by Greg Duryea, Technical Assistant

Reducing high unaccounted for water loss – an ongoing effort by systems with KRWA's help

Since 1992, Kansas Rural Water Association has operated a contract, "Technical Assistance to Public Water Suppliers", funded through the Kansas Water Plan. Administered by the Kansas Water Office, one portion of the contract provides funding to assist public water systems that have high unaccounted for water loss. They are flagged as "Special Focus" projects. When unaccounted for water loss is at 30% or more, yes, that's high! Beginning July 1, 2008, the Kansas Water Office also identified systems that had a zero or negative water loss.

Where to begin?

Working with many Special Focus projects can be challenging for KRWA staff – as well as the systems. Those systems that have a negative water loss have the possibility of a couple problems. It's likely to be inaccurate metering. So, the water district is selling more water than it is purchasing? That's maybe what's happening on paper – but it's impossible in reality. KRWA finds many master meters that have slowed down due to age and wear. The meter is simply not registering all the flow. The easy fix is to replace the meter.

Of the 44 systems that were identified for assistance in Fiscal Year 2008, 12 systems had either a zero or negative water loss. The remaining 32 had unaccounted for water loss greater than 30%.

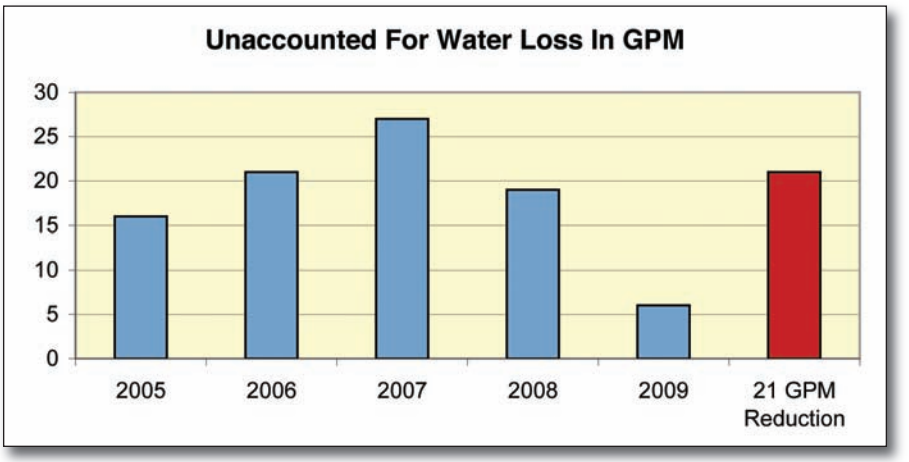
Then there's a turn of fortunes. The purchasing system now has an increased water bill from its supplier and the system also has an increase in the unaccounted for water loss.

Everything is not so simple for those systems that have a true water loss problem. Generally, high water loss can be attributed to several fairly common factors. Of the 44 systems that were identified for assistance in Fiscal Year 2008, 12 systems had either a zero or negative water loss. The remaining 32 had unaccounted for water loss greater than 30%. The calculations were based on information the water systems provided on their 2007 Municipal Water Use Report filed with the Department of Agriculture, Division of Water Resources.

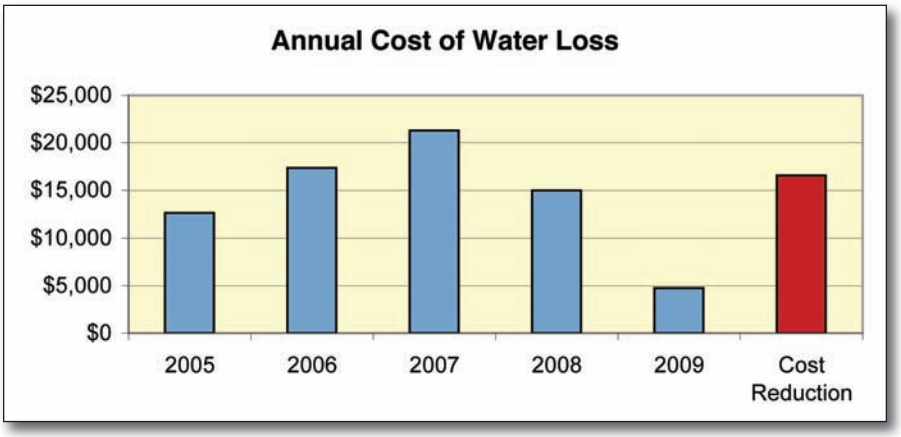
There were 19 water systems that made significant improvements in reducing the amount of unaccounted for water. In order to be removed from the Special Focus listing, the system must reduce the amount of unaccounted for water to less than 20% for two consecutive quarters. While this may not sound to difficult to accomplish, in some systems it only takes one leak to cause large fluctuations in the percentage of loss. This means that the system will need to perform satisfactorily another six months with a water loss percentage less than 20%. The 19 systems that were removed from the listing continue to work to reduce their water loss. It is a never-ending battle for some systems.

