WINTER 2018 | NUMBER 135

OPERATOR DIGEST

EOCP

Quarterly Newsletter of the Environmental Operators Certification Program – BC/Yukon

STORMWATER MANAGEMENT

FLOODING IN WEST KELOWNA

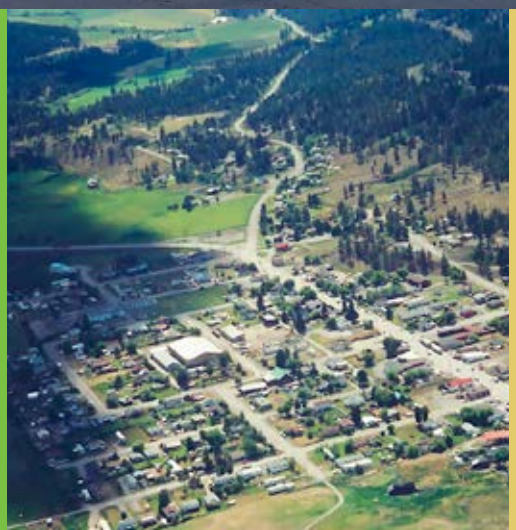
West Kelowna's Freshet Event of Summer 2017 was extremely challenging, posing serious questions on flood management in a future of climate change.

SPECIAL SECTION ON STORMWATER begins P6

VILLAGE OF CLINTON

NEW Pall's Aria FIT filtration system means no more boil water advisories!

P4



DON'T MOVE A MUSSEL!

Invasive mussels are edging ever closer. Lets keep them from contaminating our lakes!

P 12

OPERATOR
DIGEST

The **Operator Digest** is the official newsletter of the **Environmental Operators Certification Program**.

Submissions for publication in the Digest are welcome. Please email them to the EOCP office at eocp@eocp.ca

Changes of address, annual dues, Continuing Education Requirements, exam applications, as well as general inquiries about the program should be addressed to:

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Publications Mail Agreement No. 41498030

The Environmental Operators Certification Program is a charter member of the Association of Boards of Certification and is a registered society with more than 4,500 active members.

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MESSAGE FROM THE DIRECTORS AND STAFF

Rob Fleming, Chair **Kalpna Solanki, CEO**

2017 was a year of numerous changes at the EOCP, the most notable being the launch of the EOCP's new Customer Relationship Management System – the largest project ever undertaken by the EOCP. With the launch of the new CRM system, we are now able to:

1. Store data electronically;
2. Track, manage and report on EOCP Operators throughout the full lifecycle of their interaction with the EOCP;
3. Collect and process Continuing Education Units;
4. Improve the interaction with Operators through an up-to-date design and web interaction;
5. Provide workflow and status tracking;
6. Manage facilities, employers, and owners;
7. Collect Operator dues and facility fees;
8. Provide roll-up reporting and exception reporting to various levels;
9. Provide enhanced data security and data access – in the event of fire/flood/earthquake; and
10. Provide support to integrate with the EOCP's accounting system.

Fast on the heels of the launch of the CRM system, work began on the planning of the EOCP Conference. Yes, you read that correctly! 9-11 September 2018 will be the EOCP's first-ever Tradeshow and Conference at the Marriott Pinnacle in downtown Vancouver. **ENQUIRE–LEARN–APPLY** is the theme of the EOCP's tradeshow and conference that is being designed by Operators for Operators.

We will have more information on this event via emails and online. We encourage you to come early, and/or stay late, and take in the sights and sounds of Vancouver!

2017 was also the year of fires and floods, with both complicating the work of Operators. Page 6 covers the impact of floods on the City of West Kelowna, an event that had a very high level of involvement by Parks, Public Works, Fire and Rescue, as well as many from City Hall who provided support.

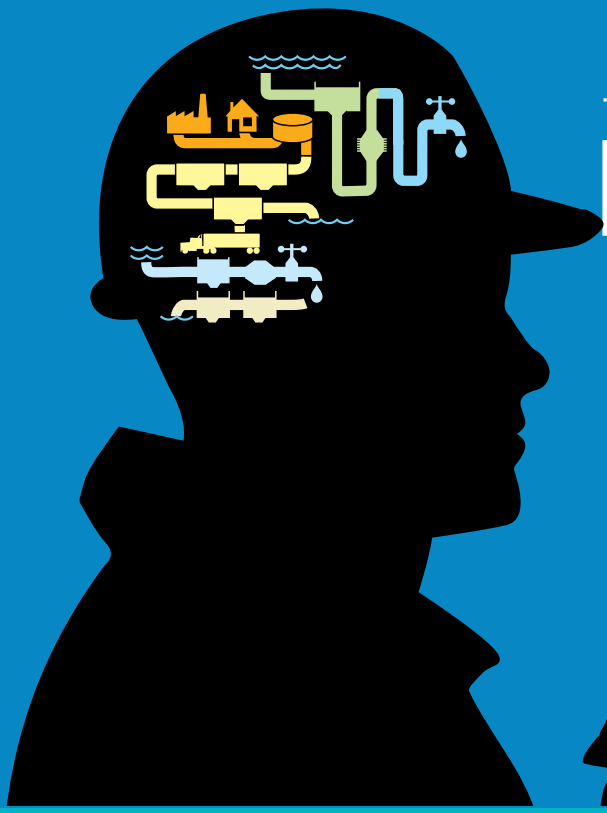
Flood events seem to be increasing in severity with every passing year, so in this issue we include articles on stormwater management and the need for stormwater utilities to provide a comprehensive look at this problem and propose solutions.

2017 also marked the start of the roll-out of the EOCP's new Facility/System Classification models involving the first major change in classification processes in more than 20 years! Work will continue on the reclassification of facilities and systems through 2018 and 2019, and an update is presented on page 17.

