

J&R Sales and Service, Inc.

Over 20 years in Onsite Wastewater Solutions.



BETTER WATER. BETTER WORLD.®



Wastewater Pretreatment Systems



Subsurface Wastewater Disposal

About Us...

- J&R was established in 1990 with a goal to provide high quality, cost effective onsite treatment solutions
- We have over 20 years experience in the wastewater treatment market
- We began Piloting in Massachusetts with FAST® and GEOFLOW Drip Dispersal in 1998 at the Alternative Septic System Test Center
- The first FAST® single home installation was in 1995
- We have over 3,000 onsite systems installed – primarily in Massachusetts and Rhode Island
- We maintain greater than 80% of these installations through our service division, Wastewater Treatment Services
- We are proud to represent BioMicrobics throughout New England.
 - BioMicrobics is a well established global leader in onsite wastewater treatment solutions
- The BioBarrier system has Massachusetts Piloting Use Approval

BioBarrier[®]

Membrane BioReactors (MBR)



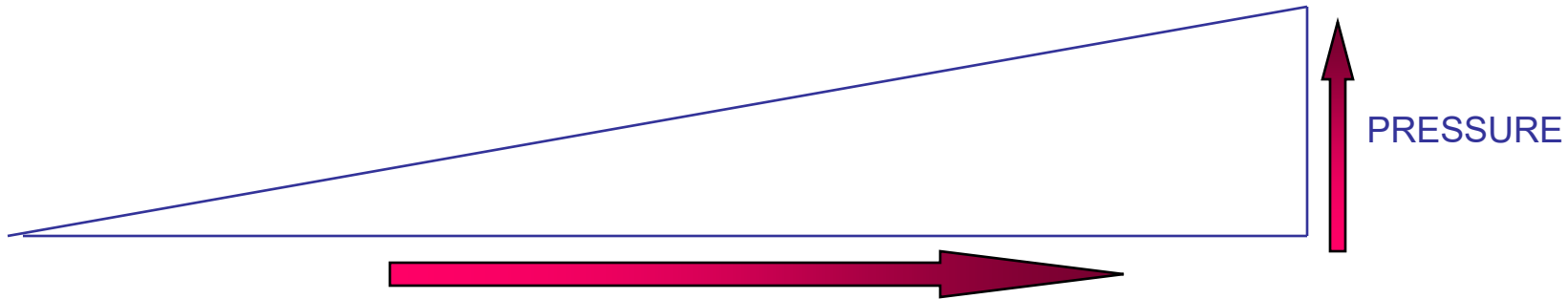
Membrane Spectrum

Microfiltration

Ultra filtration

Nan filtration

Reverse Osmosis



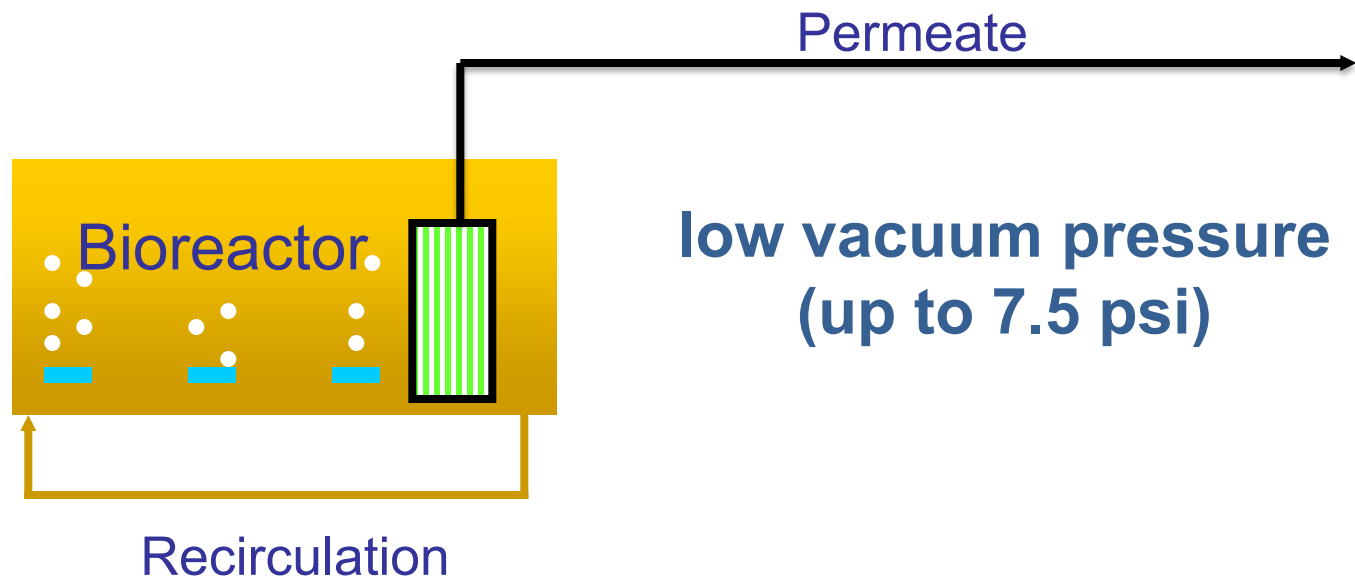
INCREASING TRANSMEMBRANE PRESSURE
DECREASING MEMBRANE OPERATIONAL LIFE

Filtration in the 0.1 micron range is the most widely used membrane type in wastewater treatment applications.

