

WATER CANADA

TOP PROJECTS

The Ten Biggest Water Investments in Canada



**Net-Zero
Progress**

**Privitization
Risk Rewards**

BRIDGING THE GAP

With Trenchless Solutions



“The best way to create value in the 21st century is to connect creativity with technology” - Steve Jobs

Due to favourable installation, operational and environmental advantages, Cured In Place Pipelining (CIPP) was the method chosen to rehabilitate the 45 year old Hespeler Trunk Sanitary Sewer in the City of Cambridge, On. A bridge was constructed to effectively and safely divert flows while approximately 1,400 metres of 600/675mm diameter vitrified clay pipe running along and crossing beneath the Speed River was repaired.

Visit liquiforce.com to learn more about the advantages of trenchless technology.

LiquiForce

GRAVITY
The proven trenchless sewer program cities trust.

CANADA'S TOP WATER PROJECTS

The biggest water infrastructure projects in Canada.

10 North End Sewage Treatment Plant Biological Nutrient Removal Upgrade

12 The Port Lands Flood Protection and Enabling Infrastructure Project

14 Capital Region District Wastewater Treatment Project

16 North Shore Wastewater Treatment Plant

18 Bonnybrook Wastewater Treatment Plant D Expansion

20 Annacis Island Wastewater Treatment Plant Expansion

22 Hanlan Watermain Project

24 Woodward Wastewater Treatment Plant

26 South End Winnipeg South Wastewater Treatment Plant Phase IV Expansion

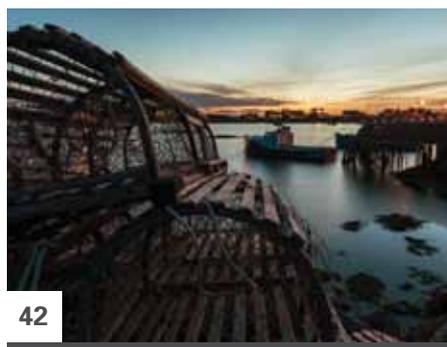
28 Kitchener Wastewater Treatment Plant

DRINKING WATER

30 Private Payoffs

Experiences with privatized water services vary.

BY ALAN SHAPIRO



WASTEWATER

34 Full Circle

Stratford, Ont. looks at harnessing its wastewater resource potential.

BY NANCY CARR

COLUMNS

8 Interview

Interview with Minister Sohi.

BY KATHERINE BALPATAKY

36 Governance

Collaborative consent: towards watershed co-governance in B.C. and beyond.

BY ROSIE SIMMS,
MERRELL-ANN PHARE,
OLIVER M. BRANDES,
AND MICHAEL MILTENBERGER

38 Rules & Regs

One Size Does Not Fit All

BY ROBERT HALLER

42 H2Opinion

P.E.I. Premier

WADE MACLAUCHLAN's
message to Nova Scotia.

DEPARTMENTS

5 Editor's Note

Large-Scale
Accomplishments

6 Front

Letters to the editor,
Sandra Postel's new book.

40 People & Events

Jobs, awards, contracts,
and the latest event coverage.



ARSENIC IS **NOT** A GAME

Ready to make the right move?

AdEdge is your one-stop resource for arsenic treatment systems for any size community. We now supply Bayoxide E33 adsorptive media and E33 media replacements for the largest and the smallest systems. As always, AdEdge offers competitive pricing, experienced engineers, and unparalleled support.

With AdEdge's arsenic treatment systems' global success history, why would you go anywhere else?

When you're ready to make the right move, call us at **866.823.3343**.



www.AdEdgetech.com

EDITOR

Katherine Balpatak

PUBLISHER

Todd Latham

ASSOCIATE PUBLISHER

Jane Buckland

ART DIRECTOR & DESIGNER

Donna Endacott

ASSOCIATE EDITOR

Andrew Macklin

CONTENT AND MARKETING MANAGER

Todd Westcott

CONTRIBUTING WRITERS

Oliver M. Brandes, Nancy Carr, Robert Haller, Wade MacLauchlan, Michael Miltenberger, Merrell-Ann Phare, Alan Shapiro, Rosie Simms, Tristan Simpson, Todd Westcott

ADVERTISING

Jane Buckland jane@actualmedia.ca

AUDIENCE ENGAGEMENT INTERN

Jacquelyn Mayo

ADVISORS

Nick Reid, James Sbrolla

WATER AMBASSADOR

Lee Scarlett



Water Canada is published six times a year by Actual Media Inc.

ACTUAL MEDIA INC.

147 Spadina Avenue, Unit 208
Toronto, ON, Canada M5V 2L7
Phone: 416-444-5842

Subscription/customer services:
416-444-5842 ext. 211

Water Canada subscriptions are available for \$39.95/year or \$64.95/two years and include the annual Buyer's Guide issue.

©2018 Actual Media Inc. All rights reserved. The contents of this publication may not be reproduced by any means in whole or in part, without prior written consent from the publisher.

Printed in Canada.



Undeliverable mail return to:
147 Spadina Avenue, Unit 208
Toronto, ON, Canada M5V 2L7
Canadian Publications Mail Product
Sales Agreement 40854046
ISSN 1715-670X

Proud member of:

Canadian Association on Water Quality
Canadian Water Resources Association
Ontario Ground Water Association
Water Environment Association of Ontario
Water Environment Federation



Large-Scale Accomplishments

BY KATHERINE BALPATAKY

TEN EXTRAORDINARY water infrastructure projects, representing \$6.1 billion in investments, are the focus of this issue of Water Canada. From an engineering perspective, they are a marvel. Broken down into parts, each project represents the collective knowledge and effort of hundreds of individuals—technology developers, project managers, lenders, decision-makers, communications specialists, and citizens. Each project is a testament to these contributors and the time they have invested in creating solutions that improve living standards and ecosystem health through large-scale water management.

In addition to boosting the competitiveness of private businesses and accommodating growth, many of these projects also represent Canada's commitment to meeting the new federal Wastewater Systems Effluent Regulations announced on July 18th, 2012. All were designed with the objective to elevate Canada's resilience to climate change.

In this special edition of Water Canada, we speak to business leaders, politicians, academic researchers, and citizens to capture their opinions about why these projects matter and what makes them unique. We applaud the municipalities that are demonstrating bold leadership and the federal and provincial governments' role in making water infrastructure renewal a priority.

As a Water Canada reader, you are a part of the same process of improving water management in this country and beyond. Celebrating these innovative projects is, in part, a celebration of our readership.

I hope you enjoy these stories—your stories.

Contact Katherine at
416-444-5842 ext. 116 or email
katherine@watercanada.net

@CanadianWater WaterCanada

All back issues of Water Canada are available for download at watercanada.net/issues

Source: Indiana University

Most Canadians think the delivery of safe drinking water, purified wastewater, and scrubbed stormwater is magic. Actually, most water managers would agree: water is magic. But the infrastructure and efforts to ensure that households have access to clean water are very real.



ALAN SHAPIRO

Alan is a Vancouver-based science communicator with a focus on water resources and environmental issues.
PG 30



NANCY CARR

Nancy is a Toronto-based writer and editor with experience in the fields of mining, personal finance, and health.
PG 34



WADE MACLAUHLAN

Wade is Premier of Prince Edward Island
PG 42

ABOUT THE COVER

The 2018 edition of Water Canada’s Top Projects includes a range of technology installations, natural infrastructure restorations, land-use planning techniques, and existing infrastructure refurbishments never before seen in this magazine. The list reflects the \$2-billion Clean Water and Wastewater Fund that has provided for over 2,300 water, wastewater, and stormwater systems in communities across Canada; as well as provincial and municipal leadership to ensure clean, safe water and climate resilience for future generations.

Cover Design: Chris Mulligan

NEXT ISSUE: MAY/JUNE

- **Ralph Goodall: Flood-Proofing Canada**
- **The Future of Precision Agriculture**
- **De-Risking Water Infrastructure**

PLUS Regular columns, including Rules & Regs, Groundbreakers, Fine Print, and Liquid Assets.

To inquire about advertising, contact jane@actualmedia.ca

Dear Water Canada,

I am Charlotte White, I am 13 years old and go to Parkview public school in Markham, Ontario. I might be only 13-years-old but I have been learning a lot about protecting our water and our water environment and I am concerned. I am lucky because I have been able to see how our sewer system works and where the wastewater flows (from our homes to our treatment facility to our waters). I’ve been to the Greenway Wastewater Treatment Plant in London, Ontario and saw firsthand all the garbage people are flushing down toilets. I have done a speech on the Water Brother’s “The Big Leak” episode with TVO. I’ve interviewed Barry Orr of the City of London and an international expert on “flushability.”

These are just some of the things that I’ve done, and they have made me start to think about what I want to do with my life. There are so many things I can be but after seeing what I saw, I know that I’m going to be an environmentalist.

We must protect our environment! I know right now life seems fine with only a few problems but there is way more going on behind the scenes and (below the ground) that must be brought to the public’s attention. Such as garbage in the sewers. It’s a far bigger problem than we might think. Garbage in the sewer system is one of the reasons people are having floods in their homes and the reason that the animals in our lakes and ponds are getting sick. Did you know that all kinds of plastic are flushed down toilets—things like plastic flossers, plastic hygiene applicators, wipes of all kinds, and until recently little beads called microbeads? This plastic should not be flushed but it is. [...]

I am concerned and see this issue as an easy issue to solve because “toilets are not garbage cans.” It is that simple! We must all care about what is happening and I want to help prevent further damage to this earth.

Charlotte White, grade 8, Markham, Ont.

Dear editor,

I enjoyed your article on First Nations Water Authority and am encouraged at the direction taken by John G. Paul and [Atlantic Policy Congress]. As I work through fish passage water projects, I am amazed and sometimes frustrated by the vast number of interests and authorities who are involved and the small number who are willing and able to take charge and complete.

I was not familiar with the concept of “Two Eyed Seeing” (Albert Marshall) but after completing a project with [the Ontario Ministry of Transportation] and Saugeen Ojibway Nation, where all parties gave a commitment of

support for ongoing education and understanding of traditional and modern ways, I get it. The project was a major success.

In the last 150 years, thousands of improperly installed culverts and small dams have blocked spawning fish and made nursery streams sterile. In a perfect world we would remove these barriers and replace them. It is not however a perfect world where minnows matter. There is never enough time, money, or political will to properly address the issue before many more generations are lost.

Dave Penny, Guelph, Ont.

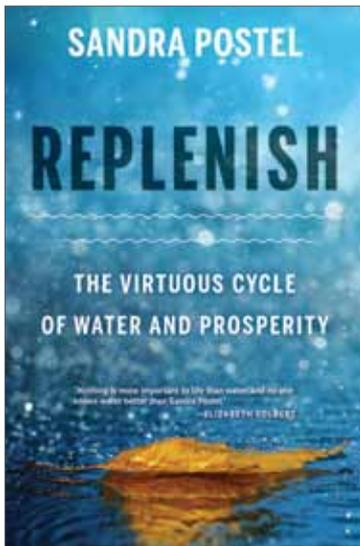
Send your letters to Katherine Balpataky at

katherine@watercanada.net

For daily news and discussion, visit

- @CanadianWater**
- /WaterCanada**
- WaterCanada**

Online at
WATERCANADA.NET



Fixing What's Broken

A review of Sandra Postel's latest book, *Replenish*.

BY KATHERINE BALPATAKY

BE IT LACK OF knowledge or arrogance, humans have a long history of trying to tame Mother Nature by developing landscapes in ways that are at odds with the water cycle. Global Water Policy Project director and founder, Sandra Postel, believes that humans have broken the water cycle, yet she is optimistic that we can fix it.

"There are so many ways that we have deleted, damaged, and broken the water cycle," said Postel. "Going forward, if we want to ensure that we have water security, it is going to require that we take some significant steps."

In *Replenish: The Virtuous Cycle of Water and Prosperity*, Postel weaves a hopeful story of collaboration, innovation, and victory as she imagines restoring healthy watersheds, soils, rivers, groundwater, and atmospheric water. It's an inspiring journey across five continents towards what has been described as the water ethic. While acknowledging the benefits of large-scale water engineering, Postel examines places where development or, in some cases, redevelopment is being done in harmony with nature.

"We have eight times more water in the soil reservoir than all the world's rivers combined, but we don't really manage the water for good health, or for expanding the soil reservoir as a way of preparing for and mitigating more drought [...] Similarly, we are in a net-depletion state with groundwater around the world. But I spotlight the central valley of California where farmers are partnering

with scientists and agencies to work to restore that groundwater supply by actively using winter floodwaters to recharge the groundwater, including using farmlands."

Postel visits parts of Hungary where rivers have been given more room to roam; New Mexico, where forest rehabilitation is safeguarding drinking water; China, where sponge cities capture rainwater to curb urban flooding; and the Verde Valley in Arizona, where monitoring tools are helping farmers get more crop per drop.

"Technology has a very important role to play," said Postel. "I grew up in Long Island in New York, and one of the stories that I really like is how Long Island is faced with the same problem that so many other lakes around North America—Lake Erie, for example. It's the problem of dead zones and toxic algal blooms. It turns out that the eastern end of Long Island has the densest area of septic systems of any place in the United States. [...] So, in this case, new onsite wastewater treatment technology that's being piloted in the eastern end of Long Island to try to deal with nitrogen is going to be very important in other places."

"The twentieth century was the age of dams, diversions, and depletions, the twenty-first century can be the age of replenishment," writes Postel. "We can choose to write another water story." **wc**

Katherine Balpataky is Water Canada's editor.



