecting the right partner, both from a broker and insurer stance, to ensure the longevity of your business.

The list below are some signs that your broker and insurer do not have an in-depth knowledge of your operations and thus the potential for an uninsured loss is increased:

- 1) The only time during the year you speak with your broker and/or insurance company is during the time of renewal;
- 2) During the renewal, the broker only requests for confirmation of a) change in revenue b) change in operations;

3) Your broker or insurer does not engage in discussions on industry trends, such as Regulatory Orders pertaining to Environmental Clean Up Costs;

4) Expanded Coverages such as Environmental Liability, Professional Liability (Errors & Omissions) and Management Liability have never been discussed nor has their potential exposures;

5) Your broker/insurer are not active in the various industries which they claim to be experts in (ex. a Construction Insurance Broker is not active in the Construction Association);

6) When you receive the formal policy document it contains errors, which is a sign that your broker has not done their due diligence in reviewing the policy for accuracy; and

7) Be weary of programs. Some brokers will try to fit clients' with various scopes of operations under one designed program; however, coverage is not tailored to each clients' exposure.

One common misconception is coverage pertaining to liquidated damages. It is crucial to the health of your business to review any and all contracts you engage in. The 'Insurance Requirement' section of contracts is typically straight forward; you either have procured the contractually required coverage or you have not. However, more attention should be

paid to the 'Indemnity' section. There is no insurance policy in the marketplace that will provide coverage for liquidated damages, so it is important to understand how much skin you have in the game before signing the contract. It is also important to note the limitation of liability which will cap your liability associated with the work being performed.

Insurance is a sustainable risk transfer tool which most businesses use daily. Like most tools a contractor may use on a construction site, if not used correctly, or if the individual is not educated on how to use the tool, it will have little value. When selecting a broker and insurance company partner do so not strictly based on price but rather on the knowledge and expertise they have in the industry in which you operate.

If you feel your broker/insurance company is well educated on your operations and is a partner rather than provider, then the answer is most likely yes, your insurance will cover you for your operations.

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# OOWA'S REGISTERED PROFESSIONAL PROGRAM (RPP)

## You'll be in Good Company



Register in OOWA's RPP or the In-Development Program and join the ranks of other onsite professionals already getting recognition for their continuing education efforts in serving our industry on our website's Find an Expert directory. To learn more go to OOWA's 'Training' webpage: [www.oowa.org/education-training/](http://www.oowa.org/education-training/) or call 1-855-905-6692 ext. 101.

- **Kim Millen**, Inspector, Norfolk County
- **Anne Egan**, R.J. Burnside & Associates, Designer (In-Development)
- **Bert Knip**, Technical Sales Consultant (In-Development)
- **Bert Knip**, Wastewater Service Technician (In-Development)
- **Brady Straw**, Waterloo Biofilter Systems, Designer (In-Development)
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- **Brian Zingula**, ESSE Canada, Regulatory Inspector (In-Development)
- **Dave Ruppert**, Ruppert Haulage, Installer
- **Dean Kerr**, Willis Kerr Consulting, Installer
- **Deanna Simpson**, ESSE Canada, Project Admin Professional (In-Development)
- **Greg Cherniak**, Regulatory Inspector (In-Development)
- **Jasmine Marshall**, ESSE Canada, Project Admin Professional/Technical Sales Consultant (In-Development)
- **Jason Berry**, ESSE Canada, Private Inspector (In-Development)
- **Jason Rail**, The Septic Store, Wastewater Service Technician
- **Jane Zima**, SimbiH2O, Project Admin Professional (In-Development)
- **Jessica Lynn Morin**, ESSE Canada, Project Admin Professional (In-Development)
- **Kara Yokom**, ESSE Canada, Project Admin Professional (In-Development)
- **Paul Sharp**, Plumaid/Earthmoves, Onsite Installer (In-Development)
- **Ray Foster**, ESSE Canada, Wastewater Service Technician
- **Rene Goulet**, Rene Goulet Septic Pumping & Design, Designer
- **Robert Palin**, North Bay Mattawa Conservation, Inspector
- **Robin Allen**, North Bay Mattawa Conservation, Inspector
- **Willis Kerr**, Willis Kerr Consulting, Installer

## MOECC SEEKING COMMENTS ON HAULED SEWAGE POLICY & PROGRAM

OOWA wants to let all of its members know about the opportunity to provide pre-consultation comments to the Ministry of the Environment and Climate Change regarding the development of hauled sewage policies and programs. There is currently a posting on Ontario's Environmental Registry (ER) that provides further details. Go to the ER website at [www.ebr.gov.on.ca](http://www.ebr.gov.on.ca) and then search for registry number 012-9498 to read the full posting and to find out how to submit comments. The deadline for comments is May 10th, 2017.

To help with getting feedback, the MOECC is asking:

- What should be done with hauled sewage, treated or untreated?
- What objective should any septage policy achieve?
- Are there any potential beneficial uses of hauled sewage that you would like the ministry to consider as part of this review?

- Are there any specific hauled sewage treatment technologies that you would like the ministry to consider as part of this review?
- What specific additional information would you like the ministry to consider as part of this review?

The Environmental Registry provides the public with the opportunity to provide comments to government regarding the development of policy or legislation that will have an impact on the environment. OOWA encourages its members to take advantage of this opportunity to have their individual voices to be heard by submitting their own comments. OOWA will welcome any input from its members to help us develop a formal response on behalf of our industry association. OOWA will also be reaching out to our OASIS partners to consult with them ensuring a coordinated response to this important issue that affects members of both associations.

Contact us with your thoughts:  
[outreach@oowa.org](mailto:outreach@oowa.org) or 1-855-905-6692 ext. 101

# A Fundamental Knowledge of the Soil Treatment Process is the Starting Point for Installing Effective Onsite Systems

*By Jim Anderson, Ph.D., and David Gustafson, P.E.*

---

## **Piping and rock**

The system we are talking about consists of a piping network to receive septic tank effluent with rock or some other media to help distribute the effluent to the soil. The design of these systems must take into account the average daily sewage flow, the method of distribution between parts of the system, the soil conditions, and the required setback distances.

As an installer, you and the designer need to know about all of these aspects. You are the last person (besides the local inspector) in contact with the system, and therefore you become responsible if one of the necessary conditions is not met. Remember: You get the call if something goes wrong.

In a typical gravity soil treatment system that consists of treatment trenches, the effluent flows by gravity into a 4-inch pipe with 1/2-inch holes spaced 6 inches apart. The effluent flows down through the distribution media or rock to the soil. The rate at which effluent moves into the soil is affected by a number of factors: volume of effluent (daily flow); soil properties such as texture, structure and moisture content; depth from the soil surface; the size of soil pores (large or small), and soil consistency.

## **Building the biomat**

As the effluent comes in contact with the soil surface, all the factors come into play to promote the formation of a layer called the biomat. The biomat is formed by microorganisms in the soil and the effluent. The organisms attach to the soil particles and media at the interface.

This, along with suspended organic solids, begins to reduce the infiltrative capacity of the soil where the effluent first contacts it. As the system is used, the biomat covers the entire bottom infiltrative surface. Effluent then begins to pond, and the biomat develops up the sidewalls.

The biomat acts as a valve to slow the flow of effluent into the soil. This creates and maintains unsaturated and aerobic conditions below and alongside the trench, maximizing the effluent's contact time with soil particles in this highly biological zone.

It is here that the BOD and suspended solids are removed, and under these conditions, bacteria and viruses are held and prevented from moving away. This allows treatment to occur that removes these organisms. Maintaining an unsaturated

aerobic zone around the trenches is the single most important factor to prevent transmission of pathogens.

In a mature gravity-fed system with the biomat formed on the bottom and the sidewalls, effluent will pond in the trenches – a natural result of biomat formation. It does not necessarily mean the system is failing. We would expect to see ponding in the trench while an area of a few inches along the side and on the bottom the soil itself remains unsaturated.

Effluent will then move out through both the trench bottom and the sidewalls. How much flows out the bottom versus out the sidewall varies over time, depending on the soil's vertical and horizontal hydraulic conductivity, biomat resistance, and the soil moisture condition. That is why we often see that trenches work better when the weather is warmer and dryer.

## **Separation distances**

This is also a part of the reason why separation distance to saturated soil conditions, such as periodic high water tables, is so important. If the bottom of the system is too near the water table, the soil is naturally moist, which means it holds less oxygen. This leads to a lack of oxygen for treatment and for bringing the biomat into equilibrium, making for a thicker, more resistant biomat, which can reduce flows to the point of failure.

So you have the double whammy in the sense that you do get inadequate treatment, leading to transmission of pathogens, and you also get system hydraulic failure. The contaminated waters can then move to deeper aquifers or to nearby lakes and streams.

As we will discuss in upcoming articles, these are soil conditions that you should be able to recognize, and one part of a good installation is to provide that separation. One comment we often hear from installers is, "Boy, I am glad the soils in my area are nothing but sand and gravel. I have no problem getting rid of the effluent, and I never see a biomat."

Recognize that if the soil conditions are sandy or gravelly and the effluent moves too fast through those large soil pores, none of the treatment we've talked about occurs. That is because the flow through the soil pores is saturated, and the effluent does not have adequate contact time in the soil for treatment to occur.



Under these conditions, pathogens can move thousands of feet away from the system, potentially contaminating drinking water sources as well as nearby surface waters. This is why under sandy conditions your state code (province) may place certain system restrictions on how sandy the soil can be and still use a septic-tank-to-drainfield gravity system.

For the finer-textured, less-coarse soils, recognize that the sizing factors we all use in system design are based on assuming the biomat will be present. We count on it to be present to assist in the treatment process. So as installers, we need to know what can be done to identify and enhance the conditions that will keep the system in balance, providing treatment while insuring that your clients' toilets flush and the water moves away.

*This material is extracted from the full page article in the December 2011 issue of Onsite Installer magazine, published by COLE Publishing Inc., [www.onsiteinstaller.com](http://www.onsiteinstaller.com). It is reprinted by permission.*

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# MEMBER PROFILE

**Jocelyn Kerrigan**  
County of Lambton

**Name of Business** County of Lambton

**Services:** The County of Lambton provides upper tier Inspection Services to the 11 Townships within, including but not limited to Private Septic Inspections and Regulatory mandates.

**Service Area:** The County of Lambton, population of 127,000 and area of 3002km<sup>2</sup> with over 120km of coastline.

**Number of Years in Role:** I started my career with the County of Lambton in 2006 as a building inspector and then moved into the role of Private Septic System Coordinator in 2008.

## **What got you started in the onsite and decentralized wastewater industry?**

Onsite wastewater treatment technology is a growing industry that requires an understanding of physics and is a puzzle with forever changing pieces and solutions. As a child, solving puzzles was always a favorite pass time of mine as was bobbing about the coast of Lake Huron. When the opportunity to work with wastewater treatment systems came available, it was an easy decision for me to jump in to help protect our freshwater resources and to help solve the puzzle that is sewage treatment and disposal.