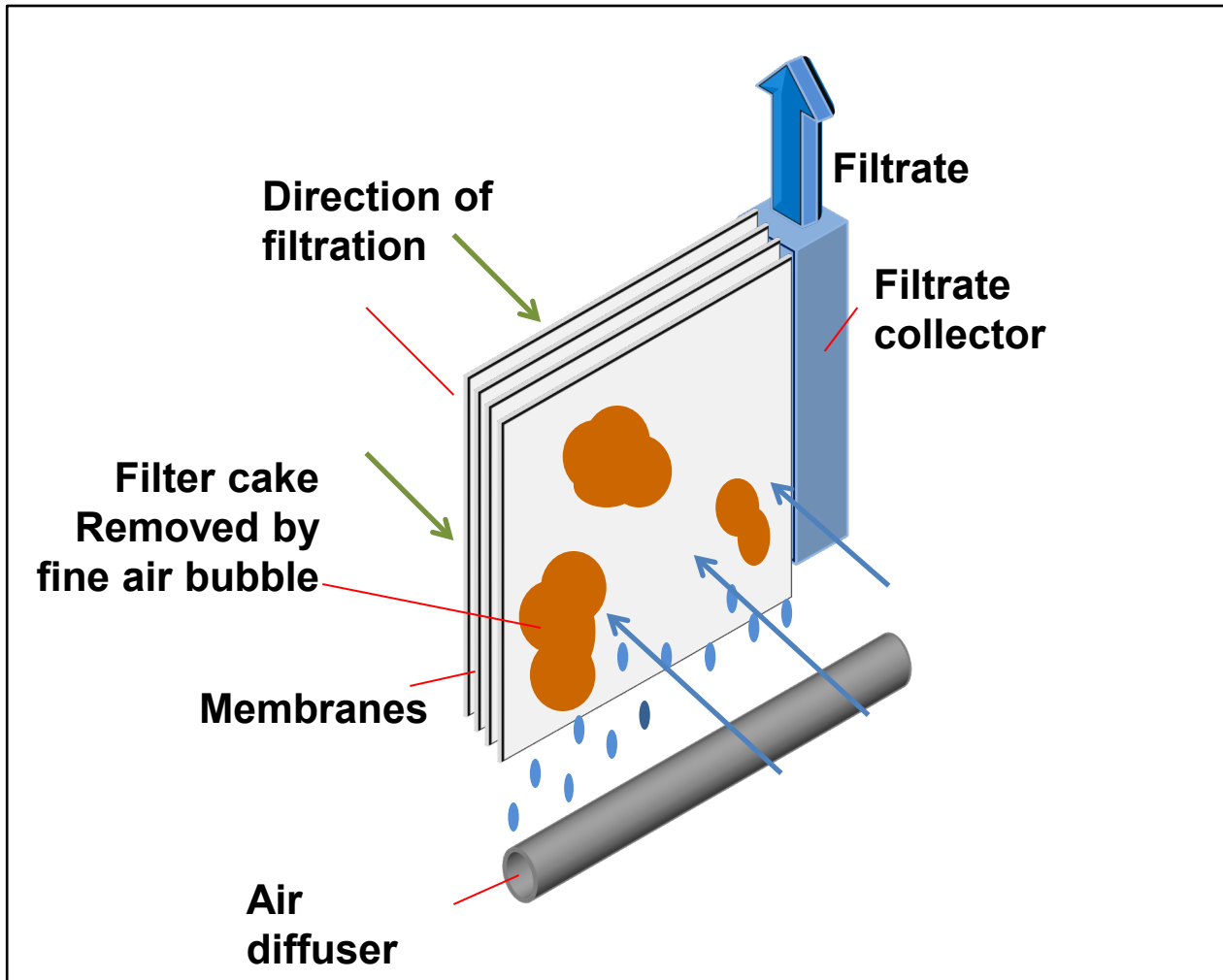
Immersed Membrane MBR

High surface area – reduced energy consumption

Commercialized 1990's



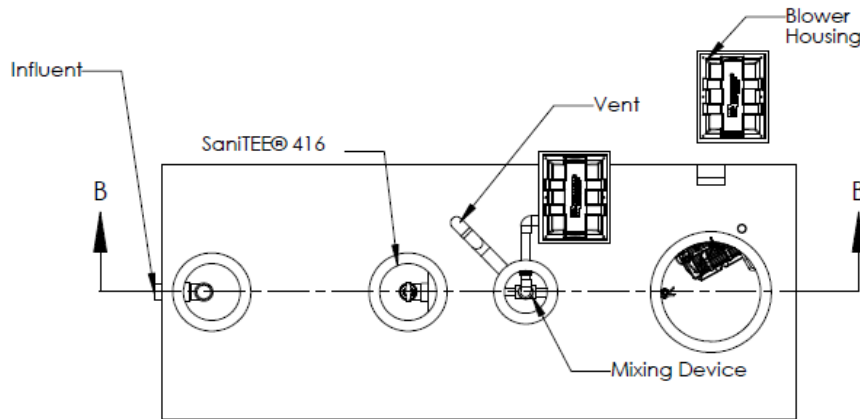
Filter Operation



BioBarrier[®]

- **The Highest, Consistent Effluent Quality**
 - BOD \leq 5 mg/L
 - TSS \leq 2 mg/L
 - Turbidity \leq 0.5 NTU
 - Fecal coli form \leq 200 CFU/100 mL (without disinfection)
 - Significant nutrient removal capability
 - Virus removal
 - Reduction of pharmaceutical byproducts