We have enjoyed working with you through 2017, and look forward to building on stakeholder relations through 2018!

Rob Fleming, Chair

Kalpna Solanki, Chief Executive Officer



EOCP TRADESHOW AND CONFERENCE

SWS SWWS WT WD WWC WWT

Choose your learning stream, or pick and choose topics from three different streams!

EOCP TRADESHOW AND CONFERENCE 9-11 SEPTEMBER 2018

MARRIOTT PINNACLE
1128 West Hastings Street, Vancouver BC
Phone: 604-684-1128
https://tinyurl.com/EOCP-marriott

KEYNOTE SPEAKER

COLIN PERKEL

Colin Perkel has been a senior journalist with Canada's national news agency, The Canadian Press. Over the past 30 years, he has covered provincial and federal politics, the environment, justice and national-security issues, and all kinds of assorted mayhem. His work has taken him across Canada, to the United States, Germany, Grenada, South Africa and Guantanamo Bay. He did three tours as a war correspondent in Afghanistan. Colin is the author of 'Well of Lies', an in-depth look at the Walkerton water tragedy where over a period of a week in May 2000, hundreds of people in Walkerton were afflicted by a deadly strain of E.coli bacteria.

ENQUIRE. LEARN. APPLY.

The EOCP tradeshow and conference is designed by Operators for Operators. This event will provide learning opportunities for water and wastewater sector professionals on innovative solutions and new insights to foster the prudent management of water and wastewater in British Columbia and Yukon.

EARLY-BIRD REGISTRATION OPENS IN MARCH!

EOCP
Environmental Operators Certification Program

CLINTON

New Pall's Aria FIT filtration system solves spring turbidity problems

By Jenni Green, P. Eng.
EOCP Technical Expert

The Village of Clinton, a community of 650 residents located in the Thompson Caribou region, was dealing with regular high turbidity events during the Spring freshet. It had been experiencing one to two boil water advisories every year, which could last upwards of two months each during the spring run-off. In addition, it did not have a storage system for water, so in the event of a power outage, the water system could only provide three hours of supply. Clinton needed a solution that could be delivered in advance of the next Spring run-off season.

"In the two years that Pall's Aria FIT filtration system has been running, we have not had a single instance where we were unable to meet treatment levels. The quality of the water is great, but most importantly, this system has provided peace of mind that we can check in on the plant in the morning then set the system alarms and leave it alone for the rest of the day as we fulfill our other responsibilities. The low operational demands have been crucial for us as a Public Works department of three."

Karl Hansen, WTII, WDII, MWWTI, WWCI
EOCP Certified Operator

In 2013, Clinton received a grant through the federal gas tax program to fund 100% of a new water treatment facility. Working with TRUE Consulting, the Village installed a Pall ultra-membrane filtration with onsite sodium hypochlorite generation. The work also included the installation of a new 14,000m^3 treated water storage tank, capable of providing three days of supply in case of an extended power outage. The new tank also provided much needed storage and improved fire flows.

Given the new Interior Health Authority requirements, surface water plants experiencing turbidity events above 1 NTU were required to implement a more robust filtration treatment process to remain compliant. The Pall Water system enabled Clinton to utilize a Direct Feed Coagulation process to remove the contaminants from the source water, along with providing a physical barrier for pathogen reduction.

Since the plant came online in December 2014, the Village has not had a single turbidity-related boil water advisory. Chief Operator Karl Hansen says he is really happy with the new system and that it makes operating much easier.

The Village undertook an extensive public engagement process throughout the upgrade, keeping the public informed each step of the way. “It was a really good process”, says Hansen. Public open houses were held where representatives from the Village and TRUE Consulting were on hand to answer questions about water quality and the project in general.

At a capacity of 1.8 mega liters per day, the new system exceeds the Village’s projected needs for the next 10 years. At that point, if required, the system is easily expandable and can incorporate additional modules and treatment trains.

MORE ABOUT THE SYSTEM

The Pall ultra-filtration system uses a feed coagulation process to move contaminants from the source water, as well as providing a physical barrier for pathogen reduction. Through the process, turbidity, colour, and organics are precipitated out so that they can be filtered. This eliminates the need for clarification which reduces cost and overall complexity.

New treatment facilities in smaller towns can often require advanced Operator training and new certifications, and higher-level certified Operators are in short supply. However, Aria FIT units are pre-engineered low-pressure membrane systems ideal for small municipalities that are Operator friendly with an easy-to-use control system. The modular design also allows for multiple configurations, making the Aria FIT system ideal for facilities with limited space.

The facility was given a Level II Water Treatment certification in December 2014, and it was operational within five months, ahead of schedule, and under the total project budget of $2.5M.

Exterior view of the new facility.

Chlortec chlorination system

PALL Aria-Fit ultra-filtration system installation

HIGHLIGHTS

- Reduction in chlorine usage by 50%
- Increase of water supply during extended power outages from 3 hours to 3 days
- Zero quality related boil water advisories since plant opening
- Project completed under budget and ahead of schedule
- 100% grant funded

BENEFITS

- Reliable water that meets drinking water regulations requirements
- Easy to use, comprehensive system that incorporates pre-treatment needs
- Smart solutions for water treatment challenges
- Speed of deployment
- No longer need to issue boil water notice during the freshet

FLOODING

West Kelowna's Freshet Event of Summer 2017 had an challenging impact on critical infrastructure, posing serious questions on flood management in the future

By Chris Anderson (Public Works Manager) and Brian Bidewell (EOCP Certified Operator (WD I, WWC III)).

