By Mark Thomas, GIS Coordinator

Brown County RWD 1 Works to Reflect Upgrades in GIS Mapping System

Brown County, Kansas is located in the extreme northeast corner of the state, just one county west from the "corner county", Doniphan. The first rural water district pipelines that went into service in Brown County for RWD 1 was in 1976. Jackson RWD 3 had extended into about a dozen sections of land in the southwest corner of the county in 1974. Brown RWD 1 is based in Fairview. It began service to 330 rural customers including individual services in the small communities of Reserve, Hamlin and Fairview. Presently the district serves 430 users.

Manager Paul Reynolds has been involved with the district since its inception. Paul worked as an inspector during the original construction that began in 1972. He became operator immediately after construction. His title was changed to manager in 1978. The role of operator more recently went to Ron Rettele, who took over his father's excavating business in Fairview in 1998. Ron has been repairing any leaks and installing new pipelines for the district ever since, along with whatever else his business has going on. Knowledge of this water system has never been a problem for the district. Paul and Ron however also recognized the district's need to accurately archive the locations of the district's infrastructure for future personnel.

In 2010, Brown RWD 1 contracted with KRWA to collect GPS data for the entire district and develop a GIS for them. The initial project was completed in 2011. As anyone familiar with mapping a utility knows, a mapping project is hardly ever finished. After completing the initial data collection, utilities, including rural water districts, should be working to maintain and update the collected data on a scheduled basis to keep their GIS up-to-date. Whether it

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Rural Water District No. 1, Brown County, like many other rural water districts constructed in the early 1970's in Kansas, has experienced failures with 1.5-inch solvent weld pipe. This graphic shows one such area. The blue line represents a new 2-inch PVC pipeline that replaced a leak-prone section of 1.5-inch solvent weld pipe. The red X's are GPS points that were collected on the newly installed 2-inch pipeline. The yellow line indicates the original 1.5-inch pipeline that is still in service.

Why all those 1.5-inch pipe failures?

According to the experience of other staff at KRWA, much of the 1.5-inch solvent weld PVC pipe installed in the mid-70s was not without problems. The problem during installation was often excessive use of the solvent weld cleaner which continued to react chemically with the pipe even years after the installation. In other cases, the pipe at the hub of the bell appears to be very thin. Rubber-gasket pipe was not generally available in 1.5-inch material at the time. Cost was also the determining factor because funding to upsize any pipeline had to be more discouraged than encouraged by the lending agency, the Farmers Home Administration. A solution would have been to upgrade from 1.5-inch solvent weld to 2-inch gasketed-pipe. Even though the difference in cost was often just a few cents per foot, the smaller pipeline was approved because that size was adequate to provide service to the customers who signed at the time. Districts that have the 1.5-inch solvent weld have been troubled with scores of leaks. At Brown RWD 1, replacing these lines has been a priority. As this effort continues, collecting GPS points on the replacement lines and any other changes in the distribution system make the district's GPS mapping more accurate.

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is new pipelines, valves, fire hydrants, meters, manholes, sewer lines, signs, or utility poles, it is important to update the GIS. New pipelines will be installed, older pipelines will in cases be relocated or replaced. A GIS is not as valuable without being kept up to date. Paul and Ron recognize this and have KRWA stop by at least once a year, usually in the Spring to collect the new lines before farmers erase the trench lines with their farm equipment. The new lines in the district are usually replacements for original 1.5-inch solvent weld pipelines that supply one or two customers a half-mile to a mile from a larger main.

I typically set utilities up with Google Earth to view the data digitally, however, the data in these projects can be used in several different capacities. Paul and Ron have yet to use the district's data digitally, as neither grew up, so to speak, in the digital era. However, in knowing the entire district almost from memory, not using the digital mapping on a daily basis is not a detriment to their efficient operation of the system. Having the data available and keeping it updated for future personnel to utilize is the goal for the time being.

Learn about the Public Water Supply portal

My article in the November 2018 issue of *The Kansas Lifeline* discussed the importance of keeping RWD boundaries up to date. This topic will be discussed thoroughly and the options that are available at the 2019 KRWA Conference & Exhibition, March 26 – 28. These options come from the Kansas Water Office Public Water Supply Portal, developed by Data Access and Support Center, in collaboration with the Kansas Water Office and Kansas Rural Water Association. This portal will allow for the update of the Kansas Public Water Supply contact database and associated GIS infrastructure data. This session will discuss this collaborative project and demonstrate how RWDs can review and submit changes to their boundaries, and other infrastructure locations, using the portal.

Mark Thomas has been a GIS Mapping Tech since September 2006. Mark has a bachelors degree in geography from Kansas State University and has specialized studies in ESRI's ArcView and ArcPad software.