Residential System - BioBarrier® 0.5-N

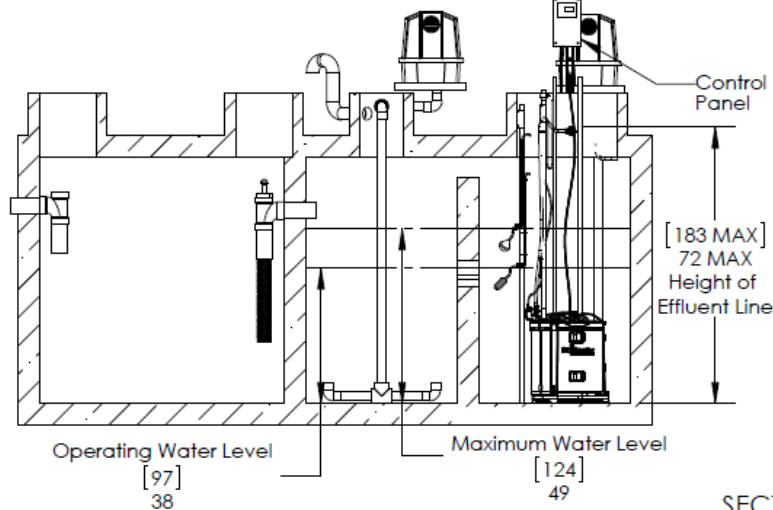


Settling Zone
375 Gallon MIN
[1420 L MIN]

Treatment Zone

Anoxic Zone
750 Gallons
[2800L]

Aerobic Zone
750 Gallons
[2800L]



NOTES

- Blower piping to BioBarrier® MBR® may not exceed 40 FT [12 m] total length and use 4 elbows maximum per train. For distances greater than 40 FT [12 m] - consult factory. Blowers must be located above flood/standing water levels on concrete bases 26" X 20" X 2" [65 X 50 X 5cm] minimum.
- Run vent(s) to desired location above finish grade and cover opening(s) with vent grate(s) w/at least 12 sq. in. [77 sq. cm] of total open surface area. Secure with stainless steel screws. Vent piping must not allow excess moisture build up or back pressure.
- All appurtenances to BioBarrier® (e.g. tank pump outs, etc.) must conform to all country, state, province, and local plumbing and electrical codes.
- The BioBarrier® MBR® control systems are provided by Bio-Microbics, Inc.
- The primary compartments may be a separate tank.
- The baffle separating the settling and the treatment chambers shall be sealed to the top of the tank, as shown on the drawing. Ventilation for the settling zone shall be provided for in the same manner as a traditional septic tank.
- All inspection, viewing, access, and pump out ports must be secured, to prevent accidental or unauthorized access.
- Tank, anchors, piping, conduit, blower housing pads and vents are provided by others.
- All piping and ancillary equipment installed after BioBarrier® MBR®, must not impede or restrict filtrate pump.
- BioBarrier® MBR® assemblies must be secured to the tanks to prevent movement or floatation(see Installation Instructions for details).
- If less than any of the specified minimums is considered necessary, consult factory for guidance.
- For enhanced nitrogen removal.
 - Anoxic Zone
 - Baffle wall should evenly distribute the volume in the Treatment Zone between the anoxic and aerobic zone.
 - Mixing device is required.

DO NOT SCALE
UNLESS NOTED
DIMENSIONS
ARE IN INCHES
[CENTIMETERS]
TOLERANCES
± 0.02 IN/IN
[± 0.05 CM/CM]

BIO MICROBICS
BETTER WATER. BETTER WORLD.™

MBR 0.5

SECTION B-B

WEIGHT	Id	SIZE	DRAWING NUMBER	SHEET 2 OF 6
NAME	DATE	A	MBR® 0.5-N	
DRAWN	CTC	11/25/2009		
CHECKED	PF	8/15/2014	REVISED 8/15/2014 REV. INI-04-G	

