

Addressing Private Property Infiltration & Inflow Without Going Onto Private Property

s public municipal entities, we know the mantra well: "Public money can't be spent on private property."

How often has that or something similar been said?

When looking holistically at the sanitary sewer

(collection) system, however, about half of the total length of pipe may be found on private property, and according to the US Environmental Protection Agency (EPA), that pipe can contribute up to 40% of the overall infiltration and inflow (I&I) to the system.

So, wouldn't it make sense to try to address private property I&I?

Unfortunately, many utilities usually do not attempt to address these issues due to any number of reasons-the most important of which is often that public entities often have (or perceive) legal constraints regarding paying for work that unduly benefits private entities. And that's where it ends: Utilities are dealing with inordinate amounts of clean water sources originating



from private property and designing and constructing mega-projects to address these issues.

ENLARGING THE AREA OF FOCUS

For Avon Lake Regional Water-a midsized water and wastewater utility serving Avon Lake, Ohio, and surrounding areas that is governed by an independently elected board-2011 helped reframe the problem in order to come up with new solutions. That year was the wettest year on record and included five different events that led to basement backups. As one can imagine, customers were demanding results.

As staff were trying to reassess what might have changed-aside from the weather-a stormwater expert suggested that the inflow could be coming from private CLEAN WATER ADVOCATE Winter

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property and convinced staff to undertake a pilot project on one street where the consultant's company would simulate rain events and Avon Lake Regional Water would have video cameras in the sanitary sewer. The area was formerly a combined sewer area. In Avon Lake, when sewers were separated in the past, though customers were required to prevent downspouts, yard drains, and driveway drains from entering the sanitary sewer, they were not required to prevent foundation drains from discharging into their laterals that used to be connected to the combined sewer and would then be connected to the sanitary sewer upon separation.

Pilot testing showed that the foundation drains were an immediate inflow source and contributed to sewer surcharging and basement flooding. This led Avon Lake Regional Water and its governing board, the Board of Municipal Utilities, to change its regulations and require customers to prevent all clean water sources from entering sanitary laterals, including foundation drains. To complement this, the City Council passed a Resolution of Necessity, which put the force of law behind the requirement to prevent clean water from entering the sanitary sewer. Additionally, as sewer separations progressed, no houses were allowed to connect to new sanitary sewers until it was proven that all clean water sources were not connected to the sanitary

lateral. The houses remained connected to the combined sewers and were required to remove all sanitary wastes from those combined sewers by a certain date when those sewers were to become storm sewers.

With the memory of basement backups, few people complained about the new requirement. Additionally, the Board of Municipal Utilities made it easier for customers by providing them with \$1,000 in wastewater bill credits over a tenyear period if they separated their clean and dirty water sources, ending up with storm and sanitary laterals connected to their respective sewers. This led to a number of customers undertaking the work.

A WIN-WIN-WIN

Initially, progress was good regarding inspections of customers' homes to determine if clean water needed to be removed from laterals, and a number of customers undertook lateral separations. However, the data also showed that not enough people would undertake the necessary work before the required deadlines.

Avon Lake Regional Water had been hearing from some customers that even with the \$1,000 credit, they could not afford to pay the \$3,000 to \$4,000 to separate their laterals. Avon Lake Regional Water investigated options for helping customers

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get the money. Unfortunately, the available grant money (Community Development Block Grant Program funds) was very quickly used for the neediest of residents. Luckily, with the support of the Board of Municipal Utilities, staff approached Ohio EPA with great interest in piloting a new type of revolving loan.

Ohio EPA offered Avon Lake Regional Water a loan in order to allow the utility to establish

its own revolving loan program for its customers. With money provided by Ohio EPA, Avon Lake Regional Water would loan its customers the money they needed for their lateral separations. Avon Lake Regional Water allowed customers to select a contractor and arrive at an approved price. Once the contractors

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do the work and both customers and Avon Lake Regional Water approve it, Avon Lake Regional Water pays the contractors. Customers repay their loans through their quarterly water and wastewater bills, and Avon Lake Regional Water uses this money to repay its loan from Ohio EPA.

The loan program–which recently received an honorable mention in the EPA's 2018 PISCES Awards–is a true win-win-win situation: Avon Lake Regional Water is better able to comply with its Long-Term Control Plan, customers are able to address private property issues such as the frequent failure of laterals due to root intrusion, and Ohio EPA benefits–along with the entire community–from a cleaner Lake Erie.

As of the writing of this piece, the program has been in existence for nearly two-and-a-half years. And during that time, approximately 350 customers have executed loan agreements, and Avon Lake Regional Water has committed more than \$1.2 million for loans to these customers.

THE FUTURE IS LARGER AND BRIGHTER

The Lateral Loan Program established by Avon Lake Regional Water and its Board of Municipal Utilities, with the help of Ohio EPA, has met the needs of the utility, the regulatory authority, and customers in a way that does not affect rates. Wet weather testing and sewer modeling have shown that wet-weather peak flow reduction during sewer separations has improved by 10% during

> the sewer separation process –i.e., from an 85% to a 95% reduction in peak flow–due to the requirement of foundationdrain disconnection from sanitary laterals. In Avon Lake, that means an additional 640,000 gallons are prevented from entering the sanitary sewers during a ten-year storm event. This reduces the chances of basement backups and/or overflows

into Lake Erie and keeps capacity available for future growth.

As a service organization with the guiding principles to lead by influencing change and leave a lasting legacy for future generations, the board and staff of Avon Lake Regional Water wholly believe that this program has a tremendous benefit for our customers, our community, and the environment.

Todd Danielson is the Chief Utilities Executive for Avon Lake Regional Water, a water and wastewater utility on the shores of Lake Erie treating water for approximately 200,000 people and cleaning wastewater generated by 30,000. Prior to joining the organization in 2010, he helped Loudoun Water (Virginia) with policy, design, and operation of community-based water and wastewater systems.