

Finding and Repairing Leaks, Reducing Water Loss are Critical to Water Systems, Large and Small

As one of the “newer” Tech Assistants working at the Kansas Rural Water Association, I appreciate the efforts that many others have made to help me become more proficient with the work I do at KRWA for cities and rural water districts. Several KRWA staff members have spent 30 years working for the Kansas Department of Health and Environment. They know both the regulatory side and they understand the small system side. I’m not the “regulatory guy”. I appreciate the small system side of the equation and I’m learning about the regulatory side. My sense is that while everyone can get hung up on “x” parts per million, if we don’t keep the pipes together and make sure the leakages are stopped, there’s no water to test. And that’s where many small system operators find themselves – dealing with day to day operations to keep water in the pipes.

My position at KRWA is funded in part as a benefit of the Clean Drinking Water Act under a contract administered by the Kansas Water Office. The Association receives referrals from the Kansas Water Office but as with all work by KRWA, the requests typically come from systems. I thought I would provide a summary of what some of the projects that I’ve been involved in this past year.

For the purpose of this article, I want to focus on only those systems that I worked with from October 2013 through September 2014 on water loss. Most of the water loss surveys KRWA conducts involve checking over paperwork and reporting. They frequently involve testing of master meters and some of the system’s service meters. Last, we look for leaks. In the 48 surveys I worked with, we located 152 gpm in leakage. Also, we reduce by 50 percent any loss that is not a chronic loss, in other words, an emergency type break. The value of the water being lost on just the work that I did, on an annual basis, would have been in excess of \$200,000.

Where’s the test port?

In order to accurately determine how much water loss a system may be experiencing generally requires testing the master meters. What is frustrating is that so many of the water systems have been constructed without there being any consideration for testing master meters. Often I and other KRWA staff need to work with the local operators to first install test ports. The means cutting pipes, installing fittings, etc. And we find numerous master meters that are not installed according to the manufacturer’s recommendations, meaning that there is not sufficient straight pipe upstream and

downstream of the meter. Having elbows, valves and other fittings butted right next the meter can create turbulence in the water flow and therefore create inaccurate registration by the meter.

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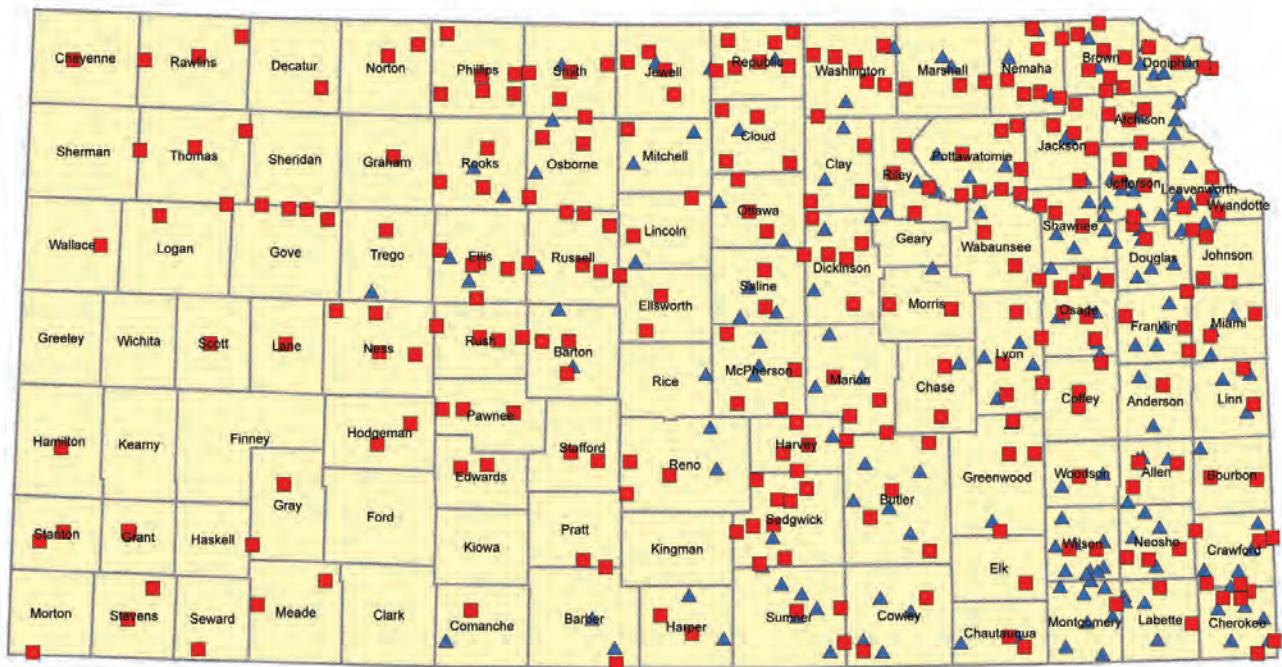
Five examples of my work at KRWA in recent months

