

# CASE STUDY

Orengo Systems® Incorporated

## LACEY, WASHINGTON

### Early Effluent Sewer Adopters Develop Hybrid System

Lacey, Washington — about 50 miles south of Seattle — began growing rapidly between 1980 and 2000. During that period, its population more than doubled, from 14,000 to 31,000.

With the neighboring cities of Olympia and Thurston, Lacey signed an Urban Growth Management Agreement that defined the Urban Growth Area (UGA) for the region. The three cities agreed to focus new growth towards the UGA and to provide sewer infrastructure to support it, instead of allowing septic.

Providing gravity sewers to these rapidly growing areas would have been extremely costly. At the time, Orengo effluent sewers were a relatively new technology. Even so, the City of Lacey decided to become an “early adopter.” In 1986, the first effluent sewer mains were installed in the Lacey UGA.

### Two Collection Systems, One Treatment System

Today, Lacey’s 33-square-mile wastewater service area includes approximately 100 miles of gravity sewer mains and 46 miles of small-diameter, watertight effluent sewer mains. The

system has about 7,800 gravity sewer connections and 2,800 effluent sewer connections (which include an underground tank and a Septic Tank Effluent Pumping [STEP] system). Some homes are also connected to community STEP tanks that accommodate as many as 100 households.

All the effluent sewer mains discharge into the city’s gravity sewer infrastructure, where the combined wastewater flows to a regional treatment plant.

### Evolution of Maintenance Protocols for the Effluent Sewer System

When the system was designed in the late 1980s, effluent sewers were uncommon, and Lacey couldn’t compare notes with any similar-sized communities about O&M protocols. So Lacey first adopted a policy of performing reactive maintenance on the effluent sewer system, rather than preventive maintenance.

This protocol worked in the early years, when all the equipment was new. But by 1998, deferred maintenance was becoming an issue. Lacey started having a high emergency call-out rate: 365 emergency calls annually (all causes) – representing 26% of the 1,400 connections.

At this point, Lacey implemented an aggressive maintenance program. For the on-lot equipment, that included pumping the tank, cleaning it, and replacing floats at every service call. For the collection system, maintenance included annual cleaning of air release valves. Because of odor issues caused by the design of the connections where the effluent lines met the gravity lines, the city adopted a chemical injection program for the connection sites.

Under this regimen, the emergency call-out rate declined to 6% per year (all causes), even as the system doubled in

*Developing efficient maintenance protocols has helped Lacey operate its hybrid sewer system economically.*



*Continued on next page*

size to 2,800 connections. The city had an excellent level of service, with prompt response to citizen calls. But the cost of this maintenance program was high, and the city urgently sought a way to get it under control.

### Finding a Sustainable, Affordable Level of Service

In 2007, at Lacey’s request, Orenco’s Asset Management Group began analyzing the city’s maintenance protocols.

Orenco arranged for Lacey officials to meet with officials from other communities that also had long experience with effluent sewer systems. They visited Charlotte County, Florida; Missoula, Montana; Yelm, Washington; and Camas, Washington. Lacey’s operators also attended a workshop at Orenco’s headquarters with operators from other communities.

Orenco then worked with Lacey to develop a plan for a sustainable, affordable level of service. Changes include the following:

- Increasing the interval between full service visits to STEP systems from five to eight years
- Experimenting with aeration for odor control, instead of chemical injection.
- Evaluating increased use of residential on-lot tanks instead of community tanks for all new construction

“We truly appreciate the effort that Orenco has made in doing what they can to reduce our costs and effort,” said Terry Cargil, water and wastewater supervisor for the city of Lacey. “They have taken the time to help us strategize ways to make wastewater service more affordable for our customers and reduce the effort required for maintenance.”

“Over the past two-plus decades, Lacey has developed tremendous experience in managing a hybrid sewer system,” says Darren Paschke, Orenco’s Post-Sales Account Manager. “And utility managers have experimented with various maintenance protocols in an effort to maintain a high level of service while controlling costs. Because of the city’s long-term experience with effluent sewers, Lacey’s O&M history serves as a valuable resource for other communities.”



Lacey, Washington

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



**Orenco Systems®**  
Incorporated

*Changing the Way the  
World Does Wastewater®*

800-348-9843 • 541-459-4449 • [www.orenco.com](http://www.orenco.com)