

CASE STUDY: Rifle Range Road WWTP Mount Pleasant, South Carolina



Application:	BNR – Anoxic Selectors
Design Flow (ADF):	9.2 MGD
Mixing Efficiency:	≈ 0.13 HP/1000 FT ³
Compressors:	Two (2) Atlas Copco GA11VSD+
Nozzles:	48
Design Engineer:	Black & Veatch
Contractor:	Garney Construction



The anoxic zone, mixed by BioMix, provides the optimal conditions for denitrification.

BioMix™ Compressed Gas Mixing Selected for WWTP Expansion and Upgrade

The population of Mount Pleasant, SC, has more than doubled since 1990 and is expected to increase another 44% by 2050. Rapid levels of growth and development, along with evolving regulations and aging infrastructure, put pressure on the city’s water and wastewater systems to meet the increased demand. Mount Pleasant Waterworks (MPW), the water and sewer utility that serves the community, owns and operates two wastewater treatment plants (WWTPs): Center Street and Rifle Range Road.

MPW expanded the Rifle Range Road WWTP in 2020, increasing the facility’s treatment capacity from an annual average of 6 MGD to 9.2 MGD to meet the city’s anticipated needs through 2035.

As part of the expansion and upgrade, EnviroMix’s BioMix Compressed Gas Mixing was utilized in the anoxic selectors.

BioMix provides optimal anoxic mixed conditions by firing programmed, short-duration bursts of compressed air through patented, engineered nozzles located near the tank floor. **BioMix provides the Rifle Range Road WWTP approximately 40% O&M savings versus conventional submersible mixing technology.**



ENERGY EFFICIENCY

40% O&M savings versus conventional submersible mixing technology



STRAIGHTFORWARD OPERATION

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



PROCESS OPTIMIZATION

Complete mixing with proven negligible oxygen transfer
Guaranteed uniform mixing



UNPARALLELED FLEXIBILITY

Variable mixing intensity based on process parameters
Suitable for a wide variety of applications

The Rifle Range Road upgrade covered nearly all aspects of the facility, including the activated sludge process. The project utilized a construction management at risk (CMAR) delivery method which allowed for nearly 15% or \$8.7 million in value engineering savings.

The existing bioreactors with anoxic selectors were converted to flow equalization tanks as part of the expansion and upgrade, and three new bioreactors were constructed. MPW had previously worked with EnviroMix at their Center Street WWTP where BioMix Compressed Gas Mixing was installed in their flow equalization tank and anoxic selectors. Based on their outstanding experience with the technology — where BioMix utilizes adjustable firing parameters that enable ideal mixed conditions with proven negligible oxygen transfer — they insisted on installing BioMix in the new anoxic selectors.

With this expansion and upgrade, MPW is positioned to protect the environment and support the community’s quality of life for years to come.

“The maintenance is super minimal. There is nothing we have to do to this tank. It works perfectly.” Greg Hill, Operations Manager, MPW



Master Control Panel (MCP) allows operators to control firing parameters from a climate-controlled room.



Located beside the tank, the valve module is easily accessible.



Duty and standby compressors charge the receiver tank which supplies compressed air to the valve module.



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