The flash flooding and lake inundation experienced in West Kelowna this year will go down in the history books as an extremely challenging time period for our municipality. Known as the 2017 Freshet Event, the City of West Kelowna's (CWK) response efforts included significant 'boots on the ground' participation from Parks, Public Works, Fire and Rescue, as well as many from City Hall who supported this team with their participation at the EOC.

Some of the factors that contributed to the 2017 Freshet Event include: late season (March and April) heavy snowfall/ snowpack, followed by an extremely rainy and wet April into May, overly saturated ground conditions, and then significant and localized storm cells. These were a perfect storm of conditions that forced road and bridge closures, slope failures, flooded homes and properties, loss of parks, and impacts on critical infrastructure. This article will focus on the latter, specifically how the CWK's wastewater collection system was impacted.

By mid-May it was becoming evident that the climbing lake levels were no longer just coffee room conversation. Not only was the inundation flooding a real concern to our community living on the waterfront but the rising lake levels were also becoming a significant concern for a good portion of the CWK's critical infrastructure located within this 'lake level' elevation. This critical infrastructure included five (of 27) sanitary sewer lift stations and associated collection mains.

With respect to the wastewater collection system, our SCADA system was recording data from our sanitary lift stations that was higher than we had ever seen. This appeared to indicate that the collection system was being subjected to very high infiltration and/or inflow. Considering the elevations that the lake had risen to, infiltration of the system was unavoidable, but it was the unknowns of the extent of additional inflow that really had us in trouble and worrying. We had inflow/infiltration coming from low lying on-property clean outs, inspection chamber caps, and as was eventually discovered, from some homeowners that felt the collection system was a venue to remove their own ground water and flooded basements. Some of what made this inflow/infiltration even more challenging included collection systems that were installed with clay pipes and with no inspection chambers. This obviously made it difficult to identify where some of the inflow might be coming from. Other challenges included a mobile home park where flood levels were

breaching underneath the trailers at the same height as their sewer connections or stratified lake level communities where our knowledge of the onsite system was limited.

We had to do something, but not knowing if we had full cooperation from all residents affected, we were worried that our sanitary infrastructure would not be able to keep up to the infiltration and inflow that was coming at us. Not only was this problematic for the CWK's wastewater collection system, but it was also becoming a significant concern for the Regional District of Central Okanagan's wastewater treatment plant where all of the CWK's, Westbank First Nation and Peachland sanitary flows are treated. This had the potential to become a very unsettling situation for many jurisdictions in the area.

So, on top of all of the significant flood prevention work that was happening along the CWK foreshore, we found ourselves with a significant inflow problem that needed to be addressed immediately. With help from CWK Bylaw, CWK Fire and Rescue and the BC Forestry Service, the response team headed out to tackle the suspected problem. This included a door-to-door campaign of education of how the sewer system works and ensuring no one was using the sewer system as a route for removing their own onsite and in-house water challenges.

We can't thank these teams enough for how they stepped up to the plate working these subdivisions finding where the inflow was coming from and getting into our systems. In some cases, we had team members helping the homeowners mitigate these connections and come up with alternative measures to evacuate their flooding challenges. This allowed our CWK Utilities team to continue working through extreme pumping situations that our stations were being tasked with.

Notable findings and considerations from the 2017 Freshet Event are trimming stations to keep more water in the vessel to help them from becoming buoyant, trimming variable frequency drives to find a constant run speed in an attempt to eliminate as many pump starts as possible, continue to engage in an inspection chamber locating program, utilization and cooperation with local emergency service workers, knowledge of your system and its capacities, as well as public awareness of local community utility systems.

OPINION

It's time to move forward on Stormwater Utilities

By Mike Firlotte, Drainage Manager for the City of Abbotsford, EOCP Board Director, WT IV and WWT I EOCP Certified Operator

The topic of Stormwater Utilities is timely! Victoria and Prince George are in different stages of working on a stormwater utility, and other municipalities are investigating moving forward with a stormwater utility.

What is drainage management?

Drainage is the movement of stormwater, either discharge to environment or to a linear pipe network via pump stations. Drainage of properties in rural areas is usually provided by natural watercourses (rivers, creeks, and streams) and the man-made ditches connected to them. Natural watercourses and streambeds are owned by the Crown on behalf of all residents of the Province. The Water Stewardship division of the Ministry of Environment protects the rights of the Province, through an approval process for any and all diversions of water, uses of water, and any changes a property owner or person desires to make in and about a stream.

Watercourses change over time as a result of natural and human factors, and those changes can adversely affect the drainage of nearby lands. For example, when a watercourse is blocked, upstream properties can be flooded. Or, as a result of land-clearing or development activities, downstream properties can be flooded or experience erosion of creek banks. Some maintenance of watercourses is generally required over time.

Rainfall which runs off the land in the City is collected by ditches in the rural areas, and by roof drains, catch basins, lawn drains, and some ditches in the urban area. It is conveyed by ditches or underground pipes and pumping stations to nearby watercourses or detention structure. The quality of the flow in the runoff is adversely impacted by human-generated pollutants from both urban and rural activities. Protection of the City's fisheries sensitive watercourses is an important environmental objective. Recent advances to improve the quality of urban runoff are being reviewed and added to the City's development requirements. As new infrastructure is built, water quality devices are added to screen out some of the pollutants.

In urban areas, surface runoff is generally directed to detention facilities via catch basin and released slowly into underground storm sewer pipes, or infiltrated into the ground via infiltration facilities. Most municipalities require the development of urban lands to be accompanied by stormwater management measures. Runoff from large roofed areas is encouraged to be infiltrated into the ground. Runoff from other areas is directed to large holding ponds or tanks, where it is released at a rate which attempts to mimic the pre-development runoff patterns. In some developments, management techniques such as rain gardens, biofiltration swales, and absorbent soils are or will be used to filter runoff (to remove pollutants) and to further reduce the peak flows.

