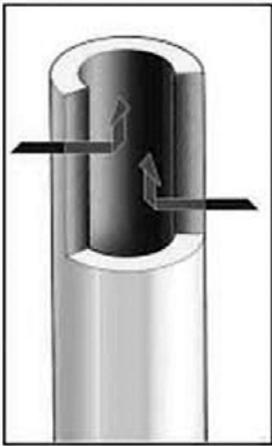


Membrane Bioreactor – cleaner water in less space

Wastewater treatment is essential to protect public health and the environment

As our population grows, we need a new wastewater treatment plant called Brightwater to protect our health, environment, and economic growth. The Brightwater Treatment Plant is being designed to meet or exceed stringent water quality standards for effluent discharge or reclaimed water production. The treatment plant will use an advanced treatment technology called a membrane bioreactor (MBR) system instead of the large round settling tanks used in conventional plants.

A new treatment process called membrane bioreactor will be used at Brightwater

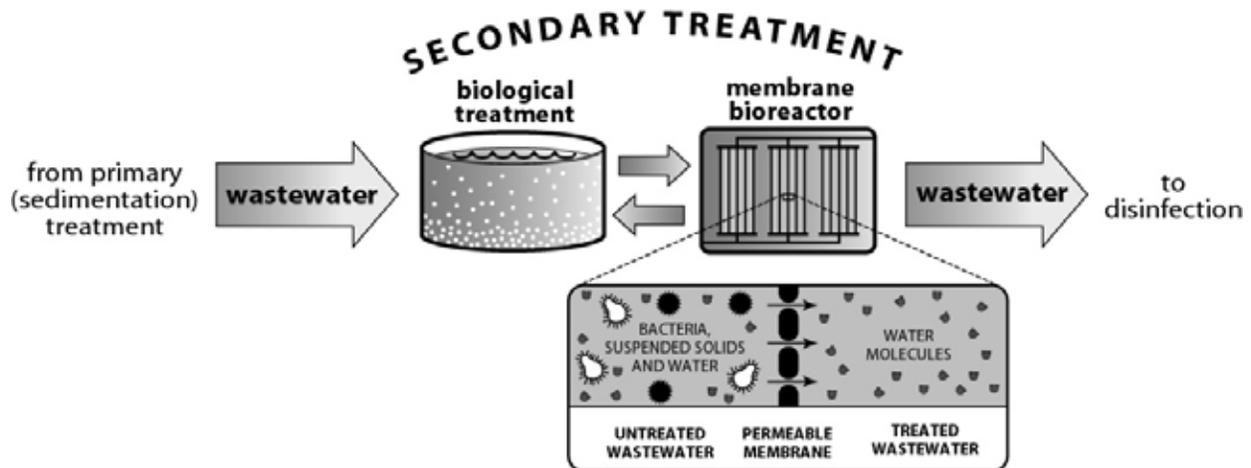


This close-up of an individual strand shows how gentle suction pulls clean water through microscopic pores.

Membrane bioreactors clean wastewater more effectively than traditional wastewater treatment processes. By combining standard biological wastewater treatment with membrane filters submerged in wastewater, the process produces higher quality effluent (treated wastewater). The membranes are immersed in wastewater. The MBR system draws wastewater through hollow fibers with microscopic pores small enough to filter out particulate matter and even individual bacteria.

The technology results in treated wastewater that is seven to 10 times cleaner than typical secondary treated wastewater, which already meets tough environmental requirements and regulatory standards for discharges into Puget Sound.

For example, 36 million gallons of the treated wastewater discharged daily from Brightwater using membrane technology would contain only the same amount of microscopic impurities as 5 million gallons of treated wastewater from a typical secondary treatment plant.



Membranes save space and simplifies odor control

This technology takes up 40 percent less space than conventional treatment systems. Membranes filter effluent and replace secondary clarifiers, the large round settling tanks used in conventional plants. This space savings will provide more room for both screening the plant from public view and using natural methods for handling stormwater and other wetland and habitat.

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Membrane Bioreactor – cleaner water in less space

continued

The small size of membrane bioreactors makes them easy to enclose in buildings, so that any odors are contained and treated.

Membranes offer emerging – but tested – technology

King County has chosen membranes from the Zenon Environmental Corp. of Ontario, Canada. Wastewater treatment plants in California, Colorado, Michigan, Georgia, Florida, Ontario and other locations around the world use Zenon membranes. Zenon membranes are also used around the world to produce drinking water. *(Note: GE Water & Process Technologies acquired Zenon Environmental Corp. in April 2007, and the membranes are now called GE's ZeeWeed Membrane Bioreactor (MBR) technology).*



The treatment plant will have large membrane units called cassettes like the one shown above.

Membrane costs comparable to conventional technology

At Brightwater, membranes cost roughly the same amount as conventional technology to build. Since membranes require more energy, operation and maintenance costs will be higher. King County was able to keep the cost of building MBR the same as conventional treatment using blending. High flows will receive advanced primary treatment then be blended with MBR-treated flows. The blend will still have fewer microscopic impurities than conventional treatment.

Membranes produce reclaimed water without additional treatment

The MBR system needs less space, simplifies odor control, and produces better water quality than traditional wastewater treatment. MBR can be used safely as a drought-proof water source for irrigation, wetland enhancement and other beneficial uses.

The MBR system can produce Class A reclaimed water, which meets strict standards of the state departments of Ecology and Health for use in non-drinking purposes, including landscaping, agricultural irrigation, heating and cooling, industrial processing, and safe discharges into freshwater.

"The wastewater will be seven to 10 times cleaner than typical secondary treated wastewater," Christie True, manager of the wastewater capital improvement program said. "Secondary treatment already meets tough environmental requirements for discharges into Puget Sound. By reducing the discharge of pollutants even more with the MBR process, we'll further improve water quality."

For more information or to be added to our mailing list, please contact us:

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