



Commonwealth of Virginia

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Matthew J. Strickler
Secretary of Natural Resources

David K. Paylor
Director
(804) 698-4000

December 23, 2020

Mr. Travis Dorman
Advanced Drainage Systems
4640 Trueman Blvd.
Hilliard, Ohio, 43026

Transmitted electronically: travis.dorman@ads-pipe.com

Re: Assignment of Percent Removal Efficiencies for Total Phosphorus for EcoPure BioFilter™

Dear Mr. Dorman:

The Department of Environmental Quality (Department or DEQ) received the Manufactured Treatment Device Registration Form and supporting documentation for the **EcoPure BioFilter™** on August 6, 2020. In accordance with § 62.1-44.15:28 of the Stormwater Management Act, 9VAC25-870-65 D of the Virginia Stormwater Management Program Regulation, and Guidance Memo No. 14-2009, Interim Use of Stormwater Manufactured Treatment Devices (MTDs) to meet the New Virginia Stormwater Management Program (VSMP) Technical Criteria, Part IIB Water Quality Design Requirements, the **EcoPure BioFilter™** has been reviewed.

Section 65 D 2 of the VSMP Regulation, which became effective on November 25, 2020, states that any MTD approved for use after July 1, 2020, must meet the requirements of § 62.1-44.15:28 A 9 of the Stormwater Management Act. Advanced Drainage Systems has obtained certification from the New Jersey Department of Environment Protection. The certification was provided to the Department.

The **EcoPure BioFilter™** is approved for use in Virginia to meet the VSMP water quality design requirements. The percent total phosphorous pollutant removal efficiency has been assigned a value of **40%**. This information will be posted on the Virginia Stormwater BMP Clearinghouse website. This device and the assigned removal efficiency can be manually added into Virginia Runoff Reduction spreadsheet to demonstrate compliance with Runoff Reduction Method.

If you have any questions regarding this information, please contact Robert E. