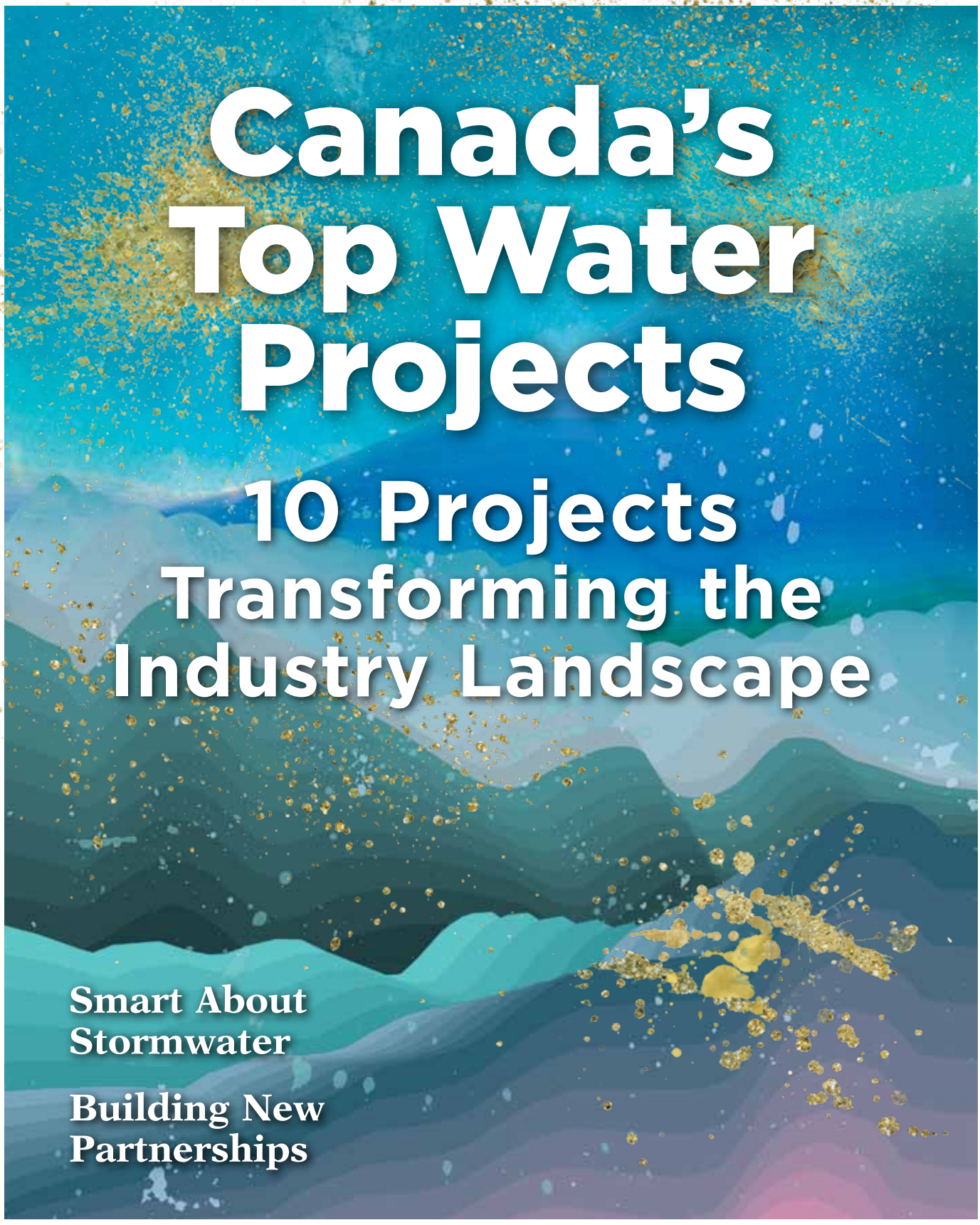
THE COMPLETE WATER MAGAZINE

MARCH/APRIL 2019

WATER CANADA



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VOLUME 19 NUMBER 2

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THE COMPLETE WATER MAGAZINE

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THE COMPLETE WATER MAGAZINE

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VOLUME 19 NUMBER 2

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The Salty Truth

BY ANDREW MACKLIN

IT AMAZES ME the concepts that people can't seem to grasp.

If you put a pile of salt in your mouth it tastes horrible, it's very difficult to get rid of it all by any means (spitting it out or otherwise), and washing it away only dilutes the problem. That dilution is difficult on the kidneys, as it increases the amount of fluid surrounding the cells and the volume of blood in the bloodstream. Over time, that can lead to high blood pressure, heart attack, and stroke, issues that can severely damage overall health or potentially cause death.

Many people, as they progress in their adult life, quickly become aware of the negative health affects of excess salt. And yet many of those same adults take handfuls of salt each year and dump it onto their sidewalks and driveways with little focus to the dilution and volume of the salt they spread.

The Lake Simcoe Region Conservation Authority (LSRCA) recently raised this issue as part of its roundtable on increasing awareness of best management practices in private sector water management. Lake Simcoe has seen steady increases in salt levels for the past several years, and is working with community and industry partners to be smarter with their application of salt.

As someone who lives across the street from Lake Simcoe, and has seen the poor effort in salt distribution by many business and commercial property owners nearby, this awareness is greatly needed.

The ill effects of poor salt usage have also caught the attention of Environment Commissioner of Ontario Dianne Saxe (who is featured in this issue on another subject on page 10). In her 2018 Back to Basics report, Saxe identified road salt as one of the four biggest causes of pollution in Ontario, along with agricultural runoff, raw municipal sewage, and toxic industrial wastewater. Salt has negative impacts on plant and animal cells, can block oxygen from getting to deep water, and can render water undrinkable for those already suffering from high blood pressure.

Salt has also become a significant issue in the construction industry, especially in urban areas. Elevated salt levels in the soil can render it unrecyclable, forcing thousands of truckloads of salt-impacted soil to be dumped at sites far away from the point of the construction activity.

The introduction of blue salt has made a small dent in the issue. Blue salt is specially treated with chemicals such as calcium chloride to act faster and provide a level of stickiness, leading some property owners to reduce the amount they apply on a given surface area.

But as our industry works to protect our watersheds, it will be critical to continue to educate property owners and stewards on the best practices of salt use, including methods for effective application and when salt is ineffective. Doing so will keep the 'blood flowing' and prevent our watersheds from having a 'heart attack'. WC

Andrew Macklin is the managing editor of Water Canada.
andrew@actualmedia.ca

For daily news and discussion, visit
@CanadianWater **/WaterCanada** **WaterCanada**

NATHAN T. WRIGHT
Nathan is a freelance illustrator and artist based in Des Moines, Iowa, USA.
PG 8

DIANNE SAXE
Dianne is the Environmental Commissioner of Ontario and considered one of the top environmental lawyers in the world.
PG 10

THERESA MCCLENAGHAN
Theresa is executive director and counsel at the Canadian Environmental Law Association (CELA)
PG 34

RICHARD LINDGREN
Richard is counsel at the Canadian Environmental Law Association (CELA)
PG 34

ABOUT THE COVER

Canada's Top Water Projects:
The size and scope of infrastructure projects continues to grow in Canada. As the country's largest cities look to upgrade their water assets, build new capacity, and protect against the impacts of climate change.

Coming up in the next issue: MAY/JUNE

Learning lessons in flood protection.

Addressing climate change impacts through asset management.

Improving water stewardship in the mining sector.

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New Partnership to Improve Freshwater Monitoring

THE POWER OF environmental DNA (eDNA) technology is being extended to community groups across Canada to allow for faster creation of more robust freshwater health data.

This is a result of a new $2.6 million partnership between World Wildlife Fund Canada (WWF-Canada), Environment and Climate Change Canada, Living Lakes Canada, Genome Canada, and Dr. Mehrdad Hajibabaei of the University of Guelph.

"Our Watershed Reports found a shocking data gap with respect to freshwater health, despite the heroic efforts of community groups, staff and volunteers dedicated to safeguarding this essential public resource," said Elizabeth Hendriks, vice-president of freshwater conservation at WWF-Canada. "This commitment brings community-based monitoring into the 21st century. Considering the increasing stress caused by climate change and the cumulative effects of other human activities, not to mention major developments on the horizon, the timing couldn't be more perfect."

eDNA metabarcoding is a combination of DNA identification and automated DNA sequencing to generate biodiversity data for freshwater benthic macroinvertebrates, the small animals that live at the bottom of streams and rivers. Changes in the make-up of these invertebrate communities can be excellent indicators of pollution and other environmental stressors.

Compared to current monitoring methods, which can be slow and costly, eDNA metabarcoding technology has the potential to produce biodiversity data more quickly, more affordably, and at a higher resolution. The results of DNA-based biomonitoring will support better environmental assessment, planning, and regulatory decisions—which is essential as population growth, agricultural activity, resource development, and climate change all put increasing pressure on Canada's freshwater ecosystems. — Staff

Standards Council of Canada Moves Toward National Stormwater Guidance

A JOINT REPORT from the Standards Council of Canada (SCC), Engineers Canada, Credit Valley Conservation, and Zizzo Strategy provides an overview of existing stormwater standards in Canada and acts as a seed document to develop a national standard for stormwater quality management.

The report provides a snapshot of the current state of stormwater planning and management and how it may be challenged by climate change. It also outlines best and emerging practices to address future needs of stormwater management in light of a changing climate, and the benefits of a national stormwater quality management standard (SW QMS).

"A standardization process in the form of a SW QMS would provide a consistent process for decision makers responsible for the design, operation, maintenance, and management of stormwater systems," wrote the authors.

Across eight sections the report attempts to do the following:

- Set the context and summarize existing challenges.
- Detail a range of legal, environmental, social, and economic risks to stakeholders in failing to adequately manage stormwater.
- Map out the landscape of existing standards, including international, provincial, and municipal guidance.
- Identify gaps in existing standards and stormwater management practices.
- Discuss the potential benefits of a SW QMS.
- Explore what a national SW QMS could look like.
- Chart next steps.

