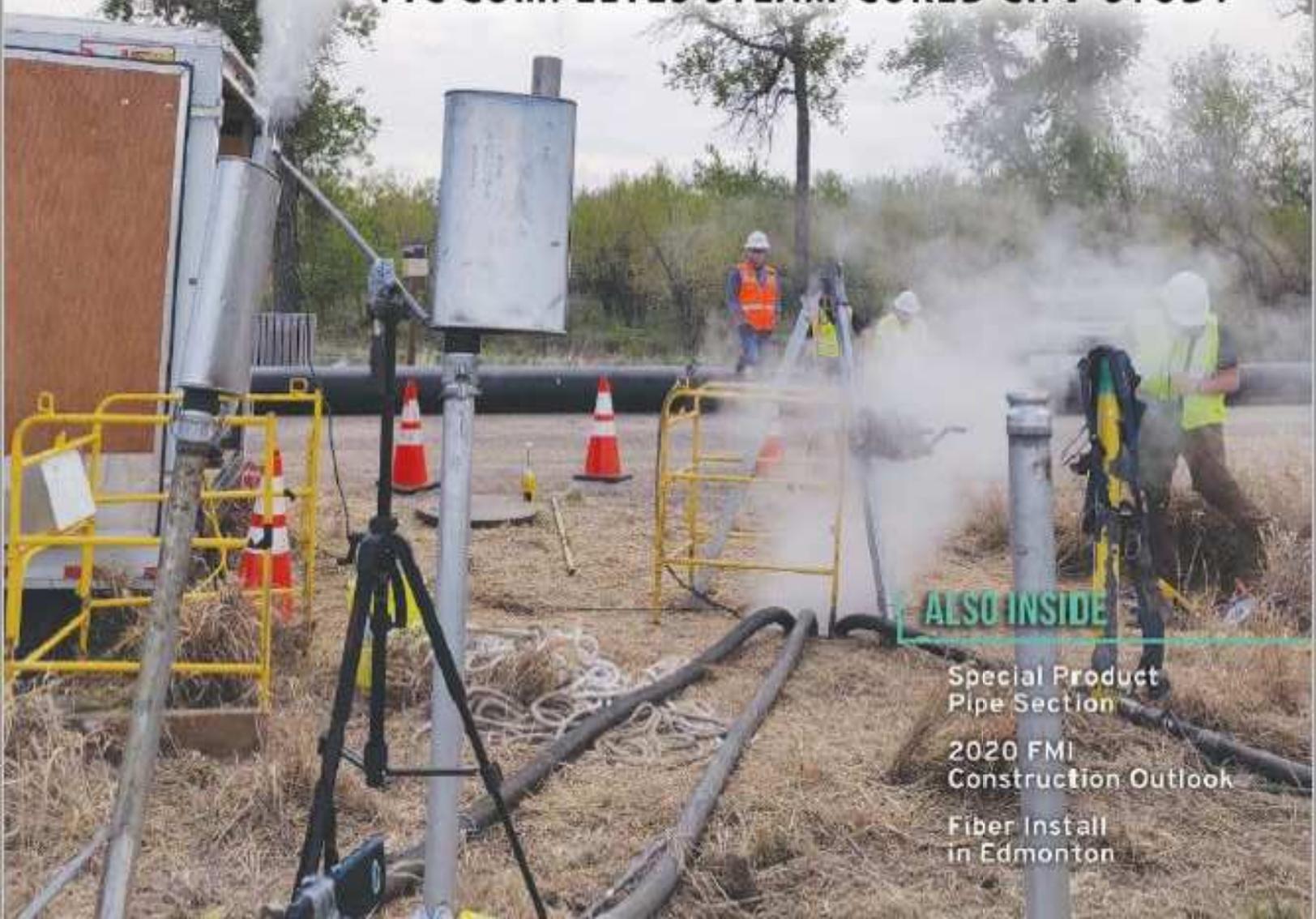


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ECUA RECOGNIZES IMPORTANCE OF LATERAL REHAB IN I/I REDUCTION

BY TIM MATHESON

Pensacola, Florida! Synonymous with white sandy beaches, blue water of the Gulf of Mexico, the Blue Angels, and world class saltwater sport fishing. The water along the Emerald Coast of Florida offers locals and visitors almost endless opportunities for outdoor enjoyment. But there is another water source that is present in the Florida panhandle that costs millions of dollars annually and goes virtually unnoticed by tourists: Infiltration and Inflow (I/I). Infiltration happens when groundwater enters into sewer pipes through areas such as holes, cracks, joint failures, and faulty connections. Inflow occurs when water enters into sewers through roof drain downspouts, foundation drains, storm drain cross-connections, and holes in manhole covers.

