MINNESOTA POLLUTION CONTROL AGENCY

520 Lafayette Road North | St. Paul, Minnesota 55155-4194 | 651-296-6300

800-657-3864 | Use your preferred relay service | info.pca@state.mn.us | Equal Opportunity Employer

January 31, 2023

Charlotte Peele
Regulatory Affairs/ Applications Specialist
BioMicrobics, Inc.
16002 West 110th Street
Lenexa, KS 66219

RE: **Product Registration Renewal #2 – Notice of Conditional Product Registration for Proprietary Treatment Product Listing**

Description:	Sewage Treatment System, Membrane Bioreactor
Manufacturer:	BioMicrobics, Inc.
Product Name:	BioBarrier® HSMBR
Model Number:	Models 1.5, 3.0, 4.5, 6.0, and 9.0 (design flows of 1,500, 3,000, 4,500, 6,000, and 9,000 gallons per day, respectively)
Product Listing:	Category B (high strength sewage)

Dear Charlotte Peele:

Thank you for your application for product renewal dated December 09,2022, for the BioBarrier® HSMBR. The unit is a biological system that uses a membrane bioreactor for wastewater treatment.

In accordance with Minn. R. chs. 7080 through 7083, the MPCA has reviewed BioMicrobics, Inc. submitted materials requesting registration for Category B (high strength sewage) treatment product listing of the BioBarrier® HSMBR in this application dated December 09, 2022. Based on the submitted documentation, the MPCA finds that the BioBarrier® HSMBR is eligible to be registered per Minn. R. ch. 7083.4030 as meeting the following treatment levels:

- **Treatment Level C** ($cBOD_5$ of 125 mg/L, TSS of 60 mg/L and Oil & Grease of 25 mg/L)

The BioBarrier® HSMBR model series is registered for systems with a design rated capacity from 1,500 gallons per day (gpd) to 9,000 gpd as shown in Table 1.

Subject to this determination, the BioBarrier® HSMBR will be placed on the List of Registered Subsurface Sewage Treatment System (SSTS) Products. The product information listed in this Notice of Proprietary Product Listing will be maintained on the MPCA website and may not be altered by the manufacturer or any other person without permission by the MPCA.

Table 1. BioBarrier® HSMBR for up to Treatment Level C.

Product Name Model	Treatment Process	Design Flow (gpd)	BOD_5 Removed (lbs/day)	Highest Treatment Level	Product Information
BioBarrier® HSMBR Model 1.5	Membrane Bioreactor	1,500	3.5	C	• Notice of Product Listing • BioBarrier® MBR Manuals o Submitted Drawings o Installation o O&M o Owner Information • Management Plan • Operating Permit Template
BioBarrier® HSMBR Model 3.0	Membrane Bioreactor	3,000	7	C	
BioBarrier® HSMBR Model 4.5	Membrane Bioreactor	4,500	10	C	
BioBarrier® HSMBR Model 6.0	Membrane Bioreactor	6,000	12.5	C	
BioBarrier® HSMBR Model 9.0	Membrane Bioreactor	9,000	19	C	

The registration of the treatment products in Minnesota is contingent upon compliance with the following conditions:

1. Products must be used in compliance with the MPCA rules, and the plans and design specifications provided. Any deviation from the plans and specifications shall not be permitted unless authorized by the MPCA for registered use.

2. The manufacturer shall have readily accessible information, specific to a product's registered use in Minnesota, for designers, regulators, installers, system owners, service providers and other interested parties for the following items: a) product manual; b) design instructions; c) installation instructions; d) information regarding operation and maintenance; e) homeowner instructions; and f) list of representatives and manufacturer-certified service providers, if any, as required by Minn. R. chs. 7083.4040 (H).

3. Septic tank capacity for dwellings shall meet the manufacturer's minimum and maximum size requirements. Designers must contact a designated representative from BioMicrobics Inc. to confirm tank sizing. All concrete, poly, fiberglass, and other registered tanks that meet Minn. R. ch. 7080.1900 to 7080.2020 can be used for this product. The tank(s) shall be designed to withstand the pressures to which it will be subject to. The tank(s) and all pipe penetrations, risers, and other connections to the tank shall be watertight. See additional tank requirements in Table 2.

Table 2. BioBarrier® HSMBR Additional Tank Requirements

Product Name Model	Operating Water Level (inches)	Minimum Tank Height (inches)	Reactor Volume (gallons)
BioBarrier® HSMBR Model 1.5	66	96	2,000 – 4,500
BioBarrier® HSMBR Model 3.0	66	96	4,000 – 9,000
BioBarrier® HSMBR Model 4.5	66	96	6,000 – 13,500
BioBarrier® HSMBR Model 6.0	66	96	8,000 – 18,000
BioBarrier® HSMBR Model 9.0	66	96	12,000 – 27,000

4. Each system must be delivered with an installation manual and owner's manual for the BioBarrier® HSMBR System. Each component must be installed in accordance with the manufacturer's installation manual.

5. BioMicrobics Inc., along with the Intermediate Designer/Advanced Designer and Installer, are responsible to ensure that proper flow splitting devices are used to split flows when flow splitting is needed. Flow splitting devices must meet the following criteria: a) designed specifically and reliably to split wastewater flows; b) accessible for on-going operation and maintenance; c) monitored to determine flow rates; d) adjustable after construction should settlement occur; and e) have infinite or continuous adjustment features.

6. The manufacturer's designated representative(s) is required to review all designs provided by Advanced Designers for treatment systems proposed to use the BioBarrier® HSMBR Model Series. Advanced Designers need to work directly with the manufacturer to ensure the wastewater is properly characterized and that BioBarrier® products, and other related components used in treatment train (e.g., septic tanks and grease interceptors), are properly sized and compatible to meet designed performance requirements.