Based on the findings in the report, SCC will issue a Request for Proposals this year to develop a National Standard of Canada. — Staff

Online at WATERCANADA.NET

NEWS: IWA and IDB launch AquaRating Community of Practice.
bit.ly/AquaRatingCoP

NEWS: Engineers PEI recognizes innovative shoreline protection project.
bit.ly/EngineersPEI

NEWS: Manitoba announces Climate and Green Plan implementation office.
bit.ly/ClimateGreen

NEWS: Yukon works with Dawson for new wastewater treatment solution
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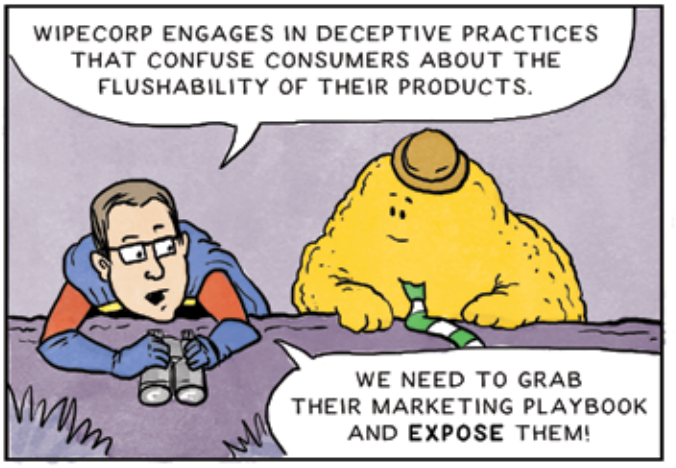

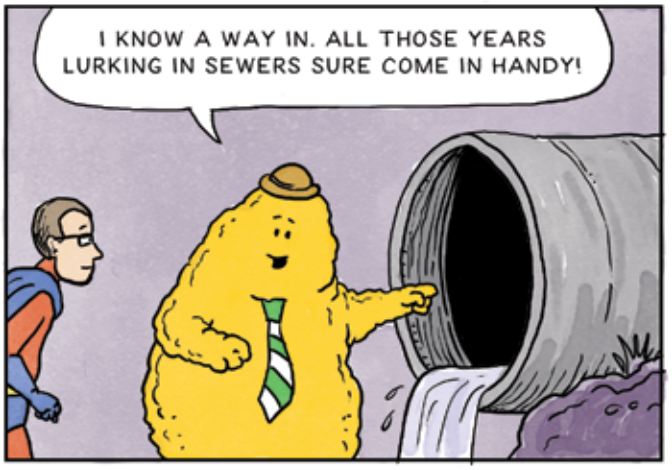

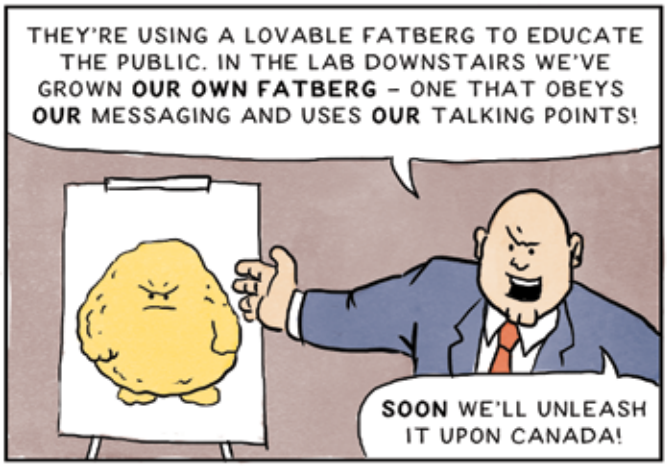

VISIT **KSB.CA/CONQUER-THE-CLOG** TO LEARN MORE ABOUT CLOGGING AND STRATEGIES TO COMBAT IT.

Nathan T. Wright is a freelance illustrator and artist based in Des Moines, Iowa, USA.

Credit: AdEdge Water Technologies

Credit: AdEdge Water Technologies

Low tide on the sandy beach at the popular quaint seaside community of White Rock surrounding Semiahmoo Bay near Vancouver in British Columbia

Removing Arsenic and Manganese in White Rock

When the City of White Rock needed a solution to remove arsenic from the community's drinking water supply, they turned to AdEdge.

The City purchased the utility from EPCOR Utilities Inc. in 2015 and collaborated with RES'EAU-WaterNET to decide the best solution for removing arsenic and manganese from the community's groundwater supply. Arsenic and manganese are found naturally in groundwater in all regions of British Columbia. Concentrations that approach or exceed the drinking water quality guidelines can occur locally anywhere in the province.

Water that contains arsenic is only a health-related concern if it is used for drinking or cooking. There are short term or acute symptoms for exposure to high levels of arsenic, but the primary concern is related to decades long exposure of even low levels of concentration in drinking water. This exposure can increase the risk of developing certain cancers.

Recent research is showing that manganese is more than an aesthetic annoyance and is actually a health and development related concern. Studies have proven that exposure to manganese can cause lower IQ and poor motor functions in young children, and also cause a disorder similar to Parkinson's disease in the elderly.

The process for removing manganese is a well-known and proven process that AdEdge efficiently and cost-effectively applies to dozens of projects across North America every year. The AdEdge Bayoxide E33 media for arsenic removal is particularly unique in that it is the highest performing and longest lasting adsorption media available in the market. Using this media results not only in the most economical system for reaching the very low arsenic treatment targets set by White Rock on the project, but also the system with the lowest operating cost because media replacements are reduced as much as possible.

After the manganese is removed, the water goes through a second set of pressure vessels that contain a specialized media called AdEdge Bayoxide E33. This media is a granular ferric oxide (which means it is made mostly from iron) and the arsenic binds itself to the media through a process called adsorption.

Thanks to the introduction of the AdEdge's patented technology, residents of White Rock can feel safe in drinking water straight from the tap. ■

AdEdge water technologies

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Flooding has become a multi-billion-dollar problem for the City of Toronto, and the problem is only going to get worse.

Smart About Stormwater

Cities have the tools needed to save billions. BY DIANNE SAXE

AS CLIMATE CHANGE begins to gather speed, its impacts become more visible each year. It is not just about polar bears anymore. It isn't even just about how difficult we are making the future lives of our children and grandchildren.

Now climate change is affecting us.

Extreme weather did not start with climate change, but in Ontario and around the world, climate change increases the risk of storms and floods, extreme heat, and forest fires. In Ontario, insured losses from extreme weather are climbing fast. Even after adjusting for inflation and GDP, Ontario had an extraordinary $1.3 billion in insured losses from catastrophic weather in 2018. Families and organizations probably suffered at least as much in uninsured financial losses, as well as impacts on mental health.

That's partly because Ontario is warming faster than the world average, and can expect to warm much more as each decade passes. Warmer average temperatures bring wilder, less predictable weather, including more frequent and severe floods, wind damage, droughts, heatwaves and forest fires, and occasionally extreme cold. Much of Ontario is already getting wetter, especially in winter, and some of what used to fall as snow now comes as rain.

According to the Insurance Bureau of Canada, up to 10 per cent of Canadian properties may soon be too high-risk for private sector flood insurance. Perhaps half of those could continue to be insurable if protective measures are taken, but premiums will presumably have to climb.

Shelter from the storm(water)

For people in cities like Toronto, one of the most urgent and immediate threats will come from stormwater. Warmer air holds and drops more water. When that extra water falls on hard surfaces like roofs, roads, and parking lots, it runs off quickly and can cause flooding and water pollution. The engineered stormwater management systems underlying many urban areas—the pipes that drain rainwater and melted snow away from city streets—cannot always accept the increased volumes of water that we are already experiencing, much less what is ahead due to population growth, urban sprawl, and climate change. The continuing destruction of wetlands and woodlands exacerbates this problem through the loss of natural reservoirs that hold stormwater (see Volume 4 of our 2018 Environmental Protection Report, Back to Basics).

Torrential downpours already overwhelm Toronto's aging stormwater infrastructure and wastewater treatment plants, especially in the 23 per cent of the city serviced by combined sewers. For example, in July 2013, a billion litres of a filthy mix of stormwater and sewage—including garbage, debris, and human bodily wastes—flooded streets and basements, and washed into Toronto's rivers and Lake Ontario.

In total, 44 Ontario municipalities still operate combined sewers, which carry both sanitary sewage and stormwater in the same pipe. Stormwater is often foul even when sewers are separated, as it typically carries road salt, petroleum products, metal and rubber fragments, fertilizers, pesticides, litter, and feces from wildlife, pets, and livestock.

Contaminated stormwater also erodes and pollutes local beaches, damages the habitat of aquatic species, and harms Ontario's tourism and recreational opportunities. This includes fishing, boating, and swimming. For example, Toronto beaches were too polluted

for safe swimming 103 times in the summer of 2018. For the last 10 years, the Marie Curtis Park East Beach has been too polluted for safe use more than a third of summer days.

Practical solutions

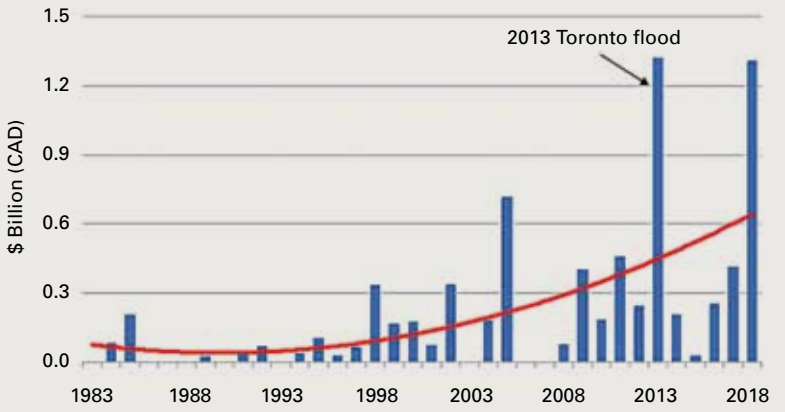
Municipalities are obliged by law to do everything reasonable to keep pollution out of lakes and rivers. Their options to reduce flooding and pollution caused by stormwater and combined sewer overflows include:

1. Reducing the amount of stormwater that flows into storm sewers and combined sewers with:
   - Downspout and weeping tile disconnection programs;
   - Green infrastructure to reduce surface runoff towards streams and sewers; and
   - Stormwater fees, to give property owners a financial incentive to keep stormwater out of sewers, and to provide the funds needed for stormwater infrastructure.
2. Reducing sanitary flows that mix with stormwater in combined sewers with water conservation programs
3. Keeping stormwater and groundwater from mixing with sanitary sewage by:
   - Replacing combined sewers with separate pipes for stormwater and sanitary waste; and
   - Improving leak detection and repair to reduce groundwater infiltration of combined sewers.

