

Addressing Water Loss and Leak Detection Requires Good Equipment and Experience Helps



This leak was located and exposed in Dickinson County RWD 2. Having good equipment helped KRWA staff and district operators with the location.

Water loss? What is it? Water loss can be a significant factor that affects both water delivery and loss of revenue, and more importantly, the loss of a valuable resource. Unaccounted for water loss can be a huge issue for municipal and rural water systems. Water loss can result in problems such as over-pumping of water rights, and certainly, loss of revenue. The Kansas Rural Water Association provides assistance to hundreds of water systems annually to help track and locate unaccounted for water loss.

Contributors to unaccounted for water loss include inaccurate metering, un-metered services, overflowing storage or leaks in the distribution system. Incorrect bookkeeping can also be a contributor. If water loss is a chronic problem, let's begin with testing master meters. The Association provides a no-cost service to test meters on wells or at points of entry and residential meters. It is common for a larger production meter to over-register due to the method in which it was installed. The quality of the water sometimes is also a factor. It is not common for a residential or positive displacement meter to over-register. Those meters tend to slow down or under-register. These two factors automatically contribute to water loss.

In the perfect world, leaks from water distribution systems would surface, an excavation would be made and the pipeline would be repaired. The perfect world does not

exist. Many leaks never surface. The Association has some great equipment and staff members who are proficient working with public water systems. The equipment operated by KRWA staff includes sound loggers, leak pinpoint correlators, leak detection equipment, certified meter testing equipment, ultrasonic strap-on flow meters, and more. One of the greatest assets KRWA has is the decades of experience that KRWA staff have in helping water systems locate and correct unaccounted for water.

Examples of two recent water loss surveys

Dan LeDuc, operator for the city of Clyde, Kansas, contacted me to request assistance with locating a possible leak in the city water distribution system. The request was made on November 6, 2019 and I responded to the call the same day.

The city of Clyde is located in Clay County in north-central Kansas. The city uses groundwater as a supply; the system provides continuous disinfection; the operator is certified and is full-time.

Dan and another city operator had noticed an excessive amount of water coming out of a storm drain and flowing into a creek. There were no visible leaks in the area and nothing in the inlets upstream.

I was able to utilize a new leak detector, a SebaKMT HL7000 that was recently purchased by KRWA, to identify a leak on a four-inch main, upgrade of the storm drain. Unable to pinpoint the leak that

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afternoon, I returned the next day to continue the work to pinpoint the leak. With the use of the SebaKMT HL6000 pinpointing correlator and the ground mic on the HL 7000, I was able to pinpoint the leak. The leak was estimated to be more than 20 gpm coming out of the storm drain. The usage at the water plant had significantly increased the day before. After repairing the leak, the flow from the storm drain ceased which verified this was the leak. With the cost of water at approximately \$2.00/M, and with the leak totaling a loss of more than 28,000 gallons per day, the annual cost would be more than \$20,000.

On Monday, August 12, I was contacted by Jeremy Reiff, Operator at Dickinson County RWD 2, for assistance with water loss.

Dickinson RWD 2 serves more than 600 rural customers. The source is groundwater purchased from the city of Abilene. All users are metered. The operator is certified and is full-time.

Jeremy and his assistant had been looking for a leak all weekend after customers called, complaining about low pressure. After checking the booster pump stations and master meters, Jeremy calculated that the system was pumping close to 100,000 gallons per day more than normal. Jeremy was able to isolate the leak to a three-mile stretch by listening to the flow through valves. Walking the entire line and excavating approximately 600 feet of pipeline, the district was still unable to locate any leak.



Tracking down water loss in rural water districts can be challenging. There are often long distances (several miles or more) between valves. SebaKMT recently donated this ultrasonic strap-on meter. It has been a great asset in locating leaks on pipelines where leakage is isolated within valves but still leaving miles to try to locate the leak. Creek crossings are a common place for leaks to go unnoticed. With the strap-on meter, the line is exposed; a check is made with the strap-on meter on both sides of the creek crossing without ever interrupting service or flow. Without the strap-on meter, the pipeline would need to be shut down and a new valve installed on the up-stream side, and then pressure test the line again at the main valve.

I suggested to pot-hole the line in a couple of areas on either side of a road and creek crossings to verify possible locations of the leak. Using the Association's ultrasonic strap-on meter, we were able to determine a 40-gallon per/min leak under a road crossing. The leak was located at the edge of a roadway at a bore connection.

The district staff was impressed with the performance of the meter technology. The following week, the district's governing body approved the purchase of a similar but less expensive meter to assist in detecting leaks to reduce future district costs and loss of water. With the cost of purchased water being more than \$2.00/1000 gallons, the savings will be significant in finding and repairing water loss quickly.

In Closing ...

Many water systems have problems with high unaccounted for water loss. Kansas Rural Water Association provides a no-charge service to assist systems with leak detection, meter testing, and more. My suggestion is when a system has problems, please don't wait until the storage tank is empty to call. KRWA staff members are ready, willing and able, 24/7, 365.

Greg Metz joined KRWA as a Technical Assistant in July 2009. He previously worked at the city of Washington for 13 years where he was involved in city utilities including the power plant, streets, water and wastewater. He also served as purchasing agent for those utilities.



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