

BOOMING BENTONVILLE Continues to Put the Best Treatment Solutions in Place for the Long Term

BY CHRIS FRENCH

n northwest Arkansas, Bentonville is the nation's fi th fastest-growing city, with a population that grew from 35,000 in 2010 to 55,000 in 2019. The citv's Water Resource Recovery Facility staff a e extremely diligent and a proven group of forward thinkers.

The facility, which mainly receives domestic wastewater, saw its 2019 average daily fl w reach 3.7MGD, up by almost one million gallons from 2018.

The first basic astewater treatment plant in Bentonville was established in 1940. Today's facility - an activated sludge-extended aeration plant, was built in 1985. The choice at that time was for Lakeside Equipment Corporation's Closed Loop Reactor (CLR) process, with its racetrack configu ation that provides a straight-line fl w pattern for wastewater between the headworks and the final cla ifier .

At the core of the CLR process is the horizontal Magna Rotor, which sustains a high population of microorganisms in the reactor to provide simple process control.

In 2019, the facility decided it was time to replace these Lakeside rotors.

Bentonville's Operations Supervisor, Chris Earl, explains: "For us, preventive maintenance is the cornerstone of our industry. Routine oil and belt changes extend the life of bearings and motors. However, you must begin with a quality product."

He added, "Despite the fact that we've had this equipment since it was installed in 1985, none of the rotors have failed! Not surprisingly, after such a long time (34 years), a few bearings have had to be replaced, and the fibe glass covers, but it is an amazing run for a piece of wastewater equipment. Our team could certainly keep this piece of equipment running for several more years, but everything was in place with our budgets - and with Bentonville continuing to grow, we decided the time was right to square everything away for the next 35 years or more."

Since the Lakeside Closed Loop Reactor (CLR) was installed in 1985, there have been four upgrades to Bentonville's Water Resource Recovery Facility.

In 1995, additions were made to maintenance and operations buildings. In 2000, two 600,000-gallon aerobic digesters and a blower building were added to improve the solids stabilization process. Also, anoxic basins were added at the north end of the plant for nitrite and nitrate nitrogen removal. Then in 2005, modific tions (continued on page 48)

were made to the anoxic basins to accommodate biological phosphorus removal. The chlorine disinfection system was replaced by a U.V. disinfection system. And in 2009, drying beds were converted to a sludge storage area. Two dump bays were also added to provide an area for Vac-Con trucks and vacuum trailers to unload contaminated material removed from the sewer collection system. This material is allowed to dry and then applied to land or sent to the local compost facility.

Throughout that entire period, the Lakeside Closed Loop Reactor has kept on working and working...

Always on hand to help Chris Earl at the Water Resource Recovery Facility has been Lakeside's agent, Phil Shupe, of North Little Rock's Shupe & Associates.



'PROACTIVE MEASURE'

"The team at Bentonville, who are very easy to work with, run a very tight ship," said Phil. "They set a great example for the wastewater industry and for all engineering by showing that it pays to look after equipment. This latest investment in Lakeside is a very wise, proactive measure that makes perfect sense for the city."

The Lakeside blades, which are die-formed of 10-gauge AISI Type 304 stainless steel to produce stiffness and rigidity that can take a 250 lb impact load without deformation, it is perhaps no wonder that they stand the test of time. The Magna Rotor provides precise oxygen input into the biological process through adjustment of rotor immersion by raising or lowering the level control weir and by adjusting the rotational speed via VFD. Microorganisms are mixed uniformly and because mixing velocity is brought to the channel, solids are prevented from settling. The Magna Rotor's design allows a single rotor to span channel widths up to 30 feet, saving significa t costs by eliminating the need for additional equipment to join multiple rotor assemblies.

Phil Shupe added: "The exemplary safety record of Lakeside's equipment also shouldn't be overlooked. With other systems of lesser quality, loosening bolts have seen brushes flying o . These hunks of steel can cause serious harm, so again, as Chris Earl rightly says, preventative maintenance and the need to begin with a top-quality product is very much the right approach and practice."

Indeed, the mission statement of Bentonville's Water Resource Recovery Facility is 'to protect public health and the environment through effective treatment of wastewater.'

Aeration in mixed activated sludge basins is of course a fi m requirement and certainly not an option, so the Bentonville team pulled out all the stops to maintain proper mixing and oxygen levels for maximum treatment quality during the dismantling and replacement of each of the eight Lakeside Magna rotors – determined to protect the local environment by keeping well within permit compliance.



Working closely alongside Chris Earl is Nancy Busen, Manager of Bentonville's Water Resource Recovery Facility.

'PROTECT AND BLEND IN'

"The amazing activities we now have in the city are our closest neighbors," she said. "We feel it is our duty to not only protect but also quietly blend in to the new ambiance of the surrounding community where beautiful new housing developments are being built as part of the incredible quality-of-life investments that are being made here. In addition to the facility, our statecertified eam of 23 also maintain 59 lift stations throughout Bentonville.

Chris Earl agrees it's imperative to keep investing in reliable equipment that is properly maintained – and reliable staff, who continue to attend industry education classes to broaden and update their knowledge.

"Admittedly the Lakeside equipment is easy to maintain," said Chris, "but with proper care, we expect to see these new Magna Rotors last for a long, long time. Seeing the previous rotors last – and in fact still working after 35 years, is the best possible product recommendation."