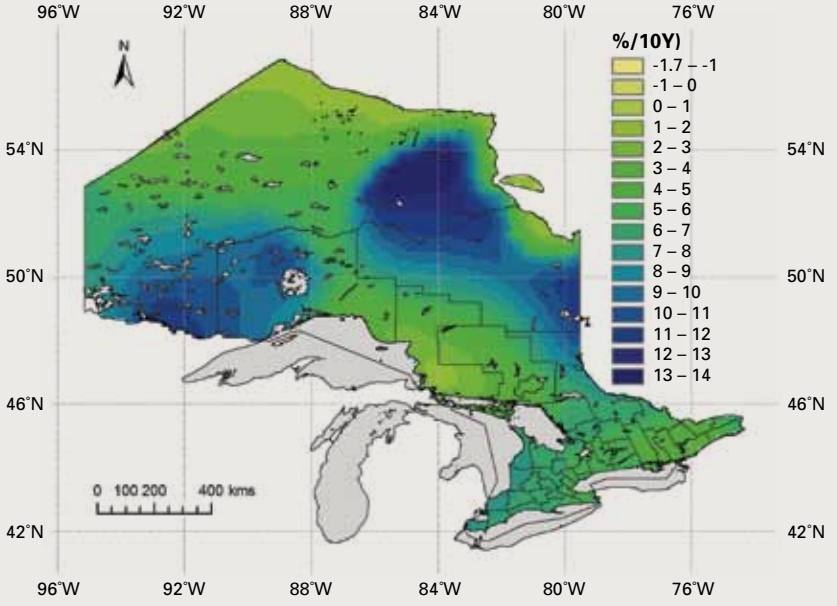
Toronto is taking some, but not all, of these steps. For example, Toronto has refused to charge stormwater fees, even in areas serviced by combined sewers. Such charges allow municipalities to collect the true cost of providing each piece of land with stormwater and sewage service, and use the money for this purpose. Kitchener and Mississauga are two of many successful examples. Instead, Toronto's current funding system allows nearly a free ride to parking lots, warehouses, and other impervious land uses that dump large stormwater costs onto the public purse.

Toronto could also do much more with green infrastructure, which it can now count as "infrastructure" in its asset management plan. Rain gardens, bioswales, and other absorbent surfaces can clean stormwater runoff and reduce its speed and volume while cooling the air. Toronto's Green Roof Bylaw is a good start, requiring certain buildings to retain at least five millimetres of precipitation, but pales in comparison to the amount of rain the city can expect to receive. In August 2018, some areas of Toronto received 130 millimetres of precipitation in a single storm, almost all of which flooded swiftly into the sewers.

Large Catastrophic Losses in Ontario



Precipitation Anomaly Percentage Trends (Winter: %/10Y)



The big picture

Climate change presents all cities with enormous challenges and opportunities. We must simultaneously slash our dependence on fossil fuels that cause climate pollution (mitigation), and get ready for what's ahead (adaptation). Fortunately, there is a lot that cities can do. Getting smarter about stormwater by using proven tools and technologies can save millions for cities and the people who live there. WC

Dianne Saxe is the Environmental Commissioner of Ontario.

Canada's 10 Largest Water Infrastructure Projects

Top100 Canada's Biggest Infrastructure Projects

The annual Top100 Projects list is available for free online at top100projects.ca

EACH YEAR, our sister publication ReNew Canada produces the Top100 Projects report. The report provides information on the 100 largest, by value, public sector infrastructure projects in Canada. The projects included on the list are ones that are progressing in procurement or construction, have secured full funding for the project, and have at least one primary company working on the project.

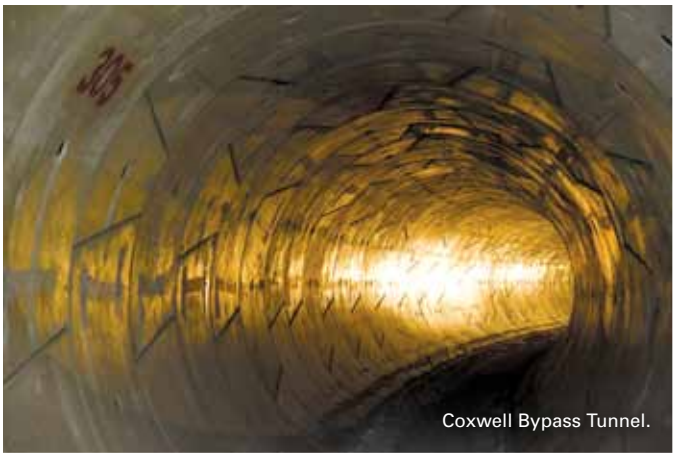
The 2019 edition of the report carried a cumulative value of more than $212.5 billion, with the largest project being the Bruce Power nuclear refurbishment project at $13 billion.

This was a record year for water projects on the list, as 11 projects were included in the report. There was almost 12, but it was replaced at the last minute by a project with a higher value, ranking it 101st overall.

The value of those 12 water projects almost breaks $10 billion ($9.9896), a sharp rise in the value of water projects on the Top100 list. To put it in perspective, just three years ago there were no water projects valued at more than $1 billion. In the 2019 report, there were three, and when taking into consideration the scope of work involved in the Annacis project, that number rises to four.

The projects on this list are ranked based on where they appeared in the 2019 report. However, two projects have changed in cost and scope for this report, which would change how these would be ranked among the 10 noted here.

Photos: City of Toronto


Coxwell Bypass Tunnel.


Taylor-Massey Creek.


Ashbridges Bay.

1

Don River and Central Waterfront Wet Weather Flow System & Connected Projects

$2 billion

Top100 Projects 2019 Rank: 25

Location: Toronto, Ontario

Owner: City of Toronto

Contractor: Hatch (outfall tunnel)

Engineer: Morrison Hershfield; Parsons (bridge technical advisor); AECOM

Other Key Players: Golder; Rider Levett Bucknall

Funding: Public

The Don River and Central Waterfront Wet Weather Flow System & Connected Projects is a 25-year program aimed at improving water quality in Toronto's Lower Don River, Taylor-Massey Creek, and the Inner Harbour. The Coxwell Bypass Tunnel, as well as the integrated pumping station at the Ashbridges Bay Wastewater Treatment Plant, and new outfall at the plant, are among the first parts to be undertaken within the overall program. Construction of the tunnel is underway now and is scheduled for completion in 2023. The station project is anticipated to be completed by 2026, and the new outfall by 2025.

"Toronto is embarking on the largest and most significant stormwater management program in the city's history. With an overall budget of more than $3 billion, the program will greatly improve the water quality in the Lower Don River, Taylor-Massey Creek and along Toronto's Inner Harbour by keeping combined sewer overflow out of our waterways while upgrading the technology and capacity capture, transport and treat it."

Lou Di Gironimo, general manager, Toronto Water, City of Toronto

For updates on each of these projects, visit **watercanada.net**

2

North End Sewage Treatment Plant Biological Nutrient Removal Upgrade

$1.4 billion

Top100 Projects 2019 Rank: 43

Location: Winnipeg, Manitoba

Owner: City of Winnipeg

Engineer: AECOM (owner's advocate/ consultant); KGS Group Ltd.

Legal: Blake, Cassels & Graydon

Other Key Players: Hanscomb (independent/ engineer's design stage cost consultant); Veolia (professional services); P1 Consulting Ltd.

Funding: Public
- **Provincial:** $195 million
- **Municipal:** $1.205 billion

Credit: City of Winnipeg

The Province of Manitoba has issued the City of Winnipeg an *Environment Act* Licence requiring the treatment of nutrients (such as nitrogen and phosphorus) among other requirements at this treatment facility. The implementation of a nutrient-removal process will require a major plant expansion and, given the age of the infrastructure and the complexity of phasing the construction, several new facilities will be constructed. The addition of wet weather treatment processes associated with combined sewer overflow control must be considered in the overall nutrient-removal process design and operational effluent disinfection for wet weather. The preliminary design phase of the plant upgrade is nearing completion. (*Note: As part of the RFP process, the City of Winnipeg's vendors and sub-contractors are not permitted to discuss city projects with the media.)*

Credit: Waterfront Toronto

3

Port Lands Flood Protection and Enabling Infrastructure

$1.25 billion

Top100 Projects 2019 Rank: 47

Location: Toronto, Ontario

Owner: City of Toronto

Project Manager: Waterfront Toronto; City of Toronto

Architect: Michael Van Valkenburgh Associates Inc. (Port Lands Estuary Plan)

Other Key Players: MVVA (design of parks, flood protection, rover valley); WSP and DTAH (roads and municipal infrastructure); Entuitive with Grimshaw and SBP (bridges); Jacobs (environmental); Toronto and Region Conservation Authority; Golder

Funding: Public
The federal, provincial, and municipal governments are each contributing an equal share of $416.6 million to this project.

The Port Lands Flood Protection and Enabling Infrastructure project is the redevelopment of one of the largest portions of under-developed land in a major urban core in North America. Located along the shore of Lake Ontario southeast of Toronto's downtown core, the project will include substantial soil remediation, a new mouth for the Don River, and critical infrastructure for flood resilience to unlock the 325-hectare site for residential and commercial development. In November 2018, Waterfront Toronto held a groundbreaking ceremony to mark the start of construction on the new river valley. The work includes a kilometre-long river valley, a natural spillway, and a new mouth for the Don River.

