



TECHNICAL AID:

Bio-Microbics Illinois BioBarrier® MBR Sizing Chart

The BioBarrier® Membrane BioReactor (MBR) is an alternative to both onsite (septic) systems and public sewer. It is important to make sure that service and maintenance are not burdensome to the customer. Because of the increased maintenance needed with the high quaternary ammonium content found in domestic wastewater, Bio-Microbics Illinois size the BioBarrier® module in increments of 250 gallons per day.

This provides long-term performance between the required maintenance servicing at a rate no greater than flow without the presence of quats. For more information about Illinois Onsite Water, Wastewater, and Storm Water Treatment Systems: www.biomicrobicsillinois.com.

In order to ensure Bio-Microbics Illinois has instituted the following sizing guidelines for the BioBarriers themselves and subsurface clean water dispersal, all new residential BioBarriers will be sized by the following formula:

| | |
|--|---|
| 0.5 BioBarrier® | 1 – 2* bedroom home under 1500 sq/feet or small office buildings with total peak flow under 250 (real) gallons per day. |
| 1.0 BioBarrier® | 3 – 5* bedroom home under 5000 sq/ft or medium office buildings with total peak flow (real) under 500 gallons per day. |
| 1.5 BioBarrier® | 6+* bedroom home or any home over 5000 sq/ft if high water usage is expected, or medium office buildings total peak flow under 750 (real) gallons per day. |
| *General Sizing Guidelines; some projects may vary. | |
| For questions, other recommendations, etc., please contact us at (815) 714-8505 or email kurt@bihlertech.org | |

For More Information:

BihlerTech & Bio-Microbics Illinois provides wastewater treatment solutions FITT® for residential & commercial properties.

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Learn more at
www.biomicrobicsillinois.com

BihlerTech, Inc. is the Bio-Microbics Distributor of Illinois and focus on Commercial and Residential projects. Through an Illinois professional dealer network, BihlerTech provides onsite, pre-treatment systems and service of Bio-Microbics® FAST® aerobic wastewater treatment systems and the BioBarrier® membrane bioreactor (MBR) water recycling system. With more than 35 years' experience distributing, installing, operating many variants of wastewater treatment processing units, Kurt Bihler, owner of BihlerTech, has invented submerged aeration devices, linearization of centrifugal pumps using variable speed drives, and has worked with the process automation of many municipal wastewater treatment plants and wastewater pumping stations. For the past 16 years, BihlerTech has served as an active consultant with Bio-Microbics systems to a variety of industries to achieve and maintain improved wastewater treatment at less cost for the State of Illinois.

These are designed for domestic wastewater under 300 BOD5. If the strength of wastewater contains a higher BOD5 or irregular flow, the MBR system will be a customized design. Contact Bio-Microbics Illinois with details: (815) 714-8505 or kurt@bihlertech.org.

ALL membrane modules will be equipped with restrictor orifices sized to limit the flow when new to 0.5 gallons per minute at the discharge point.

Dispersal field sizing shall be calculated by double-ring infiltrometer test, and sized by the Illinois WATER REUSE / MBR Illinois IDPH approval:

View the IDPH approval letter for BioBarrier® System under the "MORE INFO" tab:
www.biomicrobicsillinois.com

The use of the Illinois Soil Classifier estimates with Water Reuse certified BioBarrier systems shall be limited to showing lot unsuitability for the purposes of applying for a USEPA ILG62 NPDES permit.

Why the BioBarrier® MBR?

Removes virtually all pollutants and bacteria producing recycled water that is safe for human contact. This allows subsurface dispersal of the recycled water that is unique because the soil has no part in the treatment process.

With the BioBarrier MBR, the sizing of the dispersal area is based on engineering criteria for water movement through the soil plus a safety factor alone. This provides a real and permanent alternative to public sewer, unlike ANY soil based treatment system that will eventually clog because of soluble pollution being converted into solid sludge plugging the pores in the soil!

The sizing of utilizing decentralized MBR systems is usually a tiny fraction of that needed for conventional septic systems. Unlike "soil treatment-based onsite systems" or "Soil Absorption Systems", there is no need for expansion area for future dispersal because of failed trenches or mounds. Because we are loading the soil with clean water, the range of permeability is greatly expanded; allowing for subsurface dispersal in soils that are normally out of the range of most other types of onsite systems. A public sewer is no longer needed to build when using this permanent wastewater disposal system!

We truly feel that this is the future of water: Wastewater Treatment and Water Recycling!



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Illinois BioBarrier® Commercial Information

BihlerTech Inc and Bio-Microbics require the following information before recommending a BioBarrier equipment package as a permanent solution for your commercial wastewater needs. This information allows us to recommend to your engineer the proper tank sizing, BioBarrier model, and supplemental aeration required by your facility. Some of this information is unique to the BioBarrier® and other items are needed for any onsite wastewater treatment system.

*some projects may vary. For questions or other considerations, please contact (815) 714-8505 or email kurt@bihlertech.org

After the “Type of Establishment” is known (e.g., school, restaurant, shopping mall, gas station, etc.)

Water Usage: We need to know the patterns of water usage that the system will be expected to handle. This is especially true when using a BioBarrier® MBR because the filtrate throughput is a constant. We need water meter readings on a daily basis to determine Peak, Low, and average water uses of your facility.

Waste Strength and toxins

We will need an average sample from the outlet of the existing septic tank and the sizes of the existing septic tanks and grease trap. The following chemical analysis is required to recommend the equipment set and modification of chemicals used.

- COD
- BOD₅ (at standard dilution)
- CBOD
- TSS
- FOG

The BOD₅ sample is needed to determine the strength of soluble organics and will result in different tank sizing and required supplemental aeration needed. The ratio of COD / BOD₅ is needed to determine the organic treatability of the wastewater and presence of toxics like quaternary ammonium salts.

The ratio needs to be COD/BOD₅ = > than 0.5. If this figure is less than 0.5 then an audit of the cleaning chemicals used and the amounts and frequency needs to be done and your process must be modified and retested to ensure this ratio can be met. This is not unique to the BioBarrier® but is necessary for ANY type of onsite wastewater treatment system, even a passive system such as a mound or conventional septic.

The TSS sample along with the calculated BOD₅ biosolids generation is needed to determine the tank sizing for your desired pumping service interval.

The FOG number along with the configuration and size of the existing grease trap is needed in the calculation of a new grease trap designed specifically for an onsite treatment system and to determine the additional biochemical load and resulting supplemental aeration required for the treatment system.

Internal plumbing inspection

This is needed to make sure that no clear water from sump pumps, air conditioning or refrigeration condensate is entering the treatment system. Also to make sure that no discharge from any water treatment device or water softener is entering the treatment system. Additional internal plumbing changes will be required to divert these before a system can be installed.

Double Ring Infiltrometer test

This is BioBarrier® specific for subsurface filtrate dispersal. We use this engineering data to determine the amount of square footage of filtrate dispersal required by Illinois code. A “septic soils test” will not provide the information needed and is not used in the design of a BioBarrier® system.

By providing this information we can recommend the most cost effective system to handle your commercial facilities needs and be confident that the system will safely serve your wastewater requirements for the life of your facility.



BioBarrier 0.5 installed at a Facility in Bourbonnais, IL

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