BLOG: Bitter sweet Arctic symphony.
bit.ly/ArcticMusic



NEWS: Fort McMurray wades ahead on flood mitigation.
bit.ly/FortMacFloodP

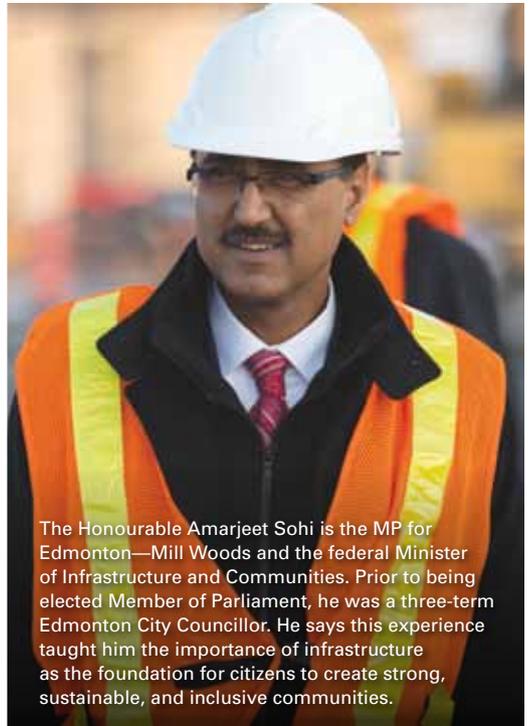


NEWS: Water Canada launches Fatberg comic.
bit.ly/Fatberg2CDA



NEWS: Ontario launches cleantech strategy with an emphasis on water.
bit.ly/ONWaterCT

Top 100  VISIT
Canada's Biggest  top100projects.ca
Infrastructure Projects **FOR UPDATED 2018 LIST!**



Water Booster

An interview with the The Honourable **Amarjeet Sohi**, MP for Edmonton-Mill Woods and the federal Minister of Infrastructure and Communities.

BY KATHERINE BALPATAKY

Q: Water Canada’s top ten projects list highlights over \$6.1 billion in combined investments in Canada’s water infrastructure. What do these investments represent for Canada?

The Government of Canada is committed to helping provinces, territories, municipalities, and Indigenous communities provide clean, safe drinking water for every Canadian, no matter where they live. To date, the \$2-billion Clean Water and Wastewater Fund has provided funding for over 2,300 water, wastewater, and storm water management systems that were enhanced in small communities across Canada, leading to more modern and reliable services.

To support community growth and economic development, 117 municipal systems are being expanded to allow servicing of new households and industrial areas. 171 systems are benefitting from upgrades that will improve their environmental performance and help bring them up to current treatment standards.

The government has agreed to extend the Clean Water and Wastewater Fund program so that recipients may incur eligible costs up to and including March 31, 2020. Were there many municipalities that voiced concerns about meeting the original funding timelines?

Some communities shared their concerns about meeting the original timelines and indicated that a program-wide extension would allow them more time to order materials, hire workers, and complete their projects. Recognizing the realities and pressures that communities across Canada have to contend with in building infrastructure, the Government of Canada agreed to extend the Public Transit Infrastructure Fund and the Clean Water and Wastewater Fund programs to ensure that the projects can proceed according to the needs of each community.

The Port Lands Flood Protection and Enabling Infrastructure project is unique in that it will naturalize the Don River to provide flood protection. What potential do you see for the federal government to support more living green infrastructure?

The Government of Canada supports the use of living green infrastructure to adapt to or prevent the impacts of climate change or natural hazards, and we are encouraging proponents to look at living green infrastructure solutions. We are also supporting broader Government of Canada research efforts to help develop guidance in the adoption of living green infrastructure solutions.

What is the department’s vision for incorporating climate considerations in infrastructure planning and design?

The Government of Canada is consciously moving away from models that consider climate change as an afterthought. The Government of Canada is delivering over \$9 billion in projects that mitigate greenhouse gas emissions, enhance our

ability to withstand the impacts of climate change, and improve overall environmental quality. We will also invest \$2 billion in the new Disaster Mitigation and Adaptation Fund.

Infrastructure Canada's programs will now include a "climate lens." This Lens will require make sure that projects consider climate into infrastructure planning and decision-making processes at every stage of a project's development.

As well, the Government of Canada has partnered with the Federation of Canadian Municipalities to deliver the Municipalities for Climate Innovation Program, which will invest \$75 million to provide for funding, training, and resources to help municipalities adapt to the impacts of climate change and reduce greenhouse gas emissions.

Several of the wastewater projects in this list are taking advantage of green energy captured on site. What role do you see for the federal government in driving net zero energy and GHG emissions in wastewater treatment plants?

The \$9.2 billion Green Infrastructure stream of the new Investing in Canada bilateral agreements provides support for water and wastewater treatment projects, including landfill gas and energy efficiency projects linked to these facilities.

The new "climate lens" that we are applying to our programs will also require an assessment of the project-level GHG emissions and the project's resilience to the impacts of climate change. Over time, we expect that the lens will support the adoption and sharing of best practices that will drive net zero energy and mitigate GHG emissions of wastewater treatment plants.

You have spoken publicly about your personal experiences growing up in Banbhaura, India, and I have read that drinking water supplies in the region are scarce and under great stress. How has your childhood shaped your perspectives on water infrastructure?

Access to a secure and reliable source of clean drinking water is a human right. Unfortunately, Canada faces its own challenges in this regard. Far too many Indigenous communities lack reliable access to clean drinking water. In a country as prosperous as Canada, this is completely unacceptable.

Our government is committed to lifting all long-term drinking water advisories on public systems on reserves by March 2021. We are on track and working hard to meet that target. Since November 2015, 52 long-term drinking water advisories on public systems on reserve have now been lifted. wc

Katherine Balpataky is Water Canada's editor.

CWRA 2018 NATIONAL CONFERENCE MAY 28 - JUNE 1, VICTORIA BC

OUR COMMON WATER FUTURE:

BUILDING RESILIENCE THROUGH INNOVATION

The BC Branch of the Canadian Water Resources Association (CWRA) is excited to be hosting the 71st National CWRA Conference, May 28 – June 1 in Victoria BC. Up to 275 water resources professionals from Canada and abroad are expected to attend the scientific program. "Our Common Water Future: Building Resilience Through Innovation" will explore the future sustainability of our society centering on water as both a resource and a hazard. The program will bring water resource professionals and others together to help chart the path to a safe, sustainable and resilient water future.



CWRA ACRH
Canadian
Water
Resources
Association Association
Canadienne
des Ressources
Hydriques

 CWRA2015

 @cwra_flows

 /company/cwra

 info@cwra.org

 www.cwra.org

Canada's Largest Water Infrastructure Projects

Every year since 2006, Water Canada and its sister publication ReNew Canada have developed a list of the top infrastructure projects under development across Canada with rankings based on capital investment. This year, Water Canada presents a Top 10 list valued at over \$6.1 billion. It contains a diversity of projects that are innovative, complex, and often controversial. We speak to project owners, key players, influencers, supporters, and critics and the influence these projects will have on the livelihoods of their host communities.

Do you have an opinion on these projects? Write to us at admin@watercanada.net. We would love to hear from you.



Photo: City of Winnipeg

1

North End Sewage Treatment Plant Biological Nutrient Removal Upgrade

\$1.4 billion (Class 5 Estimate)

Location: Winnipeg, Manitoba

Owner: City of Winnipeg

Engineer: AECOM (owner's advocate/consultant)

Legal: Blake, Cassels & Graydon LLP

Funding: Public

- **Provincial:** \$195 million

- **Municipal:** \$1.205 billion

The City of Winnipeg's North End Sewage Treatment Plant—one of Canada's oldest biological wastewater treatment plants—is upgrading to an advanced biological nutrient removal and recovery facility. The plant currently treats 200 million liters of wastewater per day, serving 70 per cent of the city's population. The upgrade will allow the city to meet the Manitoba regulatory licence mandate of 15 milligrams of nitrogen per litre of total nitrogen, and one milligram phosphorus per litre of phosphorus in the effluent for the year 2037. The reduced nutrient output from the plant's effluent will reduce the potential for algae blooms in Lake

Winnipeg. It includes provisions for future expansion to 2067 population forecasts.

The process upgrade includes new headworks, a wet weather treatment system, and a biological nutrient removal process with phosphorus recovery followed by an upgraded UV disinfection of final effluent. 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 solids processing train will receive material waste from all three Winnipeg plants to be treated in thermal hydrolysis and

anaerobic mesophilic digestion. The final dewatered, high-quality product will be of suitable use for land spreading as fertilizer.

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 Design-Build project is estimated to be awarded in 2019 and the upgrade is to be completed by 2023.

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. — City of Winnipeg Staff

Photo: Nestlé Waters Canada



At the **Hope Mountain Centre for Outdoor Learning**, elementary school students are learning the importance of water to our communities.

Since its inception, the Centre has become a core component of education for elementary schools in southwest B.C. In part, because the Centre built the program to empower students and teachers in learning about water. “Working with teachers around their curriculum,” said Michele Drummond, chair and one of the founders of the Centre. “That was really important to us. What grade does the wetland fit into? And how can a teacher then use that knowledge, that experience for the kids, during the year?”

The results speak for themselves: “I am full of gratitude for the educational programs the Centre offers our students,” wrote Peter Flynn, Grade Four Teacher and Vice-Principal, Coquihalla Elementary School. “My fervent hope, and the

Centre’s stated goal, is that while learning about their local marsh and its surroundings, students will learn to love the environment.”

How has the centre generated such a sticky experience? Mud, obviously.

“Always with some hands-on activities,” said Drummond. “They’re there getting their hands in the mud, creating models of river and tributaries with a jug of water, and they’re watching it flow.”

“Students learn how watersheds capture, store, and release water through the seasons, collecting rain and snowmelt within the air spaces that exist in soil, then slowly releasing that stored water during dry months. They learn these concepts using interactive props and squirt bottles

that show how water moves through natural landscapes or is altered by urban areas,” added Kelly Pearce, Program Director at the Centre.

The program also has a community water use component, which the students find just as compelling as the ecological one. Hannah, a grade four student at Silver Creek Elementary wrote: “Thanks for all of the great field trips. I liked the last field trip when we went inside of the big water factory. I really liked learning how to save water.”

Nestlé Waters Canada has been a sponsor of the Hope Mountain Centre’s programs since 2008. “Although, the programs are called Young Stewards of the Wetlands and Young Stewards of the Watersheds, it goes beyond that to the community,” said Drummond.

For more information, visit nestle-waters.ca



Project photos: Waterfront Toronto

The first load of core stone is deposited in the Inner Harbour—the first step in building new land around Essroc Quay as part of the Cherry Street Lakefilling Project.

2 The Port Lands Flood Protection and Enabling Infrastructure Project \$1.25 billion

Location: Toronto, Ontario

Project Manager: Waterfront Toronto and the City of Toronto

Construction Manager: EllisDon

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

Construction: EllisDon (Cherry Street Lakefilling Project)

Other: MVVA (design of parks, flood protection, river valley); WSP Canada Group and DTAH (roads and municipal infrastructure); Entuitive with Grimshaw and SBP (bridges); CH2M (environmental); Toronto Region Conservation Authority

Land ownership: CreateTO, Waterfront Toronto, The City of Toronto, and Ports Toronto

Funding: Public

- **Federal:** \$416.6 million
- **Provincial:** \$416.6 million
- **Municipal:** \$416.6 million

The Port Lands Flood Protection and Enabling Infrastructure (PLFPEI) is the largest urban renewal project in Canada and one of the largest waterfront projects in the world. The project kick-started in the 2017 when Prime Minister Justin Trudeau, Ontario Premier Kathleen Wynne, and Toronto Mayor John Tory took to Toronto’s waterfront and announced \$1.25 billion in funding. Though the project received funding last year, Waterfront Toronto and partners have worked for more than a decade to bring development to the Port Lands.

In a presentation to a Stakeholder Advisory Committee set up by Waterfront Toronto, Julius Gombos, senior project manager said, “No other North American city has such a piece of land on the doorstep of downtown, or a plan to unlock such large scale waterfront development so close to the downtown.”

The project has an estimated 21 components to transform approximately 240 hectares of underutilized land along Toronto’s eastern waterfront into an area

with residential and commercial benefits that would otherwise be at risk of flooding from the Don River watershed.

The plan is to naturalize the mouth of the Don River to create a second outlet into Lake Ontario. Another project under the branch of PLFPEI is a lake-filling project that received \$65 million in funding in 2016.

The second mouth of the Don River will require extensive groundwork, including soil remediation and excavating approximately 1.5 million cubic metres of soil.

The results will include a new island set to be named Villiers Island, an over 1,000-metre river that will handle large volumes of flood water, a green spillway which will house any overflow, and 13 hectares of new coastal wetland which provide habitat for wildlife.

The Cherry Street Lakefilling Project—the first step in protecting the Port Lands from flooding in the event of a major storm—began in December 2017. Early funding was available for this project



Julie Dabrusin, MP for Toronto–Danforth, Mayor John Tory, and Toronto City Councillor Paula Fletcher at the Cherry Street Stormwater and Lakefilling groundbreaking ceremony on January 11, 2018.

John Tory, mayor, City of Toronto

“I think is one of the most exciting projects in the city. People know the price tag—it’s a billion dollars. They may think, ‘how can it cost a billion dollars to do flood protection?’ But you can see the kind of work that has to be done just to extend the land out to provide protection to the seawall and the shoreline, and in the end to create a 20-acre park and provide streets—it’s expensive yet necessary work for building a great waterfront and proving flood protection, which will lead to a huge investment in jobs and development of the next phase of the Port Lands.”

component through the Clean Water and Wastewater Fund in 2016. Excavation for the channel is scheduled to begin 2019, and by March 2020, the lake filling component will have created new land around Essroc Quay (northwest part of Port Lands), thus stabilizing the dock walls.

In addition to the new land and river outlets, work will include flood protection landforms and infrastructure, new and expanded municipal services and utilities, and new streets and bridges, including a realigned Cherry Street. The long-term vision for the Port Lands is a diverse and multi-functional network of streets, bridges, public parks, new coastal wetlands, a number of new urban districts, and a shipping port that will support up to 30,000 new jobs. The area will showcase the city’s indigenous and urban history, technological innovation and put “public life on the water and in the water—not just next to the water.” The PLFPEI project is expected to take seven years to complete.

—Tristan Simpson and Katherine Balpataky



John Wilson,
co-chair of
the West
Don Lands
Committee

Wilson was part of the original Task Force (1991-2011) created to “bring back a clean, green, accessible Don River Valley in Toronto.” He has acted as an advisor and chair to several technical and stakeholder committees involved in the project.

“The Don River currently, and for 10 years, had this concrete channel that empties into Toronto Harbour. It takes a right angle turn directly underneath the Gardiner Expressway and it’s about as ugly and horrific a river mouth as you can imagine. It’s always clogged with flotsam and jetsam, it smells bad, and it is dredged every year to try to keep it open and flowing because it really performs no functions of a natural river mouth other than to let the water through.

