

# City of Bogue Named “Most Improved Water System” at KRWA Conference

**T**he city of Bogue has a population of 136 and is located in Graham County along Kansas Highway 18 and about one mile south of US-24 in northwestern Kansas. Bogue was named the “Most Improved Water System Award” at the 2019 Kansas Rural Water Association annual conference. This is a most deserving award and is the result of the hard work of many and in no small way, a working relationship between two neighboring cities.

Bogue was established in 1888 as a railroad town and was founded by Virgil Gay Bogue, a civil engineer working for the Union Pacific Railroad. Excellent hunting and fishing is available to residents and visitors as Bogue’s location is within less than a half hour’s drive from Webster Reservoir State Park and Wildlife Area.

Bogue’s water supply source consisted of two wells located in the Solomon River valley, the newest of which was constructed in 1975. The wells served the city adequately until recently when monitoring data indicated compliance issues with arsenic and nitrate. The well water also contained high concentrations of hardness and sulfate. Both cause nuisance conditions to customers and have non-enforceable secondary standards as established by the Environmental Protection Agency (EPA).

## Searching for a new source of water

James (Jamie) Thompson, City Treasurer, stated that when arsenic and nitrate increased in their main well, they switched to the old well for a couple of years but that well then showed elevated arsenic and nitrate. It was obvious then to city officials that something needed to be done to improve drinking water quality for customers. As a result, the city decided to drill new wells in another location. The location chosen was about eight miles south of town. Test wells were drilled into the Ogallala formation but the yield was very low. In order to use this site, more than one well would be needed along with the possibility of adding on-site storage and installing eight miles of transmission line. Mr. Thompson noted that this plan was abandoned due to cost. Attention then turned to possibly providing treatment to remove arsenic and nitrate.

A new bolted steel standpipe, 120 feet in height, was constructed to replace the old concrete elevated tank.

It was evident that the city needed to pursue financial assistance to enable a project to be developed. EBH, Engineering, consulting engineer on the project, developed a working team to include the city of Bogue, Hill City, United States Department of Agriculture-Rural Development (USDA-RD), and the Department of Commerce to review funding options for a project. The two options considered were the construction of a treatment plant and a connection to the city of Hill City. A cohesive agreement of all present was that regionalization was the best option with Hill City as the supplier for the city of Bogue.

### Hill City to be the source

Hill City, the county seat of Graham County, is the largest city in the county with a population of 1,417. Hill City has a total of eleven wells. Five are located south of town in the Solomon River Valley and six are located nine miles north of town. The South wells are maintained on an emergency basis as the water from these wells contains uranium. The north wells were drilled into the Ogallala formation and are very good wells, both from a quality and quantity standpoint. Adequate storage is provided also with a 500,000-gallon elevated tank in town



Eight miles of 6-inch PVC pipeline was installed from Hill City to Bogue by M & D Excavating, Hays, Kan.

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and approximately 50,000 gallons of storage at the north well field. Dennis Mersch, City Administrator, stated that as a part of the project, one of the six north wells was recently added to the system. This well produces 300 gpm and was provided with a backup generator. Dennis noted that the city could easily supply the city of Bogue and that city officials were in agreement to do so.