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

In one word, empathy. Understanding the challenges that some homeowners may face when installing a new septic system is a must. Many times they don't understand the technology behind the system and don't expect it to be a significant cost. Taking the time to help homeowners to ensure they fully understand the value of their investment takes time. Time is also of the essence when working with installers. By being on time for inspections and working with them from start to finish, I prevent costly changes and frustrations for everyone involved.



**JOCELYN KERRIGAN**  
County of Lambton

## **Where do you see the onsite and decentralized industry going?**

Changes to the onsite wastewater industry and to the regulations that govern it will continue in a way that will improve the quality of both our groundwater and surface waters. As lots become smaller and homes become larger, I see the need for improved technologies in the form of decentralized systems to effectively address these trends. Incorporating these innovative systems into new developments will ease large-scale infrastructure demands making them a good fit considering the growing demand for public green space.

## **What can the onsite and decentralized industry do to improve?**

Educating system users and installers on the potential impact of improperly installed and poorly maintained septic systems continues to be a struggle. Homeowners often know that furnace filters need to be changed and batteries in the smoke alarm need replacing. But seldom do they know that the effluent filter in the septic tank even exists and needs to be cleaned to protect their bed. Mandatory inspections on all types of septic systems maybe the key to educating and reminding property owners of the need for regular care of onsite wastewater systems.

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## **... work in the onsite industry?**

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# Decentralized SDGS Collection System Performance and Monitoring in Eastern Ontario Community

By Gordon Richardson and Gillian Dumencu, Clearford Water Systems

The White Tail Ridge residential subdivision located near the town of Almonte in Eastern Ontario is serviced by a decentralized small diameter gravity sewer (SDGS) system, also called a septic tank effluent gravity (STEG) sewer system. This type of communal wastewater collection system consists of onsite interceptor tanks for each house that pre-treat wastewater before it enters the sewer collection network.

The SDGS collection system conveys pre-treated effluent wastewater to a small pumping station, and then by forcemain to the town's conventional sewer system. The SDGS sewer system was constructed in 2011 from thermally fused high density polyethylene (HDPE) pipe with small cleanouts in place of concrete maintenance holes to remove the risk of inflow and infiltration to the system.

## SDGS Protects Downstream Infrastructure

SDGS interceptor tanks function similarly to septic tanks, using settling and anaerobic digestion to treat wastewater. Each house has a 4500-litre interceptor tank with two chambers, with inlet and outlet tee fittings that prevent large sewage solids and insoluble materials (diapers, wipes, etc.), as well as FOGs (fats, oils, and greases) from entering into the SDGS collection system and downstream wastewater infrastructure.

After 5 years of operation, the SDGS pumping station shows minimal solids accumulation and fouling (refer to Figure 1) compared to a typical whole sewage sanitary pumping station (refer to Figure 2). The operator of the SDGS system has indicated that the solids-free pumping station requires minimal upkeep, making it a very low maintenance (therefore, low cost) component of the town's wastewater infrastructure.

## Monitoring of SDGS Performance

The main concern at the time of approval was the capacity of the downstream municipal lagoon to receive sewage from a new development when the existing lagoon was already operating near capacity. The engineering team provided supporting information that SDGS servicing would limit the impacts to the lagoon, making servicing feasible for the development. Approvals were granted by the Municipality of Mississippi Mills and the Ontario Ministry of the Environment for the first phase of development. The Municipality wanted to confirm the design parameters for the SDGS system; therefore, a monitoring program was required to check the performance of the system. Field monitoring of the interceptor tanks was carried out every 6 months from July 2014 to December 2016 by Clearford Water Systems with assistance in the field from students in Algonquin College's Water and Waste Water Technician program. Monthly samples were also collected from the effluent pumping station to characterize the wastewater quality going to the municipal system.

The following parameters were measured:

- Raw and effluent wastewater constituent concentrations for:
  - o 5-day biochemical oxygen demand (BOD<sub>5</sub>),
  - o Total suspended solids (TSS),
  - o Total phosphorus (TP), and
  - o Ammonia-nitrogen;
- Interceptor tank scum and sludge accumulation rates.

## Raw Wastewater Characterization

Raw wastewater characterization was estimated from inlet zone grab samples from each interceptor tank. While most practical, this approach may not accurately represent raw wastewater quality given that samples from the inlet zone have already been affected by conditions in the



FIGURE 1: SDGS pumping station with minimal solids accumulation after 5 years of operation



FIGURE 2: Typical raw sewage pumping station with solids and scum accumulation (Environmental Biotech, 2017)

interceptor tank. When the collected data is compared to a more rigorous sampling study for raw wastewater characterization for single family homes (WERF, 2009), the measured concentrations are similar to the typical raw wastewater parameters from the study with the exception of more ammonia in the collected samples (refer to Table 1 on page 24). This appears to be an indication of the level of mixing and anaerobic digestion occurring in the interceptor tanks, as discussed in more detail below. Therefore, raw wastewater from the subdivision appears to be consistent with typical characterization from the study.

*continued on next page*



Parameter	Measured Inlet Zone		Typical Raw Wastewater (WERF)	
	Range	Median	Range	Median
BOD5 (mg/L)	61-2000	425	112-1101	420
TSS (mg/L)	22-2170	380	22-1690	232
TP (mg/L)	1-27	10	0.2-32	10
Ammonia-N (mg/L)	3.4-165	60	1.6-94	14

TABLE 1: Comparison of Measured Inlet Zone and Typical Raw Wastewater Concentrations

Parameter	Range	Median
BOD5 (mg/L)	65-285	170
TSS (mg/L)	30-136	60
TP (mg/L)	4.8-14	9
Ammonia-N (mg/L)	41-98	70

TABLE 2: Measured Interceptor Tank Effluent Concentrations

Parameter	Typical Raw Wastewater	Median Measured Effluent	Typical Percent Removal
BOD <sub>5</sub> (mg/L)	420	170	60%
TSS (mg/L)	230	60	74%
TP (mg/L)	10	9	10%
Ammonia-N (mg/L)	14	70	(400)%*

\*Denotes increase in concentration

TABLE 3: Interceptor Tank Removal Rates

**Effluent Wastewater Characterization**  
Monthly samples were taken at the pumping station—a composite of all wastewater effluent from the subdivision—and were sent to an accredited laboratory for analysis of BOD, TSS, TP, and total ammonia-nitrogen. These results are summarized in Table 2.

### Interceptor Tank Performance

Comparing the pumping station data to the WERF study raw wastewater concentrations, the interceptor tanks reduce the BOD and TSS typically by around 60% and 74%, respectively, as shown in Table 3 below. This indicates that primary and partial secondary treatment have taken place. Phosphorus removal is a physical process, and is not significantly impacted by the biological treatment in the interceptor tanks. The ammonia-nitrogen increases significantly due to the conversion of organic nitrogen

to ammonia-nitrogen as part of the anaerobic digestion.

### Sludge & Scum Accumulation and Pump-Out Frequency

Like septic tanks, sludge and scum accumulate in the interceptor tanks requiring periodic pump-out when the volume of solids reaches a certain level that compromises effluent quality from the tank. The pump-out threshold level for SDGS interceptor tanks is greater than for septic tanks, typically around half the interceptor tank working depth. This is because interceptor tanks do not have such a strict solids removal requirement as septic tanks, which are required to protect onsite leaching beds.

The measured sludge depth increase in the tanks ranged from 2-18 cm/year (median of 6 cm/year), which corresponds to a rate of 20-175 L/person/year (median of 60 L/person/year). These findings show

above average performance (i.e., lower sludge accumulation) relative to typical published values of 40-440 L/person/year for septic tanks (Philip et al., 1993).

Based on the measured sludge accumulation and operating time, pump-out periods were estimated for each tank. The results shown in Figure 3 below indicate that pump-out periods are expected to vary greatly, typically from 5-15 years, as a result of different individual household habits regardless of the number of occupants in each house. Instead, it appears that the estimated pump-out periods increase the longer that tanks are in operation. This may be explained by the anaerobic bacteria becoming more efficient in the tank environment, thereby increasing the amount of biological treatment that takes place and decreasing the rate of solids accumulation in the tanks.

### Discussion

Field monitoring of the SDGS system at the White Tail Ridge subdivision indicates that interceptor tanks provide considerable pre-treatment of wastewater, typically by around 60% and 74% reduction of TSS and BOD, respectively. Additionally, the measured sludge accumulation in interceptor tanks indicates that pump-out frequencies are expected to range between 5-15 years for typical single family households. These infrequent pump-outs and minimal operational impacts on downstream wastewater collection, pumping and treatment facilities make SDGS an effective way to manage wastewater in communal systems.

### References

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# How to Quit Hogging and Delegate

By Ellen Rohr

Perhaps you don't want to add anymore to someone else's plate. So, you do whatever needs to be done without asking for help. Maybe you don't trust someone else to do it right? So you keep taking on more and more. It might be that you don't know how to delegate successfully...so you hog all the opportunities yourself. Here are tips for identifying and delegating projects.

## **Opportunities are born when you fall in a hole or run into a problem.**

First, deal with the immediate issue. Then, consider...is this a blue-moon event or do we need to do something to keep us from falling into this hole again? Suppose you have a landscaping company. For the thousandth time you have reached for the weed whacker and it has been lost, broken, or put somewhere other than where you want it to be. You could come uncorked – again – or you could write, "Create Tool Check Out Procedure" on a Master Projects list. Encourage team members to add to the Master Project list. They know what isn't working and they are your best hope for getting problems solved.

## **For each project, use the classic Journalistic Questions to delegate successfully.**

### **Why?**

Have a good reason for why it needs to be done. "It's frustrating to be 100 miles from the shop and not have a weed whacker on your truck."

### **What?**

Describe, as best you can, what this project would look like when it's done. Most often, a project is done when you have a written checklist/procedure for making sure that the problem doesn't keep happening. "Tools are accounted for, cared for properly and where we need them. All team members have been trained on, and are held accountable to, the written procedure.

### **Who?**

Assign the project to someone. Or, ask for a volunteer. Communicate that project management skills are taken into consideration when auditioning team members for promotions. Call this person the Project Leader. You may assign a few team members to the project. The Project Leader is responsible for the outcome.

### **How much?**

Meet to discuss the project with the Project Leader. How much time, energy and resources will be needed?

### **When?**

What's the time frame? When is the next meeting to check progress? When is the finished project due? How? There are no bonus points for making a molehill project a mountainous event. Always aim for simple solutions. When you assign the project, discuss and clarify expectations. Then, let the Project Leader loose.

### **Then, manage, but don't take over, the project.**

You don't want to come to the end of the project and be deeply disappointed by the results. So, determine what kind of management will be required to make sure you stay in communication and aware of the progress of the project. Set the Project Leader up to win, and you win. Use meeting time to brainstorm solutions if they get stuck.

