

KRWA Purchases New Equipment for Leak Detection

While the Kansas Rural Water Association has always had various types of equipment to assist with leak detection, KRWA recently made the decision to upgrade to new leak detection equipment. Previous leak detection equipment has been instrumental in finding numerous leaks for cities and RWDs for many years. Due to newer technology becoming available and the older equipment slowly becoming obsolete, the decision was made to upgrade. The new equipment has newer technology that will allow KRWA to assess and find water leaks without interruption.

When determining there is a possible leak, a technical assistant will start at the master meter. The master meter should be tested for accuracy to determine if there is a possible leak. KRWA recently purchased new Sensus OMNI V2 test meters. This meter has the capability to test flow rates from 0.5 to 500 gallons per minute. It has a pressure gage to measure line pressure. It is imperative to maintain a minimum of 20 PSI to ensure an accurate test. Lack of accurate PSI will result in an invalid test. A minimum of a 25-foot fire hose must be attached to the outlet of the meter to be tested and connected to the upstream inlet of the test meter. Once all hoses are connected the technician can now proceed with a field test. A field test will consist of a minimum of three flow tests. Depending on the flow rate the technician can then determine the amount of water that will be needed to run through the meter to ensure accurate readings. The amount of water needed can be measured in gallons or cubic feet, however the Sensus meter measures only in gallons.

The next piece of equipment that KRWA invested in was the LD-12 Professionals Plus Water Leak detector. This device is used to listen for potential leaks. The strengths of this device are that it can detect leaks very well under hard surfaces such as concrete, brick streets, and sidewalks. However, over a softer surface such as grass and dirt other techniques may need to be used in conjunction with the listening device to ensure a more accurate reading.

The sounds of leaks in pressurized water pipes can travel for hundreds if not thousands of feet in every direction down the mains and surfaces. If no evidence of



KRWA Tech Tony Kimmi listens to a fire hydrant as part of a water loss survey.



KRWA has upgraded some leak detection equipment such as this LD Professional Water Leak Detector.

a leak is visual such as water surfacing, then a technician will have to compare loudness of leak sounds at the meter's valves and hydrants. Typical maximum distance for transmission of leak sounds for instance 6-inch cast iron pipe is 600 to 1,000 feet. The typical max distance of leak sounds on a 6-inch PVC pipe is 200 to 300 feet. The knowledge of pipe material and diameter is important to know how far the sounds of a leak may be transmitted along the pipe.

When conducting a water loss survey, the KRWA technician will find two meters, valves or hydrants with the loudest leak sounds and then the technician will be able to "pinpoint" the leak. The water leak detector will then be used to listen every two to three feet directly over the pipe.

The LD-12 leak detector has three low filters and three high filters. These filters are used to filter out noises that are not caused by a leak such as overhead electrical lines, traffic noise, and

other environmental noises. From a personal perspective certain noises such as dog barking or people talking cannot be filtered out. Wind can also become an issue during a water loss survey. Wind can mimic the sound of any type of leak and it is best to attempt to find the exact location of a leak on a day where wind is not a factor. If listening for a leak is unavoidable on a windy day it is recommended that the technician block the wind flow around the sensor cable by utilizing his body as a wind break.

The new equipment that KRWA has invested in has proven to be a benefit to the technical assistants utilizing this equipment in leak detection as well as a benefit to the water systems across Kansas as leaks can be assessed on a more accurate level.

Water Loss Surveys Conducted by KRWA . . .

KRWA has recorded water loss surveys that the Association staff have conducted since 1989. Every location of every leak pinpointed, plus the cost of the water for that system and the gpm combine to provide an accounting of what KRWA staff been able to accomplish working with cities and RWDs across the state.

	FY 17	FY 18	FY 19	FY 20
Number of Surveys	170	199	161	152
GPM detected	634.75	594.50	536	579.50
GPY detected	333,624,600	312,469,200	285,663,600	304,585,200
\$ Cost Savings	\$1,321,329	\$950,605	\$827,883	\$915,148



New Sensus meter with digital readout

The chart shows that in the most recent full state fiscal years, KRWA conducted 682 water loss surveys, locating 2,344 gpm with a cost savings of \$3,073,866. Note also that KRWA reduces any emergency leak by 50 percent or more for reporting purposes. Much of the work concerning water loss is funded through a contract administered by the Kansas Water Office and operated by KRWA. The funding is a benefit of the Clean Drinking Water Fee.

Tony Kimmi has worked as a Tech Assistance for KRWA since October 2009. He has extensive experience in the operation of construction equipment. He has assisted in the



construction of several rechlorination stations and ongoing monitoring of water quality issues. Tony enjoys providing assistance to public water systems.