"The Port Lands Flood Protection project is a key Council priority and a long-term investment in our city's social, economic, environmental, and ecological future. The project will unlock the potential of underutilized waterfront lands, protect the area from flooding and create new parks, natural areas, and neighbourhoods where people will live, work, and play."

John Tory,
Mayor, City of Toronto

"The naturalization and flood protection of the Don River mouth has been adopted by Toronto's communities for a disarmingly simple reason: It gives us hope. Whether you were born in Canada or, like me, came here more recently, Canada symbolizes the natural. The Don project makes us believe we can restore healthy nature in our cities."

John Wilson,
co-chair, West Don Lands Committee;
director, Waterfront for All


Credit: CRD

4

Capital Region District Wastewater Treatment Plant

$765 million

Top100 Projects 2019 Rank: 64

Location: Victoria, British Columbia

Owner: Capital Region District

DBF Team: Harbour Resource Partners (McLoughlin Point Wastewater Treatment Plant); AECOM Canada; Graham; SUEZ; CEI; Gracorp; Michelss Canada

DBFOM Team: Hartland Resource Management Group (Residuals Treatment Facility)

Contractor: Kenaidan Contracting Ltd. (Clover Point Pump Station)

Management Consultant: EY

Legal: Norton Rose Fulbright (advisor to CRD)

Other Key Players: KPMG (commercial advisor); Operis (financial advisor for RTF team); Aon Risk Solutions; Associated Engineering; Kerr Wood Leidal; Stantec; Parsons (Residual Solids Pipeline Phase – Designer); GHD (odour control & HVAC)

Funding: P3

"There has been tremendous collaboration between local communities, government agencies, and stakeholders in developing the McLoughlin Point Wastewater Treatment Plant. Once complete, this facility will allow the Capital Regional District to provide tertiary treatment to core area's wastewater, through a truly state-of-the-art facility."

Jeremy Klarenbach, general manager of infrastructure process facilities, Graham

The Capital Regional District's Wastewater Treatment Project will provide tertiary treatment for wastewater from the core area municipalities of Victoria, Esquimalt, Saanich, Oak Bay, View Royal, Langford, and Colwood, as well as for the Esquimalt and Songhees Nations. The project consists of three main components: the McLoughlin Point Wastewater Treatment Plant, which will provide tertiary treatment to the core area's wastewater; the Residuals Treatment Facility, which will turn the residual solids into Class A biosolids; and the conveyance system, which includes the pumps and pipes that will carry wastewater from across the core area to the treatment plant and residual solids to the Residuals Treatment Facility. Construction of the McLoughlin Point Wastewater Treatment Plant started in April 2017. In 2018, the Residuals Treatment Facility began construction, along with the major parts of the conveyance system. The remaining aspects of the conveyance system will begin construction in 2019. All of the project components are scheduled for completion by the end of 2020.

"Water is a precious and valuable resource. The CRD project is important because it safeguards the environment through compliance with provincial and federal regulations, and protects the community's water resources, while minimizing the investment needed in the near and long term. We're proud SUEZ's technologies can play a key role in this project."

Gabriel Toffani, vice president of global projects, SUEZ Water Technologies and Solutions

"Construction of the CRD's Wastewater Treatment Project is well underway and we're on schedule to treat our core area's wastewater by the end of 2020. We are excited to see this project come to life, deliver this important service, and continue to focus on the environmental priorities of the region."

Colin Plant, chair, Capital Region District

Credit: Acciona

5

North Shore Wastewater Treatment Plant

$777.9 million (previously $700 million)

Top100 Projects 2019 Rank: 68

Location: North Vancouver, British Columbia

Owner: Metro Vancouver

DBF Team North Shore Wastewater Treatment Plant ($ 541 M): Acciona Wastewater Solutions LP—Acciona Infrastructure Canada Inc; Acciona Agua Internacional S.L.; DIALOG; TetraTech

DBF Team North Shore Wastewater Treatment Plant Conveyance Project ($141 M): North Shore Conveyance Partners – Kenaidan, Michaels Canada, WSP

Design Build Consultant: AECOM, HDR/CEI, Golder Associates, Louis Berger

Legal: Norton Rose Fulbright (counsel for Metro Vancouver); Osler (DBF Counsel); Torys (acted for lender)

Financial Advisor: Deloitte

Funding: Public

- **Federal:** $212.3 million
- **Provincial:** $193 million
- **Municipal:** Up to $372.6 million

This greenfield secondary treatment plant will replace an existing primary treatment plant. New federal and provincial regulations require the upgrade of all primary treatment plants. The existing primary plant removes only 40 to 60 per cent of suspended organic matter in the wastewater which, after primary treatment, is discharged directly into Burrard Inlet. The new secondary plant will be able to remove over 90 per cent of organic matter and will be located two kilometres east of the existing plant. The plant capacity will allow up to 320 million litres per day to be treated under storm conditions. Construction officially began in late August of 2018. The new plant is scheduled to be operational by the end of 2020, and the existing primary plant will be de-constructed once the new plant is in service.

"The new North Shore Wastewater Treatment Plant will provide secondary sewage treatment to about 200,000 residents in the districts of West and North Vancouver, the City of North Vancouver, and the Squamish Nation. The facility will also benefit the community by providing new indoor and outdoor community spaces including a public plaza, an outdoor open area, and meeting area."

Richard Stewart, chair, Metro Vancouver's Liquid Waste Committee

"The new NSWWTP will have a state-of-the-art secondary treatment with a focus on sustainability and community integration. The new plant will recover energy and generate fewer greenhouse gasses. It will be built to LEED standards and will include public spaces such as a public plaza and education exhibitions."

Darren Sokoloski, president and country director, Acciona

Credit: Graham Construction

6

Bonnybrook Wastewater Treatment Plant D Expansion

$600 million

Top100 Projects 2019 Rank: 76

Location: Calgary, Alberta

Owner: City of Calgary

Project/Construction Manager: Graham

Engineer: Stantec (local); Jacobs; AECOM

Legal: Blake, Cassels & Graydon (advised the City of Calgary)

Other Key Players: Hanscomb (owner's design stage cost consultant); Aon Risk Solutions (owner advisor and construction insurance broker); WPC Water Solutions; AGAT Laboratories

Funding: Public

One of Calgary's three wastewater treatment plants, Bonnybrook is undergoing an expansion with the plant estimated to be able to service an additional equivalent population of 325,000 people. When construction is completed in 2022, the facility will service a population of 1.366 million people. The Plant D expansion is the largest project of the overall upgrade and includes new primary and secondary clarifiers, new bioreactors with biological nutrient removal system, new treated effluent filtration facility, a new Thermal Hydrolysis Process facility, and a new flood berm. The city is also upgrading the existing ultraviolet disinfection system, digesters, and primary sludge thickening systems. A cofferdam has been installed south of the CN Rail river crossing near the project site, which is allowing for the installation of new effluent diffusers. The cofferdam is expected to stay in place until April 2019.

"Calgary is a big city on a small river. The Plant D Expansion and Upgrades are the major component of the City's $1 billion program of upgrades and expansions at Bonnybrook. Plant D is key in allowing Calgary to accommodate growth in the Calgary region and improve the resiliency of our infrastructure while continuing to ensure protection of the public health and the environment."

Darren Finney,
manager of Bonnybrook program delivery,
City of Calgary

"Communities are fundamental. Whether around the corner here in Calgary or across the globe, they provide a foundation, a sense of place and of belonging. The Bonnybrook Plant D Expansion project is personal to me as it demonstrates the City's long-term commitment to the people it serves through the protect our environment, public health, and overall advancement of the quality of life of my community."

Ryan Roberts,
senior vice president of water project delivery,
Stantec Consulting Ltd.

Photos: Metro Vancouver

7

Annacis Island Wastewater Treatment Plant Expansion

$1.1 billion (previously $550 million)

Top100 Projects 2019 Rank: 83

Location: Delta, British Columbia

Owner: Metro Vancouver

Contractor: Graham/Aecon Joint Venture (Stage 5 expansion); JJM Construction and Geopac Inc. (Site ground improvement and utilities relocation-completed); North American Construction (SCT Blowers-completed); Kenaidan Contracting (computer control system and laboratory building-completed; Outfall Site Prep; Cogen Back-Up Power); Outfall Contractor-TBA

Engineer: Brown and Caldwell, Stantec, EIC Solutions, Klohn Crippen Berger (Stage 5 Expansion); CDM Smith, Golder Associates (outfall); ABV - Woods plc and Black & Veatch joint venture (Cogeneration Backup Power)

Other Key Players:
EXP (vibration monitoring); WSP (materials engineering and testing); Hatch (tunnel design review and outfall construction management)

Funding: Public

- **Municipal:** $1.1 Billion

When this Stage 5 project by Metro Vancouver is complete, the Annacis Island facility will serve 1.5 million people in 14 Metro Vancouver municipalities. Today, it serves 1.25 million people. The previous expansion, Stage 4, was done in the late 1990s. The plant serves much of the Tri-Cities, Burnaby, Maple Ridge, Delta, Surrey, Pitt Meadows, Langley, and White Rock. Four proponents have been shortlisted for the outfall project, the next phase of the Annacis expansion. The winning bidder is scheduled to be named in early 2019, with construction beginning shortly thereafter.

"The Annacis Wastewater Treatment Plant is one of the region's largest wastewater treatment facilities, serving 14 Metro Vancouver municipalities. Over the next several years the plant will receive major upgrades in order to meet the needs of our region's growing population. These upgrades will significantly increase the volume of wastewater the plant can treat, and will enhance the facility's resilience to both earthquakes and the impacts of climate change."

Richard Stewart,
chair, Metro Vancouver's Liquid Waste Committee

"The Annacis Island Wastewater Treatment Plant Stage 5 Expansion Project represents a significant effort by Metro Vancouver to continue to protect public health and the environment, and to bring greater capacity, resilience, and sustainability to one of the nation's most critical water infrastructure facilities. From its enhanced use of green energy through cogeneration technology to seismic resistance improvements that will increase treatment reliability, the upgrade program reflects a holistic approach to infrastructure planning."