Homes were often constructed without underground storm sewer pipes. In some locations, ditches convey the surface runoff away, in other locations, the soil is very porous, and surface runoff either does not exit, or is collected and infiltrated into the ground using "rock pits" or other underground facilities. Home owners in these areas with drainage problems may need to check their perimeter drains, or reconstruct their rock pits.

Who works in drainage?

Most municipalities share staff with the Sanitary Collections group or have their own dedicated staff, with a similar skill set to a water and sewer operator.

Why should they be certified?

Because these staff members have similar duties to a sewer collection system operator, the principles are very similar, same pipe types, pump stations, hydraulics, environmental concerns.

What is the overlap with an Environmental Operator role?

Not having a certification role holds back stormwater operators from being treated similarly to water and sewer operators within a utility, they perform very similar duties and in most cases are shared with in sewer collection utility work.

What are the benefits to the field and employers?

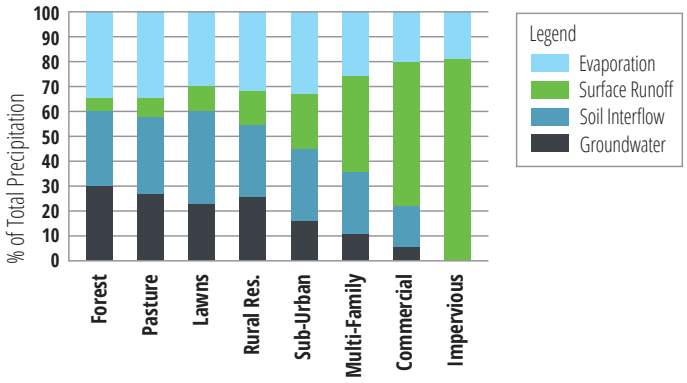
Certification will help employers as more stormwater utilities are formed. We need trained and certified operators. The staff will be able to dedicate resources to enhancing certification and training, which is needed more than ever as the climate changes and new requirements to have better controls on our stormwater management become necessary.

INNOVATIVE STORMWATER MANAGEMENT

Excerpts from an article by Hans Schreier, Faculty Of Land & Food Systems, University Of British Columbia.
Link to full article: https://tinyurl.com/Innovative-Stormwater

Emerging changes in land use and climate show that conventional stormwater management systems in urban watersheds are no longer adequate to deal with increased runoff and flooding events. The conventional approach focuses on rapid drainage and removal of stormwater runoff from all urban surfaces without addressing the problem of contaminants from urban land use activities. The Canadian Water Network (CWN) research has shown that a major shift is needed to address these new conditions by focusing on runoff detention, temporary storage and infiltration of runoff water, which also reduces the contamination problem.

Figure 1. How land use impacts the distribution of precipitation within the hydrological cycle.



To accomplish this and to reduce the flooding and contamination risk, a wide range of innovations are required to deal with the emerging runoff, flooding and pollution problems at three different spatial scales: property scale, neighbourhood scale and watershed scale.

The Property Scale

For the first time, property owners need to participate in retaining precipitation and delaying the runoff from their properties. This can be accomplished by using green roofs, harvesting roofwater for outdoor and indoor use, improving soil conditions, reducing impervious surfaces, planting urban trees and establishing rain-gardens. The concept is source control that addesses both the quality and the quantity of water.

The Neighbourhood Scale

The next level of innovation is at the neighbourhood scale where runoff from impervious surfaces and contaminants from transportation are more intense.

At this scale we need to consider transportation corridors, parking lots and commercial facilities that require drainage and that contribute many new contaminants to the runoff. These contaminants are usually different from the property scale in that they contain hydrocarbons, oil, grease, metals and sediments. Runoff can be delayed by re-designing roads and parking lots so that the runoff water is directed into swales, sand filters, detention ponds and wetlands. Making the roads smaller, removing curbs and gutters and allowing the road runoff to flow into swales filled with sand and gravel are very effective ways to temporarily store water, filter out the sediments and reduce the contaminants by microbial processes and plant uptake. Swales are also replacing drainage pipes in parking lots and are designed to detain water and reduce the contamination before the water seeps into local streams.

Ultimately all runoff and pollution ends in the watershed and in the lowland floodplain.

The Watershed Scale

At the watershed scale the focus has to be on maintaining wide vegetated riparian buffer zones that allow natural stream channels to be maintained. Buffer zones have many functions, as shown in in the figure at right, and if we leave a sufficiently wide corridor before urban development takes place we can incorporate wetlands and detention structures that delay and moderate peak flow, allowing the vegetation and soils to retain sediments and the plants to take up excess nutrients. These wide and protected buffer zones can also be used for recreational purposes because they attract significant populations of birds and wildlife, promote biodiversity and are a major food source for aquatic organisms.

The key innovative solutions at this scale are to establish wide riparian buffer zones that allow the river to establish a natural channel which acts as a filter and storage systems for sediment and water and allows contaminants to be contained before they reach the river. This also requires a new approach for how to deal with extreme flooding events. Designating temporary storage areas in topographically

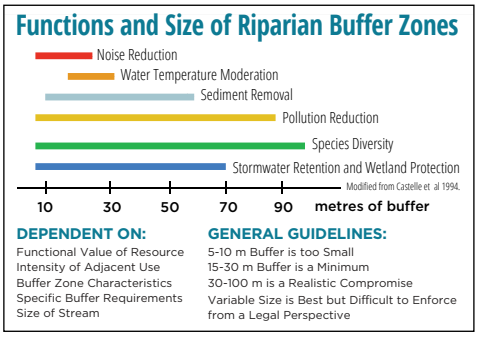


Table 1. Differences between the traditional approach versus the new innovative approach at the three spatial scales.