When I became a member of the task force, we got a report from Waterfront Regeneration Trust about all these issues, and how naturalizing the mouth of the Don would be the most effective way to address flood risk. As soon as Waterfront Toronto was set up, I was appointed of the member of the technical advisory committee for the environmental assessment [...] out of that came the Corktown Commons park and the opportunity to develop the West Donlands and the Athlete’s Village. The second part of the project is to do the mouth of the Don.

The plans that had been put forward in 1995 were not ambitious enough. Waterfront Toronto saw that and Chris Glaisek [VP for Planning and Design] at Waterfront Toronto had the brilliant idea of having this innovative design competition. That’s where Michael Van Valkenburgh Associates became involved in the project.

[Michael Van Valkenburgh’s winning design] is spectacular and it has become even more spectacular as time has gone on. [...] Everything revolves around that river and how it flows naturally into the Toronto Bay—I mean, what’s not to like about that?”



Will Fleissig,
CEO,
Waterfront
Toronto

“This is a once-in-a-lifetime opportunity to transform an under-used resource in the heart of downtown. Flood protecting the Port Lands will make way for sustainable new communities that deliver affordable housing and job opportunities. This project will enhance Toronto’s resilience to extreme weather, while also restoring a natural environment for all Canadians to explore.”



Edgar Keukenmeester, chief
project operations and control of
the room for the River Program

Room for the River is a CAD\$3 billion program in the Netherlands to address flood protection, master landscaping, and the improvement of environmental conditions in the areas surrounding the Netherlands’ rivers. The Dutch program was delivered on time and on budget. Experts from Room for the River were invited, through the Dutch Consulate, to conduct a review of 2016 Due Diligence report and 2017 implementation plan of the PLFPEI.

“We are impressed by the plans carried out by Waterfront Toronto for the Portlands. The development will make great difference for the City of Toronto by enhancing water resilience and by clearing the path for vertical development to fight house shortage in Toronto. While doing so the Portlands are also adding valuable spatial quality to the region. This is where the project shows great comparison to Room for the River. The combination of enhancing spatial quality with the necessary water safety intervention safeguards broad stakeholders support for the project.”



Project photos: Capital Region District



3

Capital Region District Wastewater Treatment Project \$765 million

Location: Victoria, British Columbia

Owner: Capital Region District

DBF Team: McLoughlin Point Wastewater Treatment Plant: Harbour Resource Partners (AECOM Canada; Graham Infrastructure; SUEZ; HRD/CEI; Gracorp Capital; Michels Canada);

Kenaidan Contracting Ltd: Clover Point Pump Station); Hartland Resource Management Group (Bird Construction Inc., Maple Reinders PPP Ltd, Synagro Capital): Residuals Treatment Facility

Management Consultants: EY

Other: KPMG (commercial advisor)

Legal: Norton Rose Fulbright (advisor to CRD)

Funding: P3
P3 (\$120M Building Canada Fund, \$50M Green Infrastructure Fund, \$41M P3 Canada Fund, \$248M Province of British Columbia, \$306M Capital Regional District).

The Capital Region District Wastewater Treatment Project is the integration of three major construction components aimed at building a modern, efficient wastewater treatment system for Victoria and its surrounding communities. The Wastewater Treatment Project is being built to meet the provincial and federal regulations for treatment by December 31, 2020.

The first element of the project is the McLoughlin Point Wastewater Treatment Plant, which will provide tertiary wastewater treatment to the Victoria core. This includes a pipeline from Ogden Point to McLoughlin Point and a new marine outfall for treated water into the Juan de Fuca Strait. The second is a Residuals Treatment Facility, located at the Hartland Landfill, which will turn residual solids into “Class A” biosolids.

In December 2017, Hartland Resource Management Group—a partnership between Bird Construction Inc., Maple Reinders PPP Ltd, and Synagro Capital—was named the proponent for the Residuals Treatment Facility. The third component is a conveyance system, which will carry wastewater from across the Core Area to the treatment plant, and residual solids to the Residuals Treatment Facility. The total cost of the project is \$765 million, and the federal and provincial governments are providing funding support. — Alan Shapiro

To see the complete list of 2018 Top100 infrastructure projects in Canada visit top100projects.ca



Greg Lewis, QC, head of Infrastructure, Mining and Commodities, Norton Rose Fulbright

“It’s great to see the CRD’s Wastewater Treatment Project come to fruition after many years of planning and procurement activity. The project will significantly improve the region’s wastewater treatment system. It has been our pleasure to assist the CRD in this major venture.”

Jim McIsaac, executive director,
T. Buck Suzuki Environmental Foundation

“Moving from screened sewage discharge to full tertiary sewage treatment is a huge step for Victoria, the region must be commended for this innovative wastewater treatment plan. The Victoria Bight ecosystem may take decades to recover from the 100-plus years of sewage pollution. Hopefully it’s not too late for the killer whales that frequent the area and that our children can harvest seafood from the area.”



Elizabeth Scott,
M.Eng., deputy
project director,
Capital Regional
District

“The Capital Regional District (CRD) currently releases untreated sewage into the Strait of Juan de Fuca, and is the last major coastal community in North America discharging untreated sewage into the marine environment. The CRD’s Wastewater Treatment Project will serve 320,000 residents, providing tertiary treatment of wastewater and producing Class A biosolids that can be beneficially re-used. The Wastewater Treatment Project will safely build a proven, environmentally and fiscally responsible wastewater treatment system so that the core area of the Capital Regional District complies with federal and provincial wastewater regulations by December 31, 2020. It will deliver a sewage treatment and resource recovery system that is innovative and optimizes benefits—economic, social, and environmental—for the long term.”



Marg Gardiner, president,
James Bay Neighbourhood Association

“After decades of debate, residents throughout the Capital Region realized that the federal and provincial mandates for wastewater treatment would be respected by the region’s mayors. It may be a decade, or many decades, before residents of James Bay know if there will be long-standing negative impacts from the McLoughlin Point plant or the installation of the conveyance line along the Dallas Road bluff.”

COLE

Leaders in Infrastructure Solutions

WATER URBAN DEVELOPMENT TRANSPORTATION ENVIRONMENT

WATER CANADA
THE COMPLETE WATER MAGAZINE

Complete the
Water Canada 2018 Readership Survey
and **we'll donate \$2** to
Engineers Without Borders
across Canada on your behalf.

watercanada.net/readership-survey



Photo: Metro Vancouver

4

North Shore Wastewater Treatment Plant

(formerly known as Lions Gate)

\$700 million

Location: North Vancouver, British Columbia

Owner: Metro Vancouver

P3 Team: ACCIONA Wastewater Solutions LP (ACCIONA Infrastructure; DIALOG; Amec Foster Wheeler; Tetra Tech)

Design Build Consultant: AECOM, Architect (HDR/CEI), Golder Associates (Geotechnica) Louis Berger (Procurement)

Other: Deloitte (Commercial)

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

Funding:

P3 (Government of Canada \$212.3M, Province of British Columbia \$193M)

The North Shore Wastewater Treatment Plant is a greenfield secondary treatment plant that will replace an existing primary treatment facility. Based on the new federal wastewater regulations, the current plant must be upgraded to secondary treatment by December 31, 2020. Once commissioned, the plant will provide treatment to approximately 200,000 residents of the North Shore, including the District of West Vancouver, City of North Vancouver, District of North Vancouver, Squamish Nation, and Tsleil Waututh Nation. Metro Vancouver and ACCIONA Wastewater Solutions LP reached financial close for the design, build, and finance of the North Shore Wastewater Treatment Plant on April 5, 2017 for \$525 million. ACCIONA is currently working onsite having begun on-ground improvements throughout 2017. Construction of permanent structures is set to begin in the spring of 2018.

Also part of the \$700 million program is the Conveyance Project, involving the design, build, and finance of a new pump station (located under the Lions Gate Bridge), a two-kilometre (900-millimetre diameter) force main to convey sewage from the District of West Vancouver and Squamish Nation to the new treatment plant, and a two-kilometre effluent pipeline to convey the treated effluent to the existing outfall. 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. Both the Province of British Columbia (\$193 million) and the Government of Canada (\$213.3 million) have committed funding to the project. — Alan Shapiro



Jonathan Wilkinson, MP, North Vancouver

“The Lions Gate Wastewater Treatment project represents an important step forward for our marine environment. Completion of the project will ensure that wastewater generated on the North Shore will be treated to a significantly higher standard prior to discharge. The project has also been designed in a manner that will allow for the easy incorporation of additional technology and processes that may be required to address new contaminants of concern in the future.”

**James Seery, project director,
North Shore Wastewater
Treatment Plan Project, ACCIONA**

“As a global leader in building sustainable water solutions, ACCIONA is pleased to work as a trusted partner to Metro Vancouver for the delivery of secondary wastewater treatment by 2020. Our team is focused on providing a new plant that is designed to meet the community’s needs with sustainability and community integration at the forefront.”



**Matt Mulligan, partner,
Norton Rose Fulbright**

“We are thrilled to see the North Shore Wastewater Treatment Plant under construction, and very proud to have assisted Metro Vancouver with this major infrastructure project. The new secondary treatment plant will replace the existing primary Lions Gate Wastewater Treatment Plant, and will provide a higher level of treatment to the North Shore’s wastewater before it is sent into Burrard Inlet.”

Connecting Global Competence



Resources. Innovations. Solutions.

May 14–18, 2018 • Messe München

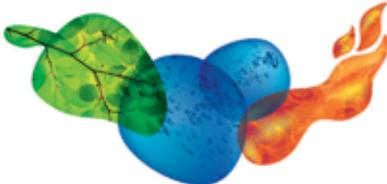
World’s Leading Trade Fair for Water, Sewage, Waste and Raw Materials Management

- How much unused potential is there still in the resource of water?
- Which solutions benefit local authorities and private utilities companies in the supply of drinking water and management of waste water?
- Which innovations reduce costs and increase sustainability in the management of industrial water?

IFAT 2018 opens up new opportunities for efficient management of one of the most valuable resources on our planet. New environmental technologies are enabling sustainable processes and better use of water in drinking water supplies, waste water management and industrial processes. In product presentations, live demonstrations and forums, innovative exhibitors and researchers will be showing just how much unused potential there still is in the resource of water.

New layout of exhibition sections: www.ifat.de/hallsituation

Get your ticket now online.
www.ifat.de/tickets/en





www.ifat.de    

Information: Canada Unlimited Inc. | Mississauga
Tel. +1 905 813 1051 | neeta.correa@canada-unlimited.com



Project Photos: City of Calgary



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

5 Bonnybrook Wastewater Treatment Plant D Expansion

\$600 million

Location: Calgary, Alberta

Owner: City of Calgary

Project/Construction Manager:
City of Calgary/Graham Construction

Consulting Engineers: Stantec (Lead);
Jacobs (formerly CH2M Hill); AECOM

Other: WPC Water Solutions

Funding: Public

The expansion of the Bonnybrook Wastewater Treatment Plant is aimed to accommodate growth in Calgary and improve resiliency of existing infrastructure, but offer the same degree of environmental protection to the Bow River, said Councillor Gian-Carlo Carra.

Already the largest of Calgary’s three wastewater treatment plants, and one of the largest biological nutrient removal plants in Canada, the Bonnybrook Wastewater Treatment Plant will undergo numerous infrastructure enhancements as part of a \$1 billion expansion program which started in 2015, including expansion of capacity of the existing treatment plant, construction of the new Plant D, expansion of the existing co-generation facility to improve energy efficiency, and a flood resiliency component to prevent overland and backflow into the plant during high water events.

Construction started for the \$600-million Plant D Expansion project in 2016 and is expected to be completed by 2022.

According to Councillor Carra, a few components of the overall expansion program are complete, including the construction and commissioning of the Dewatering Building, which provides approximately 10,000 tonnes of dewatered bio-solids from Bonnybrook to supplement the recently constructed organics composting facility at the city’s Shepard Waste Management site.

The new Plant D expansion project is ongoing, focusing initially on upgrades to the digesters and construction of the new flood protection berm for the site. The largest work package, secondary treatment, will start construction in the Spring of 2018.

The plant currently provides treatment up to an average capacity of 396 ML/d and peak capacity of 1,069 ML/d to serve 946,000 people. On completion of various projects, the peak flow capacity will be increased to 1,390 ML/d and serve approximately 1.3 million people.

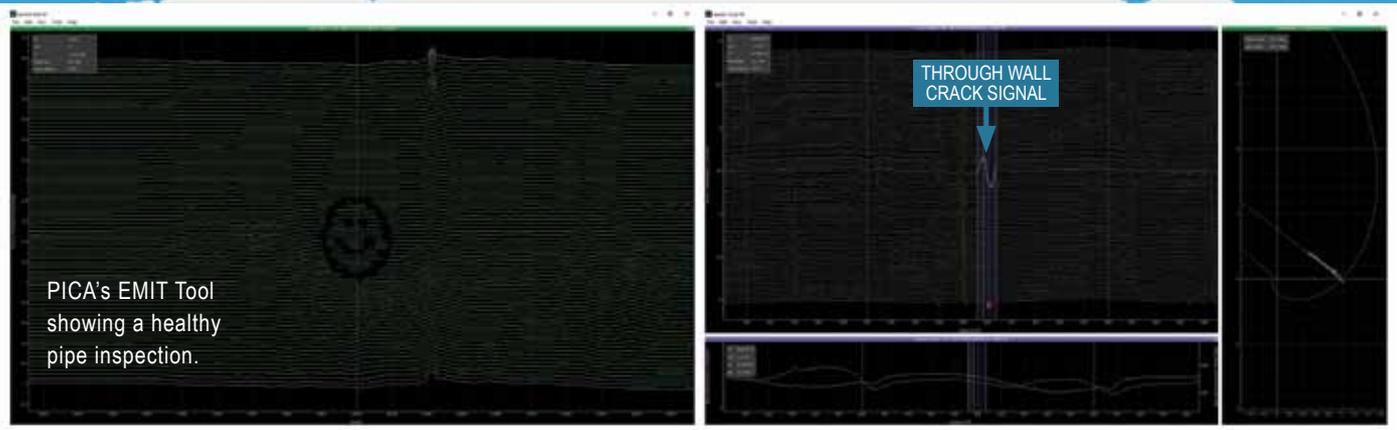
— Tristan Simpson

“For years Calgary has been a leader in North America in the quality of our wastewater management. This has had and will continue to have lasting positive impacts on our watershed even as the City has grown and continues to grow. [...] Thankfully the location of Bonnybrook minimizes the impact of the construction on the public.

