

# Maintenance of a Water System Requires Vigilance - And a Willingness to Budget for Necessary Repair and Maintenance



The above photo shows one of the two potable pressure tanks that are in KRWA's inventory of tools to help public water systems.

**M**any city and rural water districts have called on KRWA staff to inquire about storage tank maintenance. Some systems have their water storage inspected every other year to help prevent any failures. It is not uncommon that over a period of years, a settlement buildup may develop in the bottom of some water storage tanks. Rust pitting may also occur. Many factors determine how much buildup there may be over time. Sediments, rusting, or pitting may occur. The source water is a major factor depending on concentrations of iron, manganese hardness, and water stability. For example, some sediment like iron and iron bacteria will give the sediment a red /orange/tan color.

Some systems have it done every five to ten years to help cut down maintenance costs. As with everything, you have to do preventive maintenance. Most storage tank maintenance companies review many areas of a water storage tank including the interior and exterior surface, manways, ladders, and foundation. Some water storage tanks may need small touch-up jobs and others may need to be completely recoated. At some point, a water tower or standpipe may have to be sandblasted and repainted. Tank recoating is a significant cost for a small water system.

One of the main challenges for water systems is when the water storage tank has to be completely redone and this occurs when water demand is high. Taking the tower offline

when there is high demand, could result in low water pressures in some areas and customers running out of water. As you may know, temperatures play a big part in painting a water storage tank. There may be less water demand during the winter months, but due to cold temperatures, snow, and other weather problems, it may take much longer for the contractor to complete the project. And it certainly requires more time for the interior coating to “cure” before the tank can be placed back in service.

Water storage tanks are very important in the operation of a water supply system. The elevated storage tanks and standpipes help maintain pressure and provide supply to help meet varying demands. Water storage tanks provide supply during emergencies such as power outages, main breaks, or for fire fighting. Maintaining water storage tanks is very important to the overall water supply operations. Some systems take their tanks offline and attach blow-off valves on various hydrants in the system. This would be okay during the inspection if it only takes a few hours, but to have a water storage tank offline for several weeks would cause a high water loss through pressure relief valves. To reduce the high water loss some systems have installed variable frequency drives on their pumps. This allows only the amount of water required to supply the system to be pumped. Several years ago Kansas Rural Water Association constructed two portable pressure tanks, that hold approximately 3,000 gallons each.

Each has a pressure baffle to maintain pressure for the system. These tanks were designed by KRWA staff. A local contractor constructed the tanks and coated them with NSF-approved paint. The tanks can easily be pulled from system to system with a three-quarter-ton pickup. Having two tanks in place helps larger systems and RWDs to maintain pressure. An Associate Member that specializes in this service also is Tomcat Consultant / T.A.P. Co. Also some tank maintenance providers may also have tanks that can be rented.

Many cities have clear wells as part of their systems. These clear wells, above or below ground, should also be inspected at least every two years. Unfortunately, a lot of these are overlooked because they are out of sight and out of mind. I have worked with many systems across Kansas over the years, helping them clean and disinfect their clear wells. There usually is some settlement in the clear wells that may cause high turbidities and also increase chlorine demand. In most incidents, we pump the clear well down low with the high-service pumps and then pump the rest out with a trash pump. It is critical to have adequate ventilation and that the air quality is monitored. With a little hard work, squeegees, brooms, and disinfectant it shouldn't take long to get it cleaned. This also gives systems the opportunity to check for cracks in the foundations and check the vents to make sure they are screened properly. Preventive maintenance is key in ensuring a clean and safe water supply for many years to come.

### Thoughts about meter replacement

Concerning meter replacement philosophy, a general idea is to change meters every ten years or when meters reach one million gallons. Consider that many rural water customers use 200,000 to perhaps 500,000 gallons per month. There is no correct single advice as to when to change out meters. Some systems that have highly mineralized water will need to replace meters sooner than meters on a system with better water quality and especially those with low usage. The best way to determine when to change out water meters is to test a sample of both the low-usage meters and high-usage meters and from there, go about things in a logical manner versus just replacing all meters every ten years or when the register reaches a certain amount.

As far as meter replacement philosophy, there is a general suggestion that meters should be changed when reaching one million gallons or being in service for ten years. The point is, that if a system is facing water loss issues the system should consider testing some of the older meters, high-registering meters, and a random selection of other meters as a guide for meter replacement. Many city and RWD staff do not even

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know the age of the meters unless it is labeled on the meter somewhere or records are maintained on meters. The 10-year, million-gallon philosophy will be changing as new electronic meters with batteries are used that have a 20-year life expectancy.

Water systems should also have a water line replacement program. No, that doesn't mean that all pipelines need to be replaced after they are depreciated out. If the system has a lot of leaks in a section of pipeline, the system should evaluate replacing it.

Water systems should have funds

budgeted for line replacement just as the system should consider funding a meter replacement program.

### Attend the Annual Conference

One of the many sessions at the Annual Conference discusses topics I have included in this article. I want to draw your attention to the topic "Maintaining System Pressure Without A Storage Tank" on Thursday, March 30 at 9:30 a.m. in Room 210 A. This presentation will be given by Clyde Zelch, Tomcat Consultants, Rosebud, Missouri.

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