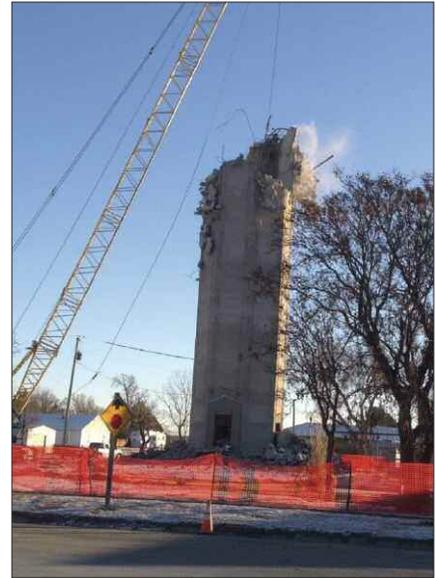
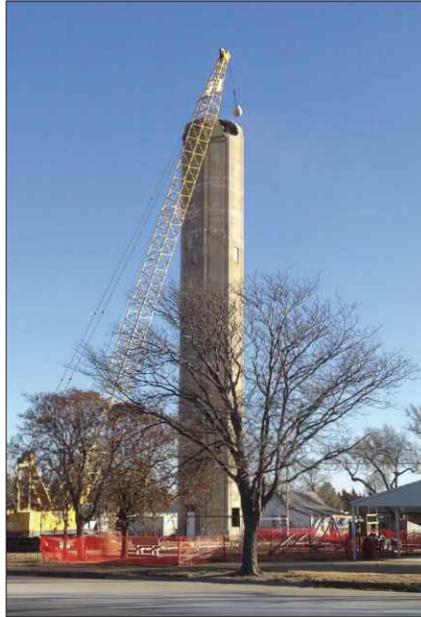
This photo shows the old well house that was a WPA project at the City of Bogue.

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**Bogue's old, WPA-constructed concrete elevated storage tank is being pelted by the wrecking ball.**

**Construction begins**

Having secured a good source of water, Bogue was then in a position to begin construction of improvements. The project included the installation of eight miles of six-inch water transmission line to bring water into Bogue from Hill City. New 6-inch PVC distribution waterline along with six fire hydrants were installed in the west side of town (11 blocks) replacing the old cast iron pipe. The city had previously replaced the distribution system lines on the east

side of town. Also included in this part of the project were service lines and new automated read meters.

Finally, elevated storage since the 1940s was provided by a concrete elevated storage tank constructed during the time of the New Deal. The tank along with a well that served as the very first well for the city was constructed as a Works Progress Administration (WPA) project. The tank though had reached the end of its service life and needed to be replaced. As a result, the concrete tank was demolished and

a new bolted steel standpipe (120 feet by 14 feet) with control valve was constructed. The project also included a new building and new liquid chlorination equipment. Contractors on this project were Midlands Contracting, Kearny, Neb. and M & D Excavating, Hays, Kan.

**Project costs**

A project of this magnitude for a system of its size would not be possible without funding assistance. The overall cost was \$2.6

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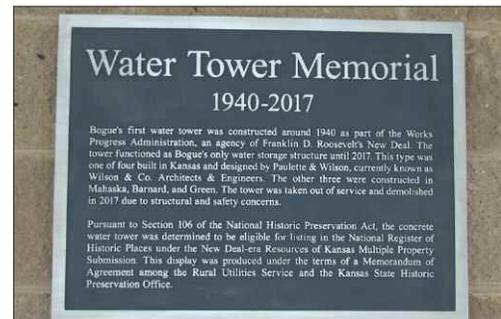


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This photo shows the start of the construction of the new water storage tank at Bogue.

million with funding sources as follows: \$1.151 million grant and \$0.881 million loan from USDA Rural Development; \$0.318 million grant from the Department of Commerce, Community Development Block Grant (CDBG), and \$0.250 million from city funds. The impact to customers was an overall increase of \$20 per month. Increases were implemented incrementally from \$38 to \$48, then to \$58 for 5,000 gallons.

With this comprehensive project, the city of Bogue was able to replace the deteriorating components within its system. Also, and probably more importantly, the

city was able to secure a quality water source for years to come. The fact that the city of Hill City was a willing supplier should not go unnoticed in the overall process. Congratulations to the city of Bogue in accomplishing the project and for receiving recognition for those efforts.

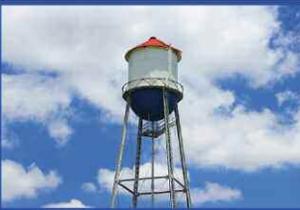
*Bert Zerr is currently a consultant with KRWA. He has been with KRWA since 2005. Prior to that, Bert was a District Engineer with the KDHE in the Salina District Office for 32 years.*



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