

CASE STUDY

An Affordable Wastewater Collection and Treatment Solution for Municipalities and Communities

FULTON, ALABAMA

Problem

Public concern was mounting over the lack of adequate wastewater treatment for the vast majority of homes in Fulton, Alabama. High groundwater levels contributed to septic system failures at some residences, while many others had no septic system at all.

Solution

A tenacious mayor researched and pursued the necessary funding all the way to Washington, D.C. In the end, he chose an Orenco Effluent Sewer followed by Orenco's AdvanTex® Treatment System, because it was easy to maintain and offered a lower cost of operations than the other options.

Small-Town Mayor Tackles a Big Problem



Residents of Fulton paid no fees for the on-lot portion of their Orenco Effluent Sewer, thanks to the diligence of their mayor in obtaining state and federal funding.

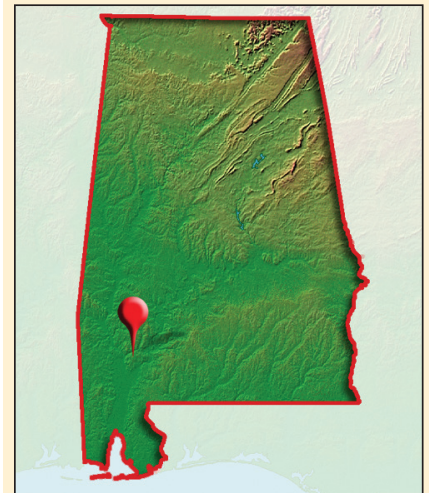
In a city with a population of almost 400, the residents of Fulton, Alabama seemed to be on their own when it came to solving the problem of failing septic systems and soil that wouldn't percolate. High groundwater levels are prevalent for 8-10 months of the year – especially in the low-lying areas along Bassett Creek, which carries water through Fulton and then south toward the Gulf of Mexico – and septic system failures were rampant. Frustrated residents had even resorted to draining wastewater from their homes straight into nearby ditches. Behind the Post Office, completely untreated sewage flowed into the creek.

But Mike Norris knew it didn't have to be that way. A life-long resident of Fulton, Norris had served on the City Council for twelve years prior

Municipal and Community Market

Project Overview

FULTON, ALABAMA



Design Parameters

- Phase I: 65 connections (+ future connections)
25,000 gpd (95 m³/day) design average flow
45,000 gpd (170 m³/day) maximum daily flow
- Phase II: 132 connections (+ future connections)
40,000 gpd (151 m³/day) design average flow
80,000 gpd (303 m³/day) maximum daily flow

Permit Limits

- 30 mg/L BOD₅
- 30 mg/L TSS
- 20 mg/L TKN

Effluent Quality*

- 15 mg/L BOD₅
- 13 mg/L TSS
- 7 mg/L TKN

Start-Up Date

- 2006 (Phase I), 2013 (Phase II)

Total Project Cost

- Phase I: \$2 million
- Phase II: \$3.5 million

* Samples collected between 6 January 2010 and 1 June 2014 and analyzed by a third party.

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FULTON, ALABAMA

Although Fulton's five units are situated partially above-ground, the AX-Max™ can also be installed in-ground, as well as individually or in multi-tank arrays.

to becoming mayor in 1998. With a background in the field of water treatment, he knew there had to be better options for his city, so he began to research the possibilities. As he puts it, "When you're a small town without a lot of personnel, you just have to take care of things on your own."

A Quest for Information and Funding

During this period of research, Mayor Norris was introduced to Dr. Kevin White, professor and chairman of the Department of Civil Engineering at the University of South Alabama in Mobile, located just 90 miles to the south of Fulton.

Dr. White is an authority on the subject of decentralized and small community wastewater treatment. He not only provided Norris with valuable information, but he also put him in touch with Dauphin Environmental Equipment, LLC, a distributor of Orenco products. The distributor arranged for Norris to tour some of the decentralized wastewater treatment facilities operated by South Alabama Utilities (SAU) in several locations in Mobile. There, Mayor Norris learned how SAU had installed more than 60 miles (96.5 km) of interconnected Orenco Effluent Sewers serving 47 subdivisions, with secondary treatment by approximately 150 AdvanTex treatment units clustered at various sites.

The mayor was impressed by what he saw in Mobile. "I loved the low maintenance that the Orenco system offered," he recalls. And, with funding being a major hurdle, he knew that financing a conventional gravity sewer plant was not an option for the city of Fulton.

Norris also knew it would be quite feasible and very cost-effective to install the two-inch and four-inch (50-mm and 100-mm) collection lines used with the Orenco STEP units. These small main lines are easily installed along streets and roads, and because they follow the contour of the ground, excavation costs are lower than for gravity sewers.

Once he had decided on Orenco Systems' technologies as the solution to Fulton's wastewater crisis, Mayor Norris armed himself with photos of the city's dire situation and began his quest for funding. After discussions with a variety of state and federal officials, and ultimately making several trips to and from Washington, D.C., Norris obtained a combination of grants and loans that would finance an Orenco Effluent Sewer for the entire city of Fulton, plus thirty customers outside of city limits.



