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# Design Considerations for the Complex Waste Streams of Wineries

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WINERY WASTEWATER TREATMENT | By Sheldon Sapoznik, REHS



Complexity is a term often used in tasting rooms to describe a fine wine, although little thought and understanding is given to the complexity of treating winery wastewater. It is vital to understand not only the nature of winery wastewater, but the by-products produced during the wine making process, such as juice acidity, lees, and cleaning agents that dictate the various constituents and concentrations encountered. Beyond the romanticized season of harvest and the demands created by crush, other activities that generate wastewater throughout the year include barrel washing, fermentation tank washing, and equipment cleaning from racking and bottling operations.

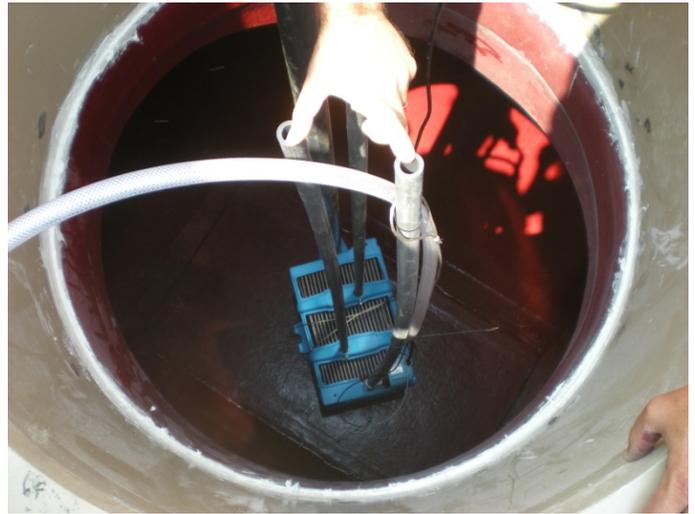
Unlike residential wastewater, winery wastewater usually does not contain pathogenic bacteria in the waste stream; however, Biochemical Oxygen Demand (BOD) and Total Suspended Solids (TSS) are found in significantly higher concentrations. In fact, BOD and TSS concentrations can be forty times as high as household wastewater with 12,000 mg/L BOD and 6,000 mg/L TSS typical during harvest activities. At other times of the year, the various winemaking activities create fluctuating flows, which create system over-capacity concerns. The need for versatility in design and operation is key in selecting a winery wastewater treatment system.

There are several factors to consider in all winery wastewater treatment system projects. Determining the actual wastewater flows during crush (the highest wastewater generating operation at a winery) can be challenging. These flows are based on industry experience, regulatory agency calculations, as well as input and data from the winery itself. Misjudging the maximum design flow and pollutant concentrations can be devastating to a winery treatment system. However, oversizing a system can equally create functional problems and add unnecessary cost. A winery wastewater treatment system should have the flexibility to handle the high and low flows and loads. Most successful winery wastewater treatment systems include proper primary screening, a robust active aeration system followed by a clarifier, or membrane barrier to separate the treated effluent from the biological process. Additional key considerations include proper sizing and material selection of the treatment tanks to provide required biological retention time, surge capacity and sludge storage capability.

The Bio-Microbics BioBarrier® HSMBR® winery wastewater treatment system takes the complexity out of treating winery wastewater with its simple, award-winning design and fully certified treatment process.

Utilizing superior aeration capabilities in conjunction with durable flat sheet membrane technology, the modular and scalable design provides flexibility to wineries, ensuring optimum treatment throughout the year and lower operating costs. These proprietary units assure all effluent passes through the membrane making it virtually impossible to bypass the treatment process along with providing microfiltration and ultrafiltration resulting in consistent high quality effluent ready for water reuse.

Introduced to the Northern California wine region of Napa/Sonoma County in 2013, the BioBarrier HSMBR winery wastewater treatment system's recent installations have generated tremendous optimism and interest due to its treatment capabilities, ease of installation, and low operating costs. As the Pacific Northwest Wine Region continues to address winery wastewater concerns, the BioBarrier HSMBR system will surely be a solution to provide vital water reuse opportunities such as quality irrigation water for vineyards, recycled water for dust control, processing area wash-down water, or just highly treated effluent for disposal where untreated or poorly treated winery wastewater threatens vital habitats or groundwater resources.



*Author Bio: Sheldon Sapoznik, REHS is the Owner of Wine to Water Sales Group. With his 20 years' experience in winery wastewater treatment as a Registered Environmental Health Specialist for Napa County, California, Mr. Sapoznik left the public section to help promote and expand the use of Membrane BioReactor technology for winery wastewater filtration.*

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 Receiving BS in Environmental & Occupational Health Science (CSUN), Mr. Sapoznik has 20 years experience in the winery market and authored wastewater regulatory & design standards. He has presented on winery wastewater treatment. Side Note: Owner of Wine to Water Sales Group - an authorized Sales Rep for the BioBarrier® HSMBR® Winery Wastewater Treatment System.

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