

# PROJECT PROFILE

An Affordable Wastewater Collection and Treatment Solution for New Developments

## THE CROSSINGS, NEW BRAUNFELS, TEXAS

**Problem** A modern, master-planned community in the Texas Hill Country needed a wastewater collection and treatment system that could be installed in phases and would perform as reliably as a large municipal system but without the cost, odor, or need for a full-time operator.

**Solution** Due to the need for "phase-ability" and affordability, developers chose an Orenco® Sewer™ and an AdvanTex® Municipal Treatment Facility. Both collection and treatment can be installed in phases, dramatically reducing up-front capital costs and offering homeowners a fully sewered community.



Located beyond the reach of any existing sewer system, this new subdivision needed cost-effective wastewater collection and treatment that could be installed in phases.

## Affordable Wastewater Collection and Treatment

SouthStar Communities was planning an 80-acre (32-ha) development for New Braunfels, Texas. Developers wanted the future homeowners to enjoy the benefits of a permanently sewered community, but they also needed a "phase-able" system. They evaluated several options, including conventional gravity sewer, ultimately concluding that a gravity sewer was cost prohibitive and could not be installed in phases.

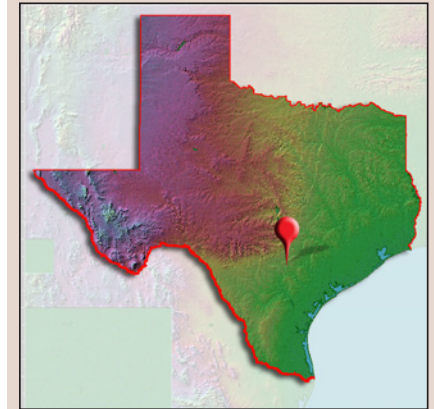
SouthStar also needed a treatment system that would minimize odors and not detract from the aesthetics of the development. They considered a full-scale activated-sludge plant, but that would have required a full-time operator, adding too much to the overall cost of the project.

Fortunately, Orenco Systems® offered affordable solutions for both wastewater collection and treatment: an Orenco Sewer™ followed by an AdvanTex® AX-Max™ Municipal Treatment Facility. Both can be installed in phases, providing short- and long-term cost savings.

## New Development Market

### Project Overview

#### NEW BRAUNFELS, TEXAS



#### Design Parameters

- 184 homes
  - ~ Phase 1: 49 homes
  - ~ Phase 2: 70 homes
  - ~ Phase 3: 65 homes

#### Installation Date

- March 2016

#### Funding Source

- Private developer

#### User Charges

- Base monthly rate: \$33.64/home (covers the cost of repairs and preventive maintenance)
- Usage fee:
  - < 5,000 gallons: \$2.66/1000 gallons
  - > 5,000 gallons: \$2.92/1000 gallons

#### Municipal Collection System

- Orenco® Sewer™
  - ~ Approx. 8,000 ft (2,440 m) of 2-in. (50-mm) and 3-in. (75-mm) diameter collection lines at full build-out
  - ~ Orenco STEP packages
  - ~ 1,250-gallon (4,730-liter) tanks

#### Municipal Treatment Facility

- TPDES permit issued by the TCEQ
- 5 AdvanTex® AX-Max™ treatment units
- 1 Max pump tank with chlorine contact chamber
- 40,000-gallon (150-m³) flow equalization tank
- Chlorine disinfection

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**THE CROSSINGS, NEW BRAUNFELS, TEXAS**

Orenco Sewers consist of low-pressure mainlines and an Orenco STEP (Septic Tank Effluent Pump) package in an underground tank at each home. Unlike gravity sewers, which require deep excavations to install manholes and large-diameter mainlines, Orenco Sewers use small-diameter mainlines. These are easily installed with light-duty equipment, reducing the cost and duration of construction.

Collection lines move primary-clarified effluent from each tank to the treatment facility. Solids sink to the bottom of the tank and are digested anaerobically over time. With only effluent going to the treatment facility, the size and cost of the facility can be significantly reduced.

Another important advantage of Orenco Sewers is that they can be installed in phases to correspond with a developer's build-out schedule. At The Crossings, homes will be constructed in three phases consisting of 49, 70, and 65 homes, respectively.

With an Orenco Sewer, the up-front cost of installing the small-diameter mainlines generally accounts for less than 20% of the overall cost of the collection system. The remaining costs are associated with the on-lot equipment at each home. These costs are deferred until the home is built and are typically financed as part of the homeowner's mortgage.

At full build-out, the AdvanTex Treatment Facility at The Crossings will include five AX-Max treatment units. Supported by Orenco, Integrated Water Services completed the design and construction of the facility in less than six months. And like the Orenco Sewer, the AdvanTex units are being installed in phases, reducing up-front capital costs.

Orenco's robust AX-Max units provide stable performance without the daily oversight – and expense – of a full-time operator. In an AdvanTex Treatment System, effluent is evenly distributed onto sheets of textile media, where microorganisms digest the organic waste in the water, treating it as it trickles through the textile.

Fractional horsepower fans draw air through the media, providing oxygen for aerobic digestion. Effluent is circulated and discharged by low-horsepower pumps that operate intermittently. The energy needed for aerating and distributing the effluent is a fraction of what would have been required if developers had chosen an activated-sludge plant.<sup>1</sup>

Developers want cost-effective solutions that provide permanent wastewater service like that of large municipalities. Orenco Sewers and AdvanTex treatment are the answer. They offer a significant reduction in capital costs and operational costs. And due to their "phase-ability," up-front costs can be deferred. Together, they provide durable, reliable solutions for municipalities and new developments.

<sup>1</sup> Richard F. Jex, PE. 2014. "Reliable Wastewater Treatment Can Be Energy-Efficient and Simple to Maintain." Presented at the Caribbean Water & Wastewater Association Conference; Nassau, Bahamas; October 9.

Data used by Orenco to derive the representations and conclusions contained within this Project Profile were current as of September, 2016.

**New Development Market****Discharge**

- Surface discharge

**Monitoring and Control**

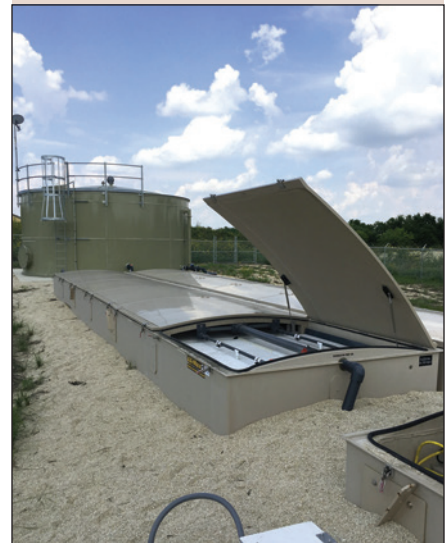
- Orenco S1 Series panel (collection)
- Orenco remote telemetry board (treatment)

**Engineer**

- M&S Engineering (collection system)
- Integrated Water Services (treatment facility)

**Operation and Maintenance**

- Crystal Clear Special Utility District



*These AdvanTex® AX-Max™ units provide excellent treatment at The Crossings without the need for a full-time operator.*

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



800-348-9843 • +1 541-459-4449  
www.orenco.com