



**RHODE ISLAND**  
**DEPARTMENT OF ENVIRONMENTAL MANAGEMENT**  
OFFICE OF WATER RESOURCES  
235 Promenade Street, Providence, Rhode Island 02908

**Alternative/Experimental OWTS Technology Program**

**Vendor Information:**

Bio-Microbics®  
16002 West 110<sup>th</sup> Street  
Lenexa, KS 66219  
Tel: 913-422-0707  
Fax: 913-422-0808  
Web: [www.biomicrobics.com/](http://www.biomicrobics.com/)

**Contact:**

Anna Cline, Sales & Regulatory Affairs  
Coordinator  
Email: [acline@biomicrobics.com](mailto:acline@biomicrobics.com)

**Technology Name & Model Numbers:**

BioBarrier 0.5-N  
BioBarrier 1.0-N  
BioBarrier 1.5-N

**Pretreatment Category**

Category 2: Not Timed - Dosed

**Design Authority**

Class II Licensed Designers and RI-PEs

**Technology Type:**

Class Two Approval  
Total Nitrogen  $\leq 10$  mg/L  
TSS  $\leq 30$  mg/L  
BOD  $\leq 30$  mg/L  
Oil & Grease  $\leq 5$  mg/L

**Certification Dates:**

Renewed: July 23, 2020  
Expires: July 23, 2025

**CERTIFICATION**

The Rhode Island Department of Environmental Management (RIDEM) has reviewed the Alternative Technology renewal application submitted by Bio-Microbics, hereafter referred to as the “Vendor”, for the BioBarrier treatment system. Based upon the information contained in the application the RIDEM hereby accepts BioBarrier, hereafter referred to as the “Technology” and hereby renews the Technology’s approval.

The Technology incorporates a membrane bioreactor (MBR) and uses three-compartment tankage either as a single three-compartment tank, or a single-compartment pre-treatment tank followed by a two-compartment tank. The BioBarrier MBR is in the last of the three compartments in both configurations. The first compartment or tank provides primary treatment and is equipped with an outlet screening device (SaniTEE®). The second and third compartments must be in the same tank. Denitrification occurs in the second compartment of the System under anoxic conditions; a mixing pump installed in this compartment recycles some of the nitrified water through a baffle wall between the second and the third compartments (the aeration/membrane zone). The third compartment contains the Membrane Bioreactor, through which water passes for additional treatment prior to discharge to a leachfield by a float activated discharge pump.

The RIDEM recognizes the Technology as capable of achieving effluent concentrations of  $\leq 10$ mg/L Total Nitrogen. The RIDEM also recognizes the Technology as a Category 2 technology as defined in the Rules Establishing Minimum Standards Relating to Location, Design, Construction and Maintenance of Onsite Wastewater Treatment Systems (the OWTS Rules), as amended. Category 2 technologies are advanced treatment units that are not timed-dosed and have been classified by the RIDEM to at least meet effluent standards of  $\leq 30$  mg/L for TSS and BOD and  $\leq 5$  mg/L for Oil and Grease.

Design and installation of the Technology shall be in accordance with the following terms and conditions:

### **I. Monitoring Requirements**

1. System monitoring shall be performed according to the provisions of the RIDEM Monitoring Protocol for Nitrogen Removal Systems.

### **II. General Design Requirements**

1. The Technology is approved for the reduction of Total Nitrogen to  $\leq 10$  mg/L, TSS and BOD to  $\leq 30$  mg/L, and Oil and Grease to  $\leq 5$  mg/L for residential use only at a maximum allowable design flow of 1,500 GPD. The system may not be installed in parallel to treat design flows that exceed the specified maximum design flow.
2. The RIDEM will only approve OWTS applications which specify the following BioBarrier models: BioBarrier 0.5N, BioBarrier 1.0N, and BioBarrier 1.5N. This requirement is applicable to all OWTS applications types including variance requests and repair applications.
3. Designs proposed with a design flow over 700GPD shall be assessed by the Vendor and confirmed to be capable of meeting treatment objectives prior to submittal to the RIDEM. For existing facilities RIDEM will require sampling and testing of the wastewater, if an application is submitted for a new facility an estimate/projection of wastewater characteristics will be required.
4. Design and installation shall be in strict conformance with the RIDEM-approved Technology Installation Manual dated: **February 2016**.
5. The Technology is not typically preceded by a septic tank. If a distinct pre-treatment tank is specified, it must conform to the RIDEM OWTS Rules.
6. To prevent flotation of the BioBarrier MBR, a corrosion resistant strut system must be installed; this equipment is available from the Vendor.
7. To ensure Owner/Operator compliance with the Technology's operating requirements, all designs shall specify an hour meter and audible and visual alarms to indicate power interruption to the Technology. To ensure owner/operator compliance with this condition, all installations of the Technology shall be equipped with an hour meter and a visible and audible motor/power failure warning light, mounted on a NEMA approved cabinet on the exterior of the building.
8. Discharge and drainfield pumps must be wired to the same circuit as the aerator.
9. Leachfield Area Reduction
  - a) Designs incorporating this Technology and a conventional leachfield shall be allowed a 45% reduction in the required leachfield size. This reduction is based upon the ability of the Technology to remove BOD and TSS as demonstrated by the data presented in the Vendor's submittal. No reduction in leachfield size shall be allowed for non-conventional leachfields unless the leachfield is approved as a Class One alternative component and such reduction is not prohibited by the Class One alternative component Certification.
10. Technology tanks, dosing chambers, pumping chambers, and riser assemblies shall be certified watertight by the manufacturer or field-tested and certified watertight using procedures set forth in the OWTS Rules.
11. Design and installation shall be in strict conformance with the RIDEM-approved Technology Installation Manual and shall only be performed by a Rhode Island licensed designer/installer who has received training and is authorized in writing by the Vendor to design/install the Technology.
12. In addition to other approved leachfield options allowed by regulation, the effluent from the System may be discharged to a pressure-dosed shallow-narrow drain field provided the latter is designed in accordance with the OWTS Rules.

