

water's next awards 2020

Celebrating Canadian water
leaders and champions



Water's Next winners received a plaque and an individually hand crafted glass pin by artisan glassblower Aaron Calenda of Guelph, Ont.

Welcome to Water's Next 2020

THE 11TH ANNUAL Canadian Water Summit celebrated the winners of the 2020 Water's Next Awards on June 11, 2020.

The Water's Next Awards program is the only national program that honours individuals, projects, and technologies that have made significant contributions to the water industry in Canada.

The presentation of the 2020 Water's Next Awards, which was hosted by Water Canada's Managing Editor Andrew Macklin, took place virtually during the 11th annual Canadian Water Summit.

"This year's Water's Next award finalists and winners reflect the very best of the Canadian water sector," said

Macklin. "The people, projects, and technologies recognized show the incredible work being done to improve the quality of our drinking water, the health of our water systems, and the resilience of our communities."

A big thank you goes out to the members of the Water's Next selection committee for their involvement. They poured through the nominations to select the winners of the awards across 12 categories. The members of the selection committee then selected the Project of the Year and the Water Steward of the Year.

Congratulations to all the winners. We'd now like to present the winners of the 2020 Water's Next Awards. **wc**

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Academic Leader: Julia Baird, Brock University

JULIA BAIRD, who is an assistant professor at Brock University, started to appreciate the value of water resources at a young age.

“My early experiences with water were agricultural,” said Baird. “I grew up on a farm in southern Manitoba and the conversation around the dinner table was always about water—either there was too much or not enough, or we were in ‘good shape’ (as my father would say) but anticipating that it wouldn’t last long! The critical nature of water was ingrained in me early, and my interest grew over time.”

Julia’s early interest in water led to a career in academia. According to Ryan Plummer, director of the Environmental Sustainability Research Centre at Brock University, Julia “uses resilience as a lens for her research—with the underlying assumptions that human-environment systems operate in complex and interconnected ways.”

The resilience lens is evident in Julia’s work, including her role as the Canada Research Chair in Human Dimensions of Water Resources and Water Resilience. “Her research focuses on identifying and testing approaches to improve water governance at the level of the individual, community, watershed, and nation,” noted Plummer.

Why is this important? “The approaches we have used in the past to govern our water resources (largely command-and-control) are insufficient to address contemporary and future water challenges,” according to Plummer. “Dr. Baird’s innovative ‘Human Dimensions of Water Resources and Water Resilience’ program of research tackles this paramount problem of our time head on.” **wc**



Business Leader: John Gillis, Innovation Cluster, Peterborough and the Kawarthas

JOHN’S desire to keep fresh water safe and healthy to drink led to his career in the water industry.

“I was born in Peterborough where our waterways are so important to life and the community,” said Gillis. “I wanted to see it last for generations.”

After graduating with a degree in electrical engineering, John started working at a multi-national corporation. While he was working there, John made a decision to start his own business.

“John created a business in process instrumentation and automation, which quickly grew into a multi-million-dollar company (Milltronics),” said Rachel Stark, a communications coordinator at Innovation Cluster—Peterborough and the Kawarthas, who nominated John for a Water’s Next Award. “He then partnered with two young entrepreneurs and two successful business people to start up a technology company (Aclarus) in the water and wastewater market.”

After several years of business, John joined the Innovation Cluster as the cleantech innovation specialist. He moved up in the organization and is now the president of the Innovation Cluster.

What’s the most interesting part of John’s job? “In Peterborough, we have a lot of working parts coming together that involve clean technologies and startups in the water and wastewater markets,” said Gillis. “It has been important to our community that all these working parts come together. We have the Innovation Cluster, Fleming College with the Centre for Advancement of Water and Wastewater Technologies (CAWT), and Trent University with Cleantech Commons all coming together to make a positive impact in our community for the water and wastewater sector.” **wc**

Credit: City of London



Government Leader: **Barry Orr,** City of London

"TOILETS ARE NOT TRASH CANS."

That's the message that Barry Orr, a sewer outreach and control inspector at the City of London, has been championing.

Over the past 10 years, one of the issues that Barry has been raising awareness about is the impact of so-called 'flushable' wipes on municipal sewer systems. Many wipes are marketed as 'flushable.' However, they are not safe to be flushed because they don't fall apart quickly like toilet paper. Since wipes don't break down easily, flushing them can

lead to blockages in pipes and damage to wastewater treatment equipment.