Ray Tarnai,
cogeneration project manager, Black & Veatch.

8

Lake St. Martin Outlet and Lake Manitoba Outlet Channel Project

$540 million

Top100 Projects 2019 Rank: 84

Location: Interlake, Manitoba

Owner: Government of Manitoba

Contractor: 513 Construction Ltd./Glen Hartman Construction Ltd. (all-weather road construction); Interlake Reserves Tribal Council/Sigfusson Northern Ltd. (all-weather road construction)

Engineer: Hatch; KGS Group

Environmental Services: North/South Consultants Inc.; M. Forster Enterprises; Stantec; E. Hicks & Associates Ltd.; Szwaluk Environmental Consulting Ltd.; Magellanicum Ecological Services

Funding: Public

- **Federal:** $247.5 million
- **Provincial:** $292.5 million

Financing

From the Government of Manitoba: Cost-share with Infrastructure Canada (INFC) as part of the Disaster Mitigation Adaption Fund (DMAF). Agreement-in-principle signed with INFC to cost share up to $247.5M of the total project cost.

In 2011, southern Manitoba experienced widespread flooding and Lake Manitoba experienced excessively high inflows through the Waterhen River, Whitemud River, and the Portage Diversion. This flood protection project is intended to improve lake level regulation and consequently reduce the likelihood of flooding along Lakes Manitoba and St. Martin. The $540-million flood protection project consists of two 23-kilometre long outlet channels with associated control structures and bridge crossings as well as an 80-kilometre all-weather access road and a 24kV transmission line to the Lake St. Martin outlet channel control structure. The Lake Manitoba outlet channel will connect Watchorn Bay on Lake Manitoba to Birch Bay on Lake St. Martin and the Lake St. Martin outlet channel will drain Lake St. Martin from a point in the southeast to Willow Point in Lake Winnipeg. Two sections of the all-weather access road are currently under construction, with an anticipated completion in 2019. Outlet and channel construction is scheduled to commence in 2020. Manitoba recognizes its duty to consult with Indigenous peoples in a meaningful way. The engagement and consultation process is currently underway, with 31 Indigenous communities identified as having the potential to be affected by the project.

"This project is critically important to ensuring the safety of all Manitobans. With each passing spring, communities in our province remain vulnerable to further flooding. We are focused on completing this project as soon as possible, for the benefit and protection of our communities that have suffered for too long."

The Honourable **Brian Pallister**, Premier of Manitoba

"The province and the federal government have to consult and accommodate the Interlake Reserves Tribal Council member communities, and Lake Manitoba First Nation before building the project. They can't dictate to us like the old days. But old habits die hard I guess, because we are having real difficulty with the province, but we are trying to work through these problems. The studies needed to assess the impacts of the channels on our reserves and our Treaty rights haven't even started yet. The province knows these studies take from six months to a year to do, and they haven't even started because the Province won't release the money for these studies. Yet the Premier goes around and blames First Nations for the delays. He's using us as scapegoats for his government's failures."

Chairman **Cornell McLean** for Interlake Reserves Tribal Council and Chief for Lake Manitoba First Nation

Credit: Region of Peel

"The Hanlan 2400 mm feedermain is one of the largest diameter pipes in the Region of Peel. This feedermain will be operated and maintained by the Ontario Clean Water Agency out of the South Peel Hub. This watermain offers long term continuity of service, efficiency in delivering safe, clean, reliable drinking water to the people of Peel Region."

Alton Williams,
transmissions manager,
Ontario Clean Water
Agency (OCWA)

"In 2007, the Region of Peel's Water and Wastewater Master Plan Update identified the need to twin the existing 14 km Hanlan Feedermain to provide a level of redundancy, permit inspection and supply additional water for future development intensification in Peel."

Elvis Oliveira,
Director – Water,
Region of Peel

9

Hanlan Watermain Project

$450 million

Top100 Projects 2019 Rank: 92

Location: Mississauga, Ontario

Owner: Region of Peel

Contractor: McNally Construction Inc. (Contract 1, Lakeshore and Dixie Roads to Golden Orchard Drive); T2DMP (Contract 2, Dixie Road from Golden Orchard Drive to Eastgate Parkway); Southland Technicore Mole JV (Contract 3, Eastgate Parkway and Tomken and Cawthra Roads)

Engineer: Jacobs (detailed design consultant: South Assignment—Contracts 1 & 2); WSP (detailed design consultants: North Assignment—Contract 3); The Municipal Infrastructure Group; GM Blueplan

Environmental Services: AECOM (environmental assessment)

Legal: Borden Ladner Gervais (legal advisor)

Other Key Players: AECOM (preliminary design report); Arup (geotechnical engineering, tunnel design, pipeline and structural design support, engineering and construction phase services); EXP (instrumentation and monitoring); Revay and Associates (project management support services); WSP (consultant and geotechnical); Aon Risk Solutions (risk advisor/broker for preferred proponent on their phases of the project); Golder; AGAT Laboratories

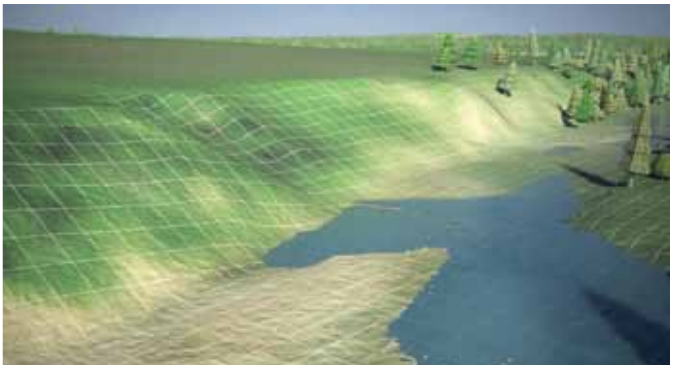
Supplier: Hanson Pipe and Precast (concrete pressure pipe); DECAST Ltd. (concrete pressure pipe, precast chambers); CRH Canada, Dufferin Concrete, Dufferin Aggregates (materials supply)

Funding: Public

- **Municipal**
  Peel Region: $330 million
  York Region: $120 million

The Hanlan feedermain will run approximately 14.5 kilometres from the Lakeview Water Treatment Plant on Lake Ontario to the Hanlan Reservoir and Pumping Station. Part of the same project, the 1,500-millimetre-wide Mississauga City Centre Subtransmission Main will run approximately six kilometres from the Hanlan pumping station to the intersection of Cawthra and Burnhamthorpe roads. The entire project is scheduled for completion in 2019.

Photos: Government of Alberta



10

Springbank Off-stream Reservoir

$432 million

Top100 Projects 2019 Rank: 94

Location: Calgary, Alberta

Owner: Government of Alberta

Engineer: Stantec

Environmental Services: Stantec

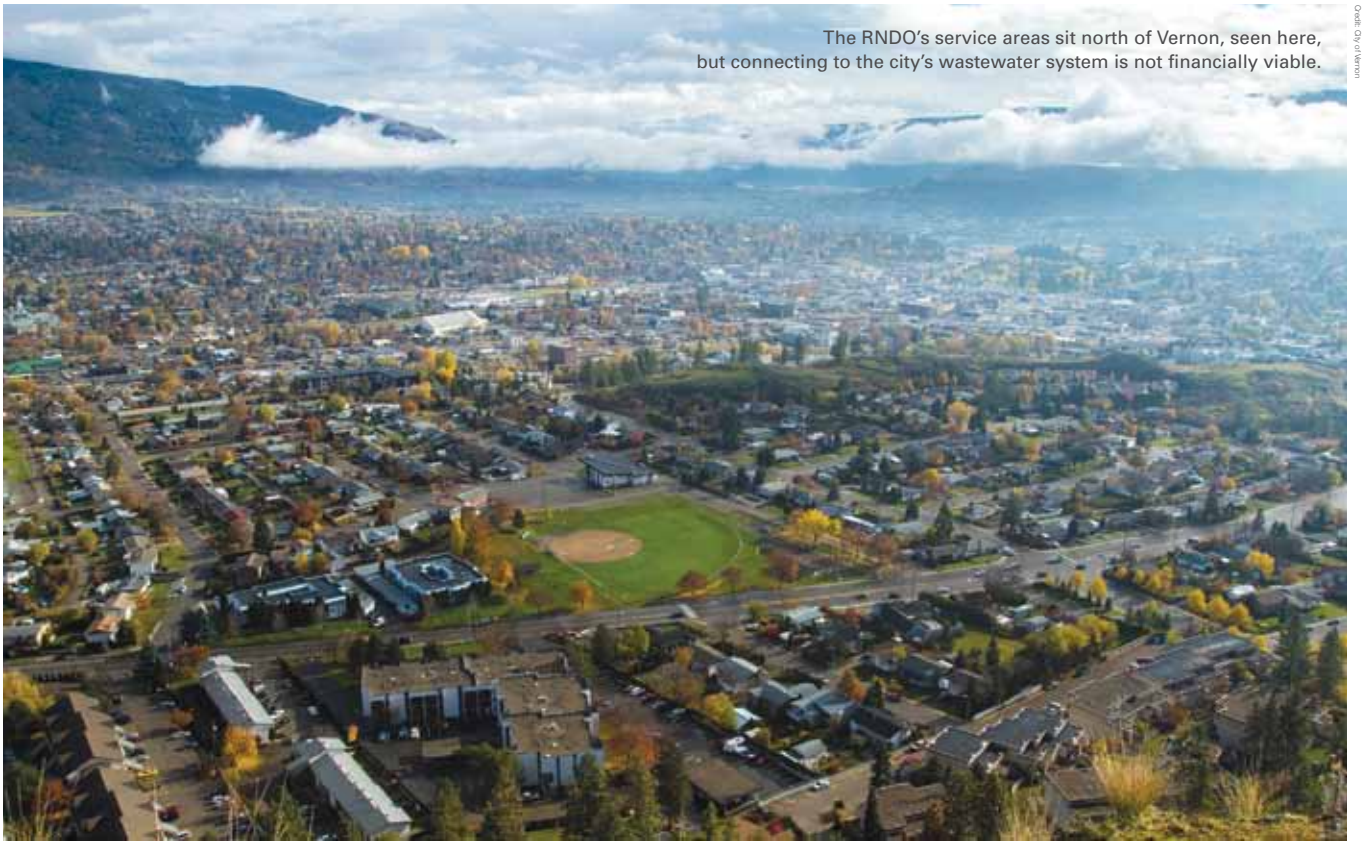
Legal: McLennan Ross (Counsel for the Government of Alberta)

Funding: Public

The Springbank Off-stream reservoir represents the Government of Alberta's solution to mitigate severe flooding along the Elbow River, similar to what took place in June of 2013. Current plans call for a dry reservoir with a capacity of 70.2 million cubic metres, with an outlet structure to safely release the water back to the river when safe to do so. The reservoir will be located approximately 15 kilometres west of the City of Calgary. Construction will require three years, with the reservoir being functionally operational at a reduced level after two years. The project is expected to be partially complete by fall 2021 and fully complete by the end of 2022. This timeline represents a 10-month delay from previous project expectations.

