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Public Utilities embraces creative technique to extend infrastructure's life

HARRISONBURG, Va. – You've likely heard the phrase "sacrificial lamb" before. But how about "sacrificial rod of magnesium"?

At the Harrisonburg Department of Public Utilities, a technique more commonly adopted by natural gas companies is now being put to good use for the first time by a water service provider in our region. Public Utilities crews recently installed magnesium anode rods – which in short are 6-foot-long, 40-pound sacks of the chemical element – to take the brunt of the damage from corrosive materials found in some soils.

With a wire connecting the anode to a nearby water line, corrosive elements will be drawn to the softer magnesium instead of the ductile iron water line – sparing the water line from much of the corrosion that leads to breaks and disruption in service. Test stations located on the surface will allow Public Utilities crews to monitor the deterioration of the magnesium and replace it as needed.

"Replacing an anode such as this is much easier than replacing or repairing a water line," Public Utilities Field Utilities Superintendent Mike Higgs explained. "This line where we have installed the magnesium anodes was placed in the 1970s in an area we later determined through study to be a critical area of corrosive elements. We've had multiple breaks on this line and had to replace some 600 feet of pipe in the past, with a break costing as much as \$50,000 or more once you account for the damage it can cause to area roadway or landscaping. Replacing an anode instead is not only more cost effective, but can be done with no disruption of service to area homes and businesses."

The life of the anode depends on the corrosiveness of the soil around it. Public Utilities will monitor this project to learn more about the process and how it could benefit other water lines across the city that are impacted by corrosive soils. Public Utilities Engineer Micaela Cummings, who served as the project manager for this effort, said that while this pilot project involved 10 anodes on 180 feet of pipe, the effort could soon be expanded to as much as 9,000 feet of pipeline.

Learn more about the work of Harrisonburg Public Utilities at www.harrisonburgva.gov/public-utilities.

The City of Harrisonburg is centrally located in the Shenandoah Valley of Virginia. It is home to 51,000 people. More information about the City of Harrisonburg is online at www.HarrisonburgVA.gov.



(Above) Harrisonburg Public Utilities Technician II Lincoln McQuillan welds a line connecting a water pipe to a magnesium anode.