	TRADITIONAL APPROACH	INNOVATIVE APPROACH
PROPERTY SCALE	Drain and remove rain & runoff	Retain rain on site, slow release of water though infiltration systems
NEIGHBORHOOD SCALE	Drain and remove rain & runoff	Store and delay runoff using detention and filter systems
WATERSHED SCALE	Store water in ponds, develop protective structures (dams & dykes), channelize streams Land use restriction in flood plain	Delay runoff in wide buffer zone and naturalized stream channels, improve flood storage within the watershed.

appropriate sites within the watershed can help reduce the flood risk problem dramatically.

None of the individually proposed innovations will be sufficient to solve all problems but it is proposed that a combination of these approaches will help reduce the flood risk and for the first time will help to reduce contaminant input into urban streams. Not all of these innovations are appropriate in all urban watersheds because the local site and climatic conditions vary from city to city. This requires that an adaptive management approach is needed to select innovations that are best suited for the local conditions. The research identified a new and innovative path to address a major urban problem and offers solutions that are capable of not only reducing the flooding risks but also significantly improving the environment of urban streams. The first step is to initiate all the above options in new urban developments where these measures are most cost effective and can reduce potential problems in a significant way.

PROPERTY SCALE	NEIGHBORHOOD SCALE	WATERSHED SCALE
Rainwater harvesting from roofs and impervious surfaces for re-use during dry periods	Minimize the size of roads, parking lots and impervious surfaces	Create large, continuous riparian buffer zones along streams and lakes
Green roofs to reduce and delay runoff	Create infiltration swales to direct road and impervious surface runoff into swales	Diversify stream channels into meandering and side stream systems (naturalize drainage)
Improve soil conditions to maximize infiltration and water storage	Create and incorporate wetlands into neighborhoods	Build wetlands and detention systems in the buffer zones
Minimize imperious surface and soil compaction	Provide temporary water storage in the form of ponds and detention systems	Select appropriate topographic areas for deliberate temporary water storage
Plant trees to reduce runoff where possible		Enforce land use zoning in the floodplain

A number of cities have taken the lead in using these innovative ideas to reduce the urban stormwater problems and some of the innovations that are in place in the Vancouver area are featured in a new video accessible on the CWN website. The remaining challenge is how these innovations can become the main tools for any new urban expansion and how the knowledge generated by research can be translated into widespread action.

INNOVATIVE ACTIONS AT DIFFERENT SPATIAL SCALES

As shown in the table at left, there are a wide range of innovative approaches that need to be adapted in order to reduce the flooding and pollution risks. No single action will be able to address all issues but a combination of actions at the different spatial scales will be the best recipe for success. Not all of the listed actions in Table 2 will succeed in all areas due to the differences in climatic and site conditions. However, there is now sufficient evidence that using a combination of options can go a long way in reducing the risk of flooding and the amount of contaminants reaching the urban streams.

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DON'T MOVE A MUSSEL!

By Corinne Jackson, Communications Director, Okanagan Basin Water Board

If you're like a lot of environmental professionals working in water, you were probably drawn to the idea of making a difference in your community, and beyond. But, if you're working in multiple water bodies you also have the potential to put that very water, and your community, at risk.

Part of our work at the Okanagan Basin Water Board has been managing invasive milfoil in our lakes for the past 36 years. We have now changed the way we do business, making sure to take precautions to prevent the spread of other invasive species, including zebra and quagga mussels, recognizing that professionals working in freshwater, including ourselves, are potential vectors.

We are reaching out to our colleagues, who are also working in the field, to join us in adopting best practices to help keep safe the waters we are trying to protect.

Okanagan Water Board Boater Outreach Training

THE PROBLEM

Almost impossible to eradicate, costs millions to manage

Invasive zebra and quagga mussels have been hitchhiking across Canada and the U.S. since the mid-80s, on boats and other non-motorized watercraft, in bait buckets, and more. These mussels, which originate from Eastern Europe, have no natural predators here and will attach to any hard surface, including hip-waders.

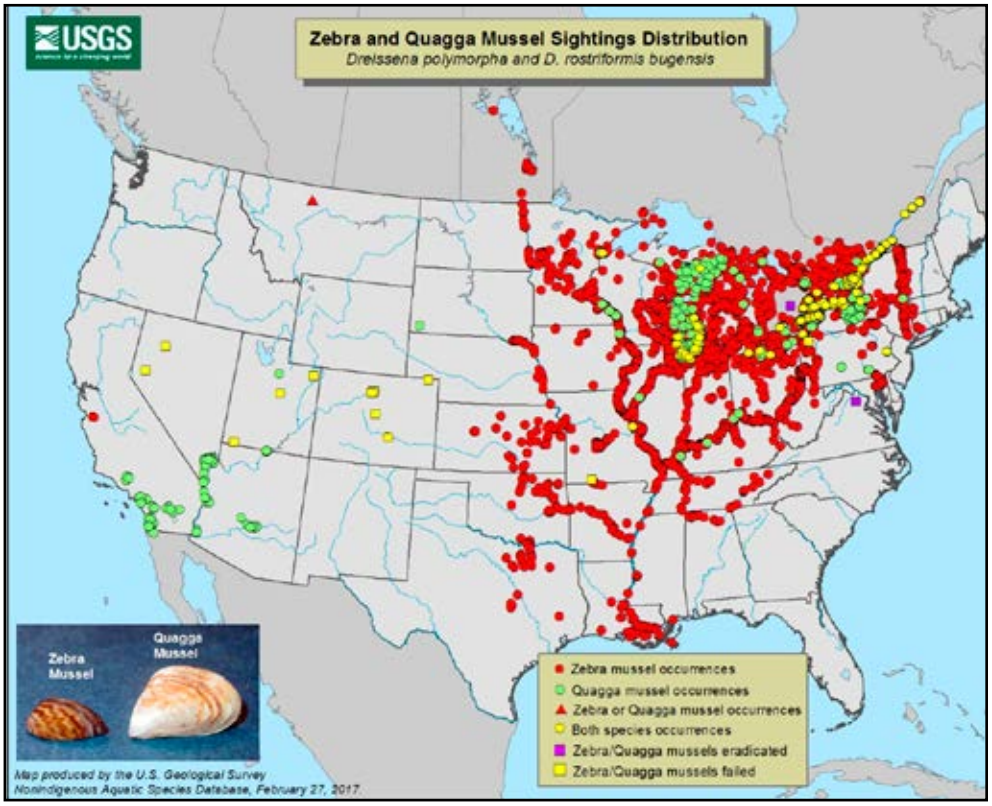
Since their arrival they have been transforming ecosystems, causing toxic algae blooms, clogging water intakes, outfalls, and other aquatic infrastructure, and ruining beaches. At this time, there is no proven method to eradicate the mussels once they arrive that doesn't also cause significant environmental impacts.

