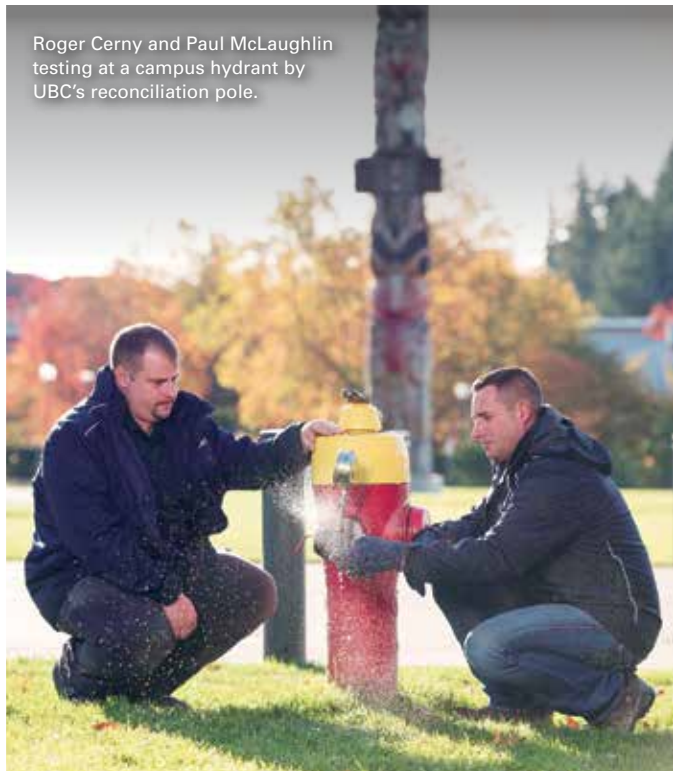




Roger Cerny and Ligia Gheorghita testing water quality at a UBC drinking fountain.



Roger Cerny and Paul McLaughlin testing at a campus hydrant by UBC's reconciliation pole.

PHOTOS COURTESY OF UBC WATER SERVICES

# Steady Under Pressure

How UBC's in-house teams keep campus flowing.

BY CHRIS FREEK, ANNIE MULLINS, YVONNE KWOK, AND ALFIE PENFOLD

**WATER IS A CRUCIAL RESOURCE** at the University of British Columbia (UBC) for basic human needs and to support research and operations. The simple act of turning on a tap to access a safe and reliable water supply is something more than 60,000 students, faculty, and staff depend on each and every day.

Although UBC isn't technically a municipality, in many ways it operates like one—maintaining a vast infrastructure and supplying its own critical services. Managing UBC's water alone is an intricate process and involves staff members from across UBC's VP Finance & Operations portfolio (VPFO). These in-house teams work in concert every day to ensure the university has a clean, safe, and sustainable resource on tap—by procuring, securing, testing, delivering, financially managing, and safely disposing of the university's water.

## Water makes its campus entrance

UBC's water is purchased from Metro Vancouver and sourced from rain and melted snow in the mountainous watersheds that surround the city. Metro Vancouver tests and treats the water, then it travels many kilometres through pipes to the Sasamat storage reservoir in Pacific Spirit Park, adjacent to UBC and about 30 minutes from Vancouver's downtown core.

Water enters the Vancouver campus through two trunk water mains. A pipe 600-millimetres in diameter runs below University Boulevard, and a 300 millimetre pipe enters below West 16th Avenue. The 600 millimetre pipe heads straight for the Power House at 2040 West Mall, where booster pumps increase the water pressure for distribution to the student residences and academic buildings in the north part of campus.

The taller buildings in this zone need their water under higher pressure to reach upper floors in the event of a fire. The 300-millimetre pipe mostly supplies residential buildings and student residences along Lower Mall. Water arrives through the 300-millimetre main at sufficient pressure to service the shorter buildings in this zone. From those two entry points, water is distributed across campus through over 80 kilometres of pipes and service connections.

## Keeping the pipes working and the water flowing

One of the many people involved in maintaining that maze of pipes is Roger Cerny, head plumber for UBC's Energy & Water Services department. Roger, who has more than 15 years of experience on campus, oversees a crew of eight, plus two labourers, to ensure the system stays

in good working order and UBC's spaces can fulfill their mission and purpose.

"I have lots of senior people on my crew, and I'm very, very fortunate to have them," Roger said. "We safeguard our system [and] we protect the drinking water. We're very proud of it."

In addition to the many kilometres of pipes Roger and his team maintain, the distribution system has 2,100 shutoff valves and 440 fire hydrants, each of which needs to be tested annually. The campus also has seven pressure-reducing valve stations and two check valves that ensure water is at the right pressure where it needs to be. And this is all before water even enters our buildings.

To make maintenance of all these components manageable, their locations and status are stored in a database. When Roger and his team test a valve, they use an iPad to scan a QR code on the item and register the inspection. The system continues to be expanded to include the thousands of assets managed by Energy and Water Services, making it easy to find and repair components across campus.

**We're trying to prevent pollution at the source, mostly through education and responding to questions.**

"Anybody who finds a problem with any of our assets, like a fire hydrant leaking, can scan it and we would get that information and be able to do the repairs necessary," Roger said. "It's like we have extra eyes in the field—that really helps us out."

