

Expansion of Wastewater Plant with MBR System

Siemens Water Technologies has installed its Immersed Membrane Bioreactor System (MBR) to expand the Calls Creek wastewater facility in the City of Watkinsville, Georgia.

The Calls Creek facility located in Oconee County has had a longstanding policy restricting the wastewater plant usage for residential use in order to leave enough treatment capacity to accommodate commercial business. With the expansion, their current wastewater treatment capacity will increase from 400,000 gallons per day (gpd) to over 670,000 gpd. In the future the plant can easily be expanded to 1 MGD with the addition of a single membrane tank to accommodate commercial growth as well as service to unincorporated areas for future use.

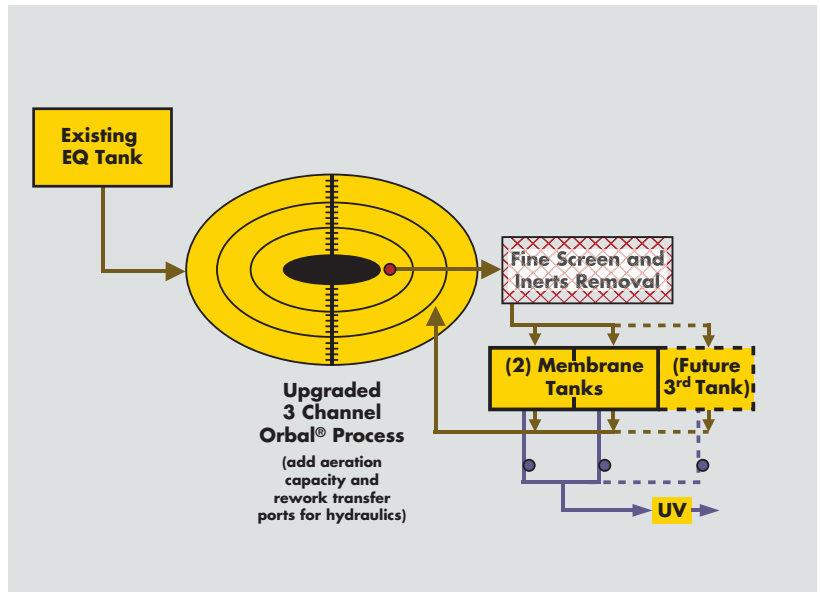
The previous wastewater treatment facility was an Orbal® system, a three-channel looped reactor activated sludge process. With the addition of the MBR system, the facility accomplishes a superior level of biological treatment as well as increases capacity of the UV system through improved transmissivity. The biological treatment process also includes an Ultrair digester to enhance biological reduction of waste sludge. The Ultrair process removes trash and inert matter from the mixed liquor minimizing the total amount of sludge removed from this facility.

At the start of this project, Siemens performed a pilot study incorporating the MBR into the biological plant loop of the facility in a three-stage process. As a result of the pilot, Siemens



installed two Ultrafine screens between the Orbal system and added a one million gallon per day (MGD) membrane operating system (MOS). The screens have a nominal opening of 250 microns and screen 100 percent of the forward flow plus the recycle flow between the Orbal system and the MOS system. In addition to the Ultrafine screen, Siemens Water Technologies incorporated an inert removal sidestream from the sump of the screen system. By installing the screening and the inerts removal system, along with the Ultrair Bioreactor, biosolids will be reduced by less than half. In addition, the removal of these components from the mixed liquor enhances the membrane bioreactor performance.

The facility was started up in early 2004.



Schematic of Calls Creek Wastewater facility



Orbal® Process



Membrane Tanks

Water Quality				
	BOD mg/l	TSS mg/l	TKN mg/l	Turbidity
Influent (avg.)	250	250	28	
Effluent (avg.)	<2	<2	<1	<2 NTU

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