

# Public Wholesale District No. 18 Completes Make-over of Plant

**A**s I wrote in the March issue of *The Kansas Lifeline*, the new sand filtration system furnished by WesTech Engineering, in partnership with Ray Lindsey Company, had been delivered to PWWSD 18 at Holton, KS on January 31. Two teams of workers from Utility Contractors, Inc. (UCI), Wichita, arrived for work on the district's plant just southwest of Holton north of Topeka. The first team arrived on Saturday, February 2 and began work on the chlorine contact loop to the southwest of the treatment plant. The other UCI team arrived on Monday, February 4 and began "gutting" of the prior membrane filtration system. At approximately mid-morning that day, Operator Denny Ashcraft shut down the treatment plant; Davin Electric disconnected the power and PWWSD 18 was offline for a "makeover". Utility Contractors had 45 days to remove the membrane system and install the new sand filtration system.

Who says a major make-over couldn't be completed in 45 days? I tracked the project and am pleased to share this itinerary.

**Week One, February 4-9:** Clearwell, valves, pipes and other miscellaneous equipment arrives. Outside team works on the 24-inch chlorine contact loop to the storage tanks. Inside team removes the three booster pumps, concrete pad from the previous tank and additional piping in the building. Dismantling of the existing interior components of the plant is complete. The concrete slab for the new filers is formed

Workers for Utility Contractors, Inc., Wichita, prepare the concrete slab for the new sand filtration system.

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and poured. Valves and connections are made on the 24-inch pipeline; hatch from the head tank is removed; bottom of tank is cleaned and removal of raw waterline begins. The top portion of the filter system is eased into the plant. This maneuver is a very slow and tedious process as the filter system has approximately 1.5 inch of space to clear the doorway. Once the filter system is

in the building, the filter is blocked up to keep weight off the concrete slab.

**Week Two, February 11-15:** This week will prove to be the busiest. The scaffolding is erected to lift the filter system. The filter system is raised to the rafters to make clearance for the clearwell. The clearwell is eased into the building; once inside the clearwell is placed on rollers and rolled into place. It's a perfect fit, almost. The nozzle on the bottom of the filter waste box has to be cut off to get the clearance for the clearwell. Due to sitting in the sun and expanding; the clearwell appears to be too big. Allowing the clearwell to sit overnight and has a chance to cool, it's a perfect fit. The scaffolding is removed; filter and clearwell are welded together. The drop pipe is welded onto the bottom of the waste box; piping is installed on the filter system. Outside the curtain in the old contact tank is removed; the crew discovers a seven foot pipe around the center column. Who

knew? Removal cost estimate will be needed from UCI for the discovered pipe. Formed and poured the concrete opening and pad for the air blowers. Installed taps in the 14-inch line for the NH<sub>3</sub> injection. Installed air releases to the 24-inch pipe.

**Week Three, February 18-22:** Pipe for backwash pumps is installed. Completed piping on filter and welding filter to clearwell. Elbow installed online to surge tank, connected backwash drain line to waste box. Installed catwalk and railing; set filter control on catwalk; installed all nozzles in filter cells.

**Week Four, February 25-March 1:** Continuing connecting piping to pumps; installed blower steel piping; installed pipe supports. Welder finishes various jobs.

**Week Five, March 4-8:** Forming and installing steel pipe supports. Began painting pipe. Finished installing blower piping; completed all piping in the treatment plant. Aligned backwash pumps to the motors and installed guards. Rotation tested on both backwash pumps and blowers. Installed four inches of gravel in filters; added two feet of water in filters, started blowers to check nozzles; all nozzles functioned. Began making connection next to building for NH<sub>3</sub> injection line. Began installing 12.5 inches of sand and 18 inches of anthracite in filter cells. Installed airlines to valves. Painted pipe stands and installed air release on finished water pump discharge. Remainder of filter media arrived (gravel and sand).



The filter vessel is suspended in preparation for the clearwell section to be moved in.



This photo shows the large clearwell being lined up to be moved into the plant.



Here comes the clearwell! It's a tight fit with only 1.5 inches of overall side clearance.



**Utility Contractor, Inc., employees pass off bags of media to each other up the stairs to the filter.**

Kansas Department of Health and Environment for bacteriological testing. WesTech Engineering completes startup; filter training provided district operator and crew. Backwash catch funnel sent to welder for an extension. Painters doing touch up work; KDHE Inspectors – Helen Holm, Vic Montgomery, and Andrew Hare inspect the project. No issues detected. KDHE lab reports Bacteria sample passed. Began pumping water to the ground storage tank; ready to send to distribution system and finished cleaning up. It's day 45 and the project is completed!