The mussels are microscopic as veligers (floating larvae), about the size of a grain of sand. At their largest, they are the size of a thumbnail (1.5 to 2 cm). Each female can produce one million eggs per spawning season. In some regions, with warm water temperatures, they've been known to have six reproductive cycles in a season. And, they can live 30 days out of water in damp, cool conditions.

In addition to the damages noted above, the mussels are costing millions to just manage. The Great Lakes spend about $250 million each year to control zebra mussels in their water intakes. As far as we know, BC, Alberta, Saskatchewan, Washington, Oregon, and Idaho are mussel-free. But it's estimated the cost to the Pacific Northwest would be $500 million annually; $43 million annually to the Okanagan alone. And in the case of Montana, where mussel larvae were discovered in October 2016, (three months after water samples were collected – a delay in testing), we cannot assume we are mussel-free, but we must act as though we are and take precautions.

Manitoba's Lake Winnipeg tested positive for the mussels in October 2013, followed by Cedar Lake in October 2015. Their

Zebra mussel close-up and clogging pipes in Cottonwood County, Minnisota.



headwaters start in the Alberta Rockies. The headwaters of Canyon Ferry Lake in Montana – where one of the positive mussel samples was taken – is within a few kilometers of at least three rivers which feed into the Columbia, one of the only remaining invasive mussel-free river systems in Canada. This proximity places a big responsibility on all of us to ensure we take extra precautions.

PREVENTION
CLEAN, DRAIN, DRY

Here in the Okanagan, our milfoil control operators use aquatic machines to de-root the weed in winter, and cut and remove it in the summer. Initially, once the milfoil was established in all of our lakes, we didn't worry about spreading it, so we would pull a machine out of one lake and launch it in the next, the same day. Now we are doing business differently. With the looming threat of invasive mussels, machines are pulled out of the lakes and brought back to the shop to be cleaned, drained, and dried. We remove all the plant material and pressure wash the hull, pull any drain plugs, drain and dry bilges, and any other places that retain lake water, and let any absorbent material dry in the sun or in winter, in the shop. We spent more than 35 years trying to manage one invasive species – we don't want to be responsible for spreading another one.

We ask all professionals working in freshwater systems to make Clean, Drain, Dry your 'business as usual'. Please help 'Spread the message. Not the mussel.' Talk with your fellow professionals about the need to take preventative measures and help protect our waters.

The **Okanagan Basin Water Board** and its **Okanagan WaterWise** outreach and education program have been sounding the alarm about the threat of zebra and quagga mussels since 2012. In 2013, it launched its Don't Move A Mussel campaign. Learn more about the mussels, the risks, prevention, and more, at www.DontMoveAMussel.ca.

Quagga Mussels on penstock gate.

A RENEWED OUTLOOK FOR BC'S FRESHWATER

By Oliver M. Brandes, Rosie Simms and Jon O'Riordan

As BC's new government embarks on the hard work of fulfilling its platform commitments and ministerial mandates, there will be no shortage of pressing issues demanding the attention of our new leaders. Water, however, is one issue that unites British Columbia as the foundation of healthy and resilient communities, economies, and ecosystems. This article explores the critical elements of a revitalized water agenda for BC, including opportunities within the province's *Water Sustainability Act*, which came into force in February 2016.

Until recently, considerations of water sustainability were only secondary to the priority of building the province's resource-based economy. In the process, watersheds have become fragmented and natural capital has been degraded. No shortage of evidence exists demonstrating the consequences—from salmon that are unable to reach their spawning grounds during periods of low flow, to communities without reliable access to safe drinking water, to extreme swings from devastating flooding in one month to rampant forest fires the next.

Further, the government institutions that exist to make and enforce decisions about BC's freshwater future are largely under-resourced, uncoordinated, and ill-equipped to build public confidence or manage risks.

A CRITICAL MOMENT

With strong public support for enhanced freshwater protection, an increasingly sophisticated freshwater constituency in BC, and new legal tools in the *Water Sustainability Act* for advancing water management and governance, BC is in a critical moment of opportunity. Our new leaders will not be starting from scratch. A policy framework for addressing BC's water issues has already been established.

Almost ten years ago, the provincial government responded to many of the province's emerging water challenges in its visionary *Living Water Smart* water strategy. The commitments and outlined actions in *Living Water Smart* ushered in a fundamental change in water policy with stronger emphasis on sustainability, cooperation, and integrated management—with a real emphasis on partnerships. *Living Water Smart* led directly to the development and passing of the *Water Sustainability Act*.

