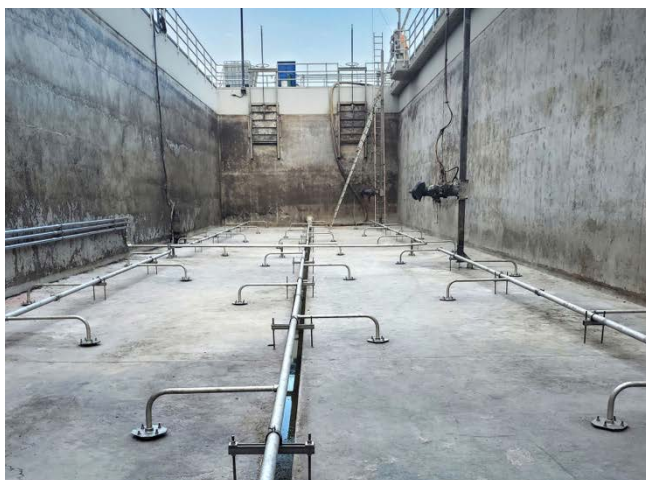


CASE STUDY: Ventura, California Water Reclamation Facility

Application:	Anoxic Zones – Two (2) Tanks
Design Flow (ADF):	14 MGD
Mixing Efficiency:	≈ 0.13 HP/1000 FT ³
Compressors:	Two (2) 20 HP Rotary Screw
Design Engineer:	HDR Engineering, Inc.



BioMix nozzles are distributed uniformly across the basin floor to provide distributed mixing energy that not only improves efficiency but also prevents solids from settling in the corners of the basins.

BioMix Delivers Fully Mixed Anoxic Zones with Minimal Maintenance Demands

The Ventura Water Reclamation Facility (WRF) is a tertiary treatment plant located about 70 miles northeast of Los Angeles near the mouth of the Santa Clara River. Currently, most of the plant's treated wastewater is discharged into the estuary after flowing through a series of wildlife ponds for about four days. In 2017, HDR Engineering began working with the city to update the WRF aeration blower system, which was installed in 1971.

HDR was also tasked with reviewing alternative mixing technologies for the anoxic zones of the BNR basins. The existing technology — ten submersible mixers with a combined 60 HP — had been found to be ineffective. The plant consistently experienced issues with sludge settling in corners of the tanks and going septic. These issues created process upsets and labor-intensive maintenance demands to clean out the tanks.

Based on Ventura's priorities of energy efficiency, low maintenance, and a system that could deliver a completely mixed environment, **EnviroMix's BioMix Compressed Gas Mixing was selected to mix the two anoxic zones, delivering estimated energy and maintenance cost savings of more than \$60,000 per year.**



ENERGY EFFICIENCY

\$60,000 annual O&M savings versus conventional submersible mixing technology



STRAIGHTFORWARD OPERATION

No mechanical or electrical components in the wastewater
Minimal, localized maintenance



PROCESS OPTIMIZATION

Proven negligible oxygen transfer
Creates optimal anoxic conditions for denitrification



UNPARALLELED FLEXIBILITY

Operator adjustable mixing intensity ensures uniform mixing under all conditions



Installing the correct nozzle density is critical in the design of a compressed gas mixing system. Even with a partially full tank, an overlap in the zone of influence of each nozzle can be observed in the surface mixing pattern.

When they first received an introduction to BioMix, the Ventura operators were skeptical about the technology's ability to fully mix the tank without delivering oxygen to the process. **The low-maintenance system sounded too good to be true. However, as plant supervisor John Willis stated, "Once it was installed and online, we just went, 'Wow, this stuff works!'"**

With BioMix in the anoxic zones, the operators saw that the tanks were completely mixed. "There was nothing in the corners. I have my guys dip the corners every so often with sludge judges, and there's nothing there," Willis said. Previously, the staff would check the tanks every month or so, and they would find septic sludge in the corners.

Regarding maintenance and operations, the BioMix system has been much less labor intensive than the mechanical mixers were. In the past, Willis's staff would have to adjust the mixers to certain levels and angles in the tank on a regular basis. **As for the BioMix system, Willis commented, "So far, there's literally been no maintenance."**

The last doubt the operations team had was EnviroMix's claim that BioMix provides complete mixing with negligible oxygen transfer. As part of the installation process, EnviroMix provided performance testing, measuring the negligible dissolved oxygen (DO) in the anoxic zones in direct comparison with the former mixing system. **Willis said, "That was part of our skepticism — the oxygen transfer. But there is none."**



The duty and standby compressors, which are easy to access, are the only components that require routine, scheduled maintenance.

"We get a full mix, and that was a real surprise to us because we were skeptical... But the system works flawlessly."

John Willis
Ventura Plant Supervisor



Contact sales@enviro-mix.com today to discuss the ways EnviroMix can optimize your mixing solutions.