7. All systems shall be designed and operated with (a) suitable alarm device(s) that monitors the BioBarrier® HSMBR and its components, should any of the system components malfunction.

8. The treatment product and associated models contained in this notice of product registration are considered a Minnesota-registered product for Type IV systems. The effluent, following treatment in the BioBarrier® HSMBR, is required to be uniformly distributed to the soil for final treatment and dispersal.

9. When the BioBarrier® HSMBR is used in systems to achieve Treatment Level C, effluent loading rates to the soil, method of distribution, and vertical separation requirements shall meet the minimum requirements contained in Minn. R. ch. 7080.2350.

10. Systems may only be designated as Type IV systems when designed and installed per the drawings submitted as part of the Application for Registration, dated April 18, 2019, and subsequent documents submitted prior to this registration.

11. As a Type IV system, the system must be constructed and operated under the required local permits.

12. The level of maintenance required for the BioBarrier® HSMBR model series shall be as specified in the products Operation and Maintenance Manual. This includes, but is not limited to, inspections and maintenance at six-month intervals, or more frequently, as required by the manufacturer.

13. As specified in the Owner's Manual, limitations of the product are identified. The manufacturer is responsible to provide a listing of other known limitations, made available on the manufacturer's website or other means.

14. Training shall be provided to MPCA-licensed Subsurface Sewage Treatment System practitioners before designing, installing, or providing service to BioBarrier® HSMBR products registered for use in Minnesota.

15. At the time of product renewal during the year 2025 and according to the "Proprietary treatment technology registration guidance – high strength waste," Manufacturers must submit data in accordance with the HSW verification protocol for each system installed under this protocol. If product manufacturers fail to submit data as outlined in the HSW verification protocol for each system installed, their registration will be discontinued until submission of the required data. Renewal requirements as stated in this guidance will be communicated to manufacturers in a letter from the MPCA, prior to their expiration deadline. Product manufacturers must submit renewal materials as specified in their renewal letters.

HSW verification protocol

An established set of requirements to verify product performance is necessary to set a consistent standard among all registered HSW treatment technologies. This protocol (table 1) requires quarterly sampling on every system installed after registration, in perpetuity, until such time that the TAP modifies, expands, alters, or cancels the protocol requirements.

Table 1. HSW verification protocol

Item	Description
Sample identification	Third-party sample reports must clearly indicate from which system/facility the samples were derived. Reports must also contain sample dates and times, sample location information, name of sampler, chain of custody information, sample collection method, and sample transportation information (time/container/temperature).
Sampling intervals	Four (4) sampling events (for both influent and effluent analysis as described below) must be taken quarterly each calendar year. The TAP will consider alternate intervals on seasonal use facilities to ensure required sampling events align with peak usage. Example: Q1: Jan – Mar, Q2: Apr – Jun, Q3: Jul – Sep, and Q4: Oct – Dec.
Influent Sampling	Influent BOD_5, TSS, and O&G composite/grab samples must be taken at the first location of sewage collection within the system and be representative of the waste being discharged from the facility. Each of these three constituents must be sampled at each sampling event per facility.
Influent waste characterization	For each set of influent data provided, the waste must be characterized as HSW in accordance with Minn. R. 7080.1550 Subp. 2 B (1). Raw sewage must exceed 300 mg/L BOD_5, 200 mg/L TSS, and/or 50 mg/L O&G in order be considered high strength waste.
Effluent sampling	Effluent $cBOD_5$ (or BOD_5), TSS, and O&G composite/grab samples must be taken after the treatment device and before discharge to the soil dispersal area. Each of these constituents must be sampled for each sampling event per facility.
Effluent waste results	In all cases, the effluent waste concentrations must meet, at a minimum, the outlined parameters for Treatment Level C: BOD_5 of 170mg/L (or $cBOD_5$ of 125mg/L), TSS of 60mg/L, and O&G of 25mg/L.
Flow measurements	Daily flow for thirty (30) days prior to each sampling event must be provided.
Third-party testing	All sampling results must be submitted on original reports from third-party entities (e.g. certified laboratories).
O&M summary	Create an O&M summary specifying the maintenance performed throughout the test period, such as pumping events or adjustments made, and include a list of tasks necessary for the product to adequately perform within the specified parameters in all configurations. Tasks should be given a specific frequency for when each shall occur (e.g. every 6 months).

Item	Description
Summary report	Items 1-5 below shall be prepared in order for each system/facility: 1. Cover page with facility name, address, product model, and design flow 2. Influent results 3. Effluent results 4. Flow measurements 5. O&M summary Combine the summary reports for each system/facility into one PDF document, and submit to the agency

16. During the period of product registration and as part of the renewal process, systems using registered treatment products are subject to an audit by the MPCA.

Please be advised that this registration expires December 31, 2025. Manufacturers desiring to continue product registration beyond this date must obtain MPCA renewal according to the requirements in Minn. R. ch. 7083.4040 (E). If the product has changed or is retested according to the protocol required for registration, renewal shall be based on the most recent test results. If the MPCA finds the product has changed in any way that may affect performance, it may not be renewed and must meet the requirements for initial registration.

The MPCA is in no way endorsing these products or any advertising and is not responsible for any situation which may result from its use or misuse. The MPCA is not liable for any product failure and these statements are not intended and cannot be relied upon to establish any substantive or procedural rights with the state of Minnesota or the MPCA, either express or implied, that can be enforced in litigation or any administrative proceeding.

If you have any questions, please contact Freya Linnett at 651-757-2724 or by email at freya.linnett@state.mn.us.

Sincerely,

Freya Linnett

This document has been electronically signed

Freya Linnett
Environmental Specialist
Municipal Division

FL:map

cc: File