"The beating heart of Calgary, one of Canada's most important economic engines, lies within the floodplains of the Bow and Elbow Rivers. Protecting this asset from increasing incidences of climate change-induced flood and drought is an imperative for the Canadian project of civilization. SR-1 begins that historic work."

Gian-Carlo Carra, ward 9 councillor, City of Calgary



The RNDO's service areas sit north of Vernon, seen here, but connecting to the city's wastewater system is not financially viable.

Credit: City of Vernon

A Common Need

Communnities work together to build a wastewater solution.

BY TODD WESTCOTT

PARTNERSHIPS ARE CENTRAL to any Canadian's understanding of our shared work. In action, this work looks exactly like the North Okanagan Wastewater Recovery Project, a project being undertaken in British Columbia by the Regional District of North Okanagan (RDNO), the Township of Spallumcheen (TOS), and the Okanagan Indian Band (OKIB).

"An obvious question is: why not just connect to the City of Vernon?" said Bob Fleming, director of Electoral Area B in the RDNO, and the one responsible for getting the project started. The RDNO's required service areas sit just north of Vernon, but connecting to their wastewater system was out of the question because it was never deemed financially viable, he said. "Under the current arrangements, the City of Vernon will not extend services to anybody that's not within their jurisdiction. In other words, they would need to be annexed into the City of Vernon to be able to qualify to receive the services."

How to solve the problem then? "Following our UBCM (Union of British Columbia Municipalities) meeting in Whistler in 2014, I rode back with my senior administrator and he encouraged me to look at little further afield, so I went to talk with the Okanagan Indian Band," said Fleming.

The initial discussions went well. "Actually we all right away said we wanted the finished product to be treated to a Class A standard, which was the highest quality coming out of the facility," said Christine Fraser, current mayor of Spallumcheen and a former councillor, recalling how the partnership formed. "And we all wanted it to be reused for replenishing the aquifer in some way, whether that was through farming, or irrigating, or just going back into the aquifer."

A growing community, Spallumcheen has to build capacity. "Right now our current industrial park is on holding tanks, so it has a huge environmental benefit there," said Fraser. "A lot of them are starting to fail, they're thirty, forty years old, some of them."

Solutions, though, don't come cheap. The $36.9 million project has required the partnership to submit to the Building Canada Fund. They will find out this year whether they are approved for the funding. "Acting alone would not have been viable, in terms of what was needed. So, the partnering created strength in numbers, basically," said Fleming.

Fraser agreed, "By the three of us working together on the infrastructure and all of those costs, it just makes sense.

It's more of a regional facility, as opposed to having little, one-off facilities."

Despite the differences in needs and governance, the partnership has been effective, according to Fleming.

"I think the biggest thing in all of it, with everybody working together, is that everybody's been really respectful of each other and of what everybody's different needs are," said Fraser.

> Connecting to Vernon's wastewater system was out of the question because it was never deemed financially viable.

The parties can't be certain they will secure the funding, and the OKIB's funding source is the most tenuous, accessed through an entirely different channel. Nonetheless, under a Memorandum of Understanding, each of the three partners has stated their intention to hold a one-third stake in the project. The RDNO and TOS will each cover fifty per cent of the cost of the common works, with the OKIB having the option to purchase its one-third share in the future once it has secured funding.

"They just weren't in the same position of trying to get their funding arranged, as the other two partners," said Fleming of the provision for the OKIB to buy-in at a later date. "So, we proceeded on the understanding that they could be a buy-in partner with a guaranteed capacity available to them."

And to keep decision-making balanced, "the Committee will provide one vote for each member, and provide each member with veto power, allowing each member to veto a decision if they wish," states the MOU.

"There are a couple of places in the Okanagan that have partnerships that are similar to this," said Fraser.

The partners have drawn from West Kelowna's partnership model to guide their work. No need to reinvent the wheel, said Fraser. "We'll learn from any issues they've had, because they have had some kinks in the system! So, we're going to try to build ours off of their model, looking at those kinks."

Of course, that's contingent on the project securing funding, but Fleming is confident of their chances: "We've got partnerships; we've got a First Nation on board; we're solving environmental issues; we're certainly solving some of the economic issues in the area."

And if they don't secure the funding? "That we would be a partnership thing; we'd have to talk about that," said Fleming.

The OKIB was unavailable for comment at the time of writing. WC

Todd Westcott is Water Canada's content and marketing manager.

Canada is a global leader on safe drinking water, but more time and more money are needed to fully remove lead from our drinking water system.

Taking the Lead

Canada setting a global example on lead and manganese.

BY ROBERT HALLER

CANADA IS SETTING ITSELF as a world leader when it comes to ensuring safe drinking water. This spring, Health Canada is announcing significant amendments to the *Guidelines for Canadian Drinking Water Quality* addressing exposure to lead and manganese. Following extensive research and review, the revised guidelines propose stricter, science-based limits for these two elements in our drinking water. The new Maximum Allowable Concentration (MAC) for lead will be among the lowest in the world, while the newly introduced MAC for manganese will be the first of its kind—far stricter than most other nations' guidelines. And while these may be just guidelines at the national level, they are generally adopted by each province and territory and made into enforceable regulations.

What are the risks? There are significant health risks associated with long term exposure to higher levels of either of these substances. Of greatest concern is their cumulative effect on the very young. Lead affects early neurodevelopment, so the most serious concerns are for pregnant women, infants, and young children. The greatest threat with manganese is when it is mixed with baby formula. The guidelines also set a far lower Aesthetic Objective (AO) for manganese to address concerns around colour and odour that can make tap water less desirable.

Speaking as the voice of the municipal utility sector in Canada, there are three major points we want to make right away. One, that we fully support these guidelines as good, science-based targets as we all support the elimination of lead and the continued delivery of safe drinking water to all. Two, that this is NOT an easy task—meeting these new targets will require time, a lot of money, and the cooperation of property owners. Three, that in the meantime, your water is still safe—nothing changed overnight, we just agreed to even better targets.

> Manganese might be a little simpler to deal with as we can at least address it at the treatment plant.

Manganese might be a little simpler to deal with as we can at least address it at the treatment plant. Primarily affecting those with groundwater sources, manganese is a challenge for thousands of communities in Canada, but it can be filtered at the treatment stage. Of course, such technologies are very expensive and require a year or two of study and design and implementation. So even if we had the money, this can't happen overnight.

Lead on the other hand poses a far more complex challenge. We cannot just address this with a lot of money. This is NOT something we can just catch with a new filter at the plant. Water leaving the plant is generally lead-free and runs through the water main pipes in the streets lead-free. The problem arises when the water comes in contact with lead piping in the individual service lines connecting to older homes or in the internal plumbing of homes and

buildings. Each community carefully adjusts the chemistry to reduce the reactivity of their water with these lead service lines, but we will have a definite challenge meeting the new MAC when testing at the tap of older homes and buildings. While we can get lead-free drinking water to the property line, we must test, report on, and be held responsible for, the water as it comes out of the tap. The best solution is to remove as much lead as possible, but we cannot remove all lead without the participation of the property owners.

Few property owners fully appreciate or are even aware of the risks of lead and currently, there is no obligation for them to eliminate their lead or to work with their municipal utility. Many communities have been running lead removal programs for years, offering incentives for property owners to replace their service lines during street reconstruction when it is practical and more affordable to do so. But many have refused to cooperate—perhaps due to costs or property disruption. Then, a year later, when the home is sold to a young family, they want the service line replaced at a much higher cost with a new road cut and repair. There needs to be incentives or pressures to promote homeowner compliance.

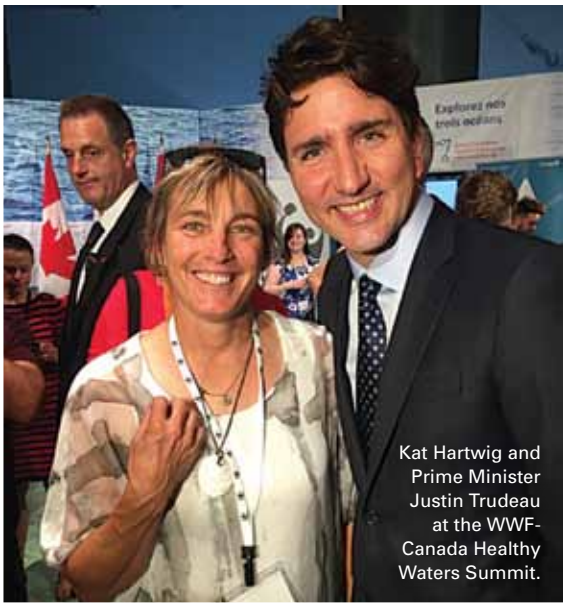
To be honest, we were more than a bit disappointed with a Parliamentary Committee last year that convened meetings to consider, "is there more the federal government could be doing about lead than just setting guidelines?" We presented several ideas including national education/awareness campaigns, targeted grants to municipal utilities, grants, or tax rebates to homeowners and identification of lead in home inspections and sales contracts. But sadly, the committee decided there was no further federal role.