13. Each Technology design shall meet all other applicable OWTS Rules and receive prior approval by the RIDEM pursuant to the regulations in effect at the time of application.

### **III. Training**

1. The Vendor shall make training available for designers, installers, and service providers.
2. The Vendor shall notify the RIDEM of the date and time of each training seminar and submit to the RIDEM a detailed agenda, material to be distributed to attendees and a list of presenters specifying their credentials at least six weeks in advance of the date of the scheduled seminar. Please consult the RIDEM-issued requirements for Vendors' technology training available on the RIDEM website in the A/E technology section.
3. The Vendor shall make available to the public, a means of verifying individuals, by name and category, who have received training and are authorized in writing by the Vendor to design, install, and maintain the Technology.

### **IV. General Certification Requirements**

1. The Vendor shall submit a manual detailing design, installation, operation and maintenance requirements for the System. When this certification and associated design, installation and operation and maintenance manual(s) are approved by RIDEM, training may be held.
2. This Class Two certification shall be effective until its expiration and may be renewed according to the provisions of the OWTS Rules, as amended.
3. The Vendor is responsible for providing any revisions to the design, installation, operation and maintenance manual(s) for all models applicable to this certification to RIDEM for review and approval within thirty (30) days of RIDEM request. All manuals must be provided to the RIDEM in electronic portable document format (pdf).
4. The Vendor shall notify the RIDEM in writing of any changes to the Technology, including its discontinuation. Modifications deemed by the RIDEM to be substantial, may require re-application to the Alternative/Experimental program.
5. The Vendor shall notify the RIDEM at least 30 days prior to any proposed transfer of ownership of the Technology. Notification shall include the name and address of the new owner and a written agreement between the existing and new owner specifying a date for transfer of ownership, responsibility, and liability for the technology. All provisions of this approval shall be applicable to any new owners.
6. The Vendor shall provide any purchaser of the Technology with a copy of this approval prior to the sale of the Technology.

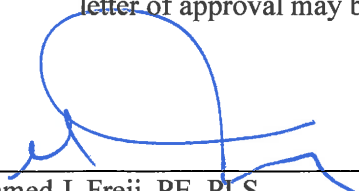
### **V. Operation and Maintenance Requirements**

1. Operation and maintenance of the Technology shall be performed in strict conformance with the RIDEM approved Owner's Manual dated: **February 2016** and Service Manual dated: **April 2016**.
2. The RIDEM approved Owner's Manual and Service Manual shall be provided to the Owner/Operator.
3. Installations of the Technology shall be maintained according to the manufacturer's specifications.
4. For seasonally used installations of the Technology, the Vendor shall provide specifications for protection of the Technology and the biological component from freezing, and conditions under which power to the Technology may be turned off.
5. The Vendor must offer for sale a minimum two-year service contract, which must include as an option, service to all components of the treatment train in addition to the Technology.

6. The Applicant/Owner shall record copies of the OWTS construction permit issued by RIDEM and the initially executed O&M contract(s) for the Technology, and all other A/E components in the treatment train, in the land evidence records of the applicable city or town prior to the RIDEM issuing the Certificate of Conformance for each installation.
7. a) The owner shall retain a public or private maintenance entity (service provider) for the life of the Technology and all other A/E components of the treatment train; a Vendor-authorized homeowner functioning as service provider is exempt from this for the Technology and any components of the treatment train for which the homeowner is providing service.  
b) No agreement with a maintenance entity shall be for less than two years.  
c) Service providers must be trained and authorized in writing by the appropriate Vendor to perform O&M on the Technology and all other A/E components of the treatment train for which they will be performing O&M.  
d) System owners who are authorized by the appropriate Vendor(s) to perform O&M on their own system's components must file a Vendor-authorization for each component for which they are performing O&M service.  
e) The service provider or homeowner providing O&M on his or her own Technology shall:
  - (1) Receive training as approved by the Vendor.
  - (2) Be available to perform required preventative maintenance, perform repairs, respond to Technology emergency situations, and conduct performance monitoring when required by this Certification or by permit.
  - (3) Perform an inspection of the treatment Technology at least twice annually for residential systems.
8. Properly trained homeowners may perform operation and maintenance on their own OWTS.
9. The Vendor shall have an inventory of Technology replacement parts available locally.

## VI. Rights of the RIDEM

1. The RIDEM may suspend, modify or revoke this approval for cause, including but not limited to: non-compliance with any of the provisions or conditions of this Certification, misrepresentation or failure to disclose fully all relevant data, or receipt of new information indicating that the use of the Technology is contrary to the public interest, public health or the environment.
2. The design, installation, and operation and maintenance manuals referenced herein are approved upon the date of approval of this Certification.
3. The RIDEM reserves the right to suspend or revoke this Certification if updated design, installation, and O&M manuals are not provided to the RIDEM within thirty (30) days of RIDEM request or one hundred and eighty (180) days prior to the expiration date of this Certification. All revisions must be reviewed and approved by the RIDEM.
4. This approval does not represent an endorsement of the Technology by the RIDEM. This letter of approval may be reproduced only in its entirety.

  
Mohamed J. Freij, PE, PLS  
Supervising Sanitary Engineer, OWTS Program

7.23.2020  
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Issuance Date