1. One of the more interesting projects that I worked with in the last year was to help locate leakage from a water line in the city of Fort Scott. We found a 2-inch fire suppression line at Fort Scott Community College leaking. Fire suppression systems are not metered in Fort Scott.
2. Having given advice to the operator in Effingham to exercise the valves, I received a call because a valve stem had been broken in the process. I high-tailed over to Horton to pick up replacement parts. After we cut the street in Effingham, we found that the valve was actually a 2-inch valve. So, we picked up parts from Atchison Cons. RWD 5 at Lancaster. We got that repair made by 8 p.m. that evening. Here was an example of where a city council member also pitched in. Councilman Kurt Kloepper and his son were in the trench and assisted tremendously. They brought pumps, as well as assisted operating the backhoe. With the hot temperatures on that day in early August, everyone did what was necessary to keep the citizens of the town supplied with water.
3. In Bonner Springs, working with Operator Derek Sheperd, we found one of the city’s master meters over-registering by nine percent. That was a significant part of the city’s unaccounted for water.
4. In Fredonia, I tested a 1-inch meter serving a restaurant and found it to be registering 145% of accurate at .25 gpm, 116% at 10 gpm and 91.2% at 25 gpm.
5. I don’t recall the number of breaks that the city of Wathena has had on a 2-inch line that runs under and parallel with US Hwy 36. I do know that KRWA has recommended that the city relocate that line. Every leak on this line is very expensive to repair, due to having to replace the highway to KDOT specs. Sand, flowable fill, and asphalt have to be replaced to KDOT standards. It’s also a matter of pretty high concern for worker safety because of the traffic.

Anyway, without sounding boastful, those are just a few of the situations I’ve been involved in recently.

I know that systems appreciate the help that they receive from the KRWA as a benefit of the funding and the contract administered through the Kansas Water Office. The Association has a long working relationship with that

Locations of the 267 cities and 199 rural water, public wholesale district or other systems that received assistance as a benefit of the Clean Drinking Water Fee in FY 14



