

It's Summertime; Maintaining Chlorine Residuals Is Always a Hot Topic!

KRWA receives numerous calls from systems having problems maintaining chlorine residuals during the summertime.

The loss of chlorine residuals is a significant concern due to regulatory requirements. The Kansas Department of Health and Environment (KDHE) requires water systems to maintain the combined chlorine residual of at least 1 mg/L at every tap or 0.2 mg/L of free chlorine at every tap. Here are some ideas to help systems maintain better chlorine residuals throughout the distribution system.

When dealing with low chlorine residuals, the system first should check chlorine residuals in the water storage tank. Most tanks in Kansas fill from, and feed from the bottom of the tank. This can leave a lot of "dead water" in the upper portions of the storage tank. It also may help to change the system control settings to lower the water level before refilling. I recommend overflowing the storage tank intake to get a good chlorine residual of greater than 2 mg/L and then think about flushing the distribution system if the chlorine in the storage tank is not good. There's no reason to flush the distribution system until good residuals are achieved in the storage tank. It is also not uncommon that, over the years, sediment buildup may occur in the bottom of the water storage tank. Many factors can influence if, how much, or over what period sedimentation might occur. The source water quality can influence the concentration of iron, manganese, hardness, and water stability, which can also affect chlorine residual levels.

Free chlorine burnout

Some systems have chosen to do a free chlorine burnout to help improve chlorine residuals in the distribution system. Free chlorine is much stronger than combined chlorine and will help remove bacterial growth, also called biofilms, in the storage tank and the distribution system. These biofilms are not harmful to the customers and do not show up in regulatory bacteriological testing water but can ultimately affect chlorine residuals in the system. Many systems complete a burnout of the system to correct this problem. A burnout is where a free chlorine instead of the regularly combined chlorine is maintained in the distribution system and storage tanks for approximately two to four weeks. Since free chlorine is a stronger disinfectant, it kills the biofilms more effectively than combined chlorine. Some systems do a free chlorine burnout in the spring and fall and this has proven to help maintain better chlorine residuals throughout the system in between burnouts.

For systems that purchase water, the purchasing system should also consider flushing any storage tanks and their



distribution system at the same time, the supplier does a free chlorine burnout to distribute free chlorine throughout the purchasing system.

As we all know, it is crucial to monitor chlorine residuals in both the distribution system and in the storage tank. I recommend that systems that have problems maintaining chlorine residuals consider installing a continuous chlorine analyzer at the storage tank.

Once chlorine residual begins to decline, the system can take action sooner than later. For example, if chlorine residuals are coming out of the storage tank drop below 2 mg/L, the system could quickly start overflowing the tank until chlorine residuals improve.

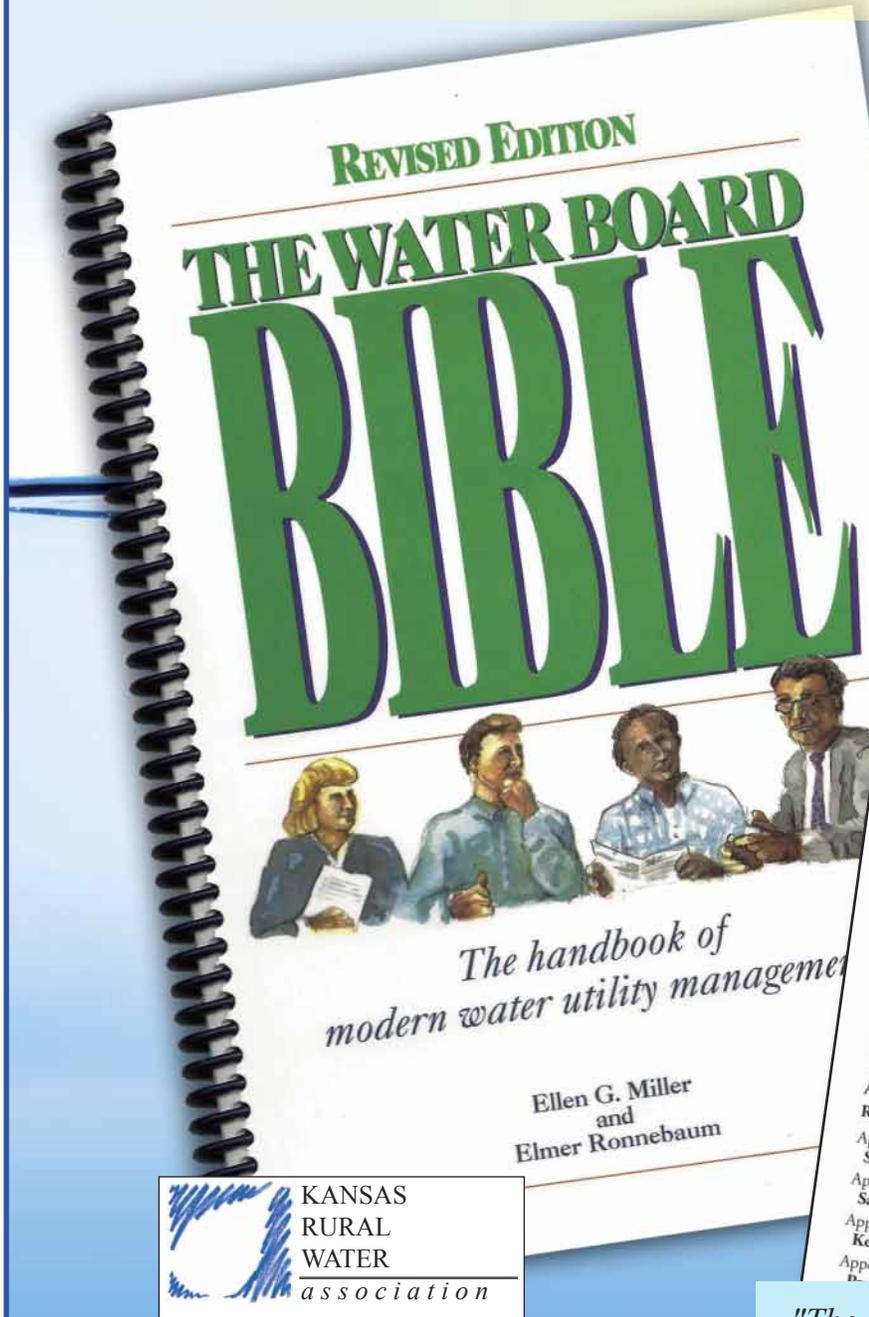
If your system has tried several options without success, you may have to look into rechlorination. Over the years, Kansas Rural Water Association has helped many systems set up rechlorination units to help improve chlorine residuals. It is an effective option wherever adequate chlorine residuals cannot be maintained in the distribution system or from the water supplier. The cost of rechlorination varies depending on the system. It can range between \$1,500 to \$30,000, depending on what options are chosen. It's not very difficult to set up rechlorination if the system has a booster pump system. With a pump station, there is a known flow rate. It simply adds chlorine and ammonia to the water to increase residuals. Most of the rechlorination systems that KRWA has helped install have been used positive displacement pumps and feed tanks at pump houses. KRWA also has a portable rechlorination building that can be used by systems to demonstrate how effective rechlorination can be.

