Puraflo

WASTEWATER TREATMENT SYSTEMS

NSF

CLASS 1
NSF/ANSI 40

OWNER'S MANUAL

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Rev. Date 090506

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1.0 CLASSIFICATION STATEMENT

The Puraflo® Peat Biofilter System for wastewater treatment has been tested, certified and listed by NSF International as meeting the requirements of ANSI / NSF Standard 40, Class 1.

2.0 GENERAL DESCRIPTION OF SYSTEM

The Puraflo® Peat Biofilter is an advanced secondary treatment system that purifies septic tank effluent to an extremely high degree before final disposal.

A typical Puraflo® Peat Biofilter system consists of:

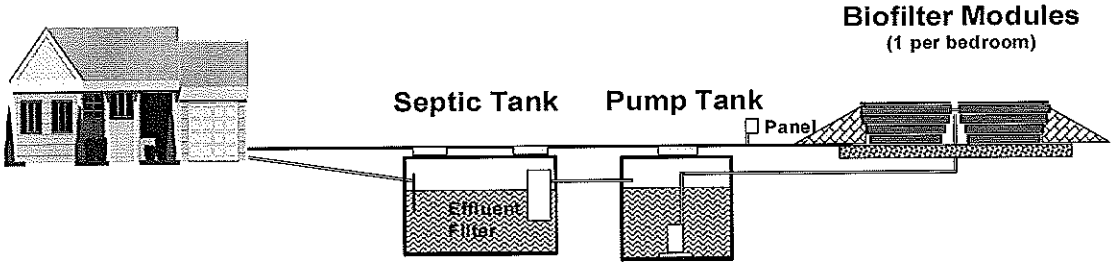
1. A septic tank fitted with an effluent filter on the outlet pipe.
2. A dosing tank and effluent pump or siphon to accommodate dosing of the septic tank effluent onto the peat fibre media.
3. Biofilter modules where advanced treatment occurs due to the physical, chemical and microbial processes that are optimized in the peat fibre media.
4. The site specific final effluent disposal system.

The filtered septic tank effluent is collected under gravity in the pump / siphon tank. A time dosing system is activated by a programmable timer, which pumps the effluent through a flow splitting inlet manifold located at the base of the treatment modules. An orifice plate is located inside the top of each inlet manifold which allows the flows to be split equally and fed simultaneously to each biofilter module. The inlet manifold is connected to the base of the biofilter and is fed upwards to a rectangular distribution grid located 6 inches below the top of each module. The effluent percolates laterally and vertically through the depth of the peat fibre treatment media and emerges as a clear innocuous liquid from the base of the system, for collection or dispersal.

Due to the high quality of the peat biofilter effluent, the siting and sizing requirements for final effluent disposal are typically less stringent than for conventional systems or systems that do not provide the same degree of treatment.

The Puraflo is a modular system with each module rated for 150 gpd maximum. The range and rated capacity of the system is therefore a multiple of the standard unit based on up to 150 gpd maximum per module.

Puraflo® Peat Biofilter



3.0 INTRODUCING SUBSTANCES TO THE SYSTEM

The Puraflo® Peat Biofilter is designed for the treatment of domestic strength wastewater from residences or other waste flows with similar wastewater strength characteristics. While the Puraflo® Peat Biofilter will process most waste produced by the average household, in order to prevent malfunctions, and to ensure optimum performance of the system, the following guidelines should be followed:-

DO

- Conserve water to reduce the amount of wastewater that must be treated and disposed
- Repair any leaking faucets and toilets (very important)

DO NOT

- Overload the system by introducing wastewater flows greater than the design flow
- Flush excessive amounts of grease, oil or fat into your septic system
- Dump excessive amounts of disinfectants, cleaners or detergents (normal amounts will not harm the system)
- Allow storm water into your septic system (storm water drains should not be connected to the septic tank and landscaping should divert storm water away from the modules)
- Use additives (septic tank additives should not be introduced into the septic tank for grease reduction, stimulation of biological activity or other purposes)
- Dispose of large quantities of organic material through a garbage grinder as this may organically overload the system and cause more frequent pumping of the septic tank
- Flush cigarettes, tea bags, sanitary napkins, tampons, diapers, condoms and other non-biodegradable products capable of blocking pipes or filters into your system
- Dump solvents, oils, paints, thinners, pesticides or poisons down the drain which can disrupt the treatment process and contaminate the groundwater
- Dispose of water softener waste directly into the septic system (where practical design a separate disposal system or balance flows into the septic system)