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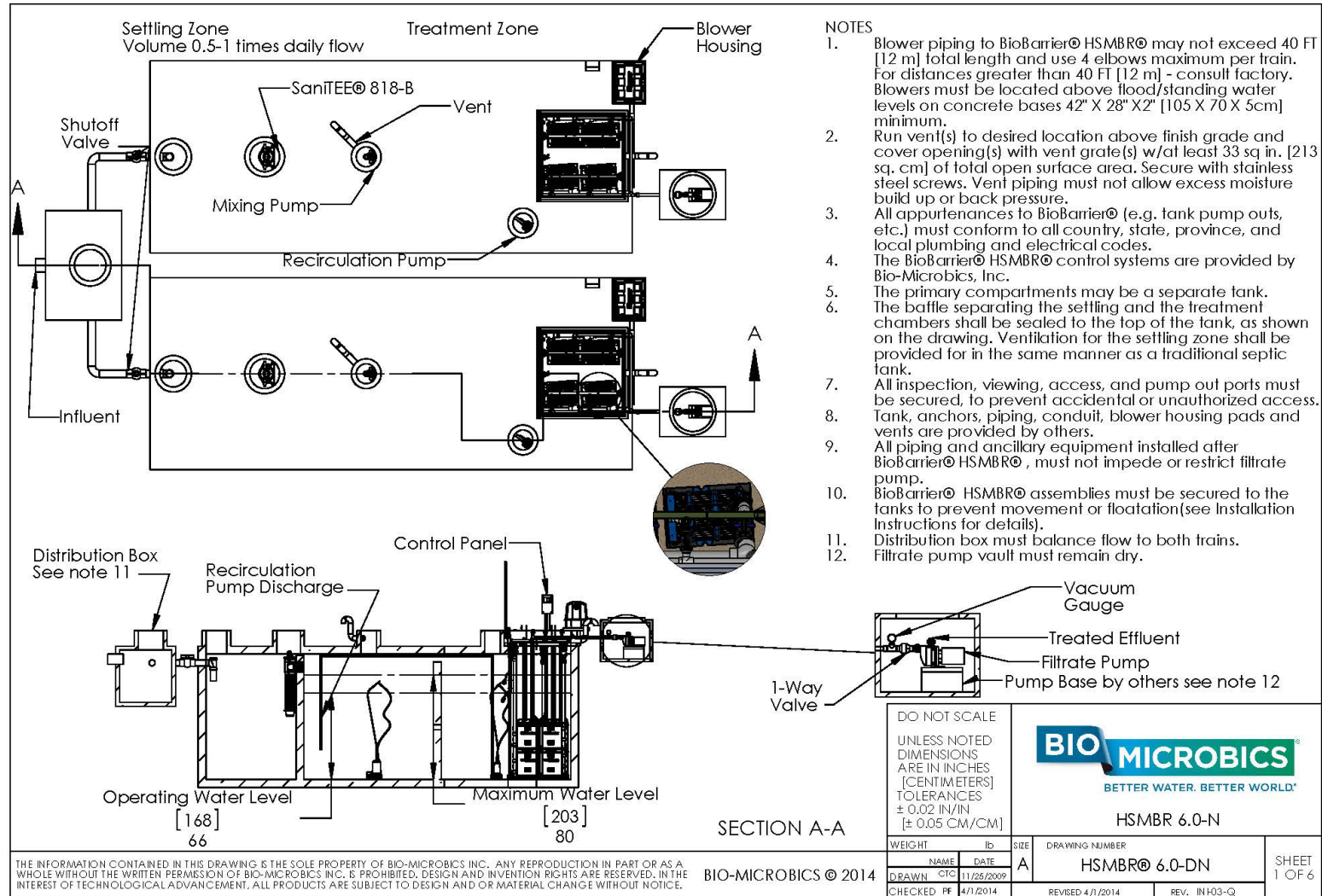
BIO-MICROBICS © 2014

BioBarrier® modules




Commercial System - HSMBR 6.0DN

Tank size varies based on application – anywhere from 10,000-18,000 total tankage required



MA DEP Requirements

- BioBarrier® is approved for Piloting Use in Massachusetts
 - Flows up to 10,000 gpd under MA DEP
 - We are currently working in the Piloting approval through MA DEP to prove the treatment capability of the BioBarrier system
 - The BioBarrier has also been through rigorous internal and 3rd party testing. It is NSF 40, 245 and 350 approved
- 