Good monitoring is essential to maintaining chlorine residuals. Good monitoring and flushing procedures help systems understand the problem. While all these options will help improve water quality, it's important also to recognize that what works for one system may not all work for another. I encourage readers to also check the article by Pat McCool in this issue beginning on page 16. Give KRWA a call or email me at lonnie@krwa.net should you need further information on this or any other water or wastewater-related issue.

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.

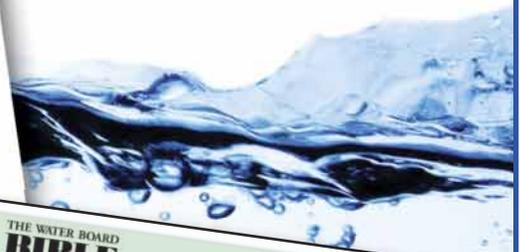


A newly updated *Water Board Bible* is now available from Kansas Rural Water Association



Building on the strong foundation document authored in 1993 by Ellen Miller and Elmer Ronnebaum, the "Bible", was reprinted in 1995 and again in 2010 with minor revisions.

A much more extensive review and updates in the 2016 printing were provided by Gary Hanson, Stumbo Hanson, LLP (ret.).



THE WATER BOARD BIBLE

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"The Water Board Bible strikes the right tone with respect to current trends including diversity in the workforce, open government and post-Flint regulatory climate as well as the relationship with the consuming public and their water supply expectations,"

– Gary Hanson

KRWA also continues to make its handbooks available to other state and national organizations. More than 42,000 copies have been provided.

To obtain copies, contact KRWA, 785.336.3760.

Funding for the 2016 printing is courtesy of the Kansas Rural Water Finance Authority. The Authority has offered to donate copies to every rural water district in Kansas, upon such request. The handbook will also be used for board training provided by KRWA.

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The Kansas Lifeline Magazine

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WEBSITE WWW.KRWA.NET

KRWA has a very robust website that is loaded with scores of links. From the training calendar to a host of downloads to more than 8,500 letters to utilities posted online.



Kansas Governor and Speaker of the House Might Agree on Funding Water Plan

If you thought eliminating the state's sales tax on groceries was the biggest piece of news from last week's State of the State, you were wrong. Kansas Governor Laura Kelly used her annual State of the State address, in part, to propose funding a state water plan abandoned by previous administrations. Her proposed budget restores full funding for the [Kansas Water Plan](#) for the first time in 15 years, which provides a five-year blueprint to ensure a reliable water supply for Kansas communities and farmers. The plan is one of the primary tools used by various local, state and federal agencies to address current water resource issues and to plan for future needs. If there's only one thing that Democrats and Republicans could agree upon, with election-year politics in mind, this might be it. Although Kansas House Speaker Ron Ryckman slammed the governor over taxes, spending and policies, during his rebuttal to the governor, he likewise highlighted the need to protect access to safe, reliable water for agricultural, industrial and residential consumption while also addressing contamination



ENEWS

A weekly "E-News" is provided by direct emails to all the contacts that KRWA has addresses for. E-News covers topics of interest to KRWA members and others. As of January 1, 2022, KRWA email groups contact nearly 4,000 addresses.

KRWA Provides education and leadership necessary to enhance the effectiveness of Kansas' water and wastewater utilities.