■ Cities ▲ Rural Water Districts, other systems

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|-----------------------|------------------------|-----------------------|-----------------------|----------------------|------------------------|----------------------|
| Allen RWD 12 | City of Alma | City of Chapman | City of Florence | City of Hillsboro | City of Longton | City of Norton |
| Allen RWD 13 | City of Almena | City of Cheney | City of Fort Scott | City of Hoisington | City of Lorraine | City of Nortonville |
| Allen RWD 6 | City of Alton | City of Cherokee | City of Fowler | City of Holton | City of Louisburg | City of Oakley |
| Anderson RWD 4 | City of Altoona | City of Cherryvale | City of Frankfort | City of Hope | City of Lucas | City of Ogden |
| Anderson RWD 5 | City of Anthony | City of Circleville | City of Fredonia | City of Horton | City of Luray | City of Olmitz |
| Atchison Cons. RWD 5 | City of Arkansas City | City of Clearwater | City of Galena | City of Hoyt | City of Lyndon | City of Olpe |
| Atchison RWD 1 | City of Arlington | City of Clifton | City of Galesburg | City of Hugoton | City of Madison | City of Onaga |
| Atchison RWD 3 | City of Arma | City of Colby | City of Garden Plain | City of Humboldt | City of Maize | City of Oneida |
| Atchison RWD 6 | City of Assaria | City of Coldwater | City of Garnett | City of Ingalls | City of Manchester | City of Osage City |
| Barber RWD 1 | City of Attica | City of Council Grove | City of Geary | City of Inman | City of Mankato | City of Osawatimie |
| Barber RWD 2 | City of Atwood | City of Courtland | City of Geuda Springs | City of Iowa | City of Manter | City of Osborne |
| Barton Hills Addition | City of Augusta | City of Cuba | City of Glade | City of Isabel | City of Marquette | City of Oskaloosa |
| Barton RWD 2 | City of Barnard | City of De Soto | City of Glasco | City of Jamestown | City of Matfield Green | City of Oswego |
| Bed Rock MPHP | City of Barnes | City of Delphos | City of Goddard | City of Jennings | City of McCracken | City of Otis |
| Blue River Hills Imp. | City of Baxter Springs | City of Denison | City of Goff | City of Jetmore | City of McCune | City of Overbrook |
| Bourbon RWD 4 | City of Bazine | City of Dighton | City of Gorham | City of Jewell | City of McDonald | City of Oxford |
| Brown RWD 1 | City of Belleville | City of Dorrance | City of Grainfield | City of Johnson City | City of Melvern | City of Ozawkie |
| Brown RWD 2 | City of Belvue | City of Edgerton | City of Green | City of Kensington | City of Milford | City of Palco |
| Butler RWD 2 | City of Bennington | City of Effingham | City of Greenleaf | City of Kinsley | City of Miltonvale | City of Park |
| Butler RWD 3 | City of Bern | City of Elkhart | City of Grinnell | City of Kiowa | City of Minneapolis | City of Parsons |
| Butler RWD 5 | City of Bison | City of Ellis | City of Haddam | City of Kirwin | City of Moran | City of Peabody |
| Butler RWD 6 | City of Bonner Springs | City of Ellsworth | City of Hamilton | City of La Cygne | City of Morrill | City of Perry |
| Butler RWD 7 | City of Brewster | City of Elwood | City of Hanover | City of LaCrosse | City of Morrowville | City of Peru |
| Camp Christy | City of Bunker Hill | City of Emmett | City of Hanston | City of Lancaster | City of Moscow | City of Phillipsburg |
| Chase RWD 1 | City of Burdett | City of Emporia | City of Hartford | City of Lane | City of Moundridge | City of Plains |
| Chautauqua RWD 4 | City of Burlingame | City of Enterprise | City of Harveyville | City of Larned | City of Mount Hope | City of Plainville |
| Cherokee RWD 1 | City of Burlington | City of Esbon | City of Havensville | City of Latham | City of Mulberry | City of Pleasanton |
| Cherokee RWD 3 | City of Burns | City of Eskridge | City of Hays | City of Lebanon | City of Munden | City of Pomona |
| Cherokee RWD 4 | City of Burr Oak | City of Everest | City of Herington | City of Lecompton | City of Muscotah | City of Portis |
| Cherokee RWD 5 | City of Burr Oak | | City of Herndon | City of Lewis | City of Narka | City of Powhattan |
| Cherokee RWD 6 | City of Cambridge | | City of Hesston | City of Liberal | City of Natoma | City of Quinter |
| Cherokee RWD 8 | City of Canton | | City of Hiawatha | City of Linwood | City of Ness City | City of Randolph |
| City of Abilene | City of Cassoday | | City of Hiawtha | City of Logan | City of Netawaka | City of Ransom |
| City of Admire | City of Cawker City | | City of Highland | City of Long Island | City of New Strawn | City of Rantoul |
| City of Agra | City of Centralia | | City of Hill City | City of Longford | City of Newton | City of Reading |

