

Biofilm Elements Treat Colorado Town

Kaldnes North America, an Anglian Water Company, was chosen to supply the city of Broomfield, Colo., with the Moving Bed Biofilm Reactor (MBBR) process to treat its municipal wastewater.

Under the terms of the contract, Kaldnes will retrofit Broomfield's existing aerobic basins with Kaldnes media, an aeration grid system and sieve assemblies. In addition, there will be new construction for phosphorus and nitrate removal.

In Broomfield, aeration is provided by five multistage centrifugal blowers, three rated at 2,300 scfm and two rated at 1,200 scfm each.

In the biotower, attached films of microorganisms feed on the organic material in the wastewater, removing it from the flow stream. Excess growths of microorganisms are washed off the biotower media and eventually are


removed in the secondary clarifiers. The biotower reduces the organic load to the activated sludge system and thus reduces the energy requirement associated with that process.

The activated sludge process utilizes diffused aeration. Biotower effluent flows by gravity to the aeration basin splitter box. Return activated sludge (RAS) from the secondary clarifiers is pumped to the aeration basin splitter box where it is mixed with the biotower effluent and distributed to the four aeration basins.

The fine bubble diffusers provide mixing that brings the microorganisms into contact with the oxidizable material in the wastewater.

Low pressure air is delivered to the diffusers by multistage centrifugal blowers. In the aeration basins, the biologically degradable organics in the wastewater are utilized by microorgan-

isms in the presence of oxygen to provide energy to the organisms to grow more microorganisms, providing a substantial conversion of BOD₅ to organism cells where aeration basin effluent flows by gravity to the secondary clarifiers. The organisms that are produced in the aeration basin can flocculate into a mass that settles along with the inert (non-biodegradable) solids.

The MBBR process utilizes millions of tiny, polyethylene biofilm elements to provide a home for a vast, highly active bacteria culture. These buoyant elements are kept in constant motion throughout the entire volume of the reactor, resulting in uniform, highly effective treatment. 

For more information on this subject, circle 861 on the reader service card.

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