Barry's advocacy led to an opportunity to work with Ryerson University, which in turn led to the development of a research facility called the Ryerson Flushability Lab.

"This lab has had students from various disciplines help research the performance of various products that are flushed down toilets," said Orr. "We have been able to research how products perform on a number of everyday conditions (e.g. low flow toilet, private drain connection, etc.)."

"The evidence obtained at the lab shows us that the toilet papers and wipes we tested from Japan and Scotland are safe for sewer system flushing," said Orr. "However, most wipes from the rest of the world are not safe to be flushed down a toilet for various reasons."

So how can we ensure that only products that are safe for publicly funded sewer systems are flushed down toilets? According to Barry, "government regulation is the only way to solve what is safe to be flushed." WC



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Credit: Conservation Ontario



Non-Government Leader: **Chitra Gowda,** Conservation Ontario

A SAFE SUPPLY of clean drinking water plays an important role in protecting public health. But what happens if a tragedy like the Walkerton crisis occurs? What if source water becomes contaminated?

One of the important lessons learned from the Walkerton crisis was that source water needs to be protected. In 2006, Ontario's Clean Water Act was passed to protect sources of municipal residential drinking water systems.

"The legislation established 19 multi-stakeholder, decision-making source protection committees," according to Conservation Ontario. This includes "municipalities and 38 source protection authorities comprised of Ontario's conservation authorities."

This is where Chitra Gowda comes in. Chitra was selected as the Water's Next Award winner in the Non-Government Leader category for the work she did in her role as the source water protection lead at Conservation Ontario.

"Chitra leads 36 conservation authorities and two other organizations to implement the requirements of the Clean Water Act, 2006 in Ontario," according to Diane Bloomfield, manager of source water protection at Conservation Halton. "Her collaborative approach to tackle implementation challenges provides fair representation from all regions of the province and includes stakeholders and partners to ensure smooth delivery of the program."

According to Gowda, the coordination of the source water protection authorities has been the most interesting initiative that she has worked on in her current role. "This is both a humbling and tremendous opportunity: to support not only day-to-day operations but also provide strategic direction and recommendations for program growth," said Gowda. "Every day is different, and brings new adventures in source water protection!" **WC**

Credit: Westbank First Nation



Operator: **Krista Derrickson,** Westbank First Nation

"KRISTA SERVES AS an inspiration to First Nation peoples as well as all women."

This is what Kalpna Solanki, chief executive officer of the Environmental Operators Certification Program, had to say about Krista Derrickson, the manager of utilities and public works in Westbank First Nation.

"I originally started my career out by going to school at the Centre for Indigenous Environmental Resources in Winnipeg and was planning on coming back to my community, Westbank First Nation, to be the environmental officer," said Derrickson.

"However, the opportunity presented itself for me to apply to become a utility operator and I took it as a way of being able to help protect the environment," added Derrickson. "I quickly fell in love with the job and industry in general. Within my first year I wrote my first certificate exam and passed, becoming the first Female First Nation Operator certified in North America."

After working as a utility operator and environmental officer in Westbank First Nation, Krista went on to work for the B.C. regional office of Indigenous Services Canada (formerly known as Indigenous and Northern Affairs Canada). While working at Indigenous Services Canada, Krista supported operator training and certification programs—including the Circuit Rider Training Program and Operator Training Program.

Krista worked at Indigenous Services Canada for seven years. After that time, Krista went back to her community and started working as the manager of utilities and public works.

"My community's branding includes three words: community, leadership, and pride," said Derrickson. "This is something I feel every day when I come to work." **WC**

Credit: Ryerson University



Young Professional: Anum Khan, Ryerson University

ANUM KHAN, a graduate student in the civil engineering program at Ryerson University, has gained early recognition for her work on 'flushable' products.

"The assumption that a 'flushable' product is safe to flush down the toilet has caused significant damage to our wastewater collection systems," said Khan. "At Ryerson University, I tested 101 different products for 'flushability' to assess their performance in wastewater collection systems, which led me to co-author a report that has since been internationally-renowned."

The report—Defining 'Flushability' for Sewer Use—came out of the Flushability Lab that's hosted by Ryerson Urban Water at Ryerson University. The report indicated that none of the 101 wipes tested, 23 of which were labelled as 'flushable,' were able to fall apart. This means that if the so-called 'flushable' products are flushed down toilets, they could negatively impact household plumbing and municipal sewage infrastructure.