Current Commercial BioBarrier Installations in MA and RI Include:

- Restaurant
- Medical Facility
- Warehouse/Office
- Residential Development
- School
- Retail

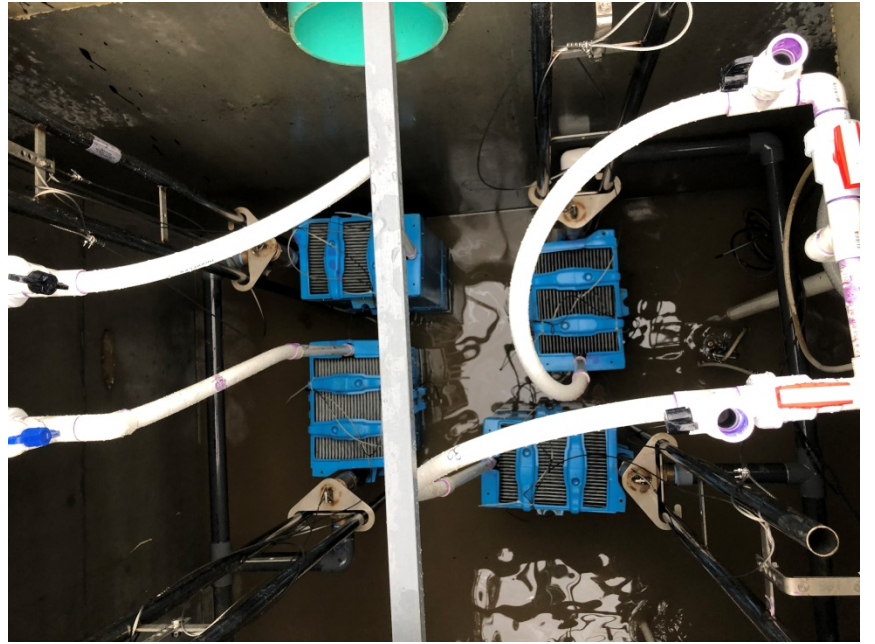


Noquochoke Village

Westport, MA

Recently featured in Onsite Installer Magazine







BioMicrobics BioBarrier®

Residential flows - design flow 9,990 gpd

INFLUENT									EFFLUENT								
	BOD mg/L	TSS mg/L	pH mg/L	TKN mg/L	Nitrate mg/L	Nitrite mg/L	Ammonia mg/L	Alkalinity mg/L	BOD mg/L	TSS mg/L	pH mg/L	TKN mg/L	Nitrate mg/L	Nitrite mg/L	TN mg/L	Ammonia mg/L	Alkalinity mg/L
June 2019	105	16.5	7.3	36.7	ND	ND	30.9	202	<4.0	<4.0	7.6	3.05	9.40	0.34	12.79	1.45	183
July 2019	520	590	7	146.0	ND	ND	83.9	333	<4.0	<4.0	7.8	2.28	4.52	ND	6.80	0.25	94
August 2019	297	54	6.9	97.3	ND	ND	63.6	329	<4.0	<4.0	8.1	1.34	2.57	ND	3.91	0.1	229
September 2019	810	620	6.5	107.0	ND	ND	61.8	255	<4.0	<4.0	7.8	1.11	1.24	ND	2.35	0.17	150
October 2019	403	848	6.9	118.0	ND	0.45	63.7	286	<4.0	<4.0	7.9	0.79	1.11	ND	1.90	0.47	108
November 2019	408	140	6.5	90.4	ND	ND	69.6	337	<4.0	<4.0	7.8	0.76	0.92	ND	1.68	0.11	260
December 2019	146	70	6.8	75.0	ND	ND	47.40	284	4.4	<4.0	7.7	1.62	3.81	ND	5.43	0.27	81
January 2020	*No testing - membrane cleaning performed																
February 2020	31	88	6.9	29.8	0.68	ND	15.60	167	<4.0	<4.0	7.4	2.26	1.23	ND	3.49	ND	81.4
March 2020	330	7	56	86.5	ND	ND	70.90	345	<4.0	<4.0	7.7	0.88	2.76	ND	3.64	0.31	80.6
April 2020	COVID	COVID	COVID	COVID	COVID	COVID	COVID	COVID	<4.0	<4.0	7.4	1.56	7.27	ND	8.83	0.14	63.5
May 2020	COVID	COVID	COVID	COVID	COVID	COVID	COVID	COVID	<4.0	<4.0	7.5	1.13	2.77	ND	3.90	ND	63.7
June 2020	COVID	COVID	COVID	COVID	COVID	COVID	COVID	COVID	<4.0	<4.0	7.5	0.48	3.89	ND	4.37	0.14	59.9
July 2020	COVID	COVID	COVID	COVID	COVID	COVID	COVID	COVID	<4.0	<4.0	7.4	0.72	4.59	ND	5.31	ND	62.6
August 2020	COVID	COVID	COVID	COVID	COVID	COVID	COVID	COVID	<4.0	<4.0	7.4	ND	3.41	ND	3.41	0.29	53.6