The majority of the funding associated with this project comes from our water utility’s user fees (as opposed to property taxes). The utility essentially has taken out a mortgage to pay for the project. As a member of Council I’m responsible for both approving the capital project and for approving the utility’s fee structure to our residential, non-residential, and regional customers. The two major challenges for the Council that I serve on was 1) dealing with the fact that previous councils had kept water fees too low to balance our debt with service level requirements (which required a significant upward adjustment of our fees), and 2) that our agreements with our development industry partners regarding servicing new growth on our city’s edges and in-filling within the Calgary’s existing footprint weren’t reflecting actual costs, which required new agreement. Both of these processes went surprisingly well.”

KNOWLEDGE IS POWER

The power to protect your environment and your peace of mind.



PICA's EMIT Tool provides extremely high resolution and sensitivity to small local defects. For example, the signal from a crack (above right) was detected in a weld (below right) when other standard tools failed to find the problem. These defects may not fail soon but they can grow without warning and fail catastrophically at the least convenient time.

Pipeline Inspection and Condition Analysis Corporation (PICA) provides detailed information on the structural condition of in-service pipelines to Asset Managers. Knowledge about their pipeline conditions enables them to be proactive and fix leaks before they happen. That's the power of PICA.

With PICA's set of non-destructive testing tools, informed Asset Managers know the real condition of their buried pipelines. This insight is empowering and makes a critical difference for repair/rehab/replace decisions. Pipelines can be surgically repaired, rehabilitated with liners, or partially replaced to extend their useful life and reduce risk of failure.

- Internal In-Line Inspection Tools, such as See Snake, Chimera, RAFT and EMIT for pipe sizes 4-inch to 78-inch are used in raw water, drinking water, waste water, force mains and siphons to report high-resolution pipe wall condition.
- External Bracelet Probes are used to map hydrogen sulphide damage and corrosion pits, and work on cast-iron, ductile-iron or steel waste water pipelines, with or without insulation or coatings.

PICA's wide range of powerful measurement tools can help elevate any existing pipeline or new pipeline installation. Keep your community safe and sleep well knowing that PICA is on the job.



GOOD DECISIONS START WITH GOOD INFORMATION.

info@picacorp.com

picacorp.com

1-800-661-0127





Photo: Metro Vancouver

6

Annacis Island Wastewater Treatment Plant Expansion

\$550 million

Location: Delta, British Columbia

Owner: Metro Vancouver

Engineer: Brown & Caldwell, Stantec, EIC Solutions, Klohn Crippen Berger (Stage 5 Expansion); CDM Smith, Golder Associates (Outfall); AMEC/Black & Veatch (Cogeneration Back-Up Power)

Contractor: Graham/AECON Joint-Venture (Stage 5 Expansion); Kenaidan Contracting Ltd. (Cogeneration); North American Construction (contractor)

Other: EXP (vibration monitoring); JJM Construction and Geopac Inc. (ground preparation and utilities relocation), Hatch (tunnel design review and outfall construction management)

Legal: Norton Rose Fulbright (for Metro Vancouver)

Funding: Public

The Annacis Island Wastewater Treatment Plant is one of the Lower Mainland's largest treatment facilities, releasing treated water into the Fraser River. Metro Vancouver is currently undergoing an eight-stage facility plan to increase the capacity of the plant. The first phase of the expansion is well under way and is expected to be finished in 2021, with the second phase completed by 2026. When Stage 5 is complete, the Annacis Island facility will serve 1.5 million people in 14 Metro Vancouver municipalities. The Stage 5 scope consists of five new additional primary sedimentation tanks, three solids contact tanks, six secondary clarifiers, two trickling filters, a trickling filter pump station, two gravity thickeners, a sludge dewatering centrifuge, and odour control upgrades.

A new outfall is nearing design completion, and the permits and approvals process is partially concluded. Exhaustive studies have been completed, including the two-

stage Ministry of the Environment Environmental Impact Study, a Navigation Impact Assessment including marine manoeuvring simulations at British Columbia Institute of Technology marine campus, and Habitat Assessment Studies, among others. In-river construction will occur over a two-year period as activities will be restricted to six months of the year to ensure the fisheries are protected. The \$200 million-plus outfall is expected to be released as an RFP for construction this in spring/summer 2018, with construction underway in 2019 and completed by 2022.

Construction of the Cogeneration Back-Up Power project has just commenced. This project will replace the existing cogeneration units with larger capacity units to utilize biogas generated by the treatment process as well, including two standby diesel generators to provide back-up power in case of a power outage. Anticipated completion is scheduled for 2019.

— Alan Shapiro



Lauren Hornor, board member,
Fraser Riverkeeper

“Given the realities of our growing urban population pressure, upgrades to the Annacis Island Treatment Plant system’s capacity to collect and treat sewage adequately are necessary. If the addition of a new outfall to the Fraser River is required, the plant must ensure transparency to the public regarding the content of releases to ensure they adhere to water quality standards. Preparation for continuous operation in the event of a major earthquake is an important component of the project and accounts for the seismic vulnerability of wastewater treatment plants. This aspect of the project also demonstrates how we can protect our marine environment in a way that benefits the surrounding community for future generations.”



Jeff Chan, division manager of
Wastewater Treatment Plant Project
Delivery, Metro Vancouver

“Upgrades to Annacis Island WWTP will continue to ensure protection of public health and the environment. A major challenge for Metro Vancouver and its members will be to adapt the legacy infrastructure of the 20th century to a more sustainable integrated 21st century system focussed on integrated resource recovery. This involves embracing new technologies and reshaping infrastructure so that resources and energy recovered can be used efficiently and effectively.”

FER-PAL
INFRASTRUCTURE

FER-PAL. HELPING YOUR COMMUNITY HELP YOU.

FER-PAL has been working in the background since 1986 helping to provide communities like yours with clean water using technologies that are sustainable and eco-friendly.

Learn more about us and our projects at [youtube.com/user/ferpalinfrastructure](https://www.youtube.com/user/ferpalinfrastructure)

Stay ahead of the curve with FER-PAL

f in t You Tube

e: info@ferpalinfrastructure.com ferpalinfrastructure.com

SWM SHIELD™ SIMPLIFIES POND MAINTENANCE

SWM Shield™ traps and contains sediment at the pond inlet where it is easily maintained by a vacuum truck.

SWM Shield™ is patent pending.

SWM SHIELD™ MAINTENANCE

- Eliminates dewatering the pond
- Eliminates costly pre-construction surveys
- Eliminates the need for heavy equipment
- Potentially reduces/eliminates approval requirements
- Makes inspections quick and simple
- Adds decades to a pond’s maintenance cycle

Contact us today for a SWM Shield™ system sizing.

info@cbshield.com **519-212-9161** cbshield.com



Photo: Region of Peel

7

Hanlan Watermain Project \$450 million

Location: Mississauga, Ontario

Owner: Region of Peel

Engineer: Jacobs/formerly CH2M (detailed design consultant: South Assignment, Contracts 1 & 2); WSP (detailed design consultants: North Assignment, Contract 3); The Municipal Infrastructure Group; GM Blueplan

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)

Environmental Services: AECOM (environmental assessment)

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

Legal: Borden Ladner Gervais LLP (legal advisor)

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

Funding: Public

• **Municipal** Peel Region: \$330 million; York Region: \$120 million

The Hanlan Water Project is an extensive watermain initiative that is globally recognized for its size and complexity. The project's main component is installing a 2,400-millimetre diameter Hanlan feedermain that will run approximately 14 kilometres from Lake Ontario to the Hanlan Reservoir and Pumping Station in north Mississauga, near Pearson Airport. The new feedermain will provide the necessary back up water supply for the existing Hanlan Feedermain.

A secondary component of the project is installing the Mississauga City Centre subtransmission main which will run approximately six kilometres from Hanlan Reservoir and Pumping station south to the city's core area. The construction, which started in 2011, is being executed under three phases, which include a series of open cuts and tunnelling. Additional project elements include replacing local distribution watermains, resurfacing roads, and wastewater collection enhancements.

The project was initiated to meet the demands of future growth in the region. "Hanlan is a critically important initiative to ensure the security of [water] supply not only for Peel but also for the York Region well beyond the expected population growth of 2031," said project manager David Abreu.

According to Abreu, Mississauga uses approximately 260 million litres of water per day. Peel also supplies water to the City of Brampton, parts of Caledon, as well as 164 ML/d to York Region, which is expected to rise to 331 ML/d by 2031. Once the project is complete, the feedermain will carry 950 ML/d, fulfilling the York-Peel Water Supply Agreement. The Hanlan Water project is currently in its last phase of construction. The overall cost of the project is estimated to be \$450 million.

— Tristan Simpson



David Abreu,
project manager,
Region of Peel

“Hanlan is a critically important initiative to ensure the security of supply not only for Peel but also for the York Region well beyond the expected population growth of 2031. [...] Challenges during construction were finding ways to minimize the impact to all residents and businesses which included constant advance notification of construction activities that either directly or indirectly impacted them. Through good engineering with the construction and traffic management plan, we were able to provide property access for all residents and businesses.”

Nicolae Neag,
construction coordinator,
TACC Construction Ltd
(consortium named T2DMP)

“The Hanlan Feedermain Project had specialized testing that has never been completed before where the integrity of the pipe was tested to ensure its structural strength and along with that a fibre optic cable was installed to provide an avenue for communications within the Region. We installed 2,400-millimetre-diameter concrete pressure pipe with round tolerances of four millimetres, every pipe was carefully delivered, moved, and installed to ensure they met the tolerance. Each pipe was also verified in position by GPS and every joint was pressure tested.”



Anthony Parente,
Hanlan project director
and director of the
Wastewater Division, Peel Region

“I believe overall that the project has been very well received by the public. Before construction began, the Region conducted a significant amount of community outreach including meeting with local councillors, attending numerous community meetings, and liaising with a variety of City of Mississauga department’s staff. We invested a significant amount of time ensuring that all the stakeholders who would be impacted by the project were aware of the project and the impacts it would have on them or their business. We also initiated two significant new programs—the first being the Business and Institutional Program (BICP) which included surveying local businesses prior to construction to find out what their needs would be; and the second, our Ambassador Program, which had two dedicated field staff available to work with businesses, institutions, and residents to help minimize the impacts during construction.

Through the BICP and Ambassador programs, we believe we were able to overcome the major impacts to residents and businesses. The project also included numerous community benefits such as a multi-use trail.”

water's next awards 2018

Celebrating Canadian water leaders and champions

Vancouver ■ June 20

AWARDS GALA AND DINNER.

ALL ARE WELCOME!



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

PRESENTED BY

THANK YOU TO OUR 2017 SPONSORS












Follow us on Twitter.

 @WatersNext

Nominations for Water's Next 2018 are now open!

watersnext.ca



The new pump station project under construction.



A rendering of the new electrical building and pump station.

8

Woodward Wastewater Treatment Plant \$340 million

Location: Hamilton, Ontario
Owner: City of Hamilton
Engineer: Jacobs/formerly CH2M (prime consultant), AECOM (lead sub-consultant)

Contractor: Raw Sewage Pumping Station (Contract 1): Maple/Ball JV (a joint venture between Maple Reinders and Ball Construction)
 Electrical and Chlorines Upgrades (Contract 2): Alberici Contractors
 New Tertiary Treatment and Red Hill Creek Modifications (Contract 3): To be tendered Q4 2018

Funding:
 • **Federal:** \$100 million
 • **Provincial:** \$100 million
 • **Municipal:** \$140 million

The Woodward Wastewater Treatment Plant Upgrade project is one of several measures being implemented to address concerns over the quality of the water in Hamilton Harbour. The existing Woodward Avenue Wastewater Treatment Plant is a conventional secondary treatment plant with chlorine disinfection and an average day capacity of 409 ML/d and a peak capacity of 614 ML/d. Tertiary treatment will reduce the

amount of suspended solids, phosphorus and ammonia reaching the local environment through the effluent that flows back to local waters.

With support from the federal and provincial governments, the upgrades will include a new raw sewage pumping station with a capacity of 1,700 ML/d; expansion of secondary treatment; addition of tertiary cloth filtration media for tertiary treatment; a new energy centre

equipped with three standby generators to service the Woodward Avenue Wastewater and Water treatment plants; and improvements to both the Red Hill Creek outfall and the collection system designed for the full future build-out of 1,000 ML/d.

The new raw sewage pumping station will have increased capacity for wet weather, which will help avoid the discharge of wastewater into Hamilton Harbour. — Katherine Balpataky



A rendering of the new Woodward tertiary treatment building.



Andrew Grice, director,
Hamilton Water,
City of Hamilton,
Public Works
Department

“This project represents an investment in environmental protection by the Hamilton community, one that would not be possible without the strong support of our federal and provincial partners who have jointly funded this work. Success is now based on the large number of dedicated city staff and partnering contractors and consultants that are actively working to move forward on this large-scale upgrade.

Once built the result will be a facility that will meet the modern expectations of the Hamilton community, and stand among the largest tertiary wastewater treatment plants in North America. [...] Over 200 local jobs will be supported on site at the height of construction, this combined with other indirect demand for services and material supply will add strength to the local economy. [...] Investing in higher levels of wastewater treatment performance is a key element in the local strategy for the remediation of Hamilton Harbour as an Area of Concern on the Great Lakes. [...] This contribution toward creating a healthy and sustainable Hamilton Harbour is about more than building a vital ecosystem, it is about developing an irreplaceable resource that meets a variety of our ecological, social, economic, and recreational community needs. As a result, vistas are more beautiful, walks along the water’s edge are more pleasant, and the experience of the harbour is more natural.

Hamilton has great plans to bring more people to the water’s edge, to live, and recreate in this unique and beautiful setting. This project supports that vision by protecting against the impacts of our urban community.”



