

Wastewater Solutions

Affordable Wastewater Treatment Solutions from Orengo Systems[®], Inc.

Designing wastewater systems for campgrounds and RV parks is challenging. After all, what kind of a system can offer the process stability to treat the high-strength wastewater that surges through the system during good weather and slows to a trickle during bad weather? Orengo's packed bed filter treatment systems have been successfully handling campground flows for decades, at more than 250 seasonal facilities around the world: campgrounds and RV parks, but also visitors' centers and freeway rest stops.



In stunning Monument Valley, the Navajo Nation operates a hotel and restaurant. When they wanted to add camping facilities as well, an AdvanTex[®] treatment system made it possible.

The View Campground, Arizona

AdvanTex[®] units accommodate growth

In beautiful Monument Valley, Arizona, the Navajo Nation wanted to expand its tourism facilities to include a campground area, cabins, and an RV park. In addition, they needed help for their current wastewater system — not manufactured by Orengo — which was struggling to keep up with flows from the existing hotel and restaurant. The Nation chose to install four AdvanTex[®] AX-Max units followed by soil trench dispersal.

The treatment units were supplied by Premier Environmental Products and installed by Integrated Water Services. Start-up was in June, 2014, just in time for the busy summer travel season. The new AX-Max units share a collection system with the older WWTS, an anaerobic-aerobic sequence bioreactor. A diversion point was added just in front of the older system so that about two-thirds of the total flow is now directed to the newer system. The AdvanTex units have the capacity for an average daily flow of roughly 20,000 gpd (75.7 m³/day), and additional units can easily be added to accommodate future growth.

Design Considerations for CAMPGROUNDS & RV PARKS

Campgrounds and RV parks experience dramatic fluctuations in wastewater flow. They also tend to generate higher-strength waste than other facilities, because when people camp out, they do a lot less washing but just as much flushing. In addition, by their very nature, campsites are often located in remote areas, where operators are not always readily available.

Orengo's AdvanTex[®] Treatment Systems employ a multi-pass, packed bed filter technology that is ideal for handling highly variable flows and is also inherently more stable than suspended-growth activated sludge systems. A more stable process means greater reliability, lower operation and maintenance requirements, and greater confidence in meeting the permit limits for these beautiful places.

Orengo's AdvanTex Design Criteria includes a sample design for campground applications. To order a copy, call 800-348-9843 or +1 541-459-4449.

Continued on next page



The refurbishment of Camp Fircom featured not only a new AdvanTex wastewater system, but also a dining hall designed by Principle Architecture. Photo courtesy of Camp Fircom.

Camp Fircom, British Columbia

Low power consumption a necessity

Camp Fircom, located on British Columbia's Gambier Island, got its start in the 1920's, with campers arriving by rowboat and sleeping under tents in open fields. The camp grew slowly, eventually adding a dining hall and various smaller structures. By 2005, major renovations were called for, including a new wastewater system.

Because the camp needed to generate its own electricity, energy efficiency was paramount. The designer chose to install three AdvanTex AX100s to accommodate average daily flows of up to 9,700 gpd (36.7 m³/day). The low maintenance requirements and low power consumption (< 2 kWh per 1000 treated gallons or 3.8 m³) of the AX100s made them a particularly good fit.

Oak Bottom Marina Campground, California

AdvanTex replaces struggling batch reactor

Just west of Redding, California, Oak Bottom Marina Campground attracts thousands of people each summer, with holiday weekends being the busiest. But the campground's wastewater system was struggling to keep up, and its aeration batch reactor required daily manual testing and adjustment. The decision was made to upgrade to a low-maintenance system that had a smaller footprint: an AdvanTex Treatment System.

The new system uses an older, existing lift station to pump wastewater to a 20,000-gallon (75.7-m³) primary treatment tank. Then, the waste flows by gravity to a pair of 6,500-gallon (24.6-m³) equalization tanks and then to a timed-dose lift station where a predetermined and adjustable amount of wastewater is pumped into an AX-Max unit for secondary treatment. Effluent is then pumped through a chemical feed system for pathogen removal and finally to a one million-gallon (3,785-m³) storage tank that holds the treated effluent for dispersal during the summer months.



More than 200 AdvanTex AX20-RTs at the BSA's National Jamboree site treat greywater from sinks and showers for reuse in toilets. Photo courtesy of Tim Felbinger.

The Summit Bechtel Reserve, West Virginia

Treating greywater for reuse saves resources

The Summit Bechtel Reserve (SBR) in West Virginia is the permanent location of the National Scout Jamboree, a monumental gathering every four years of approximately 40,000 Boy Scouts, leaders, and support staff. At other times, this 10,600-acre (4,290-ha) property serves as one of the Scouts' "high adventure bases," hosting youth and adults throughout the summer months, and occasionally in the spring and fall.

In keeping with the principles of Scouting, the organization desired an environmentally friendly method for disposing of greywater generated at SBR. Orenco's AdvanTex textile filters fit the bill. An array of AdvanTex AX-20RTs – 224 all together – was installed to process the water from SBR's 336 shower facilities and treat it for reuse in toilets. This greywater system saves the camp up to 200,000 gallons (757 m³) per day during periods of high usage.

Spring Hill RV Park, Alberta

Owners save money with new treatment system

Spring Hill RV Park in Cochrane, Alberta, boasts everything a motor home owner is looking for: large sites with adjacent fire pits, laundry and shower facilities, Wi-Fi access — even a convenience store and gas station. However, the owners were paying several thousand dollars per month to have wastewater trucked out for treatment.

In the spring of 2014, they installed an AdvanTex AX-Max unit, which now treats up to 6,600 gpd (25 m³/day) of wastewater on-site. With an AX-Max, the entire system — treatment, recirculation, and discharge — is built inside an insulated fiberglass tank, so installation is simplified. Because of the savings in trucking fees, the system will have paid for itself in just four years, including installation charges and the cost of the drainfield, aeration tank, and permit fees.

Data used by Orenco to derive the representations and conclusions contained within this Case Study were current as of March, 2016.

Orenco Systems®, Inc. • 800-348-9843 • +1 541-459-4449 • www.orenco.com