City of Republic	City of Troy	Cloud RWD 1	Harper RWD 4	Marion RWD 1	Osage RWD 8	Shawnee Cons. RWD 1
City of Reserve	City of Turon	Comanche RWD 1	Harper RWD 5	Marion RWD 4	Osborne RWD 1A	Shawnee Cons. RWD 3
City of Rexford	City of Ulysses	Country Side MHP	Harvey RWD 1	Marshall RWD 1	Osborne RWD 2	Shawnee Cons. RWD 4
City of Riley	City of Uniontown	Cowley RWD 3	Howison Heights	Marshall RWD 3	Ottawa RWD 1	Shawnee RWD 8
City of Robinson	City of Utica	Cowley RWD 4	Jackson RWD 1	McPherson BPU	Ottawa RWD 2	Smith RWD 1
City of Rossville	City of Valley Center	Cowley RWD 5	Jackson RWD 3	McPherson RWD 2	Peck Imp. District	Spring Lake RV Resort
City of Rozel	City of Valley Falls	Cowley RWD 6	Jefferson RWD 1	McPherson RWD 6	Phillips RWD 1	Suburban Water Co.
City of Sabetha	City of Vermillion	Crawford RWD 2	Jefferson RWD 10	Miami RWD 1	Pottawatomie RWD 1	Sumner RWD 1
City of Sawyer	City of Victoria	Crawford RWD 3	Jefferson RWD 12	Miami RWD 2	Pottawatomie RWD 2	Sumner RWD 2
City of Scammon	City of Viola	Crawford RWD 4	Jefferson RWD 13	Miami RWD 3	Pottawatomie RWD 4	Sumner RWD 4
City of Scandia	City of Virgil	Crawford RWD 6	Jefferson RWD 15	Mitchell RWD 2	Public Wholesale 4	Sumner RWD 5
City of Schoenchen	City of WaKeeney	Dickinson RWD 1	Jefferson RWD 2	Mitchell RWD 3	Public Wholesale 5	Sumner RWD 7
City of Scranton	City of Wakefield	Dickinson RWD 2	Jefferson RWD 3	Montgomery Cons.	Public Wholesale 6	Timber Creek East
City of Sedan	City of Waldo	Doniphan RWD 1	Jefferson RWD 7	RWD 1	Public Wholesale 11	Towns Riverview
City of Sedgwick	City of Wallace	Doniphan RWD 2	Jefferson RWD 9	Montgomery Cons.	Public Wholesale 12	Trego RWD 1
City of Severy	City of Walnut	Doniphan RWD 3	Jewell RWD 1	RWD 2	Public Wholesale 13	Trego RWD 2
City of Silver Lake	City of Wamego	Doniphan RWD 5	Labette RWD 3	Montgomery RWD 12	Public Wholesale 18	Wabaunsee RWD 2
City of Smith Center	City of Washington	Doniphan RWD 6	Labette RWD 7	Montgomery RWD 2	Public Wholesale 20	Washington RWD 1
City of Solomon	City of Waterville	Douglas RWD 1	Labette RWD 8	Montgomery RWD 4	Public Wholesale 23	Washington RWD 2
City of Spring Hill	City of Wathena	Douglas RWD 2	Lansing Correctional	Montgomery RWD 6	Reno RWD 1	Wilson RWD 1
City of St. Francis	City of Waverly	Douglas RWD 3	Leavenworth Cons.	Montgomery RWD 9	Reno RWD 3	Wilson RWD 10
City of St. George	City of Weir	Douglas RWD 4	RWD 1	Morris RWD 1	Republic RWD 1	Wilson RWD 11
City of St. John	City of Wellington	Douglas RWD 5	Leavenworth RWD 5	Nemaha RWD 1	Republic RWD 2	Wilson RWD 12
City of St. Marys	City of Wellsville	Douglas RWD 6	Leavenworth RWD 6	Nemaha RWD 3	Rice RWD 1	Wilson RWD 2
City of St. Paul	City of West Mineral	Ellis Cons. RWD 1	Leavenworth RWD 7	Nemaha RWD 4	Riley RWD 1	Wilson RWD 3
City of Stafford	City of Wetmore	Ellsworth RWD 1	Leavenworth RWD 9	Neosho Cons. RWD 1	Rocky Ford Water Co.	Wilson RWD 4
City of Stockton	City of Willis	Franklin RWD 1	Leavenworth RWD 10	Neosho RWD 4	Rooks RWD 2	Wilson RWD 6
City of Strong City	City of Wilson	Franklin RWD 2	Linn RWD 2	Neosho RWD 6	Rooks RWD 3	Wilson RWD 7
City of Sylvan Grove	City of Winchester	Franklin RWD 3	Linn RWD 3	Neosho RWD 7	Russell RWD 3	Wilson RWD 8
City of Sylvia	City of Winona	Franklin RWD 4	Lyon RWD 2	Osage RWD 1	Russell RWD 4	Wilson RWD 9
City of Syracuse	City of Yates Center	Geary RWD 2	Lyon RWD 3	Osage RWD 3	Saline RWD 6	Woodson RWD 1
City of Thayer	Clay RWD 1	Geary RWD 4	Lyon RWD 4	Osage RWD 4	Saline RWD 7	
City of Tonganoxie	Clay RWD 2	Greenwood RWD 1	Lyon RWD 5	Osage RWD 5	Saline RWD 8	
City of Topeka	Clinton State Park	Greenwood RWD 3	Marion Co. Imp. Dist. 2	Osage RWD 7	Sedgwick RWD 4	

