

CASE STUDY:  
Wellington, Utah  
Price River Water Improvement District



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| <b>Applications:</b>                                | Anaerobic Selector Basins, Anaerobic Basin Influent Channel        |
| <b>Design Flow (ADF):</b>                           | 2.2 MGD  |
| <b>Mixing Efficiency:</b>                           | ≈ 0.4 HP/1000 FT <sup>3</sup>                                      |
| <b>Compressors (existing plant compressed air):</b> | One (1) duty 20 hp rotary screw, One (1) standby 5 hp rotary screw |
| <b>Design Engineer:</b>                             | Waterworks Engineers, LLC  |

## BioMix Delivers Minimal Maintenance and Negligible Oxygen in Anaerobic Zones

The Price River Water Improvement District is a provider of drinking water and sewer and wastewater treatment services to residents and businesses in Wellington, Utah. In 2022, the district upgraded the WWTP to meet new nutrient removal standards of 1.0 mg/L total phosphorous.

As part of the upgrade, EnviroMix’s BioMix Compressed Gas Mixing System was chosen to replace an existing diffused aeration system in the solids contact basins which were converted to anaerobic selector basins. It also replaced a diffused air mixing system in the anaerobic influent channel.

BioMix was selected for its:

- **Significantly reduced maintenance** versus mechanical mixing.
- Ability to **optimize anaerobic conditions** for VFA formation and impart negligible oxygen.
- Ability to **utilize the plant’s existing compressor system**, making it more cost effective than other technologies.

In the anaerobic basins and anaerobic influent channel, BioMix **delivers a 60% reduction in energy consumption** versus alternative mechanical or diffused air mixing technologies.



Anaerobic selector basin with BioMix nozzle header firing



**ENERGY EFFICIENCY**

**60% energy reduction** versus mechanical and diffused air mixing technologies



**STRAIGHTFORWARD OPERATION**

Utilized the plant’s existing compressor system

**No mechanical or electrical components** in the wastewater



**PROCESS OPTIMIZATION**

**No measurable oxygen** introduced in the anaerobic zones by the BioMix system



**UNPARALLELED FLEXIBILITY**

**Zombie Valve Module** controls nozzle firing duration and frequency

“The system is surprisingly even more simple and easy to take care of than I expected. The equipment itself seems to be really good.”

Blaine Shipley,  
WWTP Superintendent

**STRAIGHTFORWARD OPERATION:**

The Price River staff has thoroughly enjoyed the low-maintenance aspect of the BioMix system. All in-tank components are maintenance free, non-clogging, and self-cleaning. The system is controlled by EnviroMix’s Zombie Valve Module (ZVM). The ZVM utilizes four air control valves and a zombie controller to allow operator adjustment of firing duration and frequency. Electrical requirements are limited to the power needed to operate the compressor and valve modules.

**Based on his nearly 30 years of industry experience, Superintendent Blaine Shipley stated, “I like the fact that there are no mechanical or electrical parts underwater. That's part of the reason I wanted to go this route versus some other kind of mechanical mixing. And I like the fact that it's pretty much all stainless steel. So, there's not much opportunity for corrosion.”**

**PROCESS OPTIMIZATION:**

As part of the BioMix Compressed Gas Mixing System acceptance validation, rigorous field performance testing was done in the anaerobic selector basins to verify the system does not impart measurable oxygen. Dissolved oxygen (DO) and oxidation-reduction potential (ORP) measurements were collected at four locations and three depths in each basin, once at the beginning and once at the end of the testing period. The results verified that the BioMix system did not impart measurable oxygen nor negatively impact anaerobic process conditions.



Linear, low profile nozzle header in the anaerobic influent channel



Existing compressor and receiver tank system that serves the BioMix system



Contact [sales@enviro-mix.com](mailto:sales@enviro-mix.com) today to discuss the ways EnviroMix can optimize your mixing solutions.