In addition to this new, overarching legal framework, BC is now also a signatory to two innovative bilateral water agreements for the Mackenzie River Basin, completed with the Northwest Territories and the Yukon in October 2015 and March 2017, respectively. These agreements commit each jurisdiction to cooperatively managing water in the shared Mackenzie River Basin, with a focus on maintaining ecological integrity through commitments to water quality, quantity, and aquatic ecosystem health.

Progress on water issues in BC will require a partnership approach that engages all levels of government, including Indigenous nations, watershed groups, and communities. This will be a major shift in how the province has historically operated on resource management.

With a new provincial government, BC has a fresh opportunity to bring renewed energy to the water work started a decade ago, reinforcing water as the foundation of a more sustainable economy and the lynchpin of a sustainable resource management regime.

To help guide freshwater policy priorities, the POLIS Water Sustainability Project, based at the University of Victoria's Centre for Global Studies, has set out a practical ten-step plan outlining the necessary elements and actions required to implement a bold new water agenda for BC.

The first priority is a comprehensive implementation of the *Water Sustainability Act* through the next wave of regulations. In particular, protecting environmental flows in law will be critical to guarantee a minimum level of ecological protection and provide transparency and consistency in how decision-makers consider nature's water needs.

In addition to full implementation of the Act, this 10-step plan provides direction to:

- Ensure sufficient funds to deliver on a comprehensive water policy program through appropriate water rentals;
- Acknowledge Indigenous water rights and engage Indigenous governments in a nation-to-nation approach as partners in governing and managing fresh water;
- Build resilience to droughts and floods through concerted conservation, floodplain reconnection, and natural capital valuation;
- Implement water-centric land use (watershed) planning, with a focus on quality and quantity that builds public confidence and better engages local communities. These plans should shape land use decisions through an explicit water sustainability lens. Protection of community drinking water sources must be used to prioritize other resource development activities;
- Develop an overarching water science strategy that incorporates traditional knowledge and community-based monitoring, providing the necessary science and information to make informed, evidence-based decisions; and
- Review and modernize the professional reliance model to build better oversight and accountability and empower a provincial body to provide independent oversight of BC's land and water to ensure accountability and drive the necessary government changes.

Through this suite of policy solutions, BC can position itself as a freshwater leader in Canada and beyond. With this new agenda, the province can expect growing water security, increased public confidence in evidence-based decisions, decreased conflicts as natural capital is protected, and greater ability to adapt to the oncoming changes in climate, setting BC on a course towards a sustainable freshwater future.

Oliver M. Brandes is co-director of University of Victoria's POLIS Project on Ecological Governance at the Centre for Global Studies. Jon O'Riordan is the former deputy minister of the Ministry of Sustainable Resource Management and POLIS' strategic water policy advisor.

Rosie Simms is the water law and policy researcher with POLIS.

A Revitalized Water Agenda for British Columbia's Circular Economy report is available online at poliswaterproject.org.

This article was originally published in Water Canada.

EOCP PIONEER

Bert Caine

Founding editor of the "BC Operator Digest" passes on

Bert Caine was the first Secretary-Treasurer of BC's certification program – at that time called the BC Water and Wastewater Operators Certification Program Society. Bert served in that capacity for 24 years and at times almost singlehandedly carried the program forward. He was instrumental in bringing the certification program from an ad-hoc group of concerned individuals through to a formally constituted body recognized throughout BC, YK, and across North America. Bert also served as the program representative when the board became a charter member of the Associated Boards of Certification, and for many years served on the Canadian Committee on Certification and Training.

Bert was also the Founding Editor of the BC Operator Digest. When he started in this role in 1973, the bulletin was two pages long, and was called the 'Newsletter'. The bulletin then was then renamed as the 'Scumline' in 1974, and then the 'Operator Digest' a few years later.

Bert's hard work and determination resulted in an Operator certification program that is recognized across North America, that is able to provide assurance that EOCP certified Operators are indeed capable of enabling the prudent management of water and wastewater in British Columbia and Yukon.

WHO'S ON THE MOVE

Krista Derrickson

Manager of Utilities, Westbank First Nation, appointed EOCP DIrector

Krista Derrickson was recently appointed as a Director on the EOCP Board, and is a member of the EOCP's Conference Planning Committee.

Krista is a member of Westbank First Nation, and the Manager of Utilities at WFN. WFN is one of BC's largest First Nation purveyors of water with more than 6,100 water connections on its two inhabited reserves.

Krista held the Operator/Environmental Officer position at WFN for just over 7 years (2002 – 2009). She then moved to Vancouver in 2009 to take a position with Indigenous and Northern Affairs Canada (INAC) in the BC Region. At INAC she worked on training programs for Operators who work for First Nation communities throughout BC. Here she helped create and approve new training courses and ideas through working closely with outside training providers like MTS Inc. and TRU, as well as being actively involved with the BCWWA, PWABC, and the EOCP. Krista also managed the Circuit Rider Training program that consists of hands-on training and mentoring for the Operators who work for the 203 First Nation communities throughout British Columbia. Krista also organized and hosted the annual First Nation Operators conference for the past five years, which brings together First Nation Operators from across BC and Yukon.

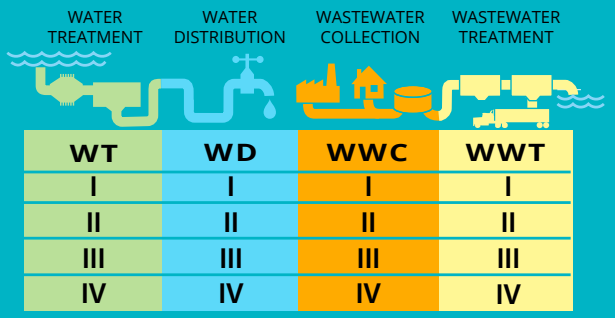
SEIDEL LIFETIME ACHIEVEMENT AWARD WINNER:

Mike Gosselin

Mike Gosselin, a Past-President of the EOCP Board of Directors, has been selected to receive the Association of Boards of Certification's (ABC) Harris F. **Seidel Lifetime Achievement Award**, in recognition of his outstanding lifetime contribution toward advancing the cause of certifying environmental professionals.

