

# COLD WEATHER ADDS CHALLENGES TO WATER SYSTEM OPERATIONS

It's been a cold winter in Kansas. That is not news. Forecasters have stated that this past December and January have been colder than any of the last 24 years. There were record lows recorded in Kansas. There have been consequences for public water systems in Kansas.

When cold weather hits, unless there is snow cover, the ground freezes and results in contraction. Depending on the location in Kansas and the soil type,

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cracks often open and cold air then penetrates deeper. Municipal and rural water systems often experience a significant increase in broken pipelines due to the effects of cold weather. Not only is the ground cold, but water temperature in the system also is reduced. That only further compounds the stress on pipe materials.

There are many new operators in municipal and rural water districts. Many of these folks have not experienced the consequences that prolonged low temperatures can have on water system operations. I mention how to be better prepared many times; I remind operators that cold penetrates and heat radiates so cold will take over if no precautions are made when the cold temps last for more than a week. Here are several examples that I worked on recently.

This January I received calls from three systems where the water storage tanks had frozen. The result was that the tanks were isolated from the system due to the ice. There were four additional systems where the level controls were not functional because of ice. At two systems, the frozen tower condition caused well pumps to cycle repeatedly. One system sustained a damaged foot valve on a well pump. Many systems had breaks in pipelines due to conditions created because of the cold weather.

In the case of one of the frozen storage tanks, the problem persisted for more than a week. At first, I worked with the operator to set up the system to operate on well pressure with a pressure relief valve. That resulted in an excessive water loss (pumping at 91 gpm) for this very small 20-meter system.



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**One small town placed this blanket wrap around the base of the riser pipe. The interconnection to a neighboring rural water district is made above ground on the opposite side of the riser.**

extremes in weather. During cold weather operations, some water treatment systems require more chemicals than normal which can affect budgets. Fire hydrants can freeze. Tanks freeze. Bypass lines around pumps can freeze. Meters break; control systems fail. Weather extremes take their toll on both equipment and people. There is only one way to avert a bad outcome. That requires preparation.

### Attend the Conference

I want to also encourage readers to attend the annual KRWA conference, March 27 - 29 at Wichita. It's the best place to shop and compare products. It's just a great opportunity to make new friends and to share experiences. By communicating, we can all learn from and help each other – and you'll be more prepared to weather the next storm, no matter what it might be.

*Doug Guenther has worked as a Technical Assistant for KRWA for 16 years. Doug worked for the City of Oakley in the Water and Electric Department for eight years. He has also worked several years for an industry supplier. Doug is a Class II Certified Water Operator.*



After several days operating with high water loss the base of the stand pipe below the bowl thawed so that the interconnect to the neighboring rural water district was operable. I then transported and installed one of the KRWA pressure tanks. Doing so enabled the small town to take water directly from the water district at a rate of 20 gpm vs. the 91 that had been produced by the wells. After slightly more than a day of operating in that manner, the riser pipe of the city's storage tank thawed and became operable again.

After observing some of the heat tape installed on the interconnect I noticed it was double wrapped in one spot. That is a problem in that it cancels out the heat tape operating efficiently. Unless corrected, with wind chills well blow zero and because of the lack of insulation, the piping would freeze again.

From meter pits that are not sealed and then have frozen meters, to the problems with pipeline breaks, the operations of many water systems are compounded due to the

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