

# CASE STUDY

## An Affordable Wastewater Treatment Solution for Commercial Properties

### Morgan's Point Resort, Texas

**Problem** Approaching forty years in operation, the wastewater treatment plant at Morgan's Point Resort, Texas, was rusted to the point that it was literally in danger of falling apart. In addition, it had constantly running aerators that consumed a lot of energy and were so loud that nearby residents complained of the noise.

**Solution** City leaders toured an Arkansas town served by an Orenco Effluent Sewer, followed by Orenco's AdvanTex Treatment System, which convinced them to install their own AdvanTex treatment plant. This not only eliminated the noisy aeration process required by their old sludge plant, but also reduced operation and maintenance costs.

### New Texas Treatment Plant Surpasses TCEQ Requirements



*The city of Morgan's Point Resort is situated next to Lake Belton, which serves as the source of the city's drinking water, in addition to providing recreational opportunities to local residents. The marina has been designated as a "Certified Clean Texas Marina."*

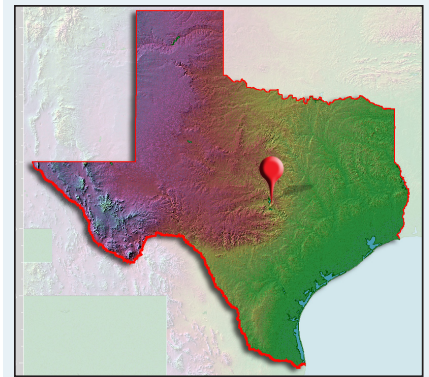
When its 1960's-era activated sludge plant failed, the City of Morgan's Point Resort, Texas, had no choice but to haul its waste to neighboring treatment facilities. Fortunately, its new wastewater plant was nearing completion at a site just a few yards away.

As far back as 2003, city leaders saw the need to begin planning to replace their aging wastewater facility, which was originally installed in 1965. According to Robert Russell, then Superintendent with Morgan's Point Resort, the old plant "took a lot of man hours to keep it maintained, and it was just too dangerous for the employees."<sup>1</sup> Finally,

### Commercial Market

#### Project Overview

#### MORGAN'S POINT RESORT, TEXAS



#### Design Parameters

- ~75 households
- 5,500 gpd (20.8 m<sup>3</sup>/day) average daily flow
- 15,000 gpd (56.8 m<sup>3</sup>/day) capacity

#### Start-Up Date

- 2007

#### Funding Sources

- Certificates of obligation issued by the city

#### Fees

- \$83.04/month per residence

#### Primary Treatment

- 40,000 gallon (151.4 m<sup>3</sup>) primary tank

#### Secondary Treatment

- 6 AdvanTex AX-100 pods

#### Tertiary Treatment

- Chlorine disinfection per TPDES permit

#### AdvanTex Effluent Quality

- <5 mg/L BOD<sub>5</sub> and TSS
- <3 MPN/100 mL E. coli

#### Dispersal

- Surface irrigation of approximately 3 acres (1.2 ha) of greenbelt easements between residences. Remaining effluent discharged into nearby Lake Belton per TPDES permit.

#### Monitoring and Control

- Orenco TCOM telemetry control panel

*Continued on next page*

## MORGAN'S POINT RESORT, TEXAS

an arm that braced one of the aeration chambers gave in, causing the plant to be shut down.

In replacing the old sludge plant, Russell saw an opportunity for the city to realize the many advantages offered by an alternative treatment process, including lower operation and maintenance costs, less noise, and no odor. "Cost, noise, smell... you name it, and we were concerned about it," remembers operator Jesse Measles.

At that time, Morgan's Point Resort contracted with Comprehensive Engineering Solutions (located in nearby Temple, Texas) for help in designing the new facility. As Russell and owner Kristine Andrews, P.E., were exploring the city's options, they were approached by Patrick Kern of Paramount Wastewater Solutions, also based in Temple. He recommended that they consider using Orenco System's AdvanTex AX100 units as the basis for their new plant.