"Over the last two years, I have been able to attend several conferences that have presented me with the opportunity

to showcase my research and garner further interest in the future work of the project," said Khan.

The report presents the need for a legislated standard, according to Barry Orr who co-authored the report alongside Anum and Darko Joksimovic.

"Defining 'Flushability' for Sewer Use clearly highlights the need for a legislated standard definition around the term 'flushable' that ensures a product is safe to be disposed of down the toilet," said Orr. "This will in turn lead to imposing stricter regulations for the labelling of products." wc



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ENVIRONMENT



Conveyance: City of Waterloo

SERVICE EXCELLENCE is one of the guiding principles in the City of Waterloo's 2019 to 2022 Strategic Plan, so it's natural that the City is working on continually improving its water distribution system.

As part of its commitment to service excellence, the City of Waterloo wants to be proactive and find ways to reduce leaks in its distribution system. For this reason, it is undertaking a project using Digital Water Solution's (DWS) Smart Hydrant.

"The goal of the project is to identify leak and pressure events that happen within the water distribution system," said Todd Chapman, the manager of programs (water services) at the City of Waterloo. "The significance of the areas chosen is to test the technology across different pipe materials. The technology is seeking to address holistic network monitoring in the form of leaks, bursts, pressure management, pressure transients, and water temperature."

One of the benefits of the technology is that it can work across asset classes. "Typically, acoustic leak detection technology works well in concrete and metal pipe but struggles in PVC," said Chapman. "DWS's Smart Hydrant works across all materials."

What advice does the City of Waterloo have for other cities that are thinking of undertaking a similar project? "The three main keys to a successful implementation are: 1) knowing what characteristics of the distribution system you wish to monitor; 2) having the operational support required to maintain the system; and, 3) analyzing and setting the various thresholds for different characteristics," said Chapman. **wc**



Drinking Water: Sanexen

THE NEED TO REPLACE AGING INFRASTRUCTURE with an effective solution led to the development of Sanexen's second-generation water lining technology.

"Aging water infrastructure needs to first be renewed and second be more resilient at the same time," according to Martin Bureau, vice president of innovation at Sanexen. "To reach the first objective, investments needed are estimated in the tens of billions for potable water infrastructure alone, which raises the urgent need for cost-effective solutions."

"Given the costs of the resilient solutions based on open trench pipe replacement, which are more than three times more expensive than regular pipe replacement, developing a trenchless solution for both pipe renewal and pipe resiliency constitutes a fantastic challenge," added Bureau.

This is where SANEXEN's Second Generation Trenchless Structural Cured-In-Place-Pipe (CIPP) technology comes in.

"The proposed solution offers a less disruptive, less costly, more environmentally friendly, and physically superior alternative to the outright replacement of aging or deteriorated water main pipes," according to Marie-Chantal Savoy, vice president of strategy and communications at Logistec, which is the parent company of Sanexen.

According to Sanexen, one of the operational benefits of its technology is that it can be deployed quicker than alternative solutions. "From an operational standpoint, our second-generation water lining technology can be deployed to achieve pipe renewal and pipe resiliency up to ten times faster than the leading resilient solution based open trench pipe replacement," said Bureau. **wc**

Courtesy: Bishop Water and The Nation Municipality



Early Adoption: Bishop Water and The Nation Municipality

THE NATION MUNICIPALITY, which is located 45 minutes east of Ottawa, is upgrading the capacity and performance of the Limoges Wastewater Treatment Facility (WWTF) using Bishop Water's BioCord Reactor system.

"The upgrade will enable the municipality to better accommodate community growth and ensure compliance with treatment regulations," said Kevin Bossy, chief executive officer of Bishop Water Technologies. "Bishop BioCord Reactors are a fixed-film biological treatment process that uses strands of densely arranged loops of polymer fibers

suspended from free-standing frames."

"This media provides a massive surface area on which preferred, naturally occurring bacteria can grow," added Bossy. "Sixty BioCord reactors will be installed into two new lagoon cells that will be created by dividing a large existing cell."

To meet the requirements of anticipated residential and commercial growth in the community, many treatment options were considered by The Nation Municipality and the project engineer R.V. Anderson Associates Limited.

"The Nation Municipality is always striving to introduce new technologies that

will result in lower capital and maintenance costs, and provide a higher quality effluent from the Limoges Wastewater Treatment Facility," said Mayor Francois St Amour.

