



AQUA-AEROBIC SYSTEMS, INC.  
A Metawater Company

# SUCCESS STORIES

## PLANT NAME AND LOCATION

HUME LAKE CHRISTIAN CAMP WWTP - HUME, CA

## DESIGN DAILY FLOW / PEAK FLOW

0.2 MGD (757 M<sup>3</sup>/DAY) / 0.2 MGD (757 M<sup>3</sup>/DAY)

## AQUA-AEROBIC SOLUTION

DUAL-BASIN AquaSBR® SYSTEM, 2-DISK AquaDisk® FILTER

## WITH 1500 KIDS COMING TO VISIT EACH WEEK, HUME LAKE CHRISTIAN CAMP NEEDS A RELIABLE WWTP!

Hume Lake Christian Camp, one of the largest church youth camps in the United States, hosts 1500 kids each week in a remote Kings Canyon National Park area in California. The peak season for Hume Lake youth visitors is April through October, but during non-peak times it also hosts weekend conferences and seminars for various business groups.

In the beginning, Hume Lake Christian Camp was a smaller facility that used a primary wastewater treatment process employing an aerated equalization basin with a facultative lagoon. When the Camp gained popularity and needed to expand, this system had to be replaced. In fact, the state of California required the Camp to install an upgraded water and wastewater treatment system that would accommodate their increasing growth.



The 2-disk AquaDisk® filter.



One of the basins containing AquaSBR® system equipment.

Hume Lake chose a dual-basin AquaSBR® system and 2-disk AquaDisk® cloth media filter to meet their treatment needs. The AquaSBR system went online in November of 1992, and the AquaDisk filter startup soon followed in January of 1994. A few of the factors treatment managers at Hume Lake considered in choosing the AquaSBR system and AquaDisk filter included minimum land requirements, lower capital costs, and system flexibility. Another important factor considered was the systems' ability to operate on a totally automatic basis with minimal operator attention and maintenance.

## AquaSBR® SYSTEM PROCESS

The AquaSBR system operates on a simple concept of introducing a quantity of waste to a reactor, treating the waste in an adequate time period, and subsequently discharging a volume of effluent plus waste sludge that is equal to the original volume of waste introduced to the reactor. This "Fill and Draw" principle of operation involves the basic steps of Fill, React, Settle, Decant, and Sludge Waste. The system may be designed to include seven individual phases of operation but the inclusion or duration of any individual phase is based upon specific waste characteristics and effluent objectives.

Where nutrient removal is required, a simple adjustment to the SBR's operating strategies permits nitrification, denitrification, and biological phosphorus removal.

## AquaDisk® FILTER PROCESS

Clarified effluent from the AquaSBR system enters the filter and flows by gravity through the cloth media of the stationary hollow disks. The filtrate exits through the hollow shaft which supports the individual disks and flows to the effluent channel. As solids accumulate on the surface of the media, the water level surrounding the disks rises. Once a predetermined level is reached, the disks rotate and the media surface is automatically vacuum backwashed clean. Heavier solids settle to the bottom of the tank and are then pumped to a digester or to the plant headworks.

## DESIGN CHARACTERISTICS

The dual-basin AquaSBR system at Hume Lake has an average, and peak design daily flow of 0.2 MGD (757 m<sup>3</sup>/day). The 2-disk AquaDisk filter has the capability of handling a flow of 465,000 GPD, requiring only 1 disk at the current flow.



Hume Lake's two AquaSBR® basins are located side-by- side with the exception of an aerobic digester basin and blower room in between them.

Since the start-up of the AquaSBR system and AquaDisk filter, the plant has experienced exceptional wastewater treatment results. Effluent BOD<sub>5</sub> and TSS levels are well below permit (as shown in the table below) and turbidity levels are less than 2 NTU. The very low NTU effluent level, in fact, meets California's Title 22 effluent requirements for recycle/reuse.

## AVERAGE ANNUAL OPERATING DATA

LOADING	DESIGN INFLUENT	AVG INFLUENT	PERMIT EFFLUENT	AVG EFFLUENT
AVG Flow mgd	0.2	0.12	----	----
Peak Flow mgd	0.2	0.14	----	----
BOD <sub>5</sub> mg/l	250	360	20	7
TSS mg/l	250	185	20	6.5

## AquaSBR® SYSTEM ADVANTAGES

Lower capital costs, small footprints, system flexibility, and minimal maintenance are the initial reasons Hume Lake Christian Camp chose to install a dual-basin AquaSBR system and 2-disk AquaDisk filter. In addition to these advantages, it has proven to be an efficient and reliable means of wastewater treatment. It ensures Hume Lake plant operators that the highest quality effluent standards will be met now, as well as in the future.

- Tolerates variable hydraulic loads
- Tolerates variable organic loads
- Controls filamentous growth
- Provides quiescent settling
- Separation of aeration and mixing
- Lower installation costs
- Return activated sludge pumping eliminated
- Small footprint
- Simple to expand or upgrade
- One company accountability

## AquaDisk® FILTER ADVANTAGES

- Consistent, high quality effluent
- Lower backwash rates
- Tolerates extreme variations in loads
- Reuse quality effluent
- Continuous filtration during backwash
- Minimal operator attention
- Minimal maintenance
- Small footprint
- Eliminates sand media and underdrains