Another vital part of Roger's and his team's work is to maintain the pipes themselves. He estimates that in 2018 alone they removed 2,200 metres of old cast iron water main. These are typically replaced with ductile iron pipes, which are more flexible and less susceptible to corrosion.

Once water enters a building, it becomes the responsibility of UBC Building Operations, another team from the VPFO. Sub-head Plumber Paul McLaughlin, who has been with UBC for 13 years, notes the importance of having an experienced in-house team of

plumbers, engineers, and technicians. "We know how everything works," McLaughlin said. "Everybody knows the buildings, and we know the people within buildings—that's huge."

### **Testing at the tap: Collaborating on domestic water safety**


Ensuring water flows without disruption isn't Roger Cerny's only responsibility. As a certified Level III water operator, Roger is also involved in testing the water to make sure it has maintained its quality after traversing several kilometres of pipes to reach the campus. It's a vital part of the job, and supports the VPFO's efforts to lead operational excellence at UBC.

Every Tuesday, water is collected by Energy and Water Services staff from 16 sampling stations strategically placed throughout the water distribution system. It is then analyzed by a third-party lab for pH level, conductivity, turbidity, and many more parameters to make sure it conforms to Health Canada standards.

Water quality is also a primary concern for Ligia Gheorghita, an environmental protection advisor with the VPFO's Safety and Risk Services department. While Roger and his team sample the water in the main distribution system, Ligia oversees the testing of water inside campus buildings—at taps and drinking fountains.

Twice per year, the water in several buildings across campus is sampled and analyzed. The buildings are typically tested twice in a row, to look for any changes in quality, and rotated, to make sure many buildings get tested. The results are reviewed and compared with Health Canada's current guidelines for drinking water quality and published on the Safety & Risk Services website.

Ligia, who obtained her PhD from UBC in chemistry, has worked at the university for 18 years. She often fields queries about the quality of water in specific buildings and works with the VPFO's Building Operations zone facilities managers to conduct ad hoc testing. Sometimes the results necessitate

**CWWA**  **ACEPU**

**Canadian Water  
& Wastewater  
Association**

**Your Advocate  
on issues of  
National Concern**

**The Voice of  
Canada's Municipal  
Water & Wastewater  
Services**

**www.cwwa.ca**

having fresh water flushed through the pipes, which may be done by Paul and his Building Operations team.

“It’s sometimes a matter of flushing the system, because the building hasn’t been used in some time—if it’s not used in summer or if some construction went on,” Ligia said.

Ligia is also involved in the safety of another key aspect of water at UBC: its disposal.

UBC’s Vancouver campus has what’s known as a split system. Rainwater and melted snow drain into a stormwater system and are diverted back into the natural environment via storm outfalls, while domestic water—roughly 10 million litres per day—ends up in a separated sanitary sewer system when it goes down our drains and toilets.

In the south part of campus, the sanitary sewage pipe travels straight south, while from the north, a sanitary sewer pipe veers north and east along the cliffs above Spanish Banks where it

links up with the Metro Vancouver sewage network. Both ultimately arrive near the airport, to be treated at Metro Vancouver’s Iona Island Wastewater Treatment Plant.

The Iona plant is a primary treatment facility, meaning it removes large materials from the water but is not equipped for more advanced purification. Because the discharge from Iona ends up in the ocean, it’s vital that UBC prevents harmful materials, such as those that may be generated in labs or from research projects, from entering the sanitary sewer.

“We’re trying to prevent pollution at the source, mostly through education and responding to questions,” said Ligia. Researchers on campus who suspect they might have harmful liquids are required to fill out an Aqueous Waste Profile form, which is reviewed by Ligia to determine how to properly dispose of the liquid. She and the team at Environmental Protection are essentially acting as an important filter to prevent harmful substances from ending up in the marine ecosystem.

## Going with the flow: The big picture

Whether it’s maintenance, strategy, or safety, UBC has staff members with diverse areas of expertise who work together to ensure the university has a steady, sustainable, and secure flow of water. The experience provided by these talented crews is vital to the university’s success, as they keep this essential resource flowing on campus. *wc*



**L-R:** Chris Freek, Annie Mullins, Yvonne Kwok, and Alfie Penfold are part of UBC’s VPFO Communications team. They tell stories about the university’s operations and finance groups and support their innovative work through effective communications.



**Canadian Environmental & Engineering Executives Conference**

**SEP. 30 - OCT. 2, 2020**  
**Simon Fraser University**  
**Wosk Centre for Dialogue**  
**Vancouver, B.C.**



## NETWORKING WAS THE #1 REASON TO ATTEND

High value keynote speakers and panelists in conversations of vital interest to you and your peers:

- MERGERS & ACQUISITIONS - OWNERSHIP TRANSITION
- INDUSTRY SURVEY RESULTS & BENCHMARKING
- CYBERSECURITY & DIGITAL EVOLUTION
- LEADERSHIP AND DIVERSITY
- STRATEGIC BUSINESS CHALLENGES
- CORPORATE RISK MANAGEMENT WORKSHOP

CE3C is an exclusive event for corporate executives in the consulting and engineering community to meet, network, and discuss key issues facing the sectors they operate in and serve.

As the only Canadian conference specifically tailored for environment and engineering executives, we invite you to join the 2020 CE3C cohort and be part of this premier gathering of leadership teams from across Canada.

**DETAILS AND REGISTRATION AT [CE3C.CA](http://CE3C.CA)**