### **Celebrate the win!**

When it is done, acknowledge it. "We now have the right tools at the right place at the right time. Kudos to the Project Leader and his team!" If you have included a bonus or a spiff for the successful completion of the project, deliver it with a handshake, a thank you and public recognition.

When you find yourself hogging the opportunities, correct yourself. Inspire them with your vision. They already know

the problems and opportunities. So, hand 'em a project.

*"I must follow them. I am their leader."*

- Andrew Bonar Law

## **About Ellen Rohr**

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

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

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# WATER CLEANTECH AND ECONOMIC DEVELOPMENT

By Roddy Bolivar, P.Eng. Bolivar=Phillips

## Nitrate reduction technology and “LID” contribute to economic development

Over 1,000,000 Ontarians have jobs in rural Ontario. The largest proportion of those jobs – 36% – are in the light industry sectors manufacturing, construction and wholesale trade. The light industry business parks where those jobs are located are an important economic development tool for rural municipalities.

Because of the jobs creation role anticipated in rural light industry business parks, minimum lot sizes are often established based on economic development objectives. In some cases, the minimum allowable lot size may not be sufficient in area to meet groundwater quality impact objectives under the D-5-4 Guideline – dilution of nitrate in septic system effluent by infiltrating rainwater. A common approach – the same development on a larger lot – will reduce the economic development potential of the light industry business park.

The Carp Road Corridor is the largest rural light industry business park in the City of Ottawa. In recent years, increasing land prices have put pressure on land development in the area and it is important that a new business owner is able to obtain maximum value / build out of a lot – larger lot sizes to support the same amount of development are not economical.

Faced with challenges to meet the City's economic development objectives for the business park and at the same time protecting groundwater and well drinking water, the City of Ottawa provided a grant to the local business association to identify solutions. The business association, industry and technical staff from the City and the Mississippi and Rideau Valley Conservation Authorities worked together to better understand the challenges and then

develop new approaches to achieve economic development goals and protect groundwater and well drinking water.

### Challenge #1 “What businesses will locate in the new subdivision?”

Population and building footprints in a residential development can be reliably predicted. For a new light industry subdivision there is considerable uncertainty and a wide range of possible lot uses, employment numbers and “hard surface”. Using City employment data, the project examined employment density and land use cover in Ottawa's existing business parks. Also, the City's economic development experts advised that they do not anticipate any significant changes to the types of building, site uses and employment in the light industry sector. Analysis of existing light industry business park development provided benchmarks which can be used to predict the form of new development and employment density at the scale of a new subdivision.

### Challenge #2 OOWA member solutions work!

The Province is a strong supporter of Ontario's cleantech water sector. Minister Moridi in his address to the World Water-Tech North America Summit in October 2016 stated “We want home-grown Ontario ideas to pour out of taps around our Planet Earth”. Yet OOWA members often report that municipalities are not as enthusiastic as the Minister in seeing those technologies implemented here at home. At commencement of the project, City technical staff expressed concerns regarding the performance and reliability of nitrate reduction technologies. The starting position was that impact analysis must use 40mg/L nitrate as specified in the D-5-4 Guideline regardless of the technology installed. Two industry service providers – RH2O and Waterloo Biofilter – provided a large volume of data on long term performance of installed systems. The Rideau Valley Conservation Authority, who already manage a septic inspection



Stormwater detention/infiltration install in the Corridor



Typical lot development in the Carp Road Corridor

program, proposed a maintenance management model they could administer. Together, these provided sufficient assurance to the City to permit use of a reduced concentration of nitrate in treated effluent in the subdivision scale D-5-4 calculation.

### Challenge #3 Integrating stormwater management with effluent management

Many OOWA members are seeing stormwater management products as a new business opportunity. Stormwater management often requires that stormwater be retained

on a development site including in underground tanks – a requirement which will influence infiltration volume that is not recognized in the D-5-4 calculation. The disconnect is perhaps particularly unusual today given the Province's strong support for "Low Impact Development" to retain and infiltrate stormwater. The project reviewed existing Corridor development and found that in some extreme cases, all stormwater (up to the 100 year event) falling on developed sites had been designed to be retained on site. The business association also collected comments from members who noted "we have never seen any water in that pond." Considering this information, the City will now allow stormwater and groundwater technical reports to "talk to each other" to include some additional allowance for infiltration above that calculated by the D-5-4 methodology.

#### Challenge # 4 How to manage risk?

Over the past 20 years municipal owners

of large stocks of physical infrastructure – roads, pipes, bridges, plants, etc. – have adopted risk management approaches to help ensure life cycle and value from investments. The project applied risk management principles by establishing "envelopes" for each of the factors in the D-5-4 calculation. Using envelopes, the variability possible in all factors can be combined to yield a reasonable "high" value and "low" value for nitrate impact. With these, other risk factors such as negative impact on economic development or likelihood of intersection of impacted groundwater with sensitive receptors can be balanced with a better understanding of the risks intended to be addressed by the D-5-4 calculation methodology.

#### Working together results in success

In October 2016 the City of Ottawa issued an area specific guideline for the Carp Road Corridor. The guideline includes:

- "Clean storm water infiltration measures

should therefore be accounted for in the estimation of 'available infiltration'; and

- "There are now available on the market nitrogen reduction treatment systems ... can be incorporated into the private servicing plan for the corridor ... used in the nitrate attenuation assessment..."

The project provides an example of how innovation and cooperation can contribute to light industry economic development in rural Ontario. The authors wish to recognize funding contribution from the City of Ottawa, cooperation and input from RH2O and Waterloo Biofilter and the role of the regulatory agencies. Copies of the project report can be obtained by contacting Roddy Bolivar (roddy.bolivar@bolivarphillips.ca).

*Roddy Bolivar, P.Eng., Bolivar=Phillips, advises on water resource strategies, policy and planning with a focus on small communities and economic development. [www.BolivarPhillips.ca](http://www.BolivarPhillips.ca)*

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# CASE STUDY

## CAVE SPRING CELLARS: FIRST SUSTAINABLE WINERY IN ONTARIO

BioGill/EcoEthic Inc.

### SITUATION

Cave Spring Cellars is committed to environmentally friendly & sustainable winemaking. Spearheaded by Dave Hooper, Operations Manager, all processes and management practices at the winery were investigated, looking for smarter, cleaner, more energy efficient methods to reduce Cave Spring Cellars' environmental impact in the making of its internationally acclaimed wines. Key focus areas included waste minimisation, energy savings and onsite wastewater treatment.

While the local water authority can remove the Biological Oxygen Demand (BOD) in wastewater, a surcharge is levied if BOD exceeds 300 mg/L. Taking a proactive approach and planning for future needs, the winery wanted to improve its onsite treatment, reduce BOD levels and hence discharge fees for its current and future wastewater requirements. Conventional technologies required expensive infrastructure investment, so a more compact solution was also required.

### SOLUTION

As a first step, the winery set up a pilot project. This initial project saw BOD dropped from as high as 6,000 mg/L to just 48 mg/L in 22 hours, well below the required threshold that would trigger municipal charges.

In October 2015, a full scale system using four BioGill bioreactors was installed by EcoEthic Inc., a Canadian wastewater specialist company. Being a compact and modular design, a room was built to house the BioGill units underneath the winery's crush-pad as this required less construction than traditional treatment options.

### DESIGN

With differences in production volumes depending on the time of year and the vintage, the treatment system was designed to cope with fluctuating organic and hydraulic loads. During peak production and crush times, this system can treat up to 18,000 litres of wastewater per day. The ability to address lower flows

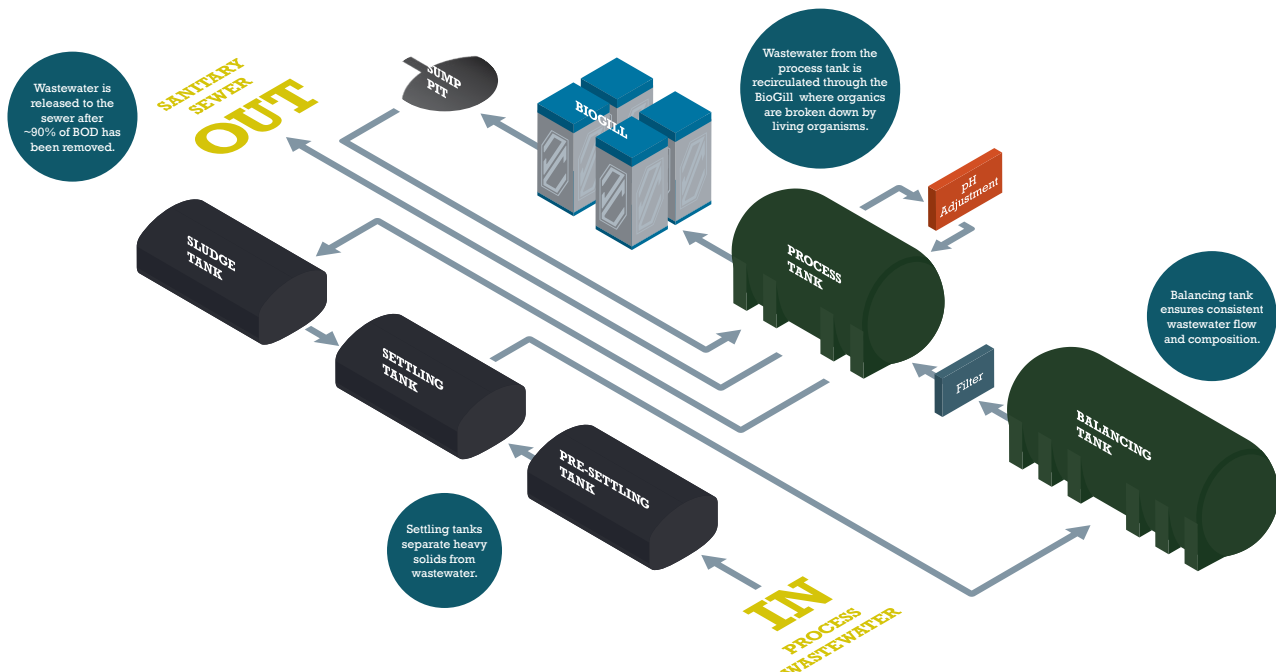


Four BioGill units operate at the winery.

of higher organic loads (in non-vintage periods) was also considered.

Wastewater flows down from the crush pad into two consecutive settling tanks. From there, the effluent moves to a large balancing tank (30,000L) where the composition is balanced for easier filtration.