4.0 HOMEOWNERS DO'S and DO NOT'S

To ensure optimum performance of the **Puraflo®** Peat Biofilter system, the following Do's and Do Not's should be followed:

DO

- Maintain a stabilized / grassed landscaped area around the modules in order to prevent soil erosion (plants and suitable shrubs can also be used to enhance the appearance of the system)
- Keep ant nests and other pests out of the treatment modules by dosing externally with suitable insecticides and pest controls as necessary
- Divert down spouts and other surface water away from the system and drainfield
- Keep your septic tank cover accessible for tank inspections and pumping
- Have your septic tank pumped regularly and checked for leaks and cracks
- Have the effluent filter cleaned annually
- Test the pump alarm occasionally (as applicable) by briefly activating the test switch on the alarm
- In the event of the alarm sounding after electrical storms or power failure, check if the electrical circuit-breakers tripped off by first turning them off and then turning them back on again
- Call your Authorized Service Provider when you have problems

DO NOT

- Dig in your drainfield or build anything permanent over it
- Plant anything over your drainfield except grass
- Drive over your drainfield or compact the soil in any way
- Attempt any homeowner maintenance to the septic tank, pump tank, electrical controls or treatment modules – **do not remove caps or covers as potentially hazardous gases and waste matter are contained in the treatment tanks which may result in death or bodily injury.**
- Place heavy objects on or drive across your treatment system
- Bury or cover the modules with soil as the Puraflo® treatment is an aerobic process that requires free passage of air through the module lids

5.0 OPERATION AND MAINTENANCE

The Puraflo® peat biofilter is a passive biological treatment system and as such there are no mechanical parts with the exception of the pump and controls which dose the treatment modules. To assure the efficient operation of the Puraflo® system, it is important that the septic tank is well maintained and sludge carryover is avoided. The measures recommended for a standard septic tank treatment system also apply to the Puraflo® system which works on the same basic principles. To ensure optimum performance of the Puraflo® system, the following practices are recommended:

5.1 Septic Tank

A well maintained septic tank is essential for most onsite treatment systems as the septic tank provides the first treatment step in wastewater purification. During a tank retention time of a day or more, the heavier wastewater solids settle to the bottom forming a sludge layer while the lighter solids, greases and oils float to the top to form a scum layer. The anaerobic conditions created in the septic tank by the scum layer allow anaerobic and facultative micro-organisms to break down (feed on) and reduce the sludge and scum volume. In this manner approximately 40 percent of sludge and scum volume can be reduced; however, the remaining solids accumulate in the tank and must be pumped out on a regular basis.

The septic tank should be inspected annually and desludged in accordance with State and EPA guidelines. Depending on use, a typical home will produce sufficient sludge requiring the tank to be desludged during a two to three year period. The importance of desludging can not be over-emphasized since the Puraflo® system is designed to treat effluent from a well functioning septic tank where a significant portion of insoluble solids have been allowed to settle out. The effluent filter installed with the Puraflo® system should be cleaned annually or at the time of system inspection. The inspection / desludging should be carried out by a certified septic pumper and should not be attempted by the homeowner.

A filter is installed on the septic tank outlet pipe to prevent the carryover of solids to the treatment system. If septic tank maintenance recommendations and practices are not followed and in particular, if large objects are disposed into the septic tank, the filter will clog causing wastewater to backup into the house.

5.2 Pump Alarm

The pump alarm should be checked on a regular basis by briefly pushing the test switch on the alarm. This activates the audio alarm buzzer and visual alarm light for a short period before it reverts to its automatic position.

Refer to the Homeowner Troubleshooting Checklist in the event that the control panel alarm is activated.