### Observations of the partners

EBH Engineering Consultant Don Hellar said, "This was a fun project. The Public Wholesale 18 Board of Directors, Manager Kerwin McKee, Plant Superintendent Dennis

**Week Six, March 11-15:** All media distributed thru filter cells 1, 2, 3 and 4. Clearwell disinfected and closed. Began running raw water through head tank to drain. Clearwell filled from distribution system. Craig Stevens with ASC Pumps works with aligning finished water pumps. All painting is finished. Completed disinfection of filters. Shut down and drained valves and head tank and cones. Started adding polymer and PotPerm; began filling head tank and cones. Installed collection fitting on waste line from drain box. Opened the ground storage tank and installed Pax mixer. Began running water from cones to filters. Pumped water from cones thru filters to the drain; disinfected the ground storage tank and operated backwash pump. Backwashed filters; discovered the CL contact loop is leaking. Began taking out two extra pipes in CT tank. Cleaning up and spreading rock. Day 39.

**Week Seven, March 18-22:** Dug up CL contact loop, repaired leak. All pipe removed from CT tank. Running water thru filters and backwashing. Removed a piece of an auger from the top of the old chlorine contact tank discharging pipe. Pressure testing on the 24-inch pipe @ 60 PSI for two hours; passed. Pumped water through the plant, CL contact loop into CT tank and drained. Cleaned and washed the filter room. Pumped water through to waste; backwashed all filters. Began CL into regular injection point. Sample taken from inside CT tank inlet; sent to

Ascraft and the operators could not have been any better to work with. They had made the difficult decision to remove the membrane filtration and install gravity sand filters before I became involved. Everything came together like you hope it will. USDA Rural Development came through with funding in time that we could meet the District's time schedule.

**By completing the operation on schedule, the District was able to save money by not having to purchase additional water from other sources.**

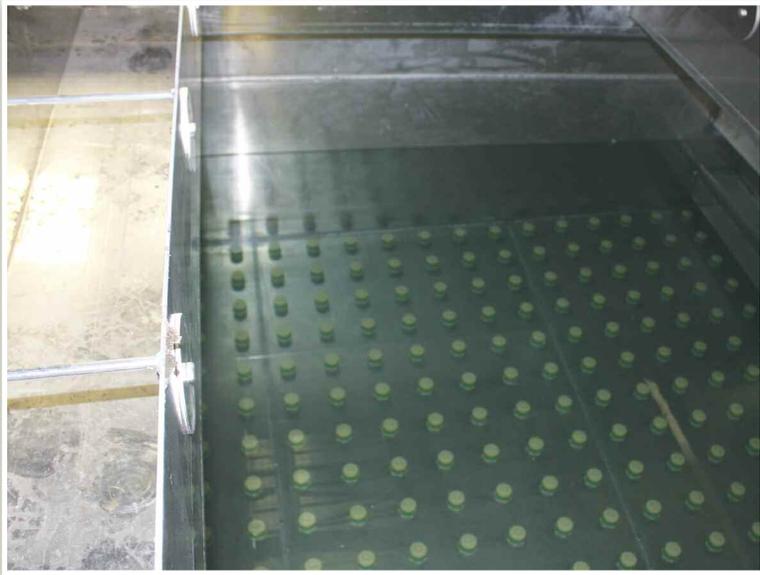
"The filter supplier, WesTech Engineering and their representative, Ray Lindsey Co. did a great job of figuring out what we needed and getting it to us on time. The General Contractor, Utility Contractors, had 45 days to remove the existing equipment and get everything installed to start treating water. They had the plant in operation within the time frame. By completing the operation on schedule, the District was able to save money by not having to purchase additional water

from other sources," Heller said.

Ray Lindsey Co. sales representative John Tillman commented, "In my 25-plus years in the water and wastewater industry, this was the fastest-paced, most efficient partnership among the Owner, Engineer, Manufacturer and Contractor that I have had the privilege of being involved with. Kudos to all of the partners."

### The funding; Earth Day Award

PWWSD No. 18 received a \$1.621 million loan from USDA Rural Development in July 2012 to make the plant



There are 357 nozzles in each of the four cells of the filtration system.

improvements. The funding will allow the district to meet the current and future needs of the more than 3,000 Jackson County customers it serves. PWWSD Chairman Richard Mulroy commented, (as he smiled widely), “The District can finally produce the water that the district was built to do.”

On April 24, in celebration of the 2013 Earth Day, USDA Rural Development recognized Public Wholesale Water Supply District No.18 for investing in its future by

partnering with the agency to improve the district’s water system. See the article on page 102.

I made numerous stops at the plant during this project. I commend Utility Contractors, Inc., for their cleanliness and professional attitude displayed during the project. This crew came to do a job and they did the job well.

The members of PWWSD 18 also appreciate the discussions they had early in 2011 with KRWA staff members Pat McCool and Lonnie Boller as the district evaluated options they had – either to try to continue to work with a membrane technology that they were not happy with or return to conventional treatment. If your city or water district has questions about water treatment or projects, KRWA staff are available to visit with city commissions or work groups and rural water district boards to have friendly conversations. It’s always helpful to know what problems others have experienced and what successes water and wastewater systems have had.

*Rita has extensive municipal experience with the city of Troy, KS for eleven years. She was a certified EMT and served as the Ambulance Director for two years and supervised the volunteer staff. Rita also worked on or completed most water and wastewater utility reporting requirements. Her focus at KRWA is to provide assistance with applications for funding for cities and rural water districts.*



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