Mayor Norris visited South Alabama Utilities, which has more than 60 miles of Orenco Effluent Sewers and multiple AdvanTex AX100 textile treatment units.



A fully plumbed and compact unit, the AX-Max is ideally suited for treating wastewater from commercial properties and communities.

Persistent Effort Pays Off

In 2006, the Phase I facility was completed on the west side of town. Phase I comprises 65 on-lot STEP packages with service lines connecting to nine Orenco AX-100 units. Later that same year, Mayor Norris was recognized as a “Rural All-Star” by the Alabama Department of Agriculture and Industries “because of his untiring efforts to improve the community and improve the quality of life and economic opportunity for all [Alabama] citizens...”

Norris then worked to obtain additional funding, and in 2013, Fulton’s Phase II facility was completed on the east side of town, consisting of 132 STEP connections and five Orenco AX-Max units. Introduced in 2010, the AX-Max has more than double the treatment capacity of an AX-100. Both treatment facilities have plenty of extra capacity, should the city need it.

Dauphin Environmental Equipment, LLC, based in Mobile, supplied the majority of products used in each of Fulton’s treatment systems. “What I really like about Orenco is they do everything they can to ensure our customers’ wastewater projects are a success from the feasibility stage through implementation to well past warranty,” said Dauphin’s Billy McLean.

According to Mayor Norris, “The system is doing what it’s supposed to do, our property owners are satisfied,

and the city council is tickled to death.” All homes and businesses in Fulton, including the large lumber mill that is the city’s major employer, are now serviced by the Orenco Effluent Sewer.

Others in the surrounding area are taking note of activities in Fulton. During the Phase II construction, several groups toured the site to determine if it was a model they could adopt for their own wastewater needs. Orenco Sales Engineer, Ben White, handled the start-up, and one of those on hand was Herman Williams, former county commissioner in neighboring Washington County and the current operator of an Orenco Effluent Sewer owned by the county.

“I’m familiar with the Orenco system,” he commented. “It’s a good design. I’m also familiar with the Orenco people. From what I know about Orenco, I would recommend it to other communities.”



The AX-Max is a recirculating media filter that can produce outstanding effluent suitable for reuse.

FULTON, ALABAMA**Enjoying the Results**

In addition to serving as mayor, Norris also acts as the city's full-time wastewater operator. He continues to be impressed with the low cost of operations and maintenance for his two facilities. "Right now," he says, "the monthly sampling cost is our most expensive item." (Sampling is a standard requirement for wastewater systems permitted by the Alabama Department of Environmental Management.)

Residents are also enjoying the benefits of this low-maintenance wastewater system, paying just \$37.50 per month for services. In addition, their on-lot pump packages – which include a watertight septic tank, Orenco's patented Biotube Pump Vault filters, and a lightweight non-corroding pump that typically lasts more than 25 years – were paid for with grant money obtained by the mayor.

Another major benefit of the city's wastewater system has been the elimination of foul odors that used to linger in the air around town due to improper sewage disposal. But thanks to the Orenco Effluent Sewer which is now operational throughout all of Fulton, homeowners can once again leave their windows open whenever they choose.

According to project engineer Tony Reid of the Montgomery office of Goodwyn, Mills, and Cawood, the Orenco Systems technologies were "a good solution for Fulton. I would recommend them again for the right application, especially for use with dripfield dispersal or spray irrigation."

Mayor Norris agrees. It was thirteen years ago that he first began his quest to provide wastewater services to his constituents. Looking back, he feels it was definitely worth all the time and effort, because "if we don't have sewer, we can't expect anyone to live here."



This fiberglass building houses Fulton's Phase II ultraviolet disinfection units. Available in numerous sizes, Orenco Fiberglass Buildings are insulated and sturdy, yet light enough to be easily transportable.

Municipal and Community Market**Grant Funding**

- State of Alabama
- HUD, Community Development Block Grant
- USDA, Rural Development Grant/Loan

Fees

- \$37.50/mo/residence
- On-lot pump packages funded entirely by grants

Collection System/Primary Treatment

- Orenco STEP units with 1,000-gallon (3785-L) tanks

Secondary Treatment

- Phase I: 9 Orenco AX-100 units
- Phase II: 5 Orenco 42' AX-Max units (12.8 m)

Tertiary Treatment

- Phase I: None
- Phase II: Ultraviolet disinfection

Dispersal

- Subsurface drip irrigation

Monitoring and Control

- Orenco TCOM remote telemetry control panel

"The system is doing what it's supposed to do, our property owners are satisfied, and the city council is tickled to death."

– Mayor Mike Norris

For information about Prelos™ Sewer, AdvanTex® Wastewater Treatment, or Orenco Controls™, contact Orenco Systems®, Inc.



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Data used by Orenco to derive the representations and conclusions contained within this Case Study were current as of June 2014.