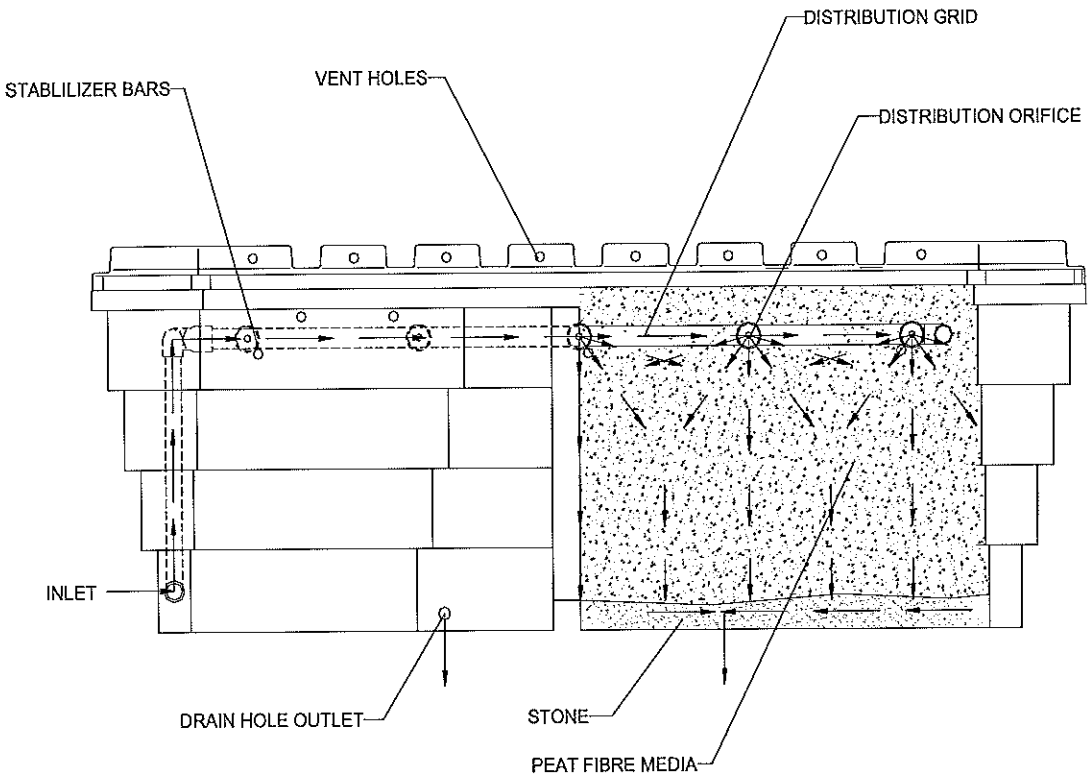
5.3 Electrical Control Panel

In the event of an electrical storm or power failure, the circuit-breaker switches on the electrical lines feeding the Puraflo® pump and alarm should be checked to see if they tripped to the "off" position. If a circuit breaker switch is tripped, the power supply to the alarm/pump should be restored by resetting the breaker. If the Puraflo® system still fails to operate, please call the Authorized Service Provider or Bord na Mona.

5.4 Puraflo® Modules

No heavy objects should be placed on top of the system modules as imposed loads can adversely effect the distribution and hence the performance of the system. The modules can be camouflaged with plants and small root ball type shrubs placed no closer than 2 feet from the modules, however, no soil or other obstruction should be placed within four inches from the top of the module where air is naturally circulated through the system.

It is essential that the treated effluent is allowed to drain freely from the modules and that the final disposal system is kept in good condition. Failure of the final disposal system may cause backing up of effluent in the Puraflo® modules which could damage the treatment capability of the system and the peat fibre. The Authorized Service Provider should be notified if there are any indications of ponding on the final disposal system and either standing water in or overflow from the modules or sampling chamber.



PURAFLO MODULE FLOW DIAGRAM

6.0 VACATION, SEASONAL AND INTERMITTENT USE

The Puraflo® treatment system will function normally when used for vacation, seasonal or intermittent applications.

During normal operation of the Puraflo® Peat Biofilter a stable ecosystem exists in the peat media consisting of a diverse population of microorganisms and also higher life forms. During a period of reduced wastewater flow to the Puraflo® biofilter the microbial population correspondingly decreases in the media. The degree of 'feeding' of the system dictates to a certain degree the microbial numbers in the media, however, the system will continue to treat the wastewater. The reason for this can be explained as follows:-

Upon complete cessation of wastewater supply to the bed a number of changes occur to the resident microbial population. Many types of bacteria and fungi will form spores during periods of nutrient depletion. These spores will remain dormant until a fresh supply of wastewater is added to the biofilter. Other non-sporing microorganisms will remain in a dormant inactive state until fresh nutrients are provided. Some microorganisms and higher life forms will persist in the peat media feeding on the residual biomass present, thus turning over the microbial population in the peat.