The Harris F. Seidel Lifetime Achievement Award is the premier award issued by the Association and is presented to an individual in recognition of outstanding lifetime contribution toward advancing the cause of certifying environmental professionals. Harris Seidel's contributions date back to 1972, the Association's first year. He is a Past-Chair of the Association (1972-73) and a past-president of the Water Environment Federation (1963-64). Mr. Seidel previously served on the Iowa Joint Board of Certification and was the Director of Water and Pollution Control for the City of Ames, Iowa from 1954-1991. He continues to serve the Association on a variety of senior and strategic issues, most recently on the Strategic Planning Committee and the Model Standards Task Force.

THE EOCP'S NEW FACILITY CLASSIFICATION MODELS - A PROGRESS REPORT



By Jenni Green, P.Eng

The EOCP's new facility classification models were officially launched in September 2017 after a two-year multi-stakeholder review process. The models were updated to improve the facility classification process with the following in mind:

- De-emphasize population as a factor in the classification of systems and facilities;
- Make the classification models and related business processes more transparent;
- Update the models to better reflect current technologies; and
- Consider the full scope of Operator responsibilities when classifying a facility or system (i.e. from watershed to tap, and drain to watershed).

By early December 2017, 95 of the over 1,100 level I to IV facilities had been reclassified - small water and wastewater models are not part of the current update. Although it is too early to see real trends, about 67% of facilities are maintaining their classification, while 12% are seeing an increase, and 21% are seeing a decrease.

At this point, it is difficult to correlate classification changes to the new model, or to the fact that many facilities had not been reclassified for more than 10-15 years. Further study will make these results clearer and we will provide another update in 2018.

Based on results thus far, we are noticing that changes that result in a decrease in classification have generally been in the distribution and collection systems. The reason for this is the de-emphasis of population and flow. Changes that have resulted in an increase in classification are being seen more in the treatment facilities. This is likely because a number of newer technologies were not captured in the old models. In addition, the definition of water treatment changed in 2014 which has caused some changes in classification among water distribution and treatment facilities.

To date, feedback from Operators and owners has been positive. The ability to see and understand where points are allocated throughout a process is a benefit to all users. There has been a good overall understanding of how and why the new models are being used. We will continue taking the feedback and information gathered during the next year to further improve the ease of use of the models.

The online facility classification system will be live at crm.eocp.ca by March 2018. Chief Operators will be emailed an invitation to log on and complete their initial facility classifications. Chief Operators will be able to update facility classifications at any time online. The EOCP requires an update to classifications following any major process change, or every 5 years at a minimum.

Over the next 12 months we will reach out to Chief Operators and owners to offer a reclassification using the new models. If you are interested in having your facilities reclassified, please contact Jenni at the EOCP. jgreen@eocp.ca 604.874.4784 x225

Facility Type	-2	-1	No Change	+1	+2	N/A (New)	Totals
WT	2	2	9	0	0	2	15
WD	0	7	19	2	1	5	34
WWC	1	5	14	0	0	5	25
WWT	0	0	14	7	0	0	21
Totals	3	14	56	9	1	12	95

IN MEMORIAM

Allan Ellsworth

Was Chief Operator of the Westside Wastewater Treatment Plant

Allan was the plant manager for many upgrades of sewer plants around central Alberta before coming to West Kelowna with a wealth of knowledge. In 2011, he attained his WWC II and WWT IV certification and was the Chief Operator at the Westside Wastewater Treatment plant. He is remembered as being happy with his life and home in West Kelowna, especially since it was so close to his first love, the great outdoors.

Allan loved history and exploring new areas of historical interest to him. His passions included exploring, fishing, quadding, skiing, camping, and photography.

A friend states: "He loved telling stories with enthusiasm and big chuckles, and everyone loved to listen".

STATISTICS
For the year 2017

EOCP
Environmental Operators Certification Program

Exams

- **922** Operators wrote certification exams in 188 sessions in 2017.

Facilities

- **150** facilities were classified/reclassified in 2017.

Continuing Education Units (CEUs)

- In 2017, 6,790 CEUs were entered for Operators, with a total of 14441.7 CEUs earned. This means that Operators notified the EOCP of **144,417** hours of training!

OPERATOR CERTIFICATION for the year 2017

Classification	IV	III	II	MUII	I	MUI	OIT	Total
WT	49	84	236	8	398	14	64	**853**
WD	90	201	891	16	1,003	23	76	**2,300**
WWC	14	72	536	10	784	24	54	**1,494**
MWWT	111	123	243	10	326	25	64	**902**
IWWT		5	18		26			**49**
BWD								**49**
SWS								**1,184**
SWWS								**394**
Total	264	485	1,924	44	2,537	86	258	**7,225**

FACILITY CLASSIFICATION for the year 2017

Classification	IV	III	II	I	Other	Total
WT	18	44	135	52		**249**
WD	35	55	177	171		**438**
WWC	12	23	82	105		**222**
MWWT	27	35	120	110		**292**
IWWT	2	1	5	1		**9**
SWS					906	**906**
SWWS					262	**262**
Total						**2,378**

Definitions

WT	Water Treatment
WD	Water Distribution
WWC	Wastewater Collection
MWWT	Municipal Wastewater Treatment
IWWT	Industrial Wastewater Treatment
BWD	Bulk Water Delivery
SWS	Small Water System
SWWS	Small Wastewater System

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