Chris McLaughlin, executive director,
Bay Area Restoration Council (BARC)

“Hamilton Harbour is a Great Lakes Area of Concern (AOC), one of dozens of environmental ‘hotspots’ on the Great Lakes and the worst on the Canadian side. Many decades of largely unmitigated sewage contamination of the Harbour is one of the main reasons for its history of very poor water quality. The City of Hamilton went so far in the years following the First World War to purchase property on the Harbour’s north shore known as LaSalle Park in order that the community could have a safe place to recreate, but even that wasn’t enough. The entire bay was a uniformly dangerous place.

Many decades passed before the City of Hamilton gave adequate attention to the problem of untreated sewage entering the Harbour. The initial Woodward Avenue Wastewater Treatment Plant was built in 1964, but was a far cry from the advances being made today under the City’s Clean Harbour program. The largest investment of the program is a \$340 million multi-phase plan to upgrade the Woodward plant’s final treatment process to tertiary treatment, allowing it to reach the strict discharge limits called for by the Hamilton Harbour Remedial Action Plan for phosphorus, ammonia, and suspended solids. The RAP’s phosphorus target of less than, or equal to 20 micrograms per litre, in particular, will actually be surpassed by the final loadings achieved by the Woodward plant, meaning that for the first time in generations, wastewater effluent will actually help to improve water quality in Hamilton Harbour!”



The secondary clarifiers that are being constructed and the second one



Project photos: City of Winnipeg

9

South End Winnipeg South Wastewater Treatment Plant Phase IV Expansion

\$335.6 million

Location: Winnipeg, Manitoba

Owner: City of Winnipeg

Project/Construction Manager: NAC Constructors

Engineer: Jacobs/formerly CH2M Hill Canada

Other: PCL Constructors Ltd.

(site preparation works); Graham (clarifier and grit removal concrete)

Funding: Public

- **Federal:** \$42.34 million
- **Provincial:** \$17.08 million
- **Municipal:** \$276.18 million

The Government of Manitoba has issued the City of Winnipeg an Environment Act License requiring the treatment of nutrients (nitrogen, phosphorus) among other requirements at the SEWPCC.

The SEWPCC currently employs a high purity oxygen process. The SEWPCC is being upgraded to a biological nutrient removal (BNR) process to remove nitrogen and phosphorous, with other upgrades to treat wet weather flows.

The implementation of BNR will require a major plant upgrade and expansion. Also, the population within the SEWPCC service area is growing and will necessitate a capacity upgrade. The upgraded design average dry weather flow will be increased to 75 ML/d.

The major plant upgrades include:

- Increase influent pump capacity
- Upgrade existing 12-millimetre screens with new 6-millimetre screens
- New primary Vortex grit removal system
- New screening/grit handling system
- New high rate clarifier

- New Biological Nutrient Removal reactors
- Two new secondary clarifiers
- New chemical building
- New rotary drum sludge thickening equipment
- Upgrade of existing UV equipment
- HPO reactors to be repurposed as fermenter and biofilter
- New 66-kilovolt substation
- New electrical service and distribution system
- New electrical building
- New centralized diesel standby generator
- Replace ABB/Bailey Infi90 DCS with PLCs.
- New control fibre network throughout the plant
- Replace existing DCS HMI with a new HMI system connected to the PLCs.

The SEWPCC Upgrade project was procured as four separate contracts. Contract 1 included foundation shoring, earthworks, and piling and was awarded

to PCL Constructors for approximately \$24 million in September of 2014 and completed February 2016. Contract 2 included the structural concrete works for the high rate clarifier and vortex grit and was awarded to Graham Construction for approximately \$9 million in October of 2015 and completed January 2017. Contract 3 included the structural concrete works for the bioreactors, blower building, and secondary clarifiers and was awarded to NAC Constructors for approximately \$39 million in May 2016 and is still in progress.

In October of 2017, NAC Constructors was awarded the last contract for approximately \$180 million. This contract includes all the remaining works such as the site-wide mechanical, electrical, concrete, and site works. The project is scheduled for completion in December of 2021.

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. — City of Winnipeg Staff



NEW
CONCERTOR™
PUMPING SYSTEM WITH
INTEGRATED
INTELLIGENCE

WORLD'S FIRST WASTEWATER PUMPING SYSTEM WITH INTEGRATED INTELLIGENCE

This revolutionary system delivers optimal performance while reducing your total cost of ownership. It also offers unparalleled flexibility and simplicity on a whole new level. You might even say it thinks for itself. We invite you to enter a new era in wastewater pumping with Flygt Concertor.

One powerful solution. Unlimited possibilities.

www.xylem.com

xylem
Let's Solve Water



Project Photos: Region of Waterloo

10 Kitchener Wastewater Treatment Plant

\$320 million

Location: City of Kitchener, Ontario

Engineer/design: TetraTec (Phase 1); Jacobs/formerly CH2M Hill (Phase 2); AECOM (site-wide facility design and pre-design of Phase 3); CIMA+ (consultant designer for the tertiary treatment, contract 4); AECOM (outfall design)

Detailed Design: T2 Utilities (pre-utility clearances)

The Kitchener Wastewater Treatment Plant upgrades and new plant are high-priority capital investments for the Region of Waterloo. The main objective is to improve water quality in the Grand River, but also to accommodate the significant growth in the Region.

Located in the City of Kitchener at 368 Mill Park Drive, the Kitchener Wastewater Treatment Plant is a conventional activated sludge process with chemical phosphorus removal, anaerobic sludge digestion, and ultra violet (UV) disinfection, and has a rated design capacity of 123 million litres/day (ML/d). The plant was originally constructed in the 1960s and Plant 2 was constructed in the late 1970s each with primary and secondary treatment, anaerobic digestion, biosolids treatment, and disinfection.

Contractor: King City Group (phase 2 upgrades); Graham Construction (contractors for the phase 1 upgrades biosolids facility); Maple Reinders (general contractors Contract 2); Graham Construction and Harbridge + Cross Ltd. JV (general contractors for contract 3); Maple Reindeer and Ball Construction JV (general contractors Contract 4)

Geotechnical consultant: WSP and Peto MacCallum Ltd.

Nancy Kodousek, director of water services, Region of Waterloo said, "This project was one of the recommendations coming from the Region's 2007 wastewater master plan. It was a very aggressive ten-year schedule, looking at upgrades to the Waterloo Treatment Plant, Hespeler Treatment Plant, Kitchener Wastewater Treatment Plant, and other facilities."

The magnitude of the work coming out of the master plan increased the Region's 10-year capital program to over \$700 million by 2010. "The question for the Region for water services was, 'how are we going to implement the recommendations?'"

A phased approach for upgrades to the Kitchener WWTP was recommended including:

Other: Trojan Technologies (UV disinfection equipment); ABS (high effluent pumps); GEA Westfalia (biosolids facility); ARCADIS (third-party consultant, value engineering); Toromont Cat (generators and switch gear); Ovivo (digester equipment); Aqua Aerobics (tertiary disc filter); John Meunier Inc./Veolia Water Solutions & Technologies Canada (major headworks); APGN and Atlas-Copco (high-speed turbo blowers)

Funding: Public

• **Municipal:** \$320 million

- Construction of a dewatering facility at the Manitou Drive Biosolids Transfer Station;
- Construction of a standby disinfection facility;
- Construction of UV disinfection and effluent pumping station facilities;
- Upgrades to Plant 2 to provide approximately 50 to 60 ML/d nitrification capacity in a plug flow configuration;
- Decommissioning of the existing biosolids storage lagoons to provide the area necessary for the construction of Plant 3;
- Upgrades to headworks and processing of biosolids (thickening, pumping); and



Sandra Cooke, senior water quality supervisor for the Grand River Conservation Authority and chair of the Water Managers Working Group for the watershed.

“The Kitchener wastewater treatment plant is the largest in the watershed. Although upgrades are continuing, we have already seen a positive improvement in water quality downstream of this plant in the watershed. With improved water quality in the river, there will be better conditions for the aquatic life in the river through the central Grand. It will further advance a developing bass fishery and slowly support other fish species to recover in this area.

Higher quality river water will also translate to better water quality for downstream users like the City of Brantford, Ohsweken, and Six Nations of the Grand River, who withdraw water from the Grand River to supply their communities with drinking water.”

- Construction of Plant 3 with capacity of approximately 60 to 80 MLD to provide, as a minimum, nitrification and tertiary treatment for enhanced phosphorus removal.

Between 2010-2012, AECOM developed a site-wide facility plan and pre-design for the Phase 3 Upgrades. The Region also had ARCADIS come in as a third-party consultant to conduct a “value engineering” assessment for the Phase 3 upgrades to ensure the design made sense from a triple bottom line perspective. AECOM was also involved in the municipal Class B schedule environmental assessment. Although it wasn’t required, the Region conducted a full public consultation process for the Phase 3 upgrades.

“We are now into Phase 3 of the upgrades, having completed the detailed design, and are in the construction phase,” said Jo-Anne Ing, head of



Ken Seiling, regional chair, Region of Waterloo

“Regional council has always been extremely supportive of upgrades to our wastewater treatment plants for the environment and to improve treatment. It’s a reflection of where we are as a Region. We are an inland community and we derive 85 per cent of our water from groundwater and about 15 per cent from the river itself, so we use the river as a water source and a way of dealing with our waste. We do have a responsibility to be environmental stewards and that includes making sure our wastewater treatment plants are operating at top capacity—not just for volumes, but how we treat the effluent and the receiving river.

As far as the public’s interest in the project, I would say it’s one of those things that fly under the radar. During our discussions about the LRT project, our share of the project was going to be about \$250 million, yet we just approved spending over \$400 million, almost \$500 million on the Kitchener-Waterloo Sewage Treatment Plants and no one batted an eye on spending that. Most people didn’t even know.”

environmental engineering at the Region of Waterloo. “It is the largest of all the projects (contract 3), accounting for \$110 million. It includes a new secondary treatment at Plant 3 and 4 and a new headworks building. We have just completed contracts 2 (a new energy centre and digestion upgrades) and 4 (tertiary treatment and new outfall),” Ing said.

The Kitchener Wastewater Treatment Plant upgrades were completed through a Design-Bid-Build as opposed to a P3 and is funded by the 10-year capital program by the Region with no external funding. The only external support came from the Federation of Canadian Municipalities: a \$2 million green municipal fund grant for the Centrate Management Treatment upgrades which consisted of a new blower building and aeration equipment in Plant 2.

— Katherine Balpataky



Mark Servos, University of Waterloo professor and Canada Research Chair in Water Quality Protection

“My [research] group has been following effects on fish in response to the wastewater infrastructure upgrades in the Grand River. The upgrades at Kitchener have had a tremendous positive impact on the receiving environment. Very quickly after the upgrades in late 2012 the fish responded to the changes in effluent quality and nutrient availability downstream. [...] Considering the enormous cost of wastewater infrastructure it is reassuring to know that these investments are not only addressing the traditional water quality concerns but are also contributing to reducing the impacts of emerging contaminants of concern in the environment.

Nancy Kodousek, director of water services, Region of Waterloo

“This project has really shown me how strong leadership and communication; building strong project teams and stakeholders to implement such a project is really the success of the project. It requires dedicated engineers for the construction of the facility, but it also involved the Ministry of the Environment and Climate Change. They worked with us in 2007 when we did our master plan looking at what were the parameters of concern and what would be their focus; what type of treatment would be need to put into these facilities. It’s working with that strong team, having a strong vision of what needs to get done, and ensuing that it being well communicated to your stakeholders so that they can work with the team on that end goal.”

Private Payoffs



The primary clarifiers at the Canmore wastewater treatment plant allow solids in the wastewater stream to settle out. Those solids are shipped offsite to be composted.

Experiences with privatized water services vary. BY ALAN SHAPIRO

THE CONVERSATION about public versus private drinking water and wastewater services in Canada is highly polarized. Proponents of private sector involvement cite efficiency gains, better management, and improved financing. Critics warn of poor service, low transparency, and increased user rates. But despite the controversy, private corporations are increasingly playing a more significant role in building, owning, and operating water services around the world.

In the past several years, municipalities across Canada, including Vancouver, Montreal, and Toronto have proposed changes to their publicly-operated water utilities and were met with strong opposition from citizens and stakeholders. Others, including Saint John and Regina, have recently moved ahead with water infrastructure projects under public-private partnership (P3) arrangements.

The U.K. is one of the few global regions

to have fully privatized its water services. Dr. Tony Balance, director of strategy and regulation at Severn Trent (one of the U.K.'s private water companies), says that "generally speaking, bills are low (average combined bills across the industry are around £1 a day) and investment is high (£150 billion has been invested since privatisation)." This has led to a 35 per cent reduction in leakage between 1995 and 2016 and a 70 per cent reduction in serious pollution incidents in the same time frame.

However, since as far back as the 1990s, U.K. water companies have been quite unpopular, garnering a bad reputation for high profits and poor performance. While initially driven by only a few companies, this image has come to represent the majority of public perception. Recent polls support returning not only water utilities to public ownership (83 per cent), but also electricity (77 per cent), gas (77 per cent)

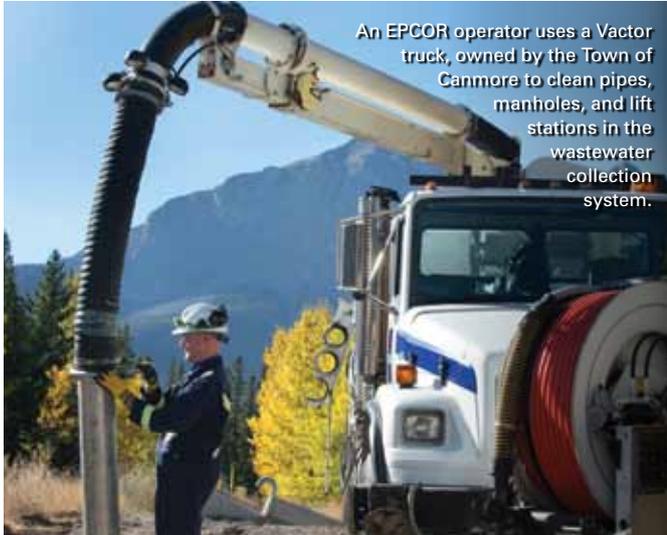
and railways (76 per cent).