Upon start up, when wastewater is once again supplied to the system, the dormant microorganisms and spores quickly resuscitate and become metabolically active. Additional beneficial bacteria will be provided by the wastewater itself. The Puraflo® Peat Biofilter very quickly reactivates to become fully efficient.

7.0 HOMEOWNER TROUBLESHOOTING CHECKLIST

DETECTION	POSSIBLE CAUSE	ACTION
Experience slow flush but electrics are in good working order	1. Unacceptable level of solids in septic tank 2. Effluent filter blocked	1. Pump out septic tank and clean effluent filter 2. Clean effluent filter
Alarm sounds continuously and effluent level rises steadily in the pump tank - this can eventually lead to slow flush caused by sewage backing up and could eventually cause effluent to pond at the septic or pump tank	1. Pump failure due to circuit breaker switch being tripped to the off position by an electrical storm or power surge 2. Pump fails due to faulty system electrics or pump itself is faulty	1. Conserve water usage, reset circuit breaker and test the alarm - if the problem recurs call your Authorized Service Provider 2. Conserve water usage and call your Authorized Service Provider
Alarm sounds periodically but resets itself (indicating that the pump is still operating) Some states require alarms that are latched (continue to alarm after the alarm event has been corrected) and will not auto-reset themselves in which case it will be necessary to reset the alarm manually	1. High water usage above design capacity activates the alarm float switch 2. Leaking plumbing fixtures 3. Leaking pump or septic tank 4. Broken timer or incorrect timer settings. 5. Latched alarm	1. Reduce water usage to range within the design capacity - 2. Repair leaking plumbing fixtures 3. Repair leaks in septic or pump tank 4. Conserve water usage and call your Authorized Service Provider. 5. Reset manually
No alarm warning - effluent level rises continuously in the pump tank potentially leading to slow flush and/or effluent ponding around septic or pump tank	1. Pump and alarm failure due to circuit breaker switches being tripped to the off position by an electrical storm, power surge or power failure 2. Pump and alarm fail concurrently due to faulty system electrics	1. Reset circuit breaker and test the alarm - if the problem recurs call for maintenance 2. Conserve water usage and call your Authorized Service Provider
Ponding of effluent on peat fibre media	1. Failed drainfield 2. Media at end of useful life	1. Consult with your Authorized Service Provider 2. Replace peat fibre media

9.0 EMERGENCY CONTACT DETAILS

In the unlikely event that you experience a problem with your Puraflo® Peat Biofilter system or if service is required, you should contact your Authorized Service Provider. The contact details for your Authorized Service Provider can be found on the Service Data Label that is attached to the control panel. You should reference the serial number of the Puraflo® Peat Biofilter found on the System Data Label attached to the Puraflo® modules when you contact the Authorized Service Provider or manufacturer.

9.1 Manufacturer Contact Details

Name	Bord na Mona Environmental Products US Inc.
Address	P.O. Box 77457
	Greensboro
	North Carolina 27417
Office No.	336 547 9338
Toll Free No.	1-800-PURAFLO
Fax No.	336 547 8559
Email Address	info@bnm-us.com
Website Address	www.bnm-us.com

9.2 Authorized Service Provider Contact Details

Name	
Address	
Office No.	
Mobile No.	
Fax No.	
Email Address	

10.0 LIMITED WARRANTY

Bord na Mona Environmental Products U.S. Inc. (herinafter called BnMEP Inc.) warrants each Puraflo® peat fibre wastewater treatment system to function properly and to be free from defects in material and workmanship for a period of two (2) years from the date of sale to the original documented retail consumer. BnMEP Inc. sole obligation under this warranty is as follows: BnMEP Inc. shall fulfill this warranty by repairing or exchanging any component part, F.O.B Factory, that shows evidence of defects, provided the said component part has been paid for, warrantee has notified BnMEP Inc. of the defect complained of and the component is returned through the Authorized Service Provider, transportation prepaid. This warranty does not cover any costs to ship the defective parts to the factory, nor any labor costs and / or other costs to remove or replace defective parts. There is no informal dispute settlement available under this LIMITED WARRANTY.