agency. Each year, KRWA provides an annual report on the contract. I looked over a copy of it recently at the KRWA office. Here are some of the highlights of that report:

- ◆ Provided assistance to 267 cities and 199 rural water systems, public wholesale districts or other types of public water systems
- ◆ Conducted 111 water loss surveys, locating more than 203 million gallons of loss on an annual basis. The cost of this production or purchase of water on an annual basis would be \$595,707. For purposes of the report, emergency leaks that are located are reduced by a minimum of fifty percent
- ◆ KRWA worked with six “Special Focus” projects identified by the Kansas Water Office as having unaccounted for water loss of 30 percent or more based on their Annual Water Use Report and assisted 68 water suppliers in developing or revising their water conservation plan
- ◆ Provided leadership and assistance to help a settlement to be reached between USDA Rural Development and Ellsworth County Rural Water District No. 1.

Again, I know first-hand that public water systems appreciate the assistance they receive that is provided through the contract. And, the Kansas Rural Water Association appreciates the partnership with the Kansas Water Office in providing the services.

The complete annual report is posted online on the KRWA Web site. It is searchable by system or by water basin. It can be found at <http://krwa.net/specialfocus>. Another way to get to it is to pull down the “Technical Assistance” link on the site at www.krwa.net.

2015 Conference

The theme for the 2015 KRWA Annual Conference & Exhibition is “The Many Hats We Wear”. I know that many KRWA staff members wear many hats – and I know the many people who work in smaller water systems also have to wear many hats. KRWA’s job is to be of help in whatever ways possible. I encourage readers to put on their “Conference-going hat” and plan to attend the 2015 Conference & Exhibition, March 24-26 at Century II in Wichita. That event is an amazing effort by everyone involved. I know that some KRWA staff have had their “Conference-preparation idea” hats on for a couple of weeks. I hope readers will plan to attend the largest water and wastewater conference in Mid-America next March.

Tony Kimmi has worked as a Tech Assistance for KRWA since October 2009. He has extensive experience in the operation of construction equipment. He is certified with gas chlorinator repair and assists many systems with ongoing water quality monitoring and leak detection work.

