



News from  
**Ontario's  
Water Sector  
Champion**

Monday June 9th, 2014

## **New Pipe-Cleaning Technology Gets Validation in the Field**

When customers in the Town of Greater Napanee, Ontario started complaining more frequently about rusty water, it was clear that some watermains in the municipality's water distribution system needed rehab. Red water problems stem from tuberculation in water pipes. Deposits—metal corrosion, biology, mineral deposits—make their way from pipes into drinking water. To increase fire flows and improve water quality, the Town decided that these pipes needed to be cleaned and lined. Several technology vendors offer proven spray-in-place-pipe (SIPP) technologies. The challenge for Napanee was preparing the pipes to be lined.

The Town received just under \$240,000 from the Ontario Ministry of the Environment through its Showcasing Water Innovation (SWI) program for a demonstration project to test an innovative drying process developed and tested at the University of Ottawa.

The SWI program helps municipalities address infrastructure challenges with funding for demonstration projects in drinking water treatment, water conservation and efficiency, and watermain rehabilitation. The funding also gives companies developing new technologies some much-needed testing ground.

"Development is very costly," says Brian Thorogood, P.Eng, project manager at Bracebridge, Ontario-based water technology company **Envirolitics**. "It is often cost prohibitive for start-up companies to demonstrate new equipment and processes in the field, such as cleaning and preparing municipal watermains, without some form of compensation". These funding programs that cover costs are crucial to new technology development and commercialization."

This particular project allowed Envirolitics to develop its patent pending **Tomahawk™** TR1 pipe cleaning system, which it is bringing to market this year after four years of research and development.

In 2011, Napanee contracted Caesar's Infrastructure Systems (CIS) to install ACURO's SIPP technology.

When the contractors found a bitumen lining in the pipes, originally applied to protect the pipes from corrosion, the plan was stalled. "It's common to find bitumen and tar linings in older pipes across North America," says Thorogood. "But you need to remove it before spray lining the pipe to ensure a good bond." It was an unanticipated step in the rehab process. "Working with a somewhat new technology, we knew what we were walking into, we knew it comes with challenges. We had some struggles," says Peter Dafoe, director of utilities and public works construction for Napanee.

In search of a solution, CIS brought in Envirolitics. “When Envirolitics came, the efficiencies started,” says Dafoe.

“You can’t line until you dry, and that takes time, but the Tomahawk dries the pipe quickly,” explains Thorogood. Envirolitics’ Tomahawk pipe cleaning system is unique because it’s a dry process. It also cleans the pipe in a closed system. By using negative rather than positive pressure to blast stone through the pipe, Envirolitics is able to contain the debris that is removed. “Instead of blowing all the junk out the back of the pipe, we now use a vac truck—something all municipalities have—and it pulls the air and abrasives through the pipe and the truck captures the debris,” says Thorogood. This dry system, which uses an airstream instead of water, conserves the tens of thousands of gallons of water that older technologies require.

The project was wrapped up in 2012 and deemed a success. ACURO estimates that the cleaning and lining of these watermains has extended their life by up to 70 years. The Town has noted significant improvements to chlorine residuals and an increase in NFPA-related fire flows. Customers in affected areas say they no longer run their taps to eliminate red or “rusty” water. It’s unclear whether the structural integrity of the infrastructure has improved; there have been two watermain breaks since the project was completed, but they were determined to be an operator error.

Dafoe says chief among a long list of lessons learned during this project is the importance of effective pipe preparation. The project was already underway before the pipe drying technology they’d planned on using had been perfected.

Napanee took away some valuable lessons, but so did the project hero. The R&D accomplished through this project was invaluable, says Thorogood. “As a result of this project, our technology has changed dramatically. Now we could do that same job in half the time.”

“We’re an enabling technology; we allow SIPP to be successful. We’re now co-developing our own lining system with help from CATT and the University of Waterloo,” says Thorogood. Last year, proof-of-concept tests showed their technology can be used to quickly coat a pipe wall. “Now that we’ve verified the process, Madison Chemical has joined and will develop the polymer that lines the pipes,” says Thorogood. “We’ll have a low-cost cleaning and water quality lining solution.”

Envirolitics is also developing another problem-solving technology, it just needs a test site in Ontario.

“Not too many people want to be the first to try a new technology—there’s an aversion to risk, and for good reason,” says Thorogood. But without opportunities to test new innovations, some beneficial tools will never make it to market. “We need that validation in the field.”

Thorogood says the role Napanee’s project played in the technology’s development can’t be underestimated. “That project really kicked us in a whole new direction. If we hadn’t been given the opportunity to do that work in the real world, we wouldn’t be where we are today.”

See more at: <http://www.watertapontario.com/news/blog/envirolitics-pipe-cleaning-technology/75#sthash.8LDVzcsY.dpuf>

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