

New Treatment Plant Allows Sought-After Southside to Keep Growing

Growth, progress, prosperity. There's no shortage of it in North Alabama, which has seen its population grow by 30,000 over the last five years, and is projected to rise by a further 24,500 by 2027. Jobs are also on the up, having increased by almost 50,000 in the past five years – with a projected growth of 33,000 more jobs, also in the next five years.

In Etowah County, Alabama's smallest yet most densely populated county, vibrant Southside (population 8,000 – about an hour northwest of Birmingham), is its fastest-growing city – but this prestigious position held by the place described as the "loveliest village on the River Coosa", has been faced with the recent possibility of being overtaken by other fast-rising locations in the state.

Growth naturally brings the need for new infrastructure. Southside's old sewage lagoon system, despite decades of excellent management, had finally reached its capacity. All that growth, progress, and prosperity – but a potential halt on building more homes and attracting more business to the area – without a new wastewater treatment system.

"Everything was perfectly in order with our treatment levels," said David Fry, Assistant Superintendent for Southside Water Works and Sewer Board, "But we'd reached the point where there was a moratorium on the lagoon, so to keep Southside on track, the City knew it had to invest in a treatment system that would future-proof the wellbeing and continued success of Southside." CDG, Inc. (which operates across the whole of Alabama) was brought in to work with the City of Southside to find the best solution. Bordered by the Coosa River in the foothills of the



CDG, Inc., provided the forward-thinking design for Southside.



Lakeside's SBR was selected for Southside.

southern Appalachian Mountains, the area is blessed with wildlife, as well as top-quality boating and fishing. So, not surprisingly, it is very well monitored by Alabama's Department of Environmental Management.

Scott Trott, P.E., Chief Strategy Officer at CDG, commented: "As always, we wanted to do much more than just

collaborate; we wanted to build a unified team with trust, so we brainstormed long and hard with Brandon Sewell (Superintendent) and Fry at the Water Works and Sewer Board to explore all the options."

He added: "This included seeing how or if the lagoons could be improved, but they just can't economically and



The Eshelman Company sourced most of the equipment.

minimizes decanting intervals, while extending the biological process time. The resultant clear water discharges without foam or floating scum.

‘LONG-LASTING AND EFFECTIVE’

Ed Moore from The Eshelman Company said: “For me, the choice of CDG, Inc. and such a long-lasting and effective Lakeside SBR underlines the City of Southside’s desire to do things properly. The old lagoon system was hampering the growth and prosperity of the city, so it was exciting to see Scott Trott’s forward-thinking design for what was clearly going to be a very well-thought-out, scalable new plant that would keep Southside one step ahead of the rest for many years to come.”



The new facility is easily scalable for the future.

The new site was laid out so that capacity – peak flow of one million gallons per day – could easily be doubled by building new tanks. Initially, it would only be running at around 150,000 to 175,000 gallons per day on average – or up 300,000 gallons per day, depending on the time of year. The site required a fair degree of earth moving for it to be raised – with ample groundwater to contend with – but according to contractor, Aaron Schmidt, this proved a straightforward challenge as the team quickly gelled together.

“Most of the equipment was sourced by The Eshelman Company,” said Aaron, “So being able to call upon Ed Moore’s knowledge and experience was a big help. Lakeside was also always quick to respond to any questions during the 10 months of construction.”

reliably meet today’s environmental needs. Some poorly maintained lagoons have well-documented issues of unwanted odors, bacterial spread, and nitrogen/phosphorous overload, but the Southside Board and its predecessors had always managed the lagoon system very professionally and successfully.”

Scott Trott continued: “Bringing the team together, including Aaron Schmidt at Schmidt Environmental Construction, Inc., we started mapping out the project with a detailed analysis so that we all knew where we were, understood what our success would look like, and how every move we made was in that right direction.”

Ultimately, an SBR (sequencing batch reactor) was chosen; one that was very robust – simple to operate – and could be easily scaled up for future needs. A site was identified, and after the equipment opportunities went out to bid, an SBR from Lakeside Equipment Corporation was chosen from its long-established agent in Alabama, The Eshelman Company.

Designed as a cost-effective biological treatment process, Lakeside’s SBR benefits from a fully automated system that treats raw wastewater flow in a single basin using timed-based phases to fill, mix, aerate, settle, decant, and waste sludge. It incorporates diffused aeration with mixers to provide optimum mixing and aeration for high oxygen transfer. An innovative decanter

It would be interesting to know just how seamless – or otherwise – it was when Southside’s first water system was constructed when the City was incorporated in 1957. Now, more than six decades on for its first dedicated wastewater treatment plant, CDG, Inc., through Scott Trott’s design, took great care not to overbuild the new facility, putting a constant review process in place with certified personnel to see the layout from the customer’s viewpoint; carefully considering heights, spaces, and repeat activities – all to make the treatment plant operator’s job easier – without unnecessary obstacles.

‘TOTAL SUPPORT THROUGHOUT’

CDG’s Scott Trott continued: “With designs that aren’t overly complicated for the sake of it, Lakeside clearly understands the needs of operators, so this, together with being excellent communicators, made everything much easier and enjoyable to work on. Some companies only work well when the sun is shining, so to speak, but as always, you soon find out who you are really working with when you hit a few stumbling blocks – and I can safely say that Jim Aitkenhead and his colleagues at Lakeside were with us from start to finish – total support throughout, taking huge pride in the job. There have been no problems with the SBR. It is very reliable and effective.”

Based on a 35-year cost analysis with key component assets forecast for a minimum of 25 years, the Lakeside SBR comprises five key stages in its process:

MIX-FILL: Raw wastewater is introduced into the basin where it is mixed with the mixed liquor suspended solids. This phase is anoxic and can be adjusted to anaerobic for phosphorus release.

REACT-FILL: Aeration is added as the basin is fed with raw wastewater to create aerobic conditions for BOD and ammonia removal. This phase can alternate between aerobic and anoxic conditions for nutrient removal.

REACT: Raw wastewater flow is stopped from entering the basin. Aeration and mixing are controlled to provide final treatment.

SETTLE: Aeration and mixing are stopped to allow separation of liquid and solids.

DECANT AND SLUDGE WASTING: Clear effluent is removed from the surface by the decanter. Near the end of decanting cycle, a set amount of settled sludge is wasted from the system.

Sewell, continued: “From managing chlorine levels at the lagoon, there is obviously far more to a full treatment plant, but that said, the SBR is very easy to operate, with the back-up of the SCADA system, and the team always ready with help, if required. The Lakeside SBR was the right solution for us. It works really well.”

Moore added: “Southside now has a delightful plant to walk around. It has a really good vibe and feel. Considering it has such a high level of design and such rugged equipment, the final cost of \$4.3 million is an outstanding achievement by all concerned, especially because the new facility is so easily scalable for the future. This is a great example of a long-lasting investment for the wastewater industry.”

‘CRUCIAL TO THE CONTINUING SUCCESS AND GROWTH OF THE CITY’

Fry concluded: “The final effluent from the SBR looks just like drinking water, which is pretty remarkable when you see where it has come from. Overall, the plant is very maintenance-friendly. “Maybe it sounds strange to some people, but the new plant is a great environment to work in – and Southside is a great place to live. This new treatment plant is crucial to the continued success and growth of the City. Now that there is all this new capacity, Southside can welcome the building of more new homes and investments from new business.”