*continued on page 51*



# MEMBER PROFILE

**Robert Davis**  
EcoEthic Inc.

**Name of Business:** EcoEthic Inc.

**Owners:** Robert Davis & Catharine Hoare

**Services:**

- \* Supply high-strength microbial formulations for increased levels of treatment in onsite systems
- \* Leaching bed bio-remediation process
- \* Canadian distributor of the BioGill technology for treating high strength wastewater
- \* Decentralized commercial wastewater treatment systems
- \* Canadian distributor of MuliToa – advanced, self contained waterless toilet technology
- \* Educational seminars for waterfront property owners and related groups

**Service Area:** Canada wide

**Number of Years in Operation:** 20 years

**What got you started in the onsite and decentralized wastewater industry?**

You could say I come by the industry nickname “poop guy” honestly as an expert consultant, supplier and speaker. Growing up I learned all about the role microbes play in “cleaning” wastewater because my father was a Civil Engineer who designed many wastewater treatment plants. As a teenager, I was genuinely fascinated to hear how bacteria & microbes work. Then as an adult, I took environmental studies. Today, EcoEthic marries the two with intense research to develop solutions that overcome challenging treatment issues, such as excessive F.O.G., high BOD, but that also mitigate negative effects of sewage on the natural environment.

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

We are passionate about supplying solutions that work. That means the EcoEthic applies integrity to all we do, and we work hard to be innovative. For example, we researched and brought in a new wastewater treatment technology to the



market named the BioGill, an above ground bioreactor. It's a highly effective, and cost-effective treatment system. One of our clients, a large winery in the Niagara region, was awarded for being the only sustainable winery in Canada as a direct result of installing our system. Also, our biological formulations for on-site treatment are so effective that they've been used by major companies under private label. In one example, our bio-remediation process, specified by an engineering firm, saved an organization over a million dollars in costly leaching bed repairs & replacement. We also form and maintain relationships with key industry professionals within the onsite industry.

**What can the onsite and decentralized industry do to improve?**

Engaging regulatory bodies (Federal, Provincial and Municipal) in the deployment, trial and installation of new technologies is a very important.

A focus on better treatment processes, educating both commercial and residential users of on-site systems and what causes them to fail, is key to pollution prevention and improving the industry.

**Where do you see the onsite and decentralized industry going?**

The forward direction and integrity of the onsite industry has improved dramatically in recent years, in part due to OOWA's activities. We see the industry moving more towards decentralized treatment systems. Overall awareness of issues associated with sewage are now more openly discussed among stake holders and regulators.

# STRATEGIC MANAGEMENT OF WATER RESOURCES IMPORTANT TO ONTARIO CRAFT BREWERIES

By Michael Fagan, Bloom Centre

It is no surprise that craft brews are growing in popularity in Ontario. This new trend in brewing is being supported by the breweries that are appearing in small rural settings, giving the local economy a boost and increasing the profile of their host community. These rural brewing operations can be accompanied by challenges with high strength wastewater that must be managed on site in the absence of municipal servicing. Those having to deal with how to treat this wastewater onsite would be wise to consider a holistic approach to water management that considers more than just an 'end-of-pipe' solution. Many of the challenges associated with onsite management of brewery wastewater can be addressed early in the design phase of the facilities themselves. Breweries present both a challenge and an opportunity to OOWA members who can be part of exploring solutions and addressing these challenges on the design and engineering side. OOWA is happy to feature this article from the Bloom Centre that explores the challenges faced by the growing craft brewery sector.

– Ontario Onsite Wastewater Association

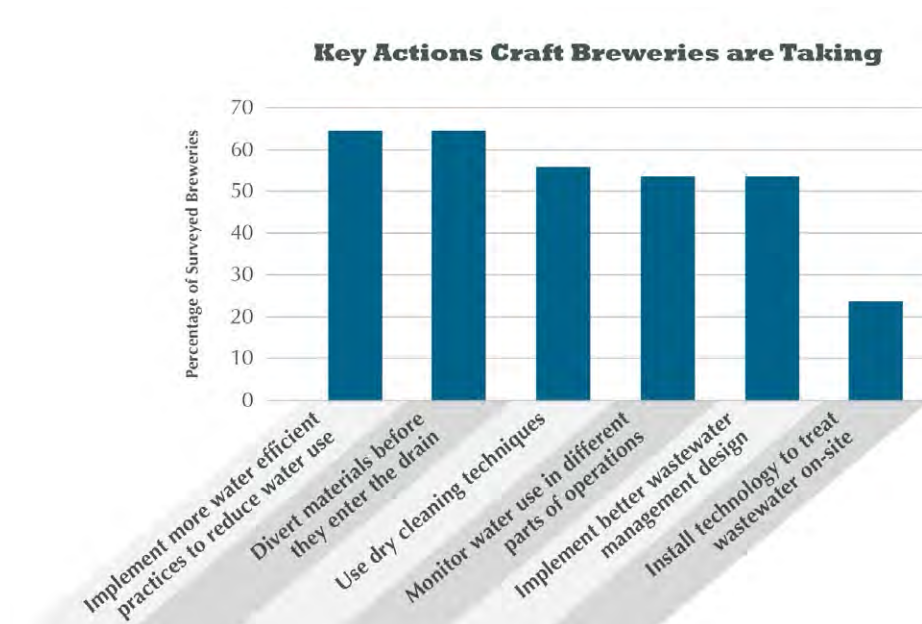
The vast majority of craft breweries in Ontario understand the need to improve their water and resource management performance to save money, protect the environment and enhance community relations.

This was a major finding of a survey of Ontario craft breweries conducted in the fall of 2016 that found 97 per cent of respondents agree that better water management is important or very important to their all-natural beer business.

Garnet Pratt Siddall, President and CEO of Side Launch Brewing Company and Chair of Ontario Craft Brewers, said the survey confirms that the craft beer industry takes environmental issues seriously.

"Ontario's craft brewing industry is experiencing tremendous new growth and success," said Pratt Siddall. "To become a North American centre of excellence in craft brewing, we'll need to be leaders in every area of the business, which includes minimizing water and resource use and moving towards a vision of zero discharge operations."

The survey, conducted by the BLOOM Centre for Sustainability, also found that a majority of craft breweries plan to take progressive steps in 2017 to improve their water and resource management practices.



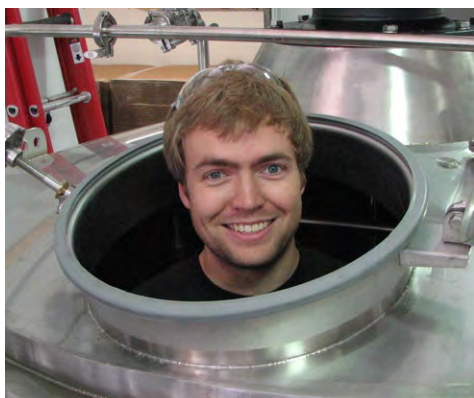
"Issues with the economic and environmental impact of water use and wastewater management are grabbing their attention," said Kevin Jones, president of BLOOM. "We're especially pleased to see such a high percentage of surveyed breweries taking action to divert and prevent materials such as spent yeast from going down the drain and increasing the strength of the wastewater."

Haliburton Highlands Brewing is an example of a growing number of craft breweries that are thinking about sustainable resource management at the 'design stage'.

"We are not connected to any municipal water infrastructure, which means we have to be good water stewards and resource managers" said Michael Schiedel-Webb, Haliburton Highlands Brewing Co-owner and Head Brewer. "This necessity has become a passion and a fundamental aspect of our brewery operations."

Schiedel-Webb explains in this video demonstration how they integrated water, energy and resource management in process design and equipment selection to benefit their business and the environment. Read more about those eco-innovations in this Haliburton Echo news report.





**Darren Smith, owner of  
Lake of Bays Brewing**

"Smaller breweries like Haliburton Highlands are more likely to take a proactive approach at the design stage," said Jones, noting that three-quarters of the BLOOM survey respondents were small and medium-sized breweries located in rural areas of Ontario.

"Moving past words into sustainable action reflects rural breweries' unique situation and the pressing need to improve water management practices in less populated communities," Jones said.

In rural communities where craft breweries are major industrial employers the discharge of large volumes of high-strength wastewater creates a burden at municipal treatment facilities.

Darren Smith, the owner of Lake of Bays Brewing in Baysville, Ontario agrees that keeping brewing by-product from going down the drain creates dollar savings and good neighbourly relations. "If you put things down a drain they're not going away," said Smith. "They're just going someplace where someone else has to deal with them."

Smaller and rural communities welcome craft breweries and their positive impact on local economies and employment.

Bob Young, Mayor of Lake of Bays, Ontario, advises collaborating closely with local breweries to both encourage their business contributions while also ensuring that the brewers are responsible in their water and waste management.

"It's critical to be on same page," Young said in an interview. "Both industry and municipalities have to understand the volume of waste and its contaminants. It makes all the difference in the world."

BLOOM launched an online platform, Water & Beer, last April to help craft breweries like Lake of Bays understand the ins, outs and in-betweens of water management. Four of out five breweries surveyed have either visited Water & Beer or plan to in 2017.

The BLOOM survey also found that about 75 per cent of craft brewers familiar with Water & Beer are satisfied with the content. As a result, they have developed a better understanding of practices they can do to reduce water use, keep by-products out of the drain and improve brewery design.

"The Water & Beer platform is an awesome tool in raising awareness and helping implement better practices. Kudos for putting this together." Mario Bourgeois, Cassel Brewery.

"Information is the key to helping the Ontario craft brewers in their efforts to be sector leaders in their efficient management of resources such as water," said Michael Fagan, Senior VP of BLOOM. "With the right information now available in one place, it is easy for brewers and other sector stakeholders to understand why it matters, what needs to happen and how to do it."

Ontario craft breweries are now located in more than 100 communities across the province. There are more than 140 craft breweries and 50 contract breweries in Ontario, employing over 1,500 workers who help quench an ever-growing public thirst for naturally produced beer.

Kevin Jones said BLOOM is pleased to see the industry's growing desire to improve their water and resource management practices, as indicated in the brewery survey.

"We know breweries are increasingly aware that water is the most important ingredient in their business operations," Jones said. "They are also starting to

recognize the opportunities to save money in the beer making process by reusing water, capturing free energy and diverting spent yeast and other materials to beneficial end-use applications. Taking action on these opportunities will benefit their business, their local community and the environment."

"Our government is a proud supporter of Ontario's craft beer industry and their efforts to grow their businesses while protecting one of our most precious resources. We are proud to have supported this survey which clearly demonstrates our craft brewers' commitment and leadership in improving our water and resource management."  
– Jeff Leal, Ontario Minister of Agriculture, Food and Rural Affairs

For further information contact:  
**Michael Fagan, Senior VP, BLOOM**  
Tel: 905-842-1115, ext. 227  
E: [mfagan@bloomcentre.com](mailto:mfagan@bloomcentre.com)

**About Water & Beer:** an online platform designed to help craft brewers understand the ins, outs and in-betweens of water management and improve their resource management performance. Water & Beer is the 'go to' resource for craft brewers who recognize that water management is important for their business, their customers and their communities. BLOOM developed Water & Beer in collaboration with Ontario Craft Brewers, individual craft breweries, government agencies, and technology and solution providers – what BLOOM calls the Collective We.