September 2020	COVID	COVID	COVID	COVID	COVID	COVID	COVID	COVID	<4.0	8	7.4	1.31	2.42	ND	3.73	ND	50.7
October 2020	COVID	COVID	COVID	COVID	COVID	COVID	COVID	COVID	<4.0	<4.0	7.6	0.56	2.65	ND	3.21	ND	75.8
November 2020	COVID	COVID	COVID	COVID	COVID	COVID	COVID	COVID	<4.0	<4.0	7.6	1.18	3.26	ND	4.44	ND	78.3
December 2020	COVID	COVID	COVID	COVID	COVID	COVID	COVID	COVID	<4.0	8	7.6	1.23	1.61	ND	2.84	ND	75.4
January 2021	COVID	COVID	COVID	COVID	COVID	COVID	COVID	COVID	<4.0	<4.0	7.5	0.62	1.67	ND	2.29	0.29	78.0
February 2021	COVID	COVID	COVID	COVID	COVID	COVID	COVID	COVID	<4.0	<4.0	7.5	ND	7.15	ND	7.15	ND	69.0
March 2021	COVID	COVID	COVID	COVID	COVID	COVID	COVID	COVID	<4.0	<4.0	7.5	0.99	8.34	ND	9.33	ND	97.1
April 2021	390	310	6.6	97	ND	ND	69	311	<4.0	<4.0	7.5	0.69	4.59	ND	5.28	0.31	43.5
May 2021	1,150	1,780	6.6	168	ND	ND	71	395	<4.0	<4.0	7.5	ND	0.92	ND	0.92	ND	85.9
June 2021	216	2,110	6.5	264	ND	ND	68	394	<4.0	<4.0	7.2	ND	2.90	ND	2.90	ND	73.6
July 2021	196	54	6.6	48	ND	ND	48	290	<4.0	<4.0	7.4	ND	4.25	ND	4.25	0.4	56.3
AVG	384.8	514.4	10.55	104.9	ND	ND	58.8	302.15	<4.0	<4.0	7.57	1.23	3.57	0.34	4.57	0.34	94
COVID=no influent samples taken																	
					% TN Removal		% BOD Removal		% TSS Removal								
					96%		99%		99%								

Key Points...

1. The BioBarrier MBR is an attractive and feasible technology for on-site treatment applications.
2. Smaller footprint for commercial flows vs. other technology options; cluster systems offer cost and footprint saving
3. BioBarrier is already approved for use in MA
4. Membrane treatment is not a new technology that needs to be proven
5. Low TN effluent can be achieved; <10 mg/L or <5 mg/L; with test results to prove it

For more information

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www.jrsalesinc.com

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www.septitech.com

www.geoflow.com