*Sitework for the new, low-profile wastewater treatment plant at Morgan's Point Resort. Its rusting activated sludge plant can be seen at the rear.*



*Six AX-100 pods provide all the treatment capacity the city currently needs, plus room to grow. These low-maintenance units can be installed in-ground or partially bermed, for an even lower profile.*

## A Field Trip Shows the Possibilities

Andrews and city staffers traveled to Bethel Heights, Arkansas, to see for themselves how Orenco equipment looked and performed. The city of Bethel Heights had recently installed 45 AdvanTex AX100 recirculating filter pods at two city treatment sites. According to Andrews, "The AX100 was a very appealing product. It offered a multi-dimensional solution to our unique problem."

Kern recalls that Morgan's Point Resort officials had also been considering the installation of another open-top activated sludge plant, but "They had zero tolerance for any kind of smell. With the AX100, everything was enclosed. They really liked that."

Another huge advantage offered by the AX100 was the opportunity to greatly reduce the amount of noise coming from the treatment site. At the deteriorating sludge plant, Russell noted that "The old circulation pump was on top of the facility and ran 24/7. People blocks away could hear it at night."<sup>2</sup>

Not only were the high-head effluent pumps of the AX100 units much quieter than the loud aerators on the old plant, but also the AdvanTex system did not require continuous operation of the pumps. Instead, they cycled on and off, for a total operation time of less than three hours per day.

Following the tour of the Bethel Heights facility, Morgan's Point staff were convinced: the Orenco AdvanTex system was the wastewater solution they had been searching for. The city moved ahead with plans for the \$1.25 million project, which also included office space for water and wastewater staff, and the new facility began operation not a moment too soon — in November, 2007, just 12 weeks after the failure of the old activated sludge plant.

Speaking of the new plant, engineer Kristine Andrews laughs about the fact that "For a sewer plant, it is actually pleasant to look at. Most people don't even know that it's a wastewater facility." The plant is located at the end of a residential cul-de-sac right next to popular Lake Belton.

Andrews also notes, "Because they offer a package deal, the Orenco products are good, clean, and easy for an engineer to put together. The support you need is there, and the questions you have are answered."

*Continued on next page*



**MORGAN'S POINT RESORT, TEXAS****A Pattern of High Water Quality**

The City of Morgan's Point Resort benefits from being located immediately to the east of Lake Belton, which offers a wide-range of recreational activities, including fishing, boating, and swimming. The lake, however, also fulfills a much more fundamental need: it is the source of drinking water for the town's 4,400 residents.

For this reason, Wastewater Operator Jesse Measles



*The effluent sample on the left, discharged from the Orenco AX100 unit, is almost indistinguishable from a water sample taken directly from Lake Belton. Weekly effluent tests from the AX system show consistently better results than are required by the TCEQ.*

pays close attention to the weekly lab results that show the high quality of effluent being released by his plant. Although the treated effluent is primarily

used as nightly irrigation for approximately three acres (1.2 ha) of greenbelt easements between residences, additional effluent is also discharged into Lake Belton.

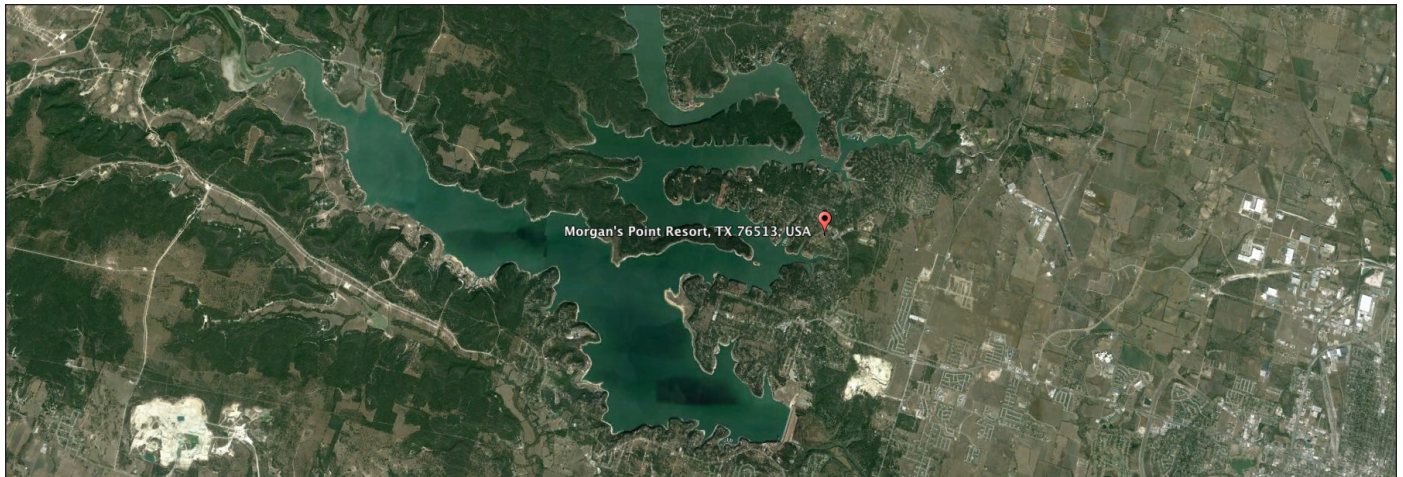
"We're pretty proud of our lab results," remarks Measles, and a quick glance of the data reveals why. Levels of both BOD<sub>5</sub> and TSS consistently hover around 2-3 mg/L, far below the limits set by the Texas Commission on Environmental Quality (TCEQ).