**About BLOOM:** Making it Easier. Clean and Simple. BLOOM is a recognized and trusted authority on sustainability and resource management practices in Ontario. BLOOM works actively with Ontario industries to find practical and affordable business solutions that deliver economic, environmental and social benefits. Follow BLOOM on Twitter, Facebook and YouTube.



# Better Best Practices for Small Communities

*By Peter Gallant, CEO, WaterTAP Ontario*

In the last edition of Onsite, my colleague Trish Johnson introduced WaterTAP's new Better Best Practices Initiative (BBPI), which is designed to help identify and address barriers associated with adopting innovative water technologies, particularly in Ontario. Key areas of focus for BBPI include streamlining regulations and procurement processes and providing opportunities to educate stakeholders, particularly end users, on priority areas.

As the WaterTAP team has begun to consult stakeholders and build these priorities, we've heard a loud and clear voice from small communities that are struggling to implement affordable, sustainable solutions for water and wastewater infrastructure. These municipalities are sharing stories about the challenges associated with approving distributed and decentralized systems. They are concerned about the Provincial Policy Statement and its land-use planning implications. They need an improved Municipal Responsibility Agreement policy and process. They require clearer, more robust management structures, including long-term maintenance, inspection and asset management plans. They argue that some key regulations are too prescriptive and cumbersome, when what they would prefer is a system that is based on outcomes, so they can readily accommodate innovative solutions. Another challenge is the lack of available data on onsite system performance in order to perform meaningful benchmarking exercises.

Often, the end result is that these communities are driven to consider solutions that are untenable on a cost-per-connection basis and are neither

physically, nor financially, sustainable. WaterTAP does not claim to have all of the answers. However, through the Water Opportunities Act, WaterTAP has a mandate to advise the provincial government on how to foster the growth of Ontario's water and wastewater sector. Over the past four years of operation, we've developed a network of strong connections and key partnerships, and attracted an experienced team supported by a distinguished Board of Directors to support our sector. Through BBPI, we are committed to collaborating with partner organizations to address these barriers.

As Trish identified in her recent article, there is significant potential for WaterTAP and OOWA to partner to address this priority area. We want to work with OOWA's membership to collectively "clear the path" for distributed and decentralized water and wastewater solutions. This work will open the door for adoption of more Ontario-developed technologies, bring more local highly skilled, low-carbon jobs to the province, and serve as a showcase for global innovation. Importantly, it will also support a future of affordable, sustainable, and efficient water and wastewater solutions for small communities, including Indigenous communities, and dispersed clusters, such as villages and hamlets.

The BBPI's first challenge has been to identify the barriers. As part of this process, we are asking for your input as OOWA members. Where have you realized success when implementing your solutions? Where have you run into challenges? Your partnership and input is valuable to this process, and we encourage you to connect with us to share your stories.

We've also developed two ways to capture your insights. The first is a simple form focused on identifying barriers. The second form feeds into a public toolbox. Using your success stories and case studies, WaterTAP is developing a "solutions bank" that categorizes technologies under common challenges (e.g. phosphorus removal, ammonia reduction). In the coming year, we will launch the solutions bank on our new website. This is part of WaterTAP's commitment to educate stakeholders from across the province and across the globe on the benefits of available, Ontario-developed solutions.

WaterTAP will also co-host a pilot workshop in Spring 2017 that will be open to a sub-set of municipalities in need of alternative water solutions. The workshop will provide guidance to municipalities to ensure that they are considering long-term costs, navigating regulatory and approval pathways, and effectively working with consultants to determine solutions. We are working with the Township of Bonnechere Valley and the Ontario Coalition for Sustainable Infrastructure, as well as a team of experts, to guide the workshop's development.

This is an exciting time for Ontario's water and wastewater sector. As WaterTAP begins the second year of our "second mandate" focused on barrier reduction, we are keen to collaborate with strong partners and, together, move the sector forward to provide benefits for Ontarians and other communities around the world. We look forward to continuing our important work with OOWA as a key partner.

# MEMBER PROFILE

## Andy Bauman

FlowSpec Engineering Ltd.

**Name of Business:** FlowSpec Engineering Ltd.

**Owners:** Andy Bauman, David Morlock

**Services:** Practical design solutions for onsite wastewater engineering needs.

**Service Area:** Kitchener-Waterloo and surrounding area

**Number of Years in Role:** FlowSpec is celebrating our first year of operation in March, 2017. In total, I have been part of the industry for 10 years.

### What got you started in the onsite and decentralized wastewater industry?

When looking for a new career avenue, Scott Robinson of Unit Precast/RH2O North America who I knew from competing together on sports teams and working in his wife Brooke's family business, offered me the opportunity to be his Technical Sales Representative. I had zero industry experience, but a professional sales background. Almost 10 years later, I'm still learning and am thankful for the opportunity to be a part of an industry that, while often underappreciated, makes a difference in people's lives and our environment.

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

Building trusted relationships through honest, frank communication and truly listening to people.

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

Our industry in Ontario has fantastic opportunity for growth. With the data that will come through performance verification as required through the CAN-BNQ and ECA compliance, the case



ANDY BAUMAN  
FlowSpec Engineering Ltd.

for onsite treatment will have gained unbiased facts to prove what the industry already knows – when properly designed, installed and maintained, onsite and decentralized systems offer reliable, cost-effective solutions that work. Perceptions at a policy-making level speak to a legacy where installations haven't demonstrated these traits and we need to work together as an industry to change the narrative.

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

"Big pipe" solutions have a leg up on us from a provincial policy perspective but simply aren't the best solution for all applications. While continuing to lobby for change at the provincial level is a necessary long-term task, the best thing we can do in our individual businesses is support and continue to develop best practices. We need to change perceptions and recorded information around onsite systems to include proper design, quality installation, ongoing maintenance and consistent performance.



# Analyzing the Environmental Impact of Onsite Wastewater Treatment System Manufacture, Production, and Transport

## A comparative analysis of conventional and recycled thermoplastic systems

*By Jonathan Kaiser and Don Krauss, Infiltrator Water Technologies*

Concern is growing globally over natural resource consumption and climate change. Many governments, companies, and industries are acting to reduce the environmental footprint associated with material and product manufacture and processing. In publishing the Provincial Policy Statement (PPS), the Ontario Ministry of Municipal Affairs and Housing is part of this global effort. The PPS is issued under Ontario's Planning Act and describes policy direction concerning land use planning. The PPS states that the Province's water and mineral resources provide important environmental, economic and social benefits. Planning authorities must also support the reduction of greenhouse gas emissions and promote design that maximizes energy efficiency and conservation. The Province must ensure that its resources are managed in a sustainable way, and the wise use and management of these resources over the long term is a key provincial interest. The onsite wastewater treatment industry currently treats the wastewater generated by nearly 28% of Canadian households and up to 33% of new developments. With the vast number of systems installed daily, employing the most sustainable methods of onsite system manufacture, construction, treatment, and dispersal can help achieve the goals identified in the PPS.

Septic systems have conventionally consisted of a precast concrete septic tank, followed by a gravel and pipe drainfield. While these materials have provided adequate treatment and dispersal of wastewater for years, they are also energy- and resource-intensive to manufacture and manage. By weight, concrete is composed of approximately 15% cement and 85% aggregates. Cement is manufactured from limestone and clay using a process known as calcination, which is energy intensive due to the amount of heat required and releases



QUICK4 EQ36 CHAMBER

carbon dioxide, a greenhouse gas. The conventional septic system is, therefore, completely reliant upon mining and processing natural gravel resources, a non-renewable process (DOT FHWA, 2012).

Gravel quarries typically begin the mining process by blasting or drilling into the natural landscape using heavy machinery to extract large particles. These are then sent through a series of machines to crush and screen the natural aggregate into various-sized stockpiles. Depending on its intended use, the aggregate often must be washed to ensure it is free of small-diameter rock and soil particles referred to as fines. The mining process therefore involves a large amount of fuel and water consumption to run the machinery and wash the aggregate, in addition to the substantial amount of natural resource consumption (USEPA, 2004).

### Change in Paradigm

Alternative materials have been more recently introduced to the septic industry, utilizing recycled thermoplastics to manufacture septic tanks and drainfield products (i.e. chambers). The manufacture of recycled thermoplastic products involves the removal of waste plastic from landfills and junkyards,

processing the plastic, melting the regrind to liquid plastic, and molding products using electric machinery. While these products have been qualitatively considered more environmentally friendly by using recycled materials, the goal of this analysis is to quantitatively compare the manufacture and transportation of both a conventional concrete/aggregate septic system and a system of recycled thermoplastic components.

### Comparative Analysis Strategy

The conventional system for this analysis is defined as a 3,600-liter, precast concrete septic tank and a 75 linear-meter stone drainfield using 75-mm polyvinyl chloride piping for distribution. The recycled thermoplastic system is defined as Infiltrator Water Technology's (Infiltrator) IM-1060 septic tank and a 75 linear-meter drainfield of Quick4 EQ36 chambers at a 33% trench length reduction. Analysis included raw material processing, manufacture of the finished product, and transportation of the product to the field site. Resources compared were water, electricity, and fuel.

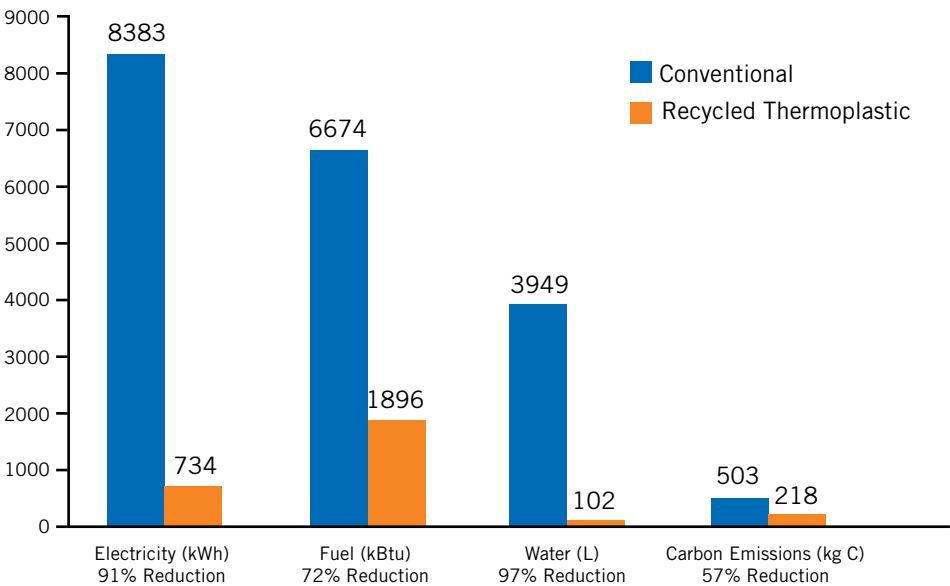
For the conventional system, the transportation distance was assumed to be 50 km to account for availability of local materials; for each conventional

system, one truck carrying one tank and one truck carrying the amount of stone required for the drainfield each travel 50 km to deliver the conventional system to the worksite. Published values for mining and cement production were used to calculate water, electricity, and fuel usage.