At the end of FY08 there were 25 systems that were still working to reduce the water loss. Improvements have included replacing miles of pipeline that had leaking glue joints or poor materials. In some cases, overflowing tanks contributed to the losses. In others, incorrect metering was the fault.

One system that had a high water loss was the city of McDonald. During one recent quarter, the city was losing 80% of the water it was producing. The main problem that the city has is leaks that do not surface in the sandy soils



A water system in north-central Kansas was able to reduce its water loss from 27 gallons per minute in 2007 to 6 gallons per minute in January 2009. In the summer 2008 this system was losing 41 gallons per minute before two leaks were located and repaired.



In 2007 this system spent $21,286 or $1.50 per thousand gallons to produce the water that was lost due to leaks. If the system is able to maintain a water loss less than 6 gpm a potential savings of $16,556 will be realized.

present in McDonald. KRWA worked with Bruce Nickel to locate the cause of the high water loss. KRWA personnel were able to detect leakage on the north portion of the distribution system but were not able to pinpoint the leak. With additional assistance by Jim Grimes with Metrotech Corporation, two leaks were located and repaired. Jim used data loggers and a leak correlator to pinpoint the leaks. Repairing these leaks made an immediate impact on the amount of water being pumped daily. The two leaks totaled 30 gallons per minute. By repairing these, the city not only saves money on the power to operate the pump unnecessarily, but also the cost of chemicals – needless to mention not wasting the water. The city is replacing those sections of waterlines that have been prone to leakage.

Seepers don't stop

It is difficult to understand why water loss is sometimes allowed to go on and on without correcting the problem. One small town has known the location of a water leak since July 2008. As of January 14, 2009 the leak has yet to be repaired. Why? The reason is that the council does not want to spend money that it does not have to hire a contractor with a backhoe to repair the pipeline. Several years ago, KRWA staff hand-dug and repaired a leak for the same small town. Now readers may suggest that it is a sad commentary to not make the investment to repair the leak – but also consider that the leak is a seeper and the cost of repairing it is significant for this small place that is virtually penniless.

There are 36 systems flagged as Special Focus projects in the current contract period. Of these 36 systems, there are 19 new systems listed that had a water loss percentage greater than 30% based on the 2007 water use data. Interestingly, eight of the new systems had a water loss of less than 20% in 2006.

Of the 36 systems, 18 of these systems were on the list in the prior period. The Special Focus projects for 2009 are: Butler RWD 2, Cherokee RWD 1, Cherokee RWD 3, Barnes, Baxter Springs, Bird City, Cawker City, De Soto, Gaylord, Geneseo, Glade, Gove, Kirwin, Manter, McDonald, Muscotah, Natoma, Spivey, Zenda, Cowley RWD 7, Crawford Chicopee RWD, Crawford RWD 5, Dickinson RWD 1, Elk RWD 1, Greenwood RWD 1, Harper RWD 5, Jefferson RWD 2, Jefferson RWD 3, Leavenworth RWD 2, Montgomery RWD 8, Neosho RWD 3, Neosho RWD 7, Pottawatomie RWD 2, Republic RWD 1, Republic RWD 2, and Wilson RWD 5.

It takes time to conduct water loss survey – and it takes more time for some of these systems to complete necessary improvements. Replacing water lines in areas that have been prone to leakage is a start. Sooner or later the efforts pay off. KRWA is pleased to provide the assistance that is possible through the funding provided by the Clean Drinking Water Fee.

Greg Duryea has worked for KRWA since 1993 as Technical Assistant. He presently manages the Emergency Operator Program, with a variety of other responsibilities. He holds a Class I water certification and is the certified operator for Sycamore Springs Resort in Brown County.

The 2009 KRWA Conference has several sessions that will discuss water loss and water conservation. Here are sessions that should be of interest:

Tuesday, March 24

- Making Friends With Locators – From Pipelines To Leaks
- Learning More About Distribution Systems

Wednesday, March 25

- Don't Blow A Fitting – Use Restraints
- Make Sure An Approved Water Meter Is Selected
- How To Make Growth Pay For Water System Expansion
- SCADA – An Overview Of Today's Latest Technologies
- An Overview Of AMR – How It Can Help Your Water Utility

Thursday, March 26

- Well Maintenance That Delivers Years Of Service
- Hydrants, Valves And The Need For Insertion
- Replacing Pipelines Without Extensive Excavation
- GIS/GPS Mapping: Costs, Benefits, Subsidy Program