The Emerald Coast Utilities Authority (ECUA), the sewer provider for Pensacola, absorbed multiple smaller utilities in the 1980s, increasing their collection system to 1,225 miles of sewer lines that service over 70,000 customers. Many of these acquired utilities included sewer lines that have been around for 100 years, making it one of the oldest sewage collection systems in the state of Florida. Unfortunately, the ECUA also inherited a great deal of I/I as a result of these aging pipes.

ECUA contends with sanitary sewer overflows (SSOs). These overflows are of particular concern along coastal regions where sewage spills can result in environmental as well as human health problems. Florida ranks fifth in the U.S. in annual rainfall, which only increases the I/I challenges the ECUA faces to reduce SSOs. [Note: Pensacola experienced over 20 in. of rain in a 24-hour period in April 2014].

The ECUA was issued a Consent Order in 2012 from the Florida DEP requiring a comprehensive evaluation of the sanitary sewer collection system by 2017 to address SSOs. The comprehensive evaluation was completed, and the Consent Order was subsequently amended in March 2019. The amended Consent Order requires completion of major repair projects within 10 years of a corrective action plan approved

by the FDEP. A corrective action plan was submitted to FDEP in June 2019. However, rather than delay critical action, ECUA has been attacking sewer basins that have historically had a large number of SSOs simultaneously with the completion of their comprehensive evaluation.

An internal Sewer System Evaluation Survey (SSES) has been conducted by the ECUA for portions of its collection system that included smoke and dye testing, flow monitoring, manhole inspection, closed circuit television (CCTV) inspection, and night-time flow measurement to identify the primary sources of I/I. The Pen Haven/Myrtle Grove, Cantonment, and downtown Pensacola areas, all containing some of the oldest pipes within the system, contained the highest concentration of I/I and were the areas the ECUA focused on first. The capital outlay is often the primary concern when designing a rehab project, but the ECUA also took into consideration the long-term return on investment, which is oftentimes overlooked. Reduction in energy costs of pump stations alone, which are a critical component of a complex system in a flat coastal terrain like Pensacola, would be significant.

Cured-in-place pipe (CIPP) is one type of pipe rehabilitation process that has proven extremely effective in reducing infiltration with millions of feet installed. Municipalities have historically focused on the main line for infiltration reduction, but it was determined in the 1990s that service laterals were a major source of I/I. ECUA engineer Stacy Hayden, P.E., observed this first-hand. ECUA conducted flow monitoring prior to CIPP main line rehabilitation in the downtown Pensacola area. Flow monitoring conducted by ECUA proved that while flows were reduced after main line CIPP rehabilitation, there was still a significant opportunity to further reduce extraneous flows by addressing the service laterals.

The ECUA contracted with BLD Services, LLC from Kenner, Louisiana to conduct a test area to further determine the impact that CIPP lateral lining has on the reduction of I/I. "We wanted to make sure that the product and process that we used for testing the ef-



fectiveness of lateral lining was proven," said Hayden. The ECUA requires that a product be in service for a minimum of two years before being approved to work within their system. BLD was subsequently added to the approved list of contractors and materials due to their vast experience, crew capabilities, and their product being in successful service. In some areas of ECUA's collection system, the BLD lateral lining system has now been in service for more than 10 years.

Steps such as sealing manholes, repairing lift stations, and rehabilitating main line/service lateral pipes with CIPP showed immediate benefits. In two sewer basins, namely A4 and A4A, the data from average daily flow (ADF) after rehabilitation was reduced by 0.57 mgd or 58 percent. More impressive, the base infiltration (BI), the infiltration that is already, to some extent, present year-round in the system on dry days prior to a rain event was reduced by 0.39 mgd or 81 percent! Projected yearly savings of \$400,000 or more are expected for the A4/A4A basins based on the average daily flow reduction of the monitoring period of 0.57 mgd.

The ECUA has recognized the many benefits of rehabilitation, both main line and laterals, by first-hand experience from the results of pre- and post-rehabilitation I/I data. The ECUA is confident that their system improvement plans are justified by not only addressing main line rehabilitation, but also the service laterals to ultimately reduce I/I and the overflows that Pensacola has experienced.

Tim Matheson of BLD Services LLC is a member of NASSCO's Lateral Committee. Photo courtesy of Laura Bogan Photography.