In calculating resource consumption of the recycled thermoplastics system, a flatbed trailer transportation distance of 1,000 km was used to account for the distance from the manufacturing plant to a nearest distributor in Toronto. A distance of 50 km was then used to calculate the distance traveled from distributor to the installation site in two pickup trucks total, one transporting the tank and one transporting the chambers. Infiltrator's Winchester, Kentucky, USA manufacturing facility water, electricity, and fuel usage data was used for the analysis.

*continued on next page*

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Values for electricity use, fuel consumption, water consumption, and carbon emissions were calculated for both systems.

### **Conventional vs. Recycled Thermoplastic Systems**

The recycled thermoplastic system consumes significantly less resources and emits less carbon than the conventional system. When comparing the thermoplastic system to the conventional system, the thermoplastic system consumes 91% less electricity, 72% less fuel, 97% less water, and emits 57% less carbon than the conventional system; at equal distance, the savings are even greater.

The majority of fuel and emissions savings for the thermoplastic system are

from the septic tank. The thermoplastic tank uses 81% less fuel and causes 63% less carbon emissions than the concrete tank. This is largely due to the cement manufacturing process involved in concrete tank production; cement production accounts for 39% of the total conventional system fuel consumption and carbon emissions.

From the analysis, the recycled thermoplastic system consumes fewer resources and emits less carbon into the atmosphere than the conventional system. It can therefore be concluded that the use of recycled thermoplastic septic system products over conventional products is a more sustainable approach to onsite wastewater treatment and more in line with Ontario's PPS. Another consideration is that effective January 1st,

2017, Canada's cap-and-trade program enforces the taxing of carbon at \$19.40 per tonne of carbon dioxide with the aim of reducing greenhouse gas emissions. When compared to the total number of septic systems installed each year in Ontario (8,000 in 2016), this could amount to a total yearly savings of 61 million kWh of electricity, 38 million kBtu of fuel, 31 million liters of water, and 2,280 metric tons of carbon if every septic system was constructed using recycled thermoplastics rather than conventional materials. This would translate to the addition of 9,500 trees to the Province, or in terms of electricity, fuel, water, and carbon savings, comparable to removing nearly 5 million homes from the electric grid for one day, removing 280,000 cars from the road for one day, and saving the water used by 102,000 homes for one day.

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*Scott McMullen, Verge Insurance*



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

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**Scott McMullen, B.A., CAIB, CPIB**

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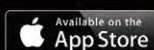
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# MEMBER PROFILE

**Michelle Tremblay**  
MNT Consulting Group Inc.

**Name of Business:** MNT Consulting Group Inc.

**Owners:** Michelle Tremblay, P.Eng.

**Services:** Established in 2010, MNT Consulting is a small and specialized, cooperative team. We work closely with our clients to prepare plans and design relating to lot grading plans, septic designs, stormwater management and topographical surveys. We offer full service in-house as it relates to information gathering, design and building permit approvals in addition to conservation authority approvals. We take the guesswork out of development approvals!

**Service Area:** Simcoe County, York Region, the GTA and cottage country

**Number of Years in Operation:** 7 years

## What got you started in the onsite and decentralized wastewater industry?

As a graduate with a degree in environmental engineering from the University of Guelph, I have more than 10 years of experience knowing the 'ins and outs' of current regulations. With a love for the outdoors and nature, it was a natural



**MICHELLE TREMBLAY**  
MNT Consulting Group Inc.

progression for the business to focus on rural land development and everything that goes along with it. We appreciate that sustainable development can include onsite design.

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

MNT Consulting strives to make our clients feel safe during their new home or renovation project. We know that these projects can be challenging and we assist in making this more flowing, safe and easy for our customers.

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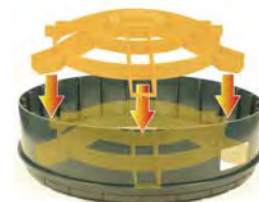


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# Water Reuse Essential for New Multi-Use Development Projects

*By Irene Hassas, Aslan Technologies*

With ongoing population growth and urbanization, increase in the development of new residential houses, private properties and recreational facilities outside the city boundaries, has created a need in new sustainable water management approaches. Many existing green belts, farm lands and Golf Courses are being developed with limits to resources to draw from and therefore, these developments have to come up with innovative solutions to their various constraints and sustainability challenges. In particular, golf courses face resource constraints related to irrigation, land footprint and isolation from municipal systems. In some instances, their locations are close to precious natural features, making growth and resource management a larger challenge.

## Water Resources and Management

One particular challenge involves water management on golf courses and multi-use properties where residential developments are combined. In these instances, the courses are not able to withdraw from a municipal water supply system as it is not feasible economically to be connected via piping.

This type of growth and multi-use development has become increasingly more common and popular in the larger cities where the land value appreciation has created a financial incentive for the development. It is therefore imperative to look at ways to develop onsite and distributed neighborhood-scale approaches to water management, including drinking water supply, irrigation and wastewater treatment.

## Integrated Water System Solutions

Utilizing a complete design approach, developments are able to integrate proper planning and implementation to build water systems for their respective properties. These communities are therefore able to take advantage of complete potable water treatment systems, pumping and piping systems, wastewater treatment and irrigation as their needs require.

Not only do these solutions allow for compact communal drinking water filtration systems, wastewater reuse and irrigation technologies, but they help reduce the overall footprint of these communities and golf courses, which are otherwise thought to be high-volume water users and resource extractors.

## Case Studies

Recently, Aslan Technologies has been engaged in multiple development projects by progressive communities and developers in North America to provide integrated water treatment solutions to these developments and several Golf Courses' re-developments such as Westhill, Whiteville and Wyndance and



Wyndance's club house begins to take shape.



Wyndance's SBR plant under construction.

many other Club Link Golf Courses. The West Hill golf course, has been a sustainable development that included a golf course, with a clubhouse and maintenance facility, in addition to 75 homes which all required clean drinking water and subsequent water treatment. For the golf course alone, 100 m<sup>3</sup> a day of water was needed for irrigation. Utilizing a packaged water treatment and Sequencing Batch Reactor (SBR), the golf course and development was able to increase its capacity of clean water supply to 170 m<sup>3</sup> a day.

Another example of a progressive and forward thinking group is the Whiteville golf course, where the developer built a community center and a shopping



This demonstrates an integrated, compact solution from start (drinking water) to finish (sewage treatment and irrigation) for a golf course facility.

For the Wyndance development, tree relocation saw the successful transplantation of hundreds of trees into the landscape of the new golf club. This 'least disturbance' golf course aimed to incorporate and preserve the natural features of the land as it is next to the ecologically significant Green Belt area.

complex in addition to rebuilding a new clubhouse. The growth of this particular development puts constraints on their water resources, which are managed on a development-level, rather than supplied by the municipality. The capacity for this golf course was increased to 30 m3 a day. Wastewater is then collected and treated utilizing using a Sequencing Batch Reactor



(SBR) as their one-stop-shop technology solution. This treated water is then collected in a centralized pond, which is then utilized for irrigating the courses.



These types of communal and integrated technology solutions are a best fit to integrate into their plan as it is able to filter wastewater from the community's onsite wastewater treatment plant to be reused for advanced golf course irrigation.

"We are integrating technologies and systems that are proven to minimize any environmental impacts, in order to preserve both the natural functioning of the Moraine and its beauty" – Daniel Guizzetti, President of Empire Communities.



### Next Steps and Future Applications

As more communities and golf courses look to expand the capacity of their properties, both in terms of occupancy and water usage, they will look to creative, sustainable and integrated approaches to managing their water and wastewater



on site. These types of compact, small footprint and customized solutions will enable expansion and provide potential for more sustainable growth and development in future.

## OOWA IS A PROUD SUPPORTER & PARTNER OF:





# MEMBER PROFILE

## Bert Knip

Make-Way Environmental Technologies Inc.

**Name of Business:** Make-Way Environmental Technologies Inc.

**Owners:** Bert and Elaine Knip

**Services:** Protecting fresh water resources is an important goal of our company. As a result, selling a wastewater treatment solution such as the Enviro-Septic system is a perfect fit for us. Make-Way also has a full service department to inspect and service all of our systems.

**Service Area:** Ontario

**Number of Years in Operation:** This is our 20th year in the wastewater industry.

### What got you started in the onsite wastewater industry?

In the mid 90's our company's main focus was the storm water market. In 1997 we were offered the Ontario distributorship for the Whitewater Aerobic Treatment Unit. At that time our company was not that familiar with the wastewater industry. Due to our concern and interest with the environment we decided that we needed to get involved. In 2008 we also became the Ontario rep for the Enviro-Septic system. Today we only focus on the wastewater market. Now 20 years later, we are still quite involved and continue to enjoy it.

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

There are usually many factors that contribute to success; hard work, persistence and endurance. I think that honesty and integrity are equally important. We have always been concerned with the environment and protecting public health therefore it was a natural fit to sell one of the most environmentally friendly septic systems on the market today. Providing a great septic system, offering good quality service all at a reasonable price to the homeowner has been and continues to be very important to our company. Elaine and I have been blessed with a great relationship in both our personal lives and our business and this may be the most important reason for longevity and success in business.



BERT KNIP  
Make-Way Environmental Technologies Inc.

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

I think that the industry will continue to grow and it will also become more complex. The concern for the environment, protecting our ground water and the awareness of public health has become very clear and important to the general public. The MMAH and the MOECC are continually setting higher standards with regards to system certification (CAN/BNQ) and discharge criteria (total nitrogen) to name a couple. Municipalities of all sizes are beginning to take a hard look at decentralized systems as an attractive, financially feasible alternative. There is a bright future for OOWA and its members.

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

OOWA has become a strong organization. We have made great strides in the last decade. We need to continue to be a leader in all aspects of onsite and decentralized wastewater treatment. It is very important to continue to engage and encourage all of the stake holders in this industry. It's often been said that the onsite wastewater industry should be considered as a skilled trade and I agree with this. We need to have good representation across the province, promote the Registered Professional Program and encourage all stake holders to join OOWA. Together we can look out for the environment and help protect our ground water resources.