Working under the direction of Wastewater Superintendent Dale Sellears, Measles handles maintenance and operations for both the water and the wastewater departments, along with two other full-time operators, Ben Wilkerson and Damon Balboa. According to Measles, wastewater maintenance is pretty routine, so "we spend most of our time on water issues."

**Saving Time and Preserving the Environment**

When it comes to the smooth operation of their wastewater plant, however, the job is simplified by an Orenco TCOM telemetry control panel installed at the facility. This touch-screen panel gives operators the ability to remotely monitor and control the performance of mechanical equipment in real time. For instance, if a pump were to malfunction, the panel would auto-dial the operator on call, alerting him to the situation and saving him the time of having to troubleshoot the source of the problem.

*Constructed by the U.S. Army Corps of Engineers, Lake Belton is located on the Leon River and offers arguably some of the best fishing, camping, and boating in central Texas.*



*Continued on next page*

## Morgan's Point Resort, Texas

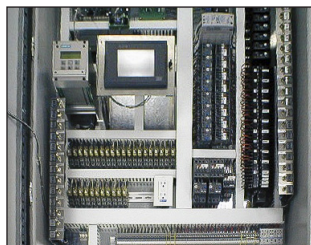


In addition to opening its new wastewater treatment plant in 2007, the city also built an adjacent 3,500 sq. ft. (325 m<sup>2</sup>) facility to house both its water and wastewater departments.

Such a time-saving device is important to the city's overall effort to productively serve its residents. "We are looking for the best cost-efficiencies ... always," states David Huseman, City Manager of Morgan's Point Resort.

Huseman views the city's wastewater plant as a key factor in helping city officials maintain their role as stewards of the local environment. "We look at our operations with the utmost scrutiny so that we can take pride in our efforts to reduce any possible environmental impact. This facility allows us to do that. It received the highest marks possible during our last TCEQ inspection."

Although the population of the city of Morgan's Point Resort has been stable for the last few years, it increased 40% between 2000 and 2012.<sup>3</sup> From time to time there is talk of future development, possibly including an additional wastewater treatment site. "In that case, I would definitely recommend an Orenco system or anything else that performs as well or better," says Huseman, adding, "... if there is such a product."



Orenco's TCOM panel provides remote monitoring and control.

## Commercial Market

*"For a sewer plant, it is actually pleasant to look at. Most people don't even know that it's a wastewater facility."*

– Kristine Andrews, P.E.

For more information about Orenco Effluent Sewers and AdvanTex® Treatment Systems, contact Orenco Systems®, Inc., at 800-348-9843.

# Orenco®

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

<sup>1</sup> Barclay, Emily. "Morgan's Point Resort Gets New Wastewater Facility." *Quality on Tap!* March/April 2008: 8-10. Print.

<sup>2</sup> *ibid.*

<sup>3</sup> City-Data.com, Morgan's Point Resort, Texas, Nov. 2013, [www.city-data.com/city/Morgan-s-Point-Resort-Texas.html](http://www.city-data.com/city/Morgan-s-Point-Resort-Texas.html)