

# KRWA Assists Doniphan County RWDs with Overhaul of Rechlorination Systems

**A**s spring turns to summer, many systems must adjust their treatment methods to maintain an adequate amount of residual chlorine throughout their distribution systems. Longer hours of sunlight and warmer air temperatures can heat water stored in water storage tanks which in turn results in a deterioration in the residual chlorine levels throughout the system. Surface water systems also treat influent water that is sometimes up to 80 degrees F.

Doniphan County Rural Water District (RWD) No. 5 is one of many systems that must adjust the treatment method accordingly with the onset of warmer weather. RWD 5 does not pump or treat their own source of surface water or groundwater. Instead, RWD 5 obtains water from Missouri-American Water, whose primary source of water is wells along the Missouri River at St. Joseph. While Missouri-American delivers treated water with adequate chlorination to RWD 5's pumphouse in Wathena, RWD 5 must rechlorinate that water before it enters their distribution system in order to maintain adequate levels throughout the system, including water sold to neighboring Doniphan County RWD No. 2. RWD 5 typically has to rechlorinate for only about three months each year, usually from about July 1 to September 30, depending on weather conditions.

RWD 5 uses ammonium sulfate and sodium hypochlorite in their treatment process. The consequences of improperly mixing these chemicals can be dangerous, if not catastrophic. Since their water treatment equipment may be idle for nine months of the year, a thorough overhaul is conducted every spring to ensure that their equipment works



KRWA Tech Assistant Lonnie Boller and Roger Engemann, Operator for Doniphan RWD 5, work at retubing peristaltic chemical feed pumps.

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as needed, when needed. Such equipment has tubing that may become brittle with the use of chlorine and the cold temperatures during idle months.

For several years, RWD 5 and numerous other systems have turned to the Kansas Rural Water Association (KRWA) to provide technical assistance and help bring the water treatment systems back into proper operating

condition. This involves items such as repairing positive displacement pumps, peristaltic pumps, chlorinators, replacing valves and injectors, along with replacing all feedlines and pressure transducer lines. KRWA recently provided such assistance to Doniphan RWD 5 and in the process tries to also train the operators on the equipment.

Once completed at Doniphan RWD 5, similar assistance was provided to Doniphan County RWD No. 2.

Most chemical feed pumps have design limitations due to a variety of chemicals. For example, some may only be designed to inject aluminum sulfate (alum), ferric sulfate, hydrochloric acid, magnesium hydroxide, 10 percent



**RWD Operator Roger Engemann works on installing the injector while KRWA Tech Lonnie Boller works on repairing the chlorine analyzer. A new photocell was also installed and the unit was retubed.**

potassium permanganate, sodium bisulfate, sodium phosphate or 10 percent sulfuric acid. The pump needs to be matched to the application and feed rate.

The two districts use Stenner pumps. These peristaltic pumps are designed to be self-priming against pressures up to 100 PSI. The design is also such that because of the positive seals on the tubing, there is no need for check valves and siphoning is prevented. The tubes and injectors are replaced each summer before startup of the rechlorination systems. This preventive maintenance makes the system almost problem free throughout the summer. KRWA recommends having extra tubing and injectors on hand to make a quick repair if needed. More than 100 feet of

.25-inch tubing was used from the feed pumps to the injection points.

Funding for the recent assistance to the two water districts in Doniphan County was provided through a contractual arrangement between the Kansas Department of Health and Environment (State Revolving Loan Program set-aside) and KRWA.

If your water system has problems with low chlorine residuals or is interested in any other help on operational, management or other issues, just give KRWA a call. KRWA has knowledgeable staff with nearly 500 years of experience with design, operations, regulatory requirements and management of public water and wastewater systems. If we can't provide the answer, we know someone who can and will. KRWA is supported by more than 250 Associate Members who provide services and equipment.

*Lonnie Boller is a Technical Assistant at KRWA. He has been employed by KRWA since 2001. Lonnie is a Class II certified operator; he previously was Water Plant Supervisor for the City of Horton. He has also attended and completed training at the University of Kansas Law Enforcement Training Center.*



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