

# An old well gets new life in small northeast Kansas town

**R**ecently, the small town of Morrill, KS in northeast Kansas was experiencing problems with their water supply well that is used solely for fire protection and bulk water sales. The problem noted by the operator was that sand and small rocks were being pumped from the well. That is a sign of real trouble.

The well was drilled in the early 1950's to supply water to this small town. The well provided drinking water for the city until the late 1980's when carbon tetrachloride, a grain fumigant, was detected in the water. The city connected to neighboring city of Sabetha; use of the well for potable water was discontinued. The leaching of carbon tetrachloride in groundwater around grain elevators is not uncommon. Only recently, the state drilled several test wells to determine the extent of the contamination including the direction of travel.

Two newer wells were also drilled in the late 1960's and early 1970's south of town to supply water.



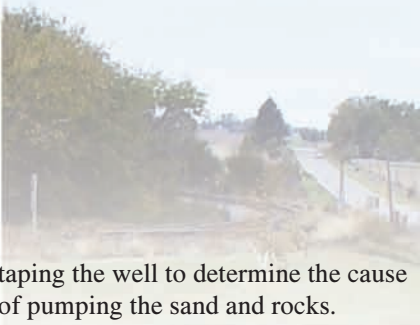
**This photo shows production from the well at 153 gallons per minute – equal to the original design standards of the 1950's construction.**

Eventually these wells were removed from service due to high nitrate levels in the ground water. In 1990, Morrill began purchasing water from Sabetha after a new six-mile transmission line was installed.

While not used every day, the 1950's well was important because of the water supply it provided for fire protection. Using the well water saved money by not having to purchase water at a higher cost to fill the fire trucks.

## Let's save that well

The city contacted Alexander Pump and Services from St. Marys, Kansas to provide a cost estimate of video



taping the well to determine the cause of pumping the sand and rocks.

In July 2009, Alexander Pump arrived to pull the small, 10-HP vertical turbine motor, pipe and pump. The entire unit was basically in good condition but it was evident there was a problem with the old casing. That was when Terry Alexander said that to video-tape the interior of the casing would be a waste of money for the city. Instead, the city agreed to have a new submersible pump and motor installed in a new casing. Alexander took care of the paperwork and ordered the new 5-hp submersible pump. They used the base from the vertical turbine motor to connect to the existing piping.

Prior to installing the new components, Alexander Pump removed sand and rocks that had accumulated in the well. The new casing was set. Next, sand and bentonite was used to properly seal the well. The moment of truth came after all the connections were made.





Dallas, Darren and Terry Alexander of Alexander Pump and Services, St. Marys, KS are about to remove the old column pipe and pump from the well.



Not very appealing, this photo shows the iron and manganese buildup on the old pump.



This 10-HP 3-phase motor operated the well that provided supplemental fire supply water to the town of Morrill.

Initially, when the switch was turned on the flow of water was very good. It appeared that a pat on the back was due to everyone involved. However, the elation did not last long because the flow of water dwindled to less than half of the amount anticipated. That was not how it was supposed to be! All the components were new and the production should be just as good as prior to the work.

### Third time charm

Terry Alexander proposed pushing water back into the well to move any obstruction from the new casing screen that may have been pulled into it when the pump was turned on. Such “surging” is often used to clean wells. The city found adapters to connect to a fire truck to force the water back into the well. On the initial dumping of water into the well, water soon came out of the top; no additional water was forced into the well. The new pump was then started. Dirty water and small particles of gravel and clay were pumped from the well. But soon, the flow slowed again. The city’s fire truck was connected to the well a second time; water was pumped back into the well. Again, more particles and dirty water were removed from the well by pumping it. The pumping rate however was not much improved. The fire truck was connected a third time

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and 1,000 gallons of water was pumped into the well; no water overflowed from the well, indicating that the screen was more open. The fire truck was disconnected and the well pump was turned on. This time very little discolored water was noticed and the flow did not slow with continued pumping. The city then filled the fire truck from the well. The total time to pump 1,000 gallons of water was only six minutes and thirty seconds. The pumping rate was 153 gallons per minute. That rate was right on target!

The mayor of Morrill was very impressed with the work by Alexander Pump and Services. Terry, Dallas and Darren were very professional throughout the entire project and stressed safety, from safety equipment to lock-out tag-out.

I write this article, not to boast about my hometown, but as an example of what can be accomplished, frequently at relatively little expense, when a community does some evaluation, sets a goal and then obtains professional services to make it happen. Many small communities across Kansas and the nation may be able to retrofit facilities to gain years of additional service from them. Sometimes, those options seem to not be fully considered.

If your community has a question concerning water or wastewater utilities, I encourage you to call KRWA at 785-336-3760 or you may email [krwa@krwa.net](mailto:krwa@krwa.net). Someone will be pleased to attend any board or council meeting or other special meeting to discuss your project and goals.

*Greg Duryea has worked for KRWA since 1993 as Technical Assistant. He presently manages the Emergency Operator Program, with a variety of other responsibilities. He holds a Class I water certification and is the certified operator for Sycamore Springs Resort in Brown County.*