Bishop BioCord Reactors were ultimately selected because "the project will enable The Nation Municipality to extend the life of its wastewater lagoon system and avoid the need to replace it with a costly mechanical treatment plant," said Bossy. "BioCord Reactors are a made-in-Canada solution that is tested and proven to provide low-energy, self-regulating nutrient removal throughout the wide range of seasonal operating conditions that a plant experiences." WC

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TIED WINNERS Wastewater: BQE Water

SELENIUM is an element that is found naturally in the environment. Despite this, high concentrations of the element have proven to be toxic to aquatic life.

"In mining, extraction and processing activities accelerate selenium release into the environment," according to David Kratochvil, president and CEO of BQE Water. "And in power generation, the ash waste from coal fired power plants that is stored in coal ash ponds often contains elevated levels of selenium."

Regulations were introduced to minimize the harmful effects of selenium on aquatic life. As a result, the mining industry needed access to technologies that could help it meet regulatory requirements.

"Mining companies turned to biological selenium treatment from power generation despite concerns that [...] different conditions exist between the two industries," said Kratochvil. "Selen-IX™ addresses the limitations of biological systems to treat selenium in the mining industry." wc



TIED WINNERS Wastewater: Sentry

THE NEED FOR real-time, reliable, and robust data for operators and process optimization specialists led to the development of SENTRY.

"Existing water quality monitoring solutions are cost prohibitive and labour intensive, requiring manual sample analysis or significant sensor cleaning and maintenance," said Patrick Kiely, CEO of Island Water Technologies.

To address this, SENTRY alerts operators of process imbalance or toxicity events. "SENTRY was developed as a robust, all-ways on, bio-electrode based monitoring platform that tracks microbial activity and notifies operators of key process upset events," said Kiely. SENTRY is supporting a number of clients across Canada. "On daily basis, we are helping our industrial wastewater treatment clients to identify and eliminate biological imbalance events," said Kiely. "We are also engaged with municipal clients to identify cost savings (reduced aeration or chemical dosing) or increased revenue generation through maximized organic loading or biogas generation." wc



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WASTEWATER APPLICATIONS

- Denitrification
- FOG BOD/COD
- Sludge Solidification



Credit: Aclarus Ozone



Water Resources: Aclarus Ozone

“SUSTAINABLE AND EFFECTIVE TREATMENT OF GROUNDWATER, green-roof, and rainwater from buildings for non-potable reuse is growing in importance due to anticipated water shortages,” according to Adam Doran, vice president of sales and marketing at Aclarus Ozone.

Doran noted that one of the benefits of reusing water is that it reduces the demand for potable water in cases where non-potable water can be used (e.g. toilets). This led to the need for a system to that can provide treatment onsite.

“Aclarus systems offer ultra-low operating costs (approximately five cents per 1,000 litres) [and] minimal maintenance or downtime,” said Doran. A system “can include remote monitoring, which makes it attractive to building owners to be environmentally responsible and [adhere] to guidelines [at the same time].”

Another driver for the development of Aclarus’ technology was that the company “was approached by a major construction firm in Toronto for treatment of highly contaminated groundwater,” said Doran.

“This project and relationship led to the firm recommending our technology to their competitors facing similar issues as well to building design firms. This evolved to our system being hard-specified for multiple projects for reuse for buildings within the Greater Toronto Area (GTA).”

The company has established itself as a leader in ozonation, according to Doran. “Aclarus Ozone now has over 900 systems across Canada and nine countries, all of which solved water issues and replaced potential chemicals from being used.” wc

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All photos: Rain City Strategy



Bioswale at 63rd Avenue and Yukon.



Rainwater Tree Trenches at Quebec and 1st Avenue.

Stormwater and Project of the Year: City of Vancouver's Rain City Strategy

LIKE MANY CITIES, the City of Vancouver is dealing with pressures associated with urban densification, aging infrastructure, and climate change. The City developed the Rain City Strategy to help address these challenges.

"Vancouver is facing many water-related challenges including the climate emergency, water quality, combined sewer overflows, aging sewer and drainage infrastructure, and population growth," said Wendy de Hoog, a senior planner with the Green Infrastructure Branch at the City of Vancouver. "The Rain City Strategy is an opportunity to address many of these challenges through integrated planning processes and the use of green rainwater infrastructure."