We're up for the challenge. In the short term, we continue to work with homeowners to remove lead or find in-home filter systems. In the long term, we want to remove all the lead service lines, but we will need time, financial support, and cooperation. WC

Robert Haller is the executive director of the Canadian Water and Wastewater Association.

Photos: Living Lakes Canada

In October 2018, Living Lakes Canada spent a couple of days in Smithers, B.C. delivering a Canadian Aquatic Biomonitoring Network (CABIN) field practicum to representatives from Gitxsan Environmental Services, Gitanyow Fisheries Authority, Wetsuweten Fisheries, Skeena Fisheries, Lake Babine Fisheries, and Eclipse Geomatics.



Kat Hartwig and Prime Minister Justin Trudeau at the WWF-Canada Healthy Waters Summit.

Living Lakes Canada is trained by Environment and Climate Change Canada to train community groups, professionals, industry, and First Nation communities in the CABIN methodology, the established national protocol in Canada that collects benthic macroinvertebrates and uses their counts as an indicator of a water body's health.

Living Lakes Canada is continuing to coordinate a Groundwater Monitoring Program to help effectively manage and protect groundwater resources in the Upper Columbia Basin. Through engagement of citizens, the program works with landowners, community groups, and governments to identify groundwater wells and monitor water levels in priority aquifers.

Water Steward

Kat Hartwig discusses her 2017 Water's Next Award, her legacy, and advice for the next generation.

BY SIMRAN CHATTHA

KAT HARTWIG brings her passion for environmental protection to her role as the executive director of Living Lakes Canada, a not-for-profit organization dedicated to protecting, restoring, and rehabilitating water bodies and watersheds.

Under Hartwig's leadership, the organization has been working on a number of projects and initiatives to help individuals understand the impacts of climate change.

Community-based monitoring is one of the approaches that Living Lakes Canada uses to engage with groups and individuals at the local level. Since 2005, the organization has been involved in Canadian Aquatic Biomonitoring Network (CABIN)—the only national standardized water monitoring program in Canada.

This program tracks benthics, which provide an indication of the health of freshwater ecosystems, and was developed by Environment and Climate Change Canada. Living Lakes Canada was one of the first organizations in Canada trained to train-the-trainer and it continues to build its capacity to train other groups to use the environmental DNA protocol.

For her tireless efforts and commitment, Hartwig received the Water Steward of the Year award at the Water's Next Awards Dinner Gala in June 2017. Water Canada recently had an opportunity to catch up with Hartwig and ask her a few questions about what it was like to win the award, what projects and initiatives she has been working on since receiving it, and what the future potentially holds.

What was is like winning the Water's Next Award in 2017?

It was a privilege and honour to be recognized. Often when you win those kinds of awards, you get lots of notes of congratulations from your colleagues. It is just nice to have the recognition of because often this work is unrecognized. I think Water Canada is doing a good thing by recognizing the hard work of people who have been involved and dedicated over the decades.

What are some projects you have been working on since winning the award?

There have been quite a few projects at different scales so I will go through some of them starting at the largest scale.

Living Lakes Canada is a part of Global Nature Fund's Living Lakes international [network]. We are connecting with not-for-profit organizations that are doing water stewardship work around the world to compare and contrast best practices in terms of community-based water monitoring, increasing water literacy in communities, building climate-resilient communities, and engaging people into water monitoring and the health of their watersheds. We have our 20th year anniversary coming up this year and we are going to be taking our whole team over to Valencia, Spain to do a lot of information sharing on the stewardship of wetlands.

On the national scale, Living Lakes Canada has been leading a national dialogue in partnership with WWF Canada and the Gordon Foundation [...] to assess community-based monitoring groups—who they are, where they are, and what they are monitoring and why across Canada. It is really interesting because now we are able to compare and contrast best practices for community-based monitoring in Canada. We are also able to see how we can support community decision-makers and First Nations in their decision-

making around watershed health and water allocation and building climate resiliency.

Regionally, what we are doing in the Columbia Basin is building a water monitoring framework and open source data hub. A gap analysis was done to assess the water data that is missing for decision-makers. Mostly it is hydrology but there's some water quality. What we are doing is building a water monitoring framework to help direct the monitoring groups in the basin so that they monitor priority areas that have been determined by First Nations and non-First Nations decision-makers.

The drive for all of this has been climate change because for us, water has always been the most tangible way for us to help people understand the pending impacts that we can anticipate from climate change.

What is your hope for your water legacy?

My hope for my water legacy is to provide an energetic, proactive, and optimistic space within Living Lakes Canada for young people to feel empowered by engaging in what they feel is meaningful. This is so that they can help to shape and direct their own climate-resilient futures in a positive way.

What advice do you have for young professionals entering the water sector? Is there something you wish you had known when starting out in the industry? Or is there something you wish you had done differently?

I think field work is really important. I think armchair work is probably not as meaningful, like to work out of an office and not get into the field to see what is happening on the ground. I feel there is a lot of that missing so people do not understand as the land changes or as the water systems change, the nuances of that if they are not out in the land. That would be some strong advice—to get out there. WC

Simran Chattha is Water Canada's associate editor.

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- Financing Flood Resilience
- Water Stewardship in the Supply Chain
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APPOINTED


JENNIFER INNIS

Jennifer Innis, a regional councillor representing Wards 3 & 4 for the Town of Caledon, has been elected as chair of Toronto and Region Conservation Authority's (TRCA) Board of Directors. In her role as chair, Innis will preside over board of directors and executive committee meetings as well as serve on the Regional Watershed Alliance.

Jack Heath, regional councillor for the City of Markham, was re-elected vice-chair of the TRCA Board of Directors. Heath will also serve on the Regional Watershed Alliance.

At the Board of Directors meeting, Executive Committee members were also elected. The new Executive Committee is comprised of:

- Regional Councillor **Joanne Dies** (Durham Region)
- Regional Councillor **Gordon Highet** (Durham Region)
- Regional Councillor **Dipika Damerla** (Peel Region)
- Regional Councillor **Jennifer Innis** (Peel Region)
- Regional Councillor **Jack Heath** (York Region)
- Regional Councillor **Linda Jackson** (York Region)
- Councillor **Paul Ainslie** (City of Toronto)
- **Ronald Chopowick** (City of Toronto)
- **Vincent Crisanti** (City of Toronto)
- **Glenn DeBaeremaeker** (City of Toronto)
- **Mike Mattos** (City of Toronto)
- Councillor **Anthony Perruzza** (City of Toronto)

Comprised of representatives from the City of Toronto, the Regional Municipalities of Peel, Durham, and York, Tosorontio, and the Town of Mono, TRCA's Board of Directors is responsible for the organization's strategic direction, ensuring compliance with applicable legislation.


TAYLOR BACHRACH


DAVID CHERNUSHENK


VIRGINIE DUFOUR


DIANE FREEMAN

FCM has announced the municipal elected official climate champions for the Municipalities for Climate Innovation Program (MCIP) and Partners for Climate Protection (PCP) program (managed and delivered by FCM and ICLEI Canada). The four elected officials selected are climate change leaders who have shown their personal commitment to climate action through successful initiatives in their communities.

The four elected officials selected to champion climate change are: **Taylor Bachrach**, Mayor, Town of Smithers, British Columbia; **David Chernushenk**, former councillor, City of Ottawa, Ontario; **Virginie Dufour**, Councillor, Laval, Quebec; **Diane Freeman**, Councillor, City of Waterloo, Ontario.

Bachrach is currently serving his third term as mayor. He is the chair of the BC Municipal Climate Leadership Council, a member of the British Columbia's Climate Solutions and Clean Growth Advisory Council, and president of GoByBike BC, a provincial organization that promotes bicycles as everyday transportation.

Chernushenko recently served two terms as a councillor, chairing the City of Ottawa's environment and climate protection committee. He also played a major role in promoting active transportation, complete streets, public health, and supportive housing. Chernushenko previously served as a member and vice chair of Canada's National Round Table on the Environment and the Economy.

Dufour is a member of the City of Laval's executive committee. Her vested interest in sustainable development makes her a valued member of the transport committee, the urban planning advisory committee, and the environment advisory committee, which she chairs.

Freeman has been an unrelenting champion for building accessible communities by planning, funding and installing sidewalks, trails and dedicated bicycle infrastructure. Through her work on the board of the Association of Municipalities of Ontario and the Share the Road Cycling Coalition, Freeman helped deliver Ontario's first Bicycle Summit.

As MCIP and PCP climate champions, they share knowledge and expertise with fellow elected officials in communities of all sizes and speak at events across the country. By sharing practical experience, the climate champions aim to inspire and support peers taking climate action in communities from coast to coast to coast.


HELEN JOWETT


CHRIS WHITE

Helen Jowett has been acclaimed to a fourth one-year term as chair of the Grand River Conservation Authority (GRCA). **Chris White** has also been acclaimed to a fourth one-year term as vice-chair.

"The role of the Grand River Conservation Authority as a leading watershed management agency, and the relationships with our partners are critical to the health and vitality of our communities," said Jowett. "I look forward to continuing to work with the board and GRCA staff as we continue with the implementation of our strategic plan."

Jowett was elected as a Region of Waterloo Councillor for Cambridge in 2014 and was subsequently appointed as a member of the GRCA Board. White served in multiple capacities on the Guelph/Eramosa Township Council from 2003-14, and has served on the GRCA board since 2014.

More news items can be found at **watercanada.net/topics/news**

Photos: Partners in Project Green and Water Canada


Dianne Zimmerman, Senior Manager of Partners in Project Green


Dr. Chelsea Rochman, Assistant Professor at the University of Toronto


The event focused on key issues surrounding the use of plastic, including minimizing non-recycled plastic and how to ensure it doesn't end up in watersheds.

Partners in Project Green Plastics Forum Vaughan, Ont.

How did we get to a stage when microplastics have become a ubiquitous issue?

This was one of the questions raised by Dr. **Chelsea Rochman**, assistant professor at the University of Toronto, at an event hosted by Partners in Project Green (PPG) on Plastics and Other Waste in Our Watersheds. The event took place at the Toronto and Region Conservation Authority's (TRCA) head office in Vaughan, Ontario.

