

DISTRICT INFRASTRUCTURE SUSTAINABILITY ADVANCEMENTS

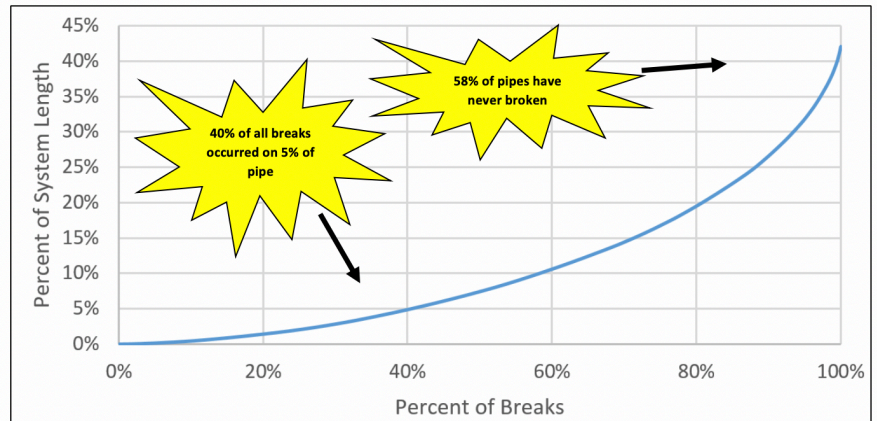
Rainbow Municipal Water District (RMWD) is making great strides in protecting water mainlines from corrosion. One of the root causes of many mainline breaks in the District is the combination of high pressure and corrosion. The combination of both has played a part with mainline breaks over the years but that is about to change. Focusing on the areas with both conditions present maximizes the effectiveness of District pipe replacement programs. The District has hired HDR Engineering, Inc., national experts in this field, to help research and develop the District's Corrosion Protection Program (CPP).

The District maintains over 320 miles of pipeline situated in rocky terrain, areas of highly corrosive soils and hilly topography. As you may be aware, a majority of our pipelines are already beyond their design lifespan of 50 years. Therefore, one of the District's primary goals as infrastructure ages is to cost-effectively sustain desired service levels. To accomplish this, the District has initiated this effort to continuously improve the way distribution infrastructure is managed.

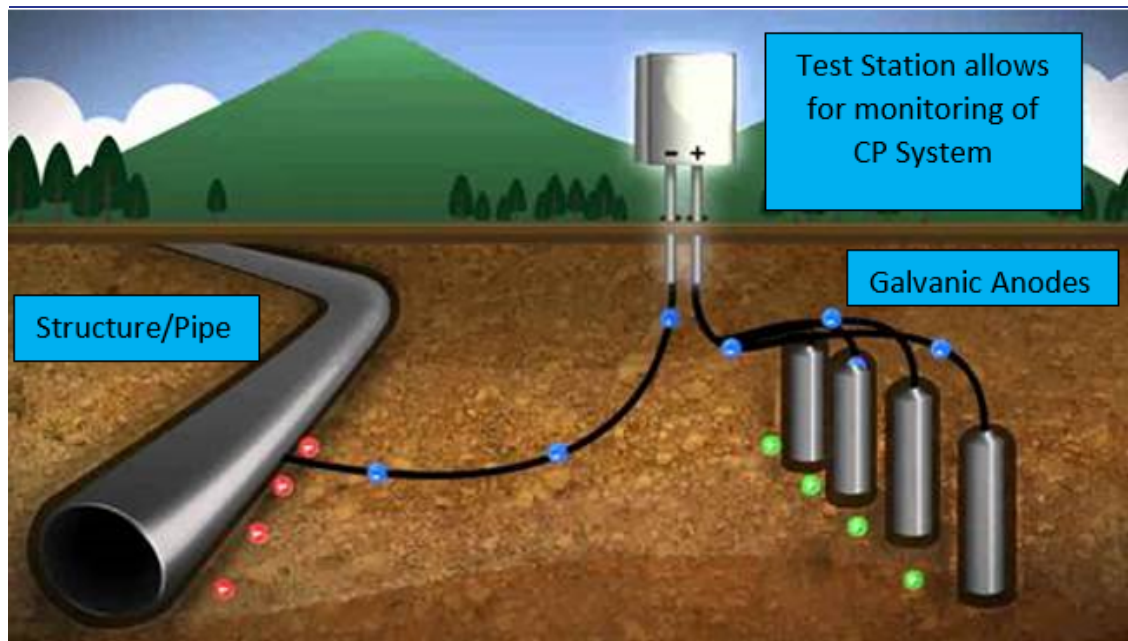
District data shows that 40% of all breaks have occurred on only 5% of the system while 58% of the system has never experienced a break. As mentioned earlier, many mainline breaks are associated with areas of high pressure and corrosive soils. Corrosive soils may include soils with high moisture content, high electrical conductivity, high acidity, and high dissolved salts that will accelerate metal corrosion. Cathodic protection is a technology that can protect pipes from corrosive soils by connecting sacrificial metal to the pipeline that will corrode in place of the pipeline.

A Small Percentage of Pipes are Responsible for Most Breaks

The District has focused its efforts on developing and implementing a comprehensive CPP to extend the useful life of linear buried infrastructure, improve system performance, and save money. The CPP will include installation of CP stations, soil corrosivity evaluations, procedures for corrosion protection repairs, and updates to District standard specifications and details. The CPP meets the District's strategic focus area of asset management and fiscal responsibility by enhancing the District's ability to prioritize corrosion protection projects. Moreover, the CPP will compliment ongoing efforts in other areas such as pressure management, condition assessment, and renewal decision making to provide the greatest return on investment for our ratepayers.



Here is a diagram of cathodic protection. This technology allows the anode to corrode in place of the water pipe. The test station allows us to check if the anodes are still working or if they need to be replaced on an annual basis.



The District recently held a training session for its crews on how to collect soil and pipe samples during mainline breaks for corrosion analysis. Collecting samples when a pipeline is already exposed for another reason (e.g. break, service tap, valve replacement), provides a unique opportunity to collect valuable condition assessment data opportunistically at a fraction of the cost and without further disrupting the community. The data collected from these efforts will be used to increase the District's confidence with fixing the right pipes, at the right time, using the right technology to ensure the greatest return on investment for ratepayers.