The White Rock Experience

The water utility for the City of White Rock, B.C. has historically been owned and operated by the private sector, a rare exception in the Canadian water services landscape. Most recently, until 2015, the water services provider was EPCOR, an Edmonton-based water corporation. In 2013, White Rock City Council decided to investigate the possibility of acquiring the utility. This was precipitated by EPCOR's plan to conduct \$11-12 million in system upgrades to comply with provincial regulations, a price tag borne primarily by residents.

Dan Bottrill, chief administration officer for the City of White Rock, shares that "in previous years, the City of White Rock has reviewed whether or not it wished to purchase the water utility, but each time there was either no political or community appetite to acquire it."

Credit: Buehler Studios



An EPCOR operator uses a Vactor truck, owned by the Town of Canmore to clean pipes, manholes, and lift stations in the wastewater collection system.

Credit: EPCOR



Overhead view of Regina's wastewater treatment facility operated by EPCOR.

Credit: EPCOR



John Elford, senior vice president of EPCOR Water Canada.

Credit: EPCOR



Peter Fassbender, Minister of Community, Sport, Cultural Development, White Rock Mayor Wayne Baldwin, federal Minister of Infrastructure and Communities Amarjeet Sohi.

However, the scale of the proposed upgrades provided the impetus to look into alternative scenarios.

After evaluating the business case, White Rock decided to move ahead with the

took the bold step to move forward and acquire the water utility. Without this action, we would not be in a position to initiate the processes we have taken to improve our water quality and supply.

began to face difficulties with water treatment, particularly with respect to recruiting and retaining qualified operators and being able to run their new facility, commissioned in 1997.

The main driver, as in the case of White Rock, is not public perception of private sector involvement but rather the cost borne by taxpayers.

purchase. While the upgrades were judged to be necessary no matter the ownership, the purchase would allow the municipality control over the process and recovery of costs by eliminating EPCOR's profits (a projected \$428,000 in 2015 and \$878,000 in 2017). After a prolonged negotiation, White Rock purchased the water utility from EPCOR in 2015 for \$13.4 million.

White Rock Mayor Wayne Baldwin said, "I am very proud that Council

I want to take this opportunity to thank our federal and provincial partners who awarded the city a historic first—nearly \$12 million dollars in grant funding through the Clean Water and Wastewater Fund to go towards our water treatment plant, which will be up and running by March 2019."

Contracted water services: The Canmore experience

The experience of Canmore, Alta., echoes that of White Rock. Prior to the 1990s, drinking water and wastewater services were provided by the Town of Canmore. As the town grew in the mid-1990s, it

After investigating a range of options and undertaking a competitive submission process, Canmore signed a 10-year agreement with EPCOR to manage water, sewerage, and stormwater services in 1999. The agreement was renegotiated in 2010 and extended for another 10 years. In the experience of Andreas Comeau, manager of public works for the Town of Canmore, "EPCOR has been really great during emergencies." In response to events such as flooding in 2013, EPCOR has been able to mobilize quickly and maintain service levels. Having EPCOR bear the risks of emergencies and contraventions has eliminated much stress for the municipality.

But this benefit comes at a cost. Canmore's water rates are already above the Alberta average and continue

to rise. “There is a sentiment that contracted services are more efficient. This may be true, but any efficiency gains are generally kept by the contractor,” said Comeau. “Going with a contracted service involves many layers of bureaucracy that need to be compensated. As a business, EPCOR needs to make their margins to provide a return to their shareholders.”

As the end of their contract term approaches, Canmore will be examining all possible opportunities, particularly focusing on costs. The possibility of returning to municipal services is on the table. The main driver, as in the case of White Rock, is not public perception of private sector involvement but rather the cost borne by taxpayers. According to Comeau, “We hear from the public when they have no water. If water and wastewater systems work, most of the concerns are from fixed income users regarding rate increases.”

Success stories

There are many examples of successful private sector involvement in water and wastewater utilities. EPCOR has a strong track record of more than 100 years’ experience in the water sector, having built Edmonton’s first treatment plant at the turn of the 20th century. Presently, EPCOR provides water, wastewater, and distribution services to more than one million people in over 85 communities and industrial sites in Western Canada (B.C., Alberta, and Saskatchewan), as well as hundreds of thousands of customers in the U.S. southwest.

EPCOR recently completed the design, build, and financing of Regina’s Wastewater Treatment Plant, one of Canada’s largest water infrastructure projects. This public-private partnership saved the City of Regina 19 per cent in expected capital costs and 20 per cent in project life-cycle costs. The project has enabled the city to meet more stringent provincial effluent requirements and

accommodate future growth. EPCOR will operate the facility for the next 26 years. “We take a long-term operator’s perspective to the operation and maintenance of water and wastewater assets,” said John Elford, EPCOR’s senior vice president, “focused on reliability and efficiency over time.”

The stories of White Rock, Canmore, and Regina highlight the importance of well-researched and negotiated agreements, transparent cost structures, protective measures, and stakeholder consultation to ensure that water utilities reflect the needs and priorities of each community. At the end of the day, said Elford, “Every community has a choice on how they want their water system to be owned or operated.” It is important to discuss and explore all options and select the appropriate fit for each community. **wc**

Alan Shapiro is a Vancouver-based science communicator with a focus on water resources and environmental issues.



9th Annual **canadian water summit**

2018
June 20-22
Vancouver
 Marriott Pinnacle

Knowledge to Practice
 Applying science,
 policy, and research
 to the blue economy

**EARLY BIRD
 REGISTRATION
 DEADLINE:
 MARCH 23**

FEATURED SPEAKERS:



Carlie Hucul
 Chief Executive
 Officer,
 BC Water and
 Waste Association



Madjid Mohseni
 Scientific
 Director,
 RES'EAU-
 WaterNET

PROGRAM WILL INCLUDE:

- Women in water diversity networking brunch
- Young professionals 21st century leadership skills program
- World Premiere of SLIME (sonic theatre about the impacts of climate change)
- University poster contest on academic-industry-community partnerships

The Canadian Water Summit was launched in 2009 and has grown into Canada's largest and most diverse annual gathering of business, government, Indigenous, academic, and non-profit water leaders, attracting 300+ attendees each June. The 2018 event will include three days of dynamic programming, including young professional skills training, women in water networking reception, field excursions, live theatre, dynamic exhibitor sessions, and the Water's Next awards gala. The week showcases the industry's best, while offering an enjoyable forum to building meaningful relationships to improve your business.

PANEL SESSIONS ON:

- Canada's Knowledge to Accelerate the UN Sustainable Development Goals
- Nation-to-Nation Water Governance
- Water Leadership in Natural Resource Development
- Advancing Utility Resource Recovery

EARLY SUPPORTERS OF CWS 2018:

@CdnWaterSummit
 bit.ly/CdnWaterSummit17
 The Canadian Water Summit

Contact jane@actualmedia.ca or call 416-444-5842, ext. 115 to discuss sponsorship and exhibit opportunities.

watersummit.ca

Full Circle



Stratford, Ont. looks at harnessing its wastewater resource potential.

BY NANCY CARR

SOMETIMES TOO MUCH of a bad thing can actually be a good thing—an air-cleaning, job-creating, waste-reducing, money-making good thing.

Stratford, Ont., a city of about 32,000, which is best known for Shakespearean theatre and Justin Bieber, has a methane gas problem. The heat-trapping greenhouse gas is a by-product of Stratford's wastewater treatment facility. The city isn't alone—it shares this problem with most municipalities that have facilities featuring anaerobic digesters to break down biodegradable material.

Currently methane from the Stratford facility is lit and flared into the atmosphere, which creates less environmental harm than simply releasing the gas into the air. But if the plant managed to increase its methane production, the methane could be converted into renewable natural gas and injected into the existing gas network for

use by consumers across the province. It would also boost job creation, help the environment, and extend the life of local landfills by diverting organic material to use in methane production.

With the help of a \$5-million Target GHG grant from the Ontario Centres of Excellence, and a potential partnership involving Stratford, the Ontario Clean Water Agency (OCWA), and SUEZ Water Technologies & Solutions, the city is examining the creation of more, not less, methane gas. A detailed business case for the project is being prepared for the City of Stratford's consideration.

Stranded assets

"We're hoping to take advantage of an existing asset that's not being used

to its full potential," said Ed Dujlovic, Stratford's director of infrastructure and development services, noting that the project would dovetail nicely with the province's climate change action plan by helping reduce greenhouse gas emissions from the water and wastewater sector.

A dual-purpose wastewater treatment facility and gas production plant would be another feather in the cap for Stratford.

"We would use organic waste to create the methane, which could then be refined and sold off as a natural gas product."

There are two keys to creating the renewable natural gas: upgrading the existing wastewater treatment facility and importing additional methane-producing organic matter. The facility

upgrades are on track to be started this year and completed in 2019 but acquiring the organics—green bin material and industrial oil and grease—is a bit trickier.

Stratford, like many smaller cities in Southwestern Ontario, doesn't have a curbside green bin program, yet. When the city recently looked into starting one, it came with a steep \$500,000 price tag, Dujlovic said. Part of that cost, he said, stemmed from transporting the organics to a processing plant and paying the tipping fee. But if the organics stayed in Stratford, where the tipping fee could be reduced, "I think we'd see a substantial savings."

In addition, Stratford could offer its newly upgraded facility as a revenue-generating drop-off point for organics from neighbouring municipalities, which are expected to initiate their own green bin programs in the next few years. Under the 2016 Waste Free Ontario Act, municipalities are being encouraged to divert 30 per cent of waste from landfills

by 2020, 50 per cent by 2030, and 80 per cent by 2050. The municipalities will need to dispose of their organics, and Stratford would need inputs for its plant.

"This facility would be able to take in up to 24,000 [metric] tonnes of organics a year, but the city only generates about 1,000 tonnes, so we would have to bring in organics from other sources," Dujlovic said.

A dual-purpose wastewater treatment facility and gas production plant would undoubtedly be another feather in the cap for Stratford. The innovative, tech-intensive community has become home to a Royal Bank data centre under Mayor Dan Mathieson and will soon be a test site for autonomous vehicles. But the new facility would also benefit the province as a whole, reducing greenhouse gases, increasing the supply of renewable natural gas, and diverting thousands of tons of organic matter from near-capacity landfills.

"This would be the first such plant in the province, and maybe in Canada," said

Indra Maharjan, a professional engineer who serves as program manager, energy conservation, resource recovery, and climate change for OCWA. "We have about 77 similar plants in the province, which can readily copy the model and execute a project in a similar way."

In fact, it's a near-perfect example of the circular economy that the province is promoting in its strategy for a waste-free Ontario.

"Farmers are growing crops. We eat the food. Then we use it to create natural gas, which can be used to run equipment, and the by-product we create will be classified as a fertilizer product," said Dujlovic. "This is where the province is going, and we're quite excited by the potential." *wc*

Nancy Carr is a Toronto-based writer and editor with experience in the fields of mining, personal finance, and health.

Lystek
Nothing wasted.
Everything to gain.

#BIOSOLIDS HAPPEN!

...and because they do, you need proven, reliable, end-to-end, organics management solutions.

The award-winning Lystek system provides exactly that. And it's easy to operate, affordable & adaptable.

Convert your WWTP into a true Resource Recovery Center with:

- **LysteGro®** - a federally recognized biofertilizer
- **LysteMize®** - for optimized digester performance
- **LysteCarb®** - an alternative source of carbon for BNR systems

water's next awards 2017 WINNER!

geela

Attending Globe Forum 2018? Visit us at the Ontario Pavilion - 1101
lystek.com • info@lystek.com • 1.888.501.6508



Collaborative Consent

Pathways towards watershed co-governance in B.C. and beyond.

BY ROSIE SIMMS, MERRELL-ANN PHARE, OLIVER M. BRANDES, AND MICHAEL MILTENBERGER

CO-GOVERNANCE between Indigenous and non-Indigenous nations has gained support as a winning condition for achieving meaningful watershed governance in British Columbia. But how can different governments share authority for watershed decision-making and work together in practice when there may be overlapping responsibilities, contested control, conflicting values, and differing legal systems? This is the fundamental question that guided a recent report by the Centre for Indigenous Environmental Resources and the University of Victoria's POLIS Project on Ecological Governance on the concept and approach of collaborative consent.

In recent years, governments at all levels in Canada have stated their commitments to reconciliation and building nation-to-nation approaches with Indigenous peoples. Both the federal and, more recently, B.C. provincial governments have committed to implementing the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) and the Truth and Reconciliation Commission's Calls to Action, which reiterate the need to secure

Indigenous nations' consent in decisions affecting their territories and communities.

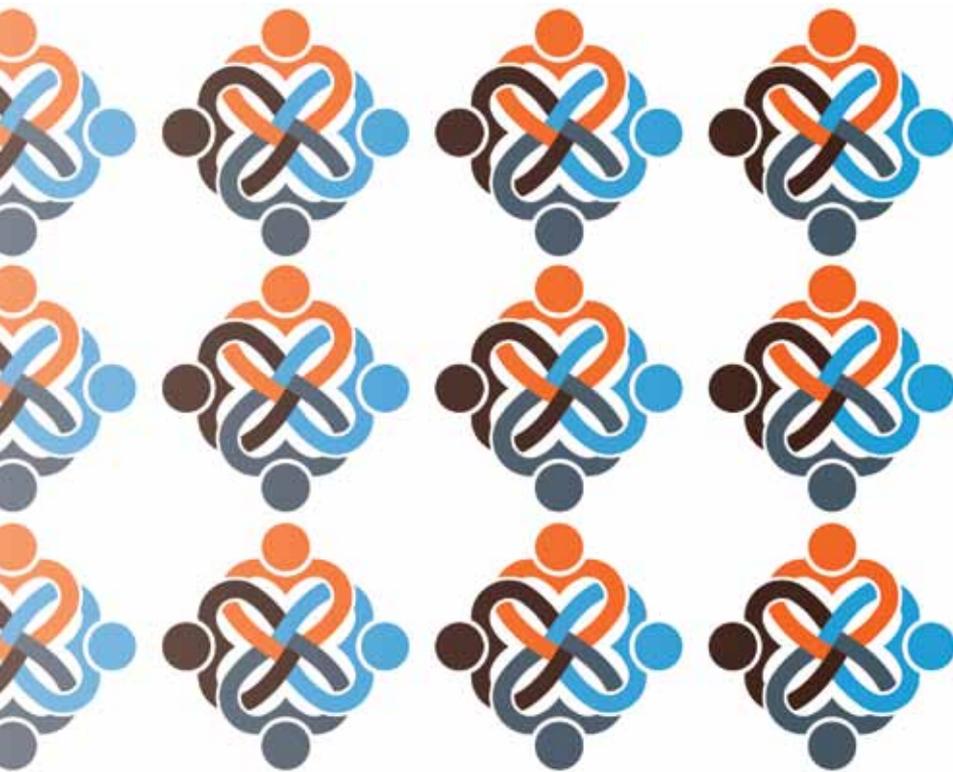
The conversation about what UNDRIP truly means and how it gets implemented is complex, contested, and ongoing. It is our view however, that freshwater offers a particularly rich opportunity to build new relationships and innovative forms of collaborative, consent-based decision-making. Water by its nature is shared and doesn't have a lot of historical legal baggage since the question of "who owns" water has never been resolved by the courts. Most people realize the real answer is "we all do." In fact, in a 2013 survey of British Columbian attitudes on freshwater, nine out of ten respondents indicated they believe no one should own water, and so we need to collaborate to protect and govern it.