During the event, Rochman discussed how waste production has increased significantly but waste management has not kept up at the same rate. She noted a study done by **Roland Geyer** (professor, University of California), **Jenna Jambeck** (associate professor, University of Georgia), and **Kara Lavender Law** (research professor, Sea Education Association) that looked at the global production, use, and fate of polymer resins, synthetic fibers, and additives.

Out of the 8.3-billion metric tonnes of waste that was produced between 1950 and 2015, only seven per cent was eventually recycled. Of the remaining waste, 30 per cent is in use, 49 per cent has been discarded, and nine per cent has been incinerated.

Rochman believes there are ways to effectively reduce the amount of microplastics that end up in the natural environment. During her presentation, she provided examples of technologies that can reduce microfibers in washing machine effluent. Rochman also provided examples of initiatives, like Ban the Bead, which raise awareness about the impact that microplastics have on the environment.

For more information, visit *partnersinprojectgreen.com*.

Photos: Water Canada


AFN National Chief Perry Bellegarde.


AFN's associate director of housing, infrastructure, and emergency management Irving Leblanc.


The First Nation Women and Water Dialogue engaged delegates on the challenges and opportunities facing women in the water industry.

2nd Annual AFN Water Symposium Niagara Falls, Ont.

Over 400 industry leaders gathered in Niagara Falls for the Assembly of First Nations' (AFN) 2nd annual Water Symposium and Tradeshow. The three-day symposium focused on issues surrounding First Nations and water in the 21st century.

Six Nations of the Grand River Chief **Ava Hill** welcomed attendees to the territory, and spoke to the great importance of water by saying "when the water is not well, we are not well." That message resonated throughout the remarks delivered as the symposium went on, reminding delegates of the importance of protecting water.

In his remarks, AFN National Chief **Perry Bellegarde** recognized the effort that has been made by the federal government to reduce the number of boil water advisories across Canada, falling from 132 to 70 during the current mandate. The government, he suggested, is moving in the right direction, but not fast enough. There is a very clear argument to be made for further investment too, the cost of infrastructure versus the social cost of not doing so. Sustainable investments are needed to ensure that actions taken to remove boil water advisories are more than just band-aid solutions.

The goal, Bellegarde stated, is to eliminate all boil water advisories by the end of 2021 but as regional Chief **Kevin Hart** stated: "lots of work needs to be done to address the underlying infrastructure." The AFN portfolio holder for housing, infrastructure, and emergency services, Hart noted that billions are needed to ensure clean water for each of Canada's 634 First Nations communities, and billions more will be needed to transport that water to the homes in each community.

For more information on the event, visit *afn.ca*.

Bill 66, as it was originally drafted, threatened the natural environment surrounding Toronto by giving way to demands to continue to push the city's boundaries outward.

A Law Too Far

Schedule 10 of Ontario's Bill 66 has got to go.

BY THERESA MCCLENAGHAN AND RICHARD LINDGREN

ACCORDING TO PREMIER DOUG FORD, Ontario is open for business. But in becoming more "business-friendly", the province may be undermining established provincial environmental protections that safeguard drinking water quality and quantity for millions of people.

This past December, just as Ontario residents were gearing up for the busy holiday season, the province suddenly introduced Bill 66 for First Reading. Better known as *Restoring Ontario's Competitiveness Act*, 2018, Schedule 10 of the Bill proposes amendments to Ontario's *Planning Act* that would allow municipalities to pass "open-for-business planning by-laws" to facilitate major new developments.

The problem? Schedule 10 exempts these major new developments from key environmental laws and land use controls, including those established under the *Greenbelt Act*, *Lake Simcoe Protection Act*, *Oak Ridges Moraine Conservation Act*, *Places to Grow Act*, the *Planning Act*, and other statutes.

Another crucial legal protection that would be circumvented by Schedule 10 is section 39 of the *Clean Water Act*, 2006 (CWA). This is because Schedule 10 expressly provides that section 39 does not apply to an open-for-business planning by-law.

Section 39 is an integral part of Ontario's multi-barrier approach to ensuring drinking water safety. It was implemented after the Walkerton Tragedy in 2000 where more than two thousand people were sickened and seven died as a result of consuming E. coli contaminated water. After this public health disaster occurred, the Canadian Environmental Law Association (CELA) worked closely with the Walkerton citizens' group to ensure that drinking water contamination of this scale would never happen again. However, Schedule 10 strips the heart out of the source protection regime under the CWA.

Section 39 has several important mandatory requirements. It requires all *Planning Act* decisions to conform to policies in CWA-approved source protection plans that prevent or stop activities that pose significant threats to drinking water. It also specifies that in cases of conflict, the significant threat policies (and designated Great Lakes policies) in source protection plans prevail over any other municipal plans, by-laws or policies. It also forbids any public work or structural development that conflicts with significant threat policies approved under the CWA. Similarly, section 39 requires provincial officials to comply with significant threat policies in source protection plans when deciding whether or not to issue environmental permits, licences or approvals.

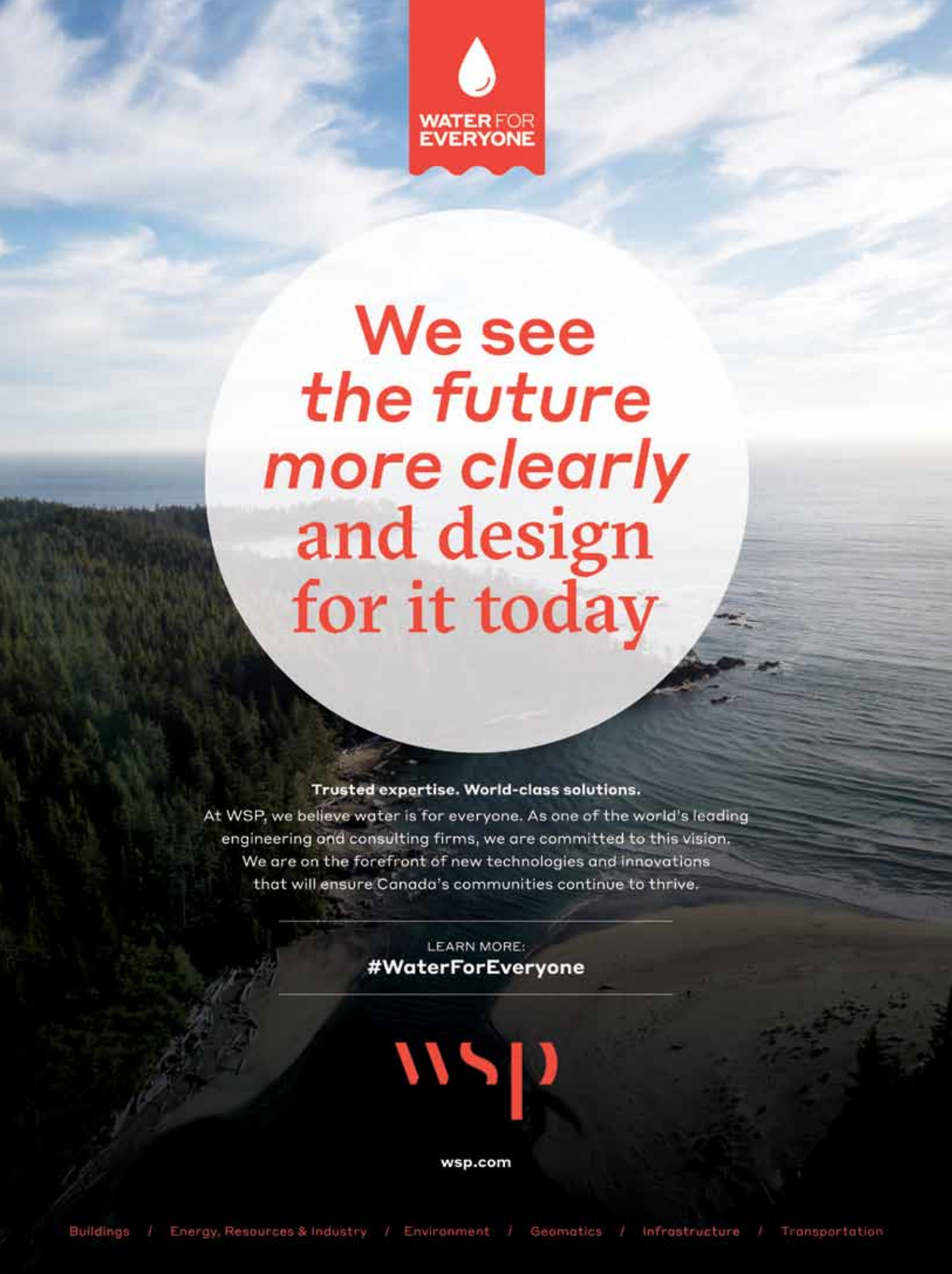
Alarmingly, Schedule 10 of Bill 66 would effectively render the CWA's conformity requirements meaningless and inoperative. If enacted, Schedule 10 could be used by municipalities to authorize massive industrial projects in wellhead protection areas or surface water intake protection zones. Imagine high-volume water-takings, on-site sewage works, waste disposal sites, or the handling or storage of solvents close to the lake, river or aquifer that you and your family depend on for drinking water purposes.

Under Bill 66, the Minister of Municipal Affairs and Housing would have to review and approve municipal requests to pass open-for-business planning by-laws. However, Schedule 10 does not legally require the Minister to refuse such requests (or to impose health-based safeguards) if the proposed development may threaten drinking water sources.

Schedule 10 therefore represents an unjustifiable rollback of current legal requirements that were specifically enacted to prevent a recurrence of the Walkerton Tragedy.

Fortunately, in light of concerns raised by MPPs, municipalities, and organizations such as CELA, the Ontario government has recently announced it will remove Schedule 10 from Bill 66 when the Legislature resumes sitting in February 2019. It's not an exaggeration to say that lives could depend on the fulfillment of this promise. WC

Theresa McClenaghan is executive director and counsel at the Canadian Environmental Law Association (CELA). Richard Lindgren is counsel at CELA.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