Feeling Exposed? How Arlington Water Utilities is Utilizing Geomorphology to Protect Sanitary Sewer Mains From Creek Erosion – PART 2

Abstract Summary:
This method documents channel reconnaissance conducted at 138 pipeline stream locations. Each crossing was evaluated to estimate the risk that condition and erosion presents to the pipeline. The crossings were then prioritized to identify the top locations in need of attention. Solutions are being implemented on the prioritized sites.

Full Abstract:

The City of Arlington has experienced tremendous population growth over the past 50 years, more than quadrupling in size since 1970. The rapid development and urbanization in the City and surrounding areas has impacted the watersheds and streams that flow through the City. The City has over 700 water and sanitary sewer pipelines that cross or parallel these streams and rivers. Watershed development has led to increased stream erosion, which presents challenges to the protection and maintenance of vital infrastructure such as water and sewer lines.

The City had an asset work order list with 169 pipeline segments with existing concerns which the Field Operations routinely assesses after a significant rainfall. The City reviewed these segments and narrowed down the list to 138 pipeline crossings requiring regular assessment. The City contracted with FNI to investigate these locations, make an evaluation of stream stability and the risk to pipeline infrastructure, and identify the ten areas in most critical need of action and propose potential solutions.

The Erosion Risk Pipeline Project is the first of its kind for the DFW Metroplex. This study took a multidiscipline approach by utilizing expertise across the company to deliver a project that incorporated science, planning, and engineering and ultimately leading to a design project of multiple locations across the City of Arlington. The project assessed 138 pipeline locations and developed design alternatives for the top ten priority areas in under four months. This erosion risk pipeline study led to future design work. The City now has a prioritized list to focus their funding. The City has selected five of the 10 areas to repair this year. A more definitive condition assessment resulted in a sense of urgency to repair known location to minimize the risk of pipeline failure, the goal being to minimize pipeline breaks and the resulting public health and environmental hazards.

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