According to de Hoog, the Rain City Strategy provides an outlook to 2050 and a 30-year road-map to transform Vancouver into a city that "values water as a resource." The strategy also aims to change rainwater management in the city using approaches that integrate grey and green infrastructure.

The Rain City Strategy has three main goals:

- ❶ To improve and protect Vancouver's water quality.
- ❷ To increase Vancouver's resilience through sustainable water management.
- ❸ To enhance Vancouver's livability by improving natural and urban ecosystems.

The strategy also set two performance-based outcomes. The first outcome is to capture and treat a minimum of 90 per cent of Vancouver's average rainfall. The second is to manage urban rainwater runoff from 40 per cent of imperious areas in the city by 2050.

"The Rain City Strategy is one of the most ambitious green rainwater infrastructure strategies in Canada," said de Hoog. "It adopts a design standard to capture and clean 48-millimetres of rainfall per day on both public and private properties and sites. This strategy will not only create more economic opportunities and green jobs for the Canadian water industry, but also encourages innovation in rainwater management products and design."

This is in part because the implementation of the Rain City Strategy

will require a workforce that can design, construct, inspect, operate, and maintain green infrastructure, according to information provided by Julie McManus who is a planner at the City of Vancouver.

What advice does the City of Vancouver have for other cities that are thinking about developing and implementing a similar strategy?

"Up until now, most rainwater in Vancouver has been managed through a conveyance only system using a network of pipes," said de Hoog. "Green rainwater infrastructure brings rainwater management back to the surface of our city through for instance implementing bioretention, permeable pavement wetlands, tree trenches, and blue-green roofs."

"As a project focused on changing business as usual processes at the City of Vancouver, collaboration is key!" added de Hoog. "While it may be challenging, taking the time to listen to many opinions, break down silos, and create a shared, collaborative vision is key to creating a long-term and lasting change." wc


Photo credit: City of Vancouver

Water Steward of the Year: Melina Scholefield, City of Vancouver

A VARIETY OF FACTORS—including urban densification, aging infrastructure, and changing weather patterns—have been putting pressure on Vancouver's sewer and drainage utilities. To address these pressures, the City of Vancouver approved the Integrated Rainwater Management Plan (IRMP) in 2016.

This plan “recommended the creation of the Green Infrastructure Implementation Branch to help guide the application of green infrastructure (GI) on public, private, and park lands,” according to Julie McManus, a planner at the City of Vancouver.

“Under Melina Scholefield's leadership, this branch developed the Rain City Strategy, which goes beyond regulatory obligation of the IRMP to address many of the stresses and pressures facing the City of Vancouver,” added McManus.

Since September 2016, Scholefield has been the manager of green infrastructure implementation at the City of Vancouver. In that role, she has helped shift the narrative around rainwater and green infrastructure.

“Early on in our process, few people recognized or appreciated the potential of green infrastructure approaches to

water management,” said Scholefield. “They were mostly described as a ‘nice to have’ while the traditional grey systems do the essential work.”

“Since then, the view has shifted significantly,” added Scholefield. “Now, there is widespread understanding of how green infrastructure not only delivers water management performance outcomes but also cost-effectively provides many co-benefits for climate resilience, urban ecology, place making, and public health.”

Part of this change has come from the fact that Scholefield has prioritized engagement with the public, industry, academia, local First Nations governments, and subject matter experts.

“Melina always makes time to participate in public engagement sessions [and] conference presentations [...] to share the City's efforts in advancing the Rain City Strategy,” said McManus. “She sees these relationships as reciprocal—a chance to educate people on water related challenges and solutions, as well as a chance to collaborate on the solutions.”

The impact of Scholefield's work extends beyond Vancouver. She is

involved in the Green Infrastructure Exchange network. She has also taken the time to share best practices with other cities that have interest in developing their own green infrastructure programs.

“By sharing Vancouver's own transformation journey through the Rain City Strategy, I hope that other cities can leverage our approach, lessons learned, and vision for the future to make change in their own communities,” said Scholefield. “The more people striving to advance the state of practice around green infrastructure and integrated water management, the more we can help each other and make progress towards sustainable, equitable, and resilient water systems.”

Seattle is one of the cities that has benefitted from Melina's insights. “The City of Seattle has learned a great deal from the exchange through Melina,” said Leslie Webster from Seattle Public Utilities. “She has generously shared the creativity, innovation, and technical excellence that is characteristic of her leadership style. Her tireless energy and enthusiasm for her work is contagious and an inspiration to those who get to work with her.” WC