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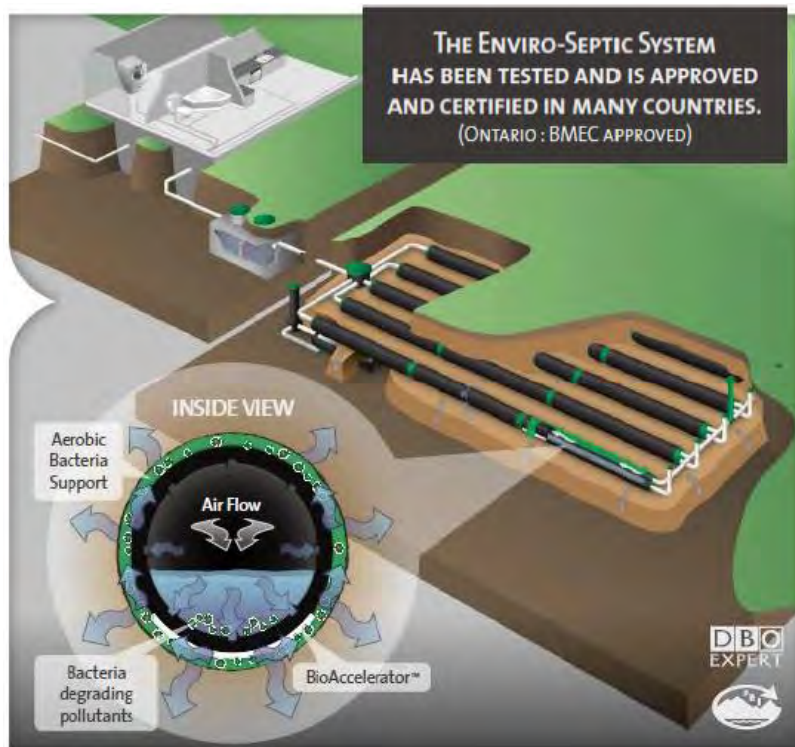
No media replacement required (such as peat moss, sand or other) and there are no mechanical parts to fail or repair. (An annual inspection is mandatory as per section 8.9.2.3. of the Ontario Building Code (OBC))

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# ECOFLO® – A SIMPLE SOLUTION FOR DN SITES

By Marie-Christine Belanger, Premier Tech Aqua

The ECOFLO® Coco Filter ECDn model series (Total Nitrogen reduction system) is a wastewater treatment technology designed to treat domestic primary/septic tank effluent. The core of the ECOFLO® system is based on the biological treatment of wastewater using a 100% organic filtering media. Wastewater is treated aerobically by bacteria fixed into the filtering media via an optimized water/air (oxygen) mass transfer process.

The ECOFLO® Coco Filter ECDn model series consists of an ECOFLO® Coco Filter certified under NSF/ANSI 40 Class 1 Standard, to which a recirculation loop is added to provide Total Nitrogen (TN) reduction, which design has been certified under ANSI/NSF Standard 245. The system is composed of a primary/septic tank, a flow regulation device, an ECOFLO® Coco Filter (which can be housed in different types of tanks - concrete, and polyethylene) and a recirculation valve.

To be treated, the wastewater flows first into a primary/septic tank where a primary treatment, gross solids sedimentation, takes place. The effluent is then directed into the ECOFLO® Coco Filter by gravity, and then evenly distributed over the surface of the filtering media using a tipping bucket and distribution plates. These plates include channels and orifices that uniformly distribute the septic tank effluent over the surface of the filtering media. Distributed wastewater trickles downward into the filtering media where microorganisms, naturally attached onto the filtering media, degrade the contaminants through their metabolic reactions. The treated wastewater is then collected below the base of the filter and pumped to a flow divider. A fraction of the flow (2/3) is returned to the septic/anoxic tank and the remaining fraction (1/3) is directed toward the final disposal. The recirculation ratio is approximately two (2) times the daily flow (2Q). The ECOFLO® Coco Filter ECDn model

series is based on a pre-denitrification approach: The ammonia is first biologically converted into nitrates inside the ECOFLO® Coco filtering media (nitrification); then, nitrates are recirculated in an anoxic reactor to be transformed into gaseous nitrogen (denitrification). To simplify the installation, the volume required for the anoxic reactor is generally "included" to the primary/septic tank effective capacity.

Flow regulation can be achieved either by a flow regulator mounted directly on the outlet of the primary/septic tank or directly by the recirculation pump controlled by a time dosing control panel. Both approaches provide equivalent flow regulation performance.

## Flow regulator:

The flow regulator regulates the flow at a rate of 24 USG/h to the ECOFLO® Coco Filter. The size of the primary/septic tank is then selected in order to offer enough buffering capacity to ensure effective attenuation of hydraulic peak flows. Normally, the minimum recommended Hydraulic Retention Time (HRT) for the primary/septic tank is 2 days based on the design capacity. With the use of the flow regulator we recommend to increase it with an additional 0.5 days.

## Pumped time dosing:

Minimum required working capacity to accommodate time dosed recirculation is 0.3 times the system daily design capacity. This volume of treated effluent can be provided either at the bottom of the ECOFLO® Coco Filter unit or in an independent pumping station installed downstream of the unit. All ECOFLO® Coco Filter units provide sufficient built-in effective volume to accommodate the recirculation. The average TN daily load applied onto the system during the NSF standard 245 certification was 2.13 g TN/ft<sup>2</sup>-d.

## System Performance

The ECOFLO® Coco Filter ECDn model

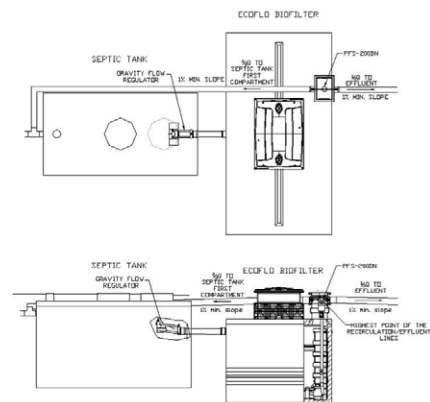


FIGURE 1

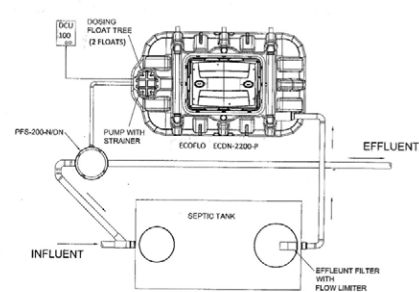


FIGURE 2

Figure 1 presents a schematic of the process using a flow regulator and figure 2 time dosed pumped recirculation.

series was submitted to different performance demonstration programs, controlled and field performance. It should be noted that all these programs were performed in the Northern region of United States or in Canada (Québec), where cold winter conditions are regularly encountered.

## CONTROLLED DEMONSTRATIONS

Three demonstrations took place at the Bellevue experimental station in Rivière-du Loup, Québec, using three distinct ECOFLO® Coco Filters. Each of these systems was submitted to the same testing protocol performed for the NSF Standard 40 & 245 certification. During the entire different demonstration periods, systems were fed at maximum design capacity, i.e. sustained design flow. The first demonstration program continued for 42 weeks, while the two other demonstration programs each



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spanned over a 26-week period (as per the NSF certification program).

A total of 660 testing days were cumulated over a 5-year period. Different configurations, dosing mode and recirculation rates were tested. The intent was to push the limits of the system in order to optimize the design and to validate system performance under cold climate conditions. Table 1 summarizes the different testing conditions for the three demonstration programs performed.

### FIELD DEMONSTRATION

In addition to certification under NSF standard 245, most of the States also request real field performance results to complete the approval process for nitrogen reduction systems. The first ECOFLO® Coco Filter operated in recirculation mode in the US was thus installed in November 2014 in the State of Pennsylvania (Morristown) to start gathering real field data under actual and uncontrolled wastewater flow. Because

Demonstration	1st	2nd	3rd
Demonstration period	Aug 27/2008 to Jun 17/2009	Jun 19/2011 to Jan 5/2012	Jan 17/2013 to Jul 18/2013
Number of days	294	184	182
Recirculation rate	2Q	3Q	2Q
Basic design ECOFLO® HLR	8.6 USG/ft²-d	11.1 USG/ft²-d	11.7 USG/ft²-d
HLR w/recirculation	25.8 USG/ft²-d	43.6 USG/ft²-d	36.9 USG/ft²-d
Average TN daily load applied	0.86 g N/ft²-d	1.25 g N/ft²-d	1.26 g N/ft²-d
Filtering media height	25.5 in	25.5 in	25.5 in
T average - Influent	14.7 C (62 F)	15.6 C (60 F)	12.2 C (53 F)
T minimum - Influent	9.3 C (49 F)	9.7 C (49 F)	9.2 C (48 F)
T maximum - Influent	21.1 C (70 F)	18.8 C (66 F)	18.5 C (65 F)
Feeding mode	Time dosed	Time dosed	Flow regulator (R1) & time dosed (R2)

of the late installation, the monitoring program only started the following June.

Table 2 summarizes the different testing conditions for this first field demonstration.

System monitoring and sampling was performed by All State Septic Systems of Pennsylvania. Sampling and monitoring plan is presented in Appendix 2.

*continued on next page*



## Results

Influent water temperature was not controlled and varied between 9 °C (48 F) and 27 °C (81 F) throughout the different demonstration periods and sites, without significantly affecting the overall system performances while maintaining the expected TN reduction efficiency.

### ECOFLO® Coco Filter ECDn NSF Certification

The performance obtained during the NSF certification corroborates the results obtained under these demonstrations programs and confirms the stability of the ECOFLO® Coco Filter ECDn model series performance with even a higher average TN load applied onto the system. Over the course of the evaluation, the average influent TN was 40.4 mg/L, ranging between 20.9 and 77.4 mg/L. Thus, with an applied hydraulic rate of 14.1 USG/ft<sup>2</sup>-d, the average TN load applied onto the ECOFLO® Coco Filter was 2.13 g TN/ft<sup>2</sup>-d. The ECOFLO® Coco Filter ECDn model series produced an average effluent TN of 18.6 mg/L, which resulted in a 53.89% reduction of the influent TN. These results were obtained despite the fact that the test was extended over a period of 35 weeks instead of the usual 26 weeks. Moreover, stress tests were run twice due to test site error and deviation from the testing protocol during the first series of stress tests. The ECOFLO® Coco Filter ECDn model series produced an effluent that successfully met the performance requirements established by NSF/ANSI Standard 245.

Performance for CBOD<sub>5</sub> and TSS remained in the expected range. Over the course of the evaluation, the average effluent CBOD<sub>5</sub> was 4 ± 3 mg/L and the average effluent total suspended solids was 2 ± 2 mg/L.

Fecal counts follow the same trend, and performances are comparable to the standard ECOFLO® Biofilter with an average Log 2.1 abatement in fecal counts.

<sup>1</sup> Calculation based on theoretical TN concentration septic tank effluent of 60 mg/L

<sup>2</sup> Since the system is operated in recirculation mode, which is performed directly into the septic tank, septic tank effluent consists into a mix of treated effluent and raw sewage. Thus values measured at the septic effluent in recirculation mode are diluted and note representative of real septic effluent. To obtain the real values of septic tank effluent, the system was operated in single pass mode for a month. Values presented in Table 5 were measured after a month of operation in single pass mode (starting May 15th, 2015). Septic tank effluent was sampled on June 10th, 17th and 24th, 2015.