"Collaborative consent"

Collaborative consent is a term that was coined to describe processes used by territorial and Indigenous governments in the Northwest Territories to develop key agreements and legislation. Collaborative consent is also one viable pathway to bring UNDRIP to life in a

meaningful way. It is a mutual consent process about governance and changing how decisions are made. Through this approach, Indigenous and non-Indigenous governments commit to working together over the long run, each with their asserted authority, and with a goal of achieving each other's consent on decisions, policies, and plans. Collaborative consent requires all governments (Crown and Indigenous) to build new shared spaces, structures, and institutions as part of an ongoing relationship now and into the future.

Collaborative consent does not require any government involved to surrender authority. Nor does it mean that all governments are involved in all decisions at all times. The critical thing is that they agree how they will work together—where collaboration is necessary (or not), and acceptance on how decisions will be made. These processes can proceed even with historical game stoppers, like unceded territory, and resolving land title and rights, because each party participates based on their own understanding of their authority, regardless of whether others agree.



Collaborative consent differs fundamentally from the current approach to consultation and accommodation occurring under s. 35 of the Constitution. Consultation and accommodation tends to deal with project-based decisions and is an “end-of-pipe” process, meaning that Indigenous nations are responding to proposed projects rather than shaping the broad policy and legal foundations within which such decisions are housed. These

Water by its nature is shared and doesn't have a lot of historical legal baggage since the question of “who owns” water has never been resolved by the courts.

constitutional protections would remain intact as a safety net should the diplomatic art of nation-to-nation relationships fail. The intention however, would be to build real partnerships and new forms of governance that would eliminate the cumbersome and often ineffective role of the courts in resolving disputes or mediating a fraying relationship.

Elements of collaborative consent are already present in a host of existing

collaborative efforts. Across Canada and beyond, Indigenous, provincial, and territorial governments are already putting aspects of this mutual consent-based approach into action as they work through the tough governance challenges of the day. While many examples exist, we note that the N.W.T. in particular offers demonstrated leadership in this realm. For years, territorial and Indigenous governments have successfully co-drafted

legislation and undertaken major collaborative negotiations for lands and waters, and in particular innovative and world-class transboundary water agreements. At a more local scale, the Cowichan Watershed Board, co-chaired by the Cowichan Valley Regional District and Cowichan Tribes, offers a leading example of how local governments and Indigenous nations can work together and collaborate for freshwater management and governance.

In British Columbia in particular, we lay out how implementing the province's 2016 Water Sustainability Act offers a compelling opportunity to put this approach into action.

This new law has many promising features that can better protect freshwater; however critical details of the legislation, especially related to the sustainability aspects, have yet to be developed. Many First Nations have also clearly stated that the consultation undertaken for WSA development was inadequate and that a more meaningful approach is needed in the regulation development and implementation phase. Changing course and bringing collaborative consent to life in the context of Water Sustainability Act implementation—including in water sustainability planning, setting water objectives, and defining and protecting environmental flows—is a potential pathway forward to begin redressing these historical shortcomings.

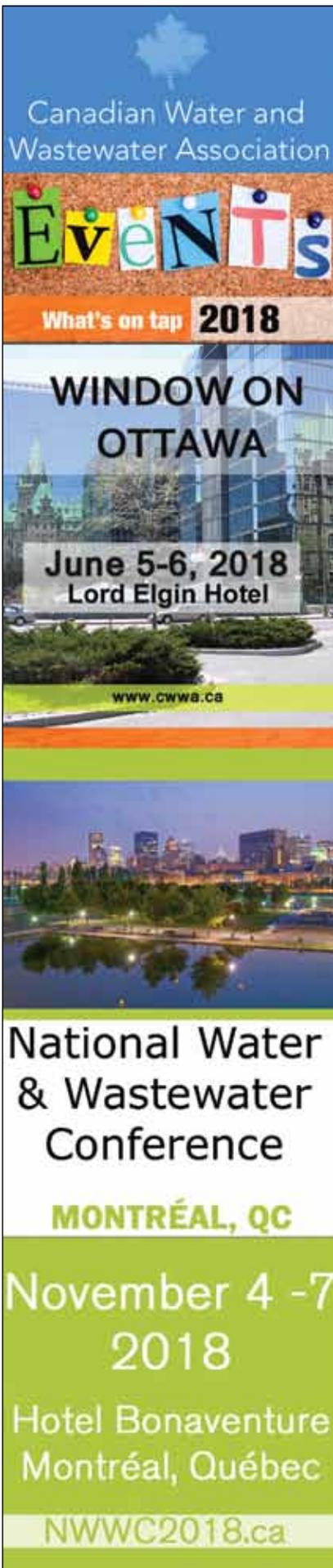
Collaborative consent is about transformative governance change. This approach will require new and vastly different attitudes, skills, and competencies within non-Indigenous governments, and a significant commitment to support Indigenous institution building and internal governance processes. But if Canada is truly going to fulfill its obligation to UNDRIP and nation-to-nation approaches, real actions, and not more words, are needed. WC



Rosie Simms is a water law and policy researcher at the University of Victoria's POLIS Water Sustainability Project; Merrell-Ann Phare is the founding executive director of the Centre for Indigenous Environmental Resources; Oliver Brandes is the associate director at the University of Victoria's Centre for Global Studies and serves as co-director of the POLIS Project on Ecological Governance; Michael Miltenberger spent 20 years as an MLA in the Northwest Territories.

The paper, Collaborative Consent and Water in British Columbia: Towards Watershed Co-Governance is available at poliswaterproject.org





A call for some flexibility and reason in meeting our goals. BY ROBERT HALLER

WATCHING WITH GREAT INTEREST how the implementation of the Wastewater System Effluent Regulations (WSER) plays out across Canada, I wonder if there is some opportunity for reasonable, case-by-case review.

WSER requires new reporting and sets stricter effluent targets for all Canadian communities. Municipal utilities have been ranked by their risk, or rather, their priority requirement for upgrades. Based on the assigned value of risk, municipalities were assigned strict deadlines of 2020, 2030, or 2040 for implementation of said upgrades. The highest priorities were in our coastal communities, where just primary (or almost no) treatment was in place.

To be clear, CWWA, and (most) Canadian municipalities, support these new regulations. If there are communities that are trying to ignore WSER, they should expect to receive all the pressure and enforcement power of the federal government. But, if a community has embraced the challenge of meeting WSER, begun the planning and engineering process, and is genuinely committed to meeting the targets, they should expect to receive some flexibility and some good faith support. So far, the WSER has been presented as set in stone, with no

leeway on deadlines, and inevitable enforcement penalties are looming. It's not that Environment Canada staff have no interest in flexibility; there is no flexibility available to them, and so none passed along.

It's one thing to set regulations, but it's quite another thing to consider options, choose a solution that is best for your situation, engineer it, finance it, and build it. Oh, and make sure it's done in five years and lasts fifty, please.

Municipal government is complicated, to say the least. Regional government, even more so. For the Capital Regional District (CRD) of Victoria, B.C., governance issues seemed to take center stage with debates over the authority of the provincial government over the regional government over the constituent municipalities. The CRD sorted this out. They have the financing, have broken ground, and have every intention of completing this project by 2020. But what if they're delayed a little further?

Meanwhile, in St. John's, no funding grants have been formally announced and the 2020 deadline is looming. In 2009, St. John's was about to a \$170-million primary treatment plant. Before they could cut the ribbon, they were informed

of the new regulations that would make their new facility non-compliant again. Expanding to secondary treatment will cost over \$220 million. This will be a serious financial challenge for St. John's and for a province facing severe financial hardships and multiple, competing

If a community has embraced the challenge of meeting WSER, begun the planning and engineering process, and is genuinely committed to meeting the targets, they should expect to receive some flexibility and some good faith support.

priorities. Perhaps there is an opportunity to discuss the genuine federal, provincial, and municipal priorities.

Cape Breton is a completely different story of geography, topography, and

demographics that makes traditional solutions impractical. The initial cost per household to meet the new regulations with traditional solutions is unreasonable. Meeting a short-term deadline of 2020 forces quick decisions and, undoubtedly, traditional, expensive solutions. Cape Breton presents an opportunity to pilot new technologies that can prove effective and affordable in small communities across Canada. One size does not fit all.

In Halifax, the estimated cost for is now over \$500 million to adjust the effluent output from their wastewater and reach compliance 2040, but is this the best use of \$500 million? They point to the difference between freshwater and marine water and between fisheries habitat and industrial harbours. Halifax

Water has proposed to direct that \$20 million at combined sewer separation that would achieve a far greater impact on water quality in the harbor than the effluent fix. Is the goal to improve water quality in the environment or to meet one output target?

This is not to say that each and every community needs an extension or variation, but there are those that do. For them, there needs to be a process in place, and the Minister needs the authority, on a case-by-case basis, to exercise some flexibility to achieve the best solution. In short, achieving our goals calls for some common sense from, well, the Commons. wc



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

SIMPLY THE BEST IN WATER STORAGE!

A GLOBAL LEADER IN LIQUID STORAGE APPLICATIONS

ADVANCED DESIGNS
Best storage tank designs. Tank Connection's Precision RTP (rolled, tapered panel) construction is the #1 bolted tank design selected worldwide!

UNMATCHED COATINGS
Our LIQ Fusion 8000 FBE™ powder coating system and application technology is unmatched in water storage applications. Our AQUA AGT 2020™ glass/porcelain enamel coating system is superior to other glass coatings in its formulation and two-fire process. Both coatings are exclusively provided by one company, Tank Connection.

SUPERIOR QUALITY
Simply unmatched worldwide. Tank Connection operates multiple ISO 9001 Certified QMS storage tank manufacturing facilities in the U.S. Our storage products and services are requested globally because our quality is recognized as the best in the industry!

INDUSTRY EXPERTS
Tank Connection is the leading expert in storage applications with more years of combined industry experience than any other tank company.

REQUEST A QUOTE AND GET CONNECTED WITH REAL PERFORMANCE FROM THE MARKET LEADER. TANK CONNECTION!



ALUMINUM DOMES AVAILABLE FOR ALL TANK APPLICATIONS

RETROFIT APPLICATIONS - NEW CONSTRUCTION
CUSTOM DESIGNS - INSULATED - SPECIAL COATINGS



TANK CONNECTION AFFILIATE GROUP

3609 North 16th Street, Parsons, KS. 67357
+1 620.423.3010 • sales@tankconnection.com
WWW.TANKCONNECTION.COM








APPOINTED



ELLEN STITT

The Walkerton Clean Water Centre (WCWC) has announced the appointment of **Ellen Stitt** as the newest member

of its board of directors. Stitt graduated from the Water Quality Technician program at Durham College in 2013. She is currently an operator with the Ontario Clean Water Agency where she is also a mentor for new operators and an active volunteer with the Canadian Water Network and Great Waters Challenge Youth Advisory Board with Waterlution.

“I feel very humbled to have been selected for a seat on the Board. I am looking forward to starting this new opportunity and contributing to the great work the Centre does,” said Stitt.

Wolseley Canada has announced three new appointments in its Burlington office. **Brian Scott** was promoted to the position of VP, Waterworks; **Yves Bélanger** to the position of VP, supply chain; and **Kelly Martin** to the position of chief financial officer

Brain Scott joined the Waterworks division over three years ago, first as national operations manager, was promoted to general manager for Ontario and for the past year was the general manager for both Ontario and Atlantic Canada. Kelly Martin has over twenty-five years of finance experience and brings to Wolseley Canada a broad and unique background in both finance and logistics across multi-sectors. Yves Bélanger brings over 25 years of food retail and food service industry experience in progressive executive roles focused on supply chain management including most recently Weston Foods where he was VP, North American Supply Chain.



Brock Carlton, CEO, FCM.



Minister Sohi addresses the audience.

FCM Sustainable Communities Conference Ottawa, Ont.

Local leaders from across Canada gathered at the 2018 Federation of Canadian Municipalities’ Sustainable Communities Conference to demonstrate how local governments are delivering some of Canada’s most innovative green solutions.

FCM President **Jenny Gerbasi** said, “Canadian municipalities are recognized globally as leaders in sustainability who are well placed to share insights and best practices with their counterparts. We are working hard to build sustainable communities—with cleaner air, soil and water; more resilience to weather extremes; lower GHG emissions and a higher quality of life.”

The event delivered three days of

participatory workshops, study tours, and plenary sessions that showcased the latest in municipal green innovation and best practices. Conference delegates were pleased to hear the Minister of Infrastructure and Communities, the Honourable **Amarjeet Sohi**, emphasize the critical role that municipalities play in delivering results on climate action including through federal investments in local sustainable infrastructure.

“Local governments are driving some of Canada’s most innovative green solutions—from building retrofits to better transit, from brownfield recovery to efficient waste systems,” said Gerbasi.



Lisa Allaire, Infrastructure Canada.



Michelle Albert.



Indra Maharjan.