BnMEP Inc. warrants the satisfactory operation of the Puraflo® peat fibre wastewater treatment system provided the treatment system is installed and operated in accordance with the design, treatment parameters and BnMEP Inc. recommendations.

This LIMITED WARRANTY applies only to the treatment process parts supplied by BnMEP Inc. and does not include any portion of the residential plumbing, drainage, disposal system, or installation of the systems. In no event shall BnMEP Inc. be responsible for delay or damages of any kind or character resulting from, or caused directly or indirectly by, defective components or materials manufactured by others or to any failure due to accidental or malicious damage, plant abuse, fair wear and tear or frost or storm damage, or use or installation contrary to zoning, regulation, or other legal mandate or ordinance.

Liability does not extend to cover damage, failure repairs and replacements due to third party causes including uncertified installation or incorrect or non regulatory compliant system design or as a result of connection to the a failed dispersal field or if the system is not used in accordance with the instructions for use contained in the owner manual.

Recommendations for special applications will be based on the best available expertise of BnMEP Inc. and published industry information. Such recommendations do not constitute a warranty of satisfactory performance.

This LIMITED WARRANTY extends to the original retail customer of the product. As herein, "original retail customer" is defined as the purchaser who first has the plant installed or in the case of a system designed for non-permanent installation, the purchaser who first uses the system. It is the purchaser's, or any sub-vendors obligation to make known to any other the terms and conditions of this warranty.

This warranty is a LIMITED WARRANTY and no claim of any nature shall be made against BnMEP Inc. unless and until the original retail customer, or his legal representative, notifies BnMEP Inc. in writing of the defect complained of and delivers the product and /or defective part(s), freight prepaid, to BnMEP Inc. or an authorized service station.

BnMEP Inc. reserves the right to revise, change, or modify the construction and/or design of the Puraflo® wastewater treatment systems, or any component part or parts thereof, without incurring any obligation to make such changes or modifications in equipment previously sold. BnMEP Inc. also reserves the right, in making replacements of component parts under this warranty, to furnish a component which, in its judgment is equivalent to the part replaced.

To the extent that the LIMITED WARRANTY statements herein are inconsistent with the locality where the Purchaser uses the Puraflo® Wastewater Treatment System, the warranty shall be deemed to be modified consistent with such local law. Under such local law, certain limitations may not apply. For example, some states in the United States and some jurisdictions outside the United States may (i) preclude the disclaimers and limitations of these warranties from limiting the rights of a consumer (ii) otherwise restrict the ability of a manufacturer to make such disclaimers or to impose such limitations; or (iii) grant the consumer additional legal rights, specify the duration of implied warranties which a manufacturer cannot disclaim, or prohibit limitations on how long an implied warranty lasts.

In no event and under no legal theory, including without limitation, tort, contract, or strict product liability, shall BnMEP Inc. or any of its suppliers be liable to the other party for any indirect, special, incidental, or consequential damages of any kind, including without limitation damages for loss of goodwill, or any kind of commercial damage, even if the other party has advised BnMEP Inc. of the possibility of such damages.

RECORD OF SYSTEM

Owner *Name & System Location* *Phone*

Street *City* *State* *Zip Code*

No. of Modules

Serial #'s (on module)

Pump(s) model #

Float(s) model #

Startup date

Design flow

Pump design specification (gpm)

Tank(s) Size(s)

Panel Make & Type

Pump tank timer settings

Dispersal method

Dealer name / phone

Engineer name / phone

Installer name / phone

Service provider name / phone

Regulatory Authority

Permit # (if applicable)

Notice of Transfer

I the undersigned _____ hereby declare that I have acquired the property located at
Name

Street *City* *State* *Zip Code*

Telephone

I have taken cognizance of the warranty provided by Bord na Mona for the Puraflo® Peat Biofilter for wastewater treatment. I wish to avail myself of this warranty for the remaining period of its coverage; I accept all of its clauses, undertakings and conditions; I have had the opportunity to examine the Puraflo Peat Biofilter and declare myself satisfied with it at the time of the transfer.
I request that Bord na Mona take note of the change of ownership.

Signature *Date*