



AQUA-AEROBIC SYSTEMS, INC.

# SUCCESS STORIES

## PLANT NAME AND LOCATION

COLORADO SPRINGS WWTP - COLORADO SPRINGS, CO

## AVERAGE DAILY FLOW

65 MGD (246,054 m<sup>3</sup>/day)

## AQUA-AEROBIC SOLUTION

(20) 7.5 HP AquaDDM<sup>®</sup> Mixers, (3) 3 HP AquaDDM<sup>®</sup> Mixers with Directional Elbows, and (1) 3 HP AquaDDM<sup>®</sup> Mixer without an Elbow

## AquaDDM<sup>®</sup> MIXERS CHOSEN OVER SUBMERSIBLE DIRECTIONAL MIXERS FOR OPTIMUM ANOXIC MIXING

The city of Colorado Springs in Colorado currently operates a 65 mgd wastewater treatment facility. To help meet the stringent water quality standards for denitrification, the facility has employed (20) 7.5 hp AquaDDM mixers. In 1994, Colorado Springs opted to install (20) AquaDDM mixers instead of installing submerged directional mixers.

Four AquaDDM mixers are used in each of five anoxic basins to partition anoxic zones into four compartments. Utilizing the mixers in this manner accomplishes mixing of the influent and provides a completely mixed environment (every constituent in the reactor exists at a uniform concentration at every point in the reactor) necessary for successful denitrification, without aeration. The need for tank baffles in the anoxic zones is eliminated due to the AquaDDM mixer's integrated flow vanes and lower input torque.

The mixers are equipped with a pivotal mooring arm to provide ease of maintenance for the plant operators. Located on the walkway at each quadrant of the anoxic basin are recessed ports with removable cross section grating. Operators can remove the grating and use the attached mooring cable to pull the mixers to the port. They can then attach a winch to the lifting harness



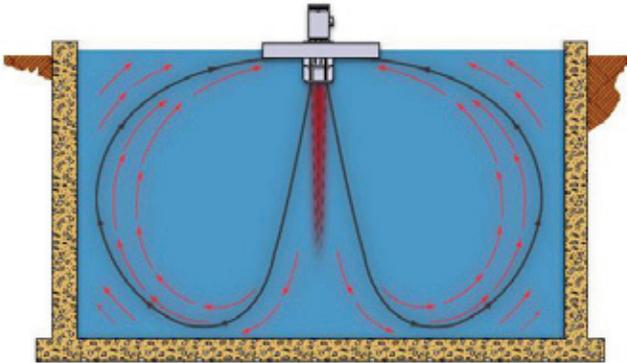
This AquaDDM<sup>®</sup> mixer with a pivotal mooring arm can be pulled to the port for ease of maintenance.

on the mixer motor. This arrangement provides total support during routine maintenance of the mixer without removing it from the basin.

A few years ago, the plant also replaced 30 submerged units that were being used in its Primary Effluent Channel with (3) 3 hp AquaDDM mixers with directional elbows and (1) AquaDDM mixer without an elbow. Since replacing these submerged units, the plant has saved significant costs on power, labor and maintenance.

## AquaDDM® MIXER PROCESS

The AquaDDM mixer is designed to provide maximum mixing efficiency as an independent mixing source or in conjunction with aeration devices. It establishes a powerful downflow, toroidal mixing pattern that transports surface liquid downward and increases mass transfer. Flow entrainment and regenerative flow create high reactor turnover rates for efficient mixing.



The AquaDDM mixer is the ideal mixer for use in anoxic basins. It is highly effective in the conditioning of sludge mass to achieve proper denitrification and also improves settling characteristics and controls filamentous growth.

## DESIGN CHARACTERISTICS

The Colorado Springs treatment plant has an average daily flow of 65 mgd (246,054m<sup>3</sup>/day). It employs (20) 7.5 hp AquaDDM mixers in its five anoxic basins, and (3) 3 hp AquaDDM mixers with directional elbows and (1) 3 hp AquaDDM mixer without an elbow in its primary effluent channel which feeds into the five basins.

According to Plant Team Leader, Jay Hardeson, *“The AquaDDM mixers were chosen due to the low maintenance requirements, and because they are direct-drive units, there are no gear boxes to contend with.”*

## AquaDDM® MIXER ADVANTAGES:

- Simple physical construction makes handling easy
- Lower initial cost, and less expensive to install and maintain than gear reduced (slow speed) units
- Direct Drive design eliminates expensive and time consuming gearbox maintenance
- One-piece stainless steel shaft means no couplings and no submerged bearings
- Suitable for most basin configurations
- High efficiency mixing reduces power consumption
- Eliminates need for tank baffling or counter rotational equipment
- Eliminates short-circuiting and deadspots in the basin
- Eliminates or greatly reduces surface splashing and foaming
- Anti-erosion plate available for use in earthen basins, or basins with synthetic liners
- Directional flow option available



One of five anoxic basins utilizing AquaDDM® mixers with a pivotal mooring arm.