OPWA Annual Conference & Awards Mississauga, Ont.

On January 25, 2018, the Ontario Public Works Association hosted its annual conference. Future Focus, and the 2018 Awards program at the Mississauga Grand Banquet & Event Centre. Plenary speakers included, **Michelle Albert**, president of OPWA; **Indra Maharjan**, who spoke about the potential of natural gas capture in wastewater treatment; and the Honourable **Amarjeet Sohi** from Infrastructure Canada, who spoke about the Smart Cities Challenge.

The OPWA Awards, established to recognize outstanding individuals, groups ,and organizations in the public

works profession, celebrated numerous projects across the province, including the Keswick Water Treatment Plant Upgrades (Regional Municipality of York, Associated Engineering, North American Construction; the Nonquon Water Pollution Control Plant (Regional Municipality of Durham, CH2M HILL, Romag Contracting Ltd.); and the Peterborough Wastewater Treatment Water Storage Reservoirs (Peterborough Utilities Commission, R.V. Anderson Associates, North American Construction, Thomas Fuller Construction Co.).

Photos: Water Canada



Autumn Peltier, 2016 nominee for the International Children's Peace Prize, addresses delegates at the AFN National Water Symposium.



David Suzuki spoke to the importance of safe drinking water and action on climate change at the AFN National Water Symposium in Vancouver.



Group photo (L-R): AFN director of housing, infrastructure and emergency services, Irving Leblanc; Stephanie Peltier, youth water advocate; Autumn Peltier; David Suzuki; and AFN B.C. Regional Chief Terry Teegee.

Assembly of First Nations National Water Symposium & Trade Show Vancouver, B.C.

The Assembly of First Nations (AFN) National Water Symposium and Trade Show, hosted February 6-8 in Vancouver, addressed the theme of 'reconciliation through sustainable water management.' The conference brought together stakeholders from across the country to drive progress on safe drinking water in First Nations communities. The conversation centered on the inadequacies of the *Safe Drinking Water for First Nations Act* and the need to implement the United Nations Declaration in the Rights of Indigenous Peoples with respect to water.

The conference opened with multiple AFN representatives, including Symposium

director **Irving Leblanc**, B.C. regional Chief **Terry Teegee**, and Manitoba regional Chief **Kevin Hart** reinforcing the vital importance of water to First Nations communities, from basic human necessity to sacred value. MP **Jonathan Wilkinson** affirmed the federal government's commitment to reviewing existing legislation and collaborating on the development of future legislation impacting First Nations rights to water.

Throughout the three days of the conference, participants heard from keynote speakers Dr. **David Suzuki** (David Suzuki Foundation), **Eriel Tchekwie Deranger** (Indigenous Climate Action), and AFN National Chief **Perry Bellegarde**. Chief

Bellegarde stressed that while the federal government's commitment to eliminating long-term boil water advisories is a good first step, sustained investment is needed to close the standard of living gap between First Nations and the rest of Canada.

Technical and panel sessions centered around implementation of water management tools, including Indigenous laws and practices, collaborative governance structures, and innovative technical solutions. The conference closed with a resounding commitment to drive both immediate progress and long-term, systemic change on First Nations water issues across the country.

Fishackathon Toronto, Ont./Global

Hundreds of young designers, developers, and subject matter experts from across Canada joined thousands of participants in more than 35 international cities on February 10-11, 2018 to tackle endemic challenges facing our world's oceans and fisheries.

First organized by the Department of State in 2014, the 2018 Fishackathon was produced by the Toronto-based non-profit organization HackerNest to inspire the creation of digital solutions to address sustainable fisheries challenges. Over the course of 28 hours, teams from universities and coding schools produced innovative projects which they presented to a panel of industry-expert judges. Stable Hacks from Seneca College presented a solution to provide access to real-time marketplace data via Short Message Service (SMS); UBC's Grow Fish team developed an app that allows fish feed producers to assess trade-offs between alternative feed ingredients; Fish Food Science from Kitchener-Waterloo built an app to put "fish feed price analysis at your fingertips;" and, Catching-Up, the winning team from Halifax, built a product that directly connects small-scale developing-world fishers to export markets to generate higher profits to fishers who need them most.

The four winners will advance to the global finals. The global prize includes scholarships to Founder Institute, \$25,000 in credits and social media/blog promotion from AWS, coaching, and mentoring.

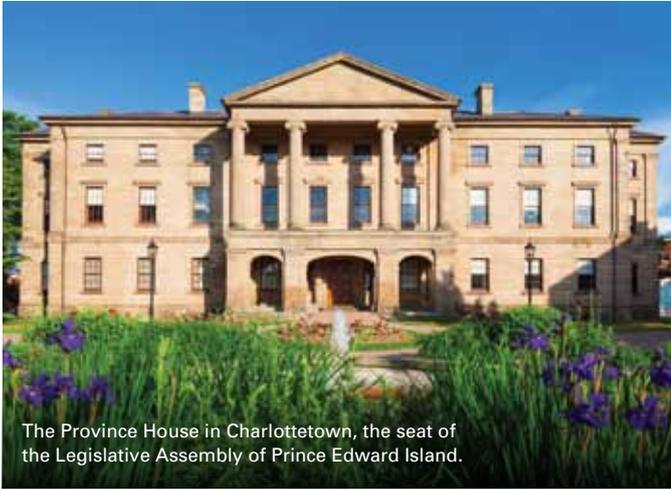


Photos: Adam Reid

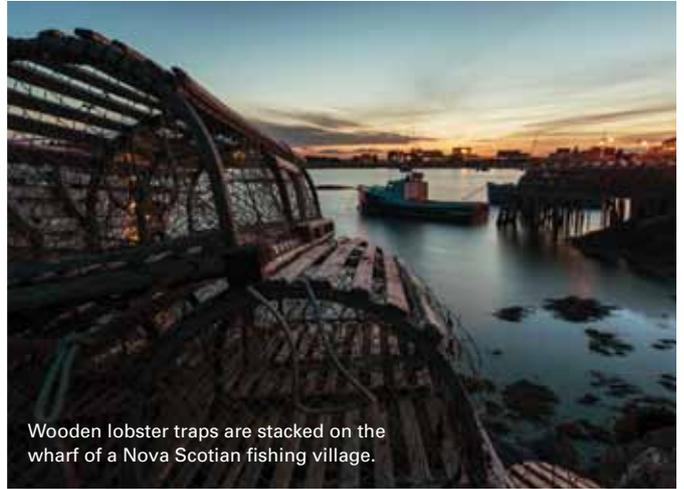
Top100 Projects Key Players and Owners Dinner Toronto, Ont.

Close to 300 executives from the public sector infrastructure industry gathered at The Carlu in Toronto on February 20th for ReNew Canada's 2018 Top100 Projects Key Players and Owners Dinner. The 2018 report featured over \$199 billion in total investment across multiple sectors, up from \$186.4 billion in the 2017 report.

The program featured a keynote panel discussion, moderated by ReNew Canada editor **Andrew Macklin**, with Infrastructure Ontario CEO **Ehren Cory**, Canadian Council for Aboriginal Business president and CEO **JP Gladu**, and Metrolinx chief capital officer **Peter Zuk**. The panel discussed future investment needs, building partnerships, improving climate resiliency, and disruptive technologies.



The Province House in Charlottetown, the seat of the Legislative Assembly of Prince Edward Island.



Wooden lobster traps are stacked on the wharf of a Nova Scotian fishing village.

Pulp Fiction

Islanders demand that Nova Scotia's wastewater plans be science-based decisions; and for greater public consultation. BY WADE MACLAUGHLAN

IN FEBRUARY representatives from Northern Pulp in Pictou County, Nova Scotia came to Charlottetown to meet with the Standing Committee on Agriculture and Fisheries to answer questions about their plans for a new wastewater treatment plant that will discharge treated effluent into the Northumberland Strait. This proposed wastewater treatment facility could have serious and unintended consequences for our commercial fishery and our aquaculture industry, as well as for the marine environment. Fishers, First Nations, and MLAs from both provinces have expressed concerns about the risks of piping as much as 75,000 cubic metres of fresh, warm water daily in the Northumberland Strait.

The Northumberland Strait fishery is a vulnerable ecosystem that provides jobs and economic development in many rural communities in Prince Edward Island. It is the primary economic driver in many communities. Families depend upon it.

Ten years ago, the Northumberland Strait was under stress and the lobster fishery was suffering. Through tremendous conservation efforts by fishers, who agreed to reduced traps, increased carapace size, and fleet buy-backs, the fishery rebounded and landings are up. Fishers feel, and rightly so, that the Northumberland Strait is both a valuable and vulnerable resource

that needs protection.

To accept a Level 1 Environmental Assessment, with a 50-day review process, for a unique area with tidal and water circulation patterns, does not meet the public expectation for protection and conservation of this resource. This project requires a more comprehensive Level 2 Environmental Assessment with a 275-day review process. Our government stands with the fishers who are worried about jeopardizing their industry and their livelihoods. We need an in-depth environmental assessment and science-based evidence.

We cannot support any industrial development that would risk the habitat and the reproductive cycle of species such as lobster or threaten the livelihood of thousands of families who depend on the fishery. I urge Northern Pulp and their consultants to address the questions and concerns from fishers. I also urge the company to slow down the process, and take the time for a comprehensive environmental assessment, one that will see a decision-based on sound science and with the input of all partners.

Islanders expect government to provide guardianship of our water resource for the common good. The Northumberland Strait has one of the more sensitive areas within the Gulf of St Lawrence with unique tidal and

water circulation patterns. The federal government has committed to increasing and enhancing protection for all marine species, habitat, and sensitive ecosystems in the Gulf through the development of Marine Protected Area Networks.

To safeguard the health and wellbeing of Islanders, we have made significant investments to upgrade wastewater infrastructure across the province with investments of \$98 million in 19 Island communities over the past two years.

During the extensive consultations that preceded the Water Act, which was adopted by the Legislature last fall, Islanders spoke passionately about the need to protect our water quality and quantity, and ensure the supply of fresh clean water for generations to come.

To gain public trust, Northern Pulp's proposal must undergo a rigorous Level 2 Environmental Assessment process to protect the fishery, the environment, and the vulnerable ecosystem that exists in the Northumberland Strait. I welcome working together with the Government of Nova Scotia and the federal government to ensure a decision based on sound science that will protect our precious resources now and into the future. *wc*

Wade MacLauchlan is Premier of Prince Edward Island.



Question today *Imagine tomorrow* Create for the future

At WSP, that means engineering innovative solutions to the challenges the future will bring, while seizing opportunities to safeguard and protect precious water resources. Can we design a place where our communities can thrive?

We think we can.

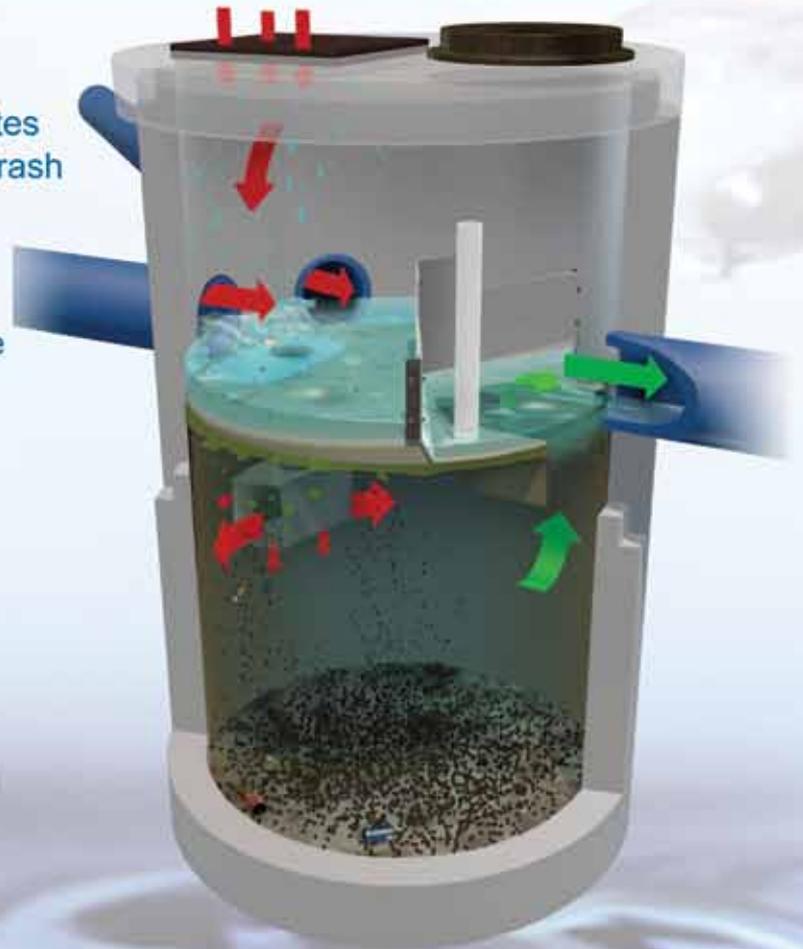
wsp.com

The newest Stormwater Treatment Technology

Stormceptor[®] **EF**

*A continuation and evolution of the most globally recognized
oil grit separator (OGS) - Stormceptor[®]*

- Removes pollutants at higher flow rates
 - Sediment (TSS), free oil, debris, trash
- Patent-pending treatment and scour prevention
- Verified third-party OGS performance
 - TSS Removal
 - Scour Prevention
 - Oil Capture & Retention
- Design flexibility
 - Single inlet
 - Multiple inlets
 - Grate inlet
 - Submerged
- Easy to install, inspect, and maintain



ISO 14034 Environmental Management – Environmental Technology Verified (ETV)

Stormceptor[®]



GLOBE BOOTH 1326
FORUM 2018

IMBRIUM SYSTEMS - info@imbriumsystems.com | (416) 960-9900

Stormceptor is manufactured and sold under license:

Alberta to W. Ontario – Lafarge (403) 292-9502

British Columbia – Langley Concrete Group (604) 533-1656

Ontario – Forterra Pipe & Precast Inc. (519) 622-7574

Quebec – Lécuyer et Fil Ltée (514) 861-5623

Maritimes - Strescon Limited (506) 633-8877



imbrium[®]

www.imbriumsystems.com