TABLE 2

Demonstration	Morristown, PA
Demonstration period	Dec 01/2014 to Oct 21/2015
Number of days	689
Recirculation rate	2Q
Design ECOFLO® HLR	8.6 USG/ft <sup>2</sup> -d
HLR w/recirculation	25.8 USG/ft <sup>2</sup> -d
Theoretical TN daily load	1.88 g N/ft <sup>2</sup> -d
Filtering media height	25.5 in
T average - Influent	16.7 C (62 F)
T minimum - Influent	8.8 C (48 F)
T maximum - Influent	27.2 C (81 F)
Feeding mode	Flow regulator

TABLE 3

Controlled Demo	Parameters	Influent (mg/L)	Effluent (mg/L)	Reduction (mg/L)
1st Demonstration Nbr of samples: 39	CBOD <sub>5</sub>	249 ± 67	6.5 ± 7	97.4%
	TSS	225 ± 58	5.3 ± 3.7	97.6%
	TN	27.4 ± 5.6	9.4 ± 4.4	65.8%
	NH <sub>4</sub>	11.9 ± 4.1	2.7 ± 3.8	77.3%
	NOx		5.7 ± 2.6	
	Fecals	1 228 144	4 932	2.4 log

Controlled Demo	Parameters	Influent (mg/L)	Effluent (mg/L)	Reduction (mg/L)
2nd Demonstration Nbr of samples: 11	CBOD <sub>5</sub>	221 ± 59	2.9 ± 0.8	98.7%
	TSS	223 ± 68	2.61.1	98.8%
	TN	30.0 ± 7.3	6.9 ± 1.5	77.0%
	NH <sub>4</sub>	14.8 ± 4.8	0.3 ± 0.4	98.0%
	NOx		5.4 ± 1.3	
	Fecals	1 484 400	1 927	2.9 log

Controlled Demo	Parameters	Influent (mg/L)	Effluent (mg/L)		Reduction (mg/L)
3rd Demonstration Nbr of samples: 22			R1	R2	
	CBOD <sub>5</sub>	211 ± 58	7.8 ± 4.9	7.4 ± 4.8	96.54
	TSS	206 ± 55	7.1 ± 5.2	8.0 ± 6.6	96.3%
	TN	28.6 ± 6.9	10.4 ± 2.5	11.5 ± 2.2	61.8%
	NH <sub>4</sub>	12.7 ± 4.7	0.7 ± 0.8	0.4 ± 0.5	95.5%
	NOx		7.0 ± 2.0	8.9 ± 2.9	
	Fecals	625 627	8 932	10 908	1.8 log

Field Demo	Parameters	Effluent (mg/L)	Effluent (mg/L)	Reduction (mg/L)
PA Demonstration Morristown, PA Nbr of samples: 14	CBOD <sub>5</sub>	254 <sup>2</sup> ± 29	3.0 ± 2.7	98.8%
	TSS	67 <sup>2</sup> ± 38	5.0 ± 0.1	92.5%
	TN	64.7 <sup>2</sup> ± 5.8	24.3 ± 5.4	62.4%
	NH <sub>4</sub>	50.1 <sup>2</sup> ± 7.2	2.6 ± 6.6	94.8%
	NOx		20.1 ± 2.7	
	Fecals	30 641 <sup>2</sup>	289	2.0 log

# MEMBER PROFILE

## Pam Sayne

Know Your Home Inspections Inc.

**Name of Business:** Know Your Home Inspections Inc.

**Owner:** Pam Sayne

**Services/Mandate:** Services include home inspections, service organization with Natural Resources Canada for Energy Evaluations, septic visual inspections, wood appliance inspections (WETT), SB12 new construction and renovations modeling, Energy Star modeling and certification, Blower door testing, training and education.

**Service Area:** Haliburton County, City of Kawartha Lakes, Muskoka, Orillia and Bancroft areas.

**Number of Years in Operation/Role:** Since 1999, I've owned and operated Know Your Home Inspections. I included septic inspections in 2013 after completing a number of courses.

### What got you started in the onsite and decentralized wastewater industry?

In 1998 I moved full-time to Haliburton County, a place that prides itself on clean water, attracting permanent and seasonal residents and tourists. The size of Prince Edward Island, the County boasts over 600 lakes which for the most part, are clean and healthy.

Applying my property management and adult education background, along with additional skills training, I started a home inspection and energy evaluation business, Know Your Home Inspections.

As a municipally elected politician, I recognize the immense personal liability we have regarding the health and safety of centralized and decentralized waste water systems and potable water services. We depend greatly on municipal staff and professionals who monitor, maintain and report regularly on these services. Having the knowledge to appreciate their work demands gives me more confidence in evaluating reports or recommendations.

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

Success is in supporting community members who want to do the right thing to protect our environment. Collective and professional efforts contribute to maintaining and improving our living conditions. My clients make my business a success.



PAM SAYNE  
Know Your Home Inspections Inc

Where do you see the onsite and decentralized industry going? I believe composting technology is the way to the future. We see the improvements in technology making composting toilets a viable alternative for situations where full scale systems are difficult to accommodate.

The future technological leaps in wastewater systems may be unimaginable to today's home-owner. It may be comparable to low-tech countries leaping from pencil and paper technology to the internet cloud technology. Could we skip from the expanding processing fields for waste water to a very condensed processing?

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

Many take for granted the processing of everyday waste water until it is visible, smells or creates ill environmental and health effects. Increased population will further stress at-capacity development -especially along water ways. In the future climate change may lead to more water table fluctuations and seasonal flooding that may result in onsite system failures.

While attending home shows I discover how little the public knows about waste water systems. It is reassuring that people are asking good questions but more public education is needed. Finally, we need the ongoing creative work of OOWA bringing together inspectors, practitioners, developers, science, and regulators. Here is where the technology of the proverbial out-house can converge with the recycled waste water technology on space crafts. Environments should be enjoyed and maintained wherever we are!

## The New CAN/BNQ 3680-600 Standard

*Continued from page 1*

Existing CAN/BNQ 3680-600 testing facilities in Canada, include the Bureau de Normalisation (BNQ) in Quebec, and the recently opened NSF testing facility in Edmonton, Alberta. A previously operating NSF testing facility at Alfred College (Ottawa area), has been closed for some time.

The following manufacturers completed their certification to CAN/BNQ 3680-600, for use in Ontario;

1. **Norweco** - new Hydro Kinetic FEU sewage treatment system. Norweco was the first to complete their CAN/BNQ 3680-600 certification (BNQ). Norweco is working with a number of the precast manufacturers in Ontario, to supply the new Norweco treatment system, for installer installations. Training sessions for sewage system installers, designers, engineers and building department / health officials are now ongoing. The Norweco website is [www.norweco.com](http://www.norweco.com)
2. **BioMicrobics** - BioBarrier MBR membrane treatment system (NSF). This membrane technology will be made available through Cromar Advanced Septic Systems. Their website is [www.cromar.ca](http://www.cromar.ca)
3. **Waterloo Biofilter** - new Anaerobic Digester & Biofilter treatment system (BNQ). Waterloo Biofilter is working with tank manufacturers and sewage system installers, for the installations

of their enhanced treatment systems. Waterloo Biofilter have commenced with their training sessions for sewage system installers, designers, engineers and building department / health officials. The Waterloo Biofilter website is [www.waterloo-biofilter.com](http://www.waterloo-biofilter.com)

Premier Tech Aqua have advised that their Ecoflo treatment system has successfully completed the 12 month BNQ testing programme, and are only awaiting completion of the associated report certification. In comparison to their previous approval, their treatment system has also been enhanced, with details to follow. The Premier Tech website is [www.premiertech.com](http://www.premiertech.com)

With the recognition of meeting Level IV (formerly 'tertiary') quality effluent, as detailed in OBC Table 8.6.2.2, these advanced treatment units are permitted to be used in conjunction with smaller footprint OBC Leaching Beds, including; Type 'A' Dispersal Beds (Area = QT/400), Type 'B' Dispersal Beds (Area = QT/400) and Shallow Buried Trenches. It is noted that all former [Building Material Evaluation Commission] Area Bed approvals have been revoked by BMEC, and are now included as Type 'A' Dispersal Beds in the OBC.

Two other manufacturers have BMEC approvals; Enviro-Septic and Eljen GSF, that are recognized by MMAH as meeting Level IV quality effluent. They are recognized as combined treatment (pipe/module) and soil / dispersal systems, and offer similar smaller footprint fields (Area = QT/400). They both are not affected by CAN/BNQ 3680-600

requirements, as there is no advanced treatment unit.

Other treatment manufacturers that are currently undergoing testing, include; Clearstream, WSB Clean, and FAST-BioMicrobics.

There has been some question as to whether CAN/BNQ 3680-600, which is referenced to 'Onsite Residential Wastewater Treatment Technologies' applies to only residential sewage systems, and therefore is not required for non-residential sewage systems. The OBC is specific in that Level IV quality effluent must be provided in accordance with Table 8.6.2.2, and that the only acceptable testing standard, for an advanced treatment unit is now the CAN/BNQ 3680-600. In our opinion, all advanced treatment units must have CAN/BNQ 3680-600 certification for OBC use in Ontario. In addition, and since CAN/BNQ 3680-600 certification is a new OBC requirement, the use of non-certified treatment units under an OBC Alternative Solution, in our opinion, is not an appropriate option.

The installation of systems that do not have the CAN/BNQ 3680-600 certification may only be installed after January 1st, 2017, if a building permit application was submitted by December 31, 2016.

To access listings of certified technologies, you can visit the following websites; [www.bnq.qc.ca/en/standardization/environment/onsite-residential-wastewater-treatment-technologies.html](http://www.bnq.qc.ca/en/standardization/environment/onsite-residential-wastewater-treatment-technologies.html) (BNQ), [http://info.nsf.org/Certified/Wastewater/Listings.asp?Standard=CBNQ3680&\(NSF](http://info.nsf.org/Certified/Wastewater/Listings.asp?Standard=CBNQ3680&(NSF)

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### ... work in the onsite industry?

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## CASE STUDY Cave Spring Cellars: First sustainable winery in Ontario

*Continued from page 30*

Effluent then goes into the processing tank where it is circulated into the BioGill units.

The effluent is delivered to the top of the BioGill units, where it is gravity fed over and down the gills. BioGill technology harnesses microorganisms, Nature's best recyclers and decomposers, to remove the organic material (BOD) in the wastewater. The microbes grow on the gills effectively digesting the BOD-producing organic materials.

### RESULTS

The BioGill system has lowered the BOD in the winery wastewater by up to 99%. Prior to treatment, the BOD from non-vintage loads can be up to 9,645 mg/L. Following a 22 hour treatment cycle, the BOD has been reduced to 101 mg/L.

In June 2016, Cave Spring Cellars became Ontario's first certified sustainable winery for its wastewater treatment, waste management and energy saving initiatives. Externally audited by Sustainable

Winemaking Ontario (SWO), the program was developed by the Wine Council of Ontario (WCO) in order to assist the local wine industry implement environmental best practices. This helps wineries reduce water service costs and helps the local community in its efforts to better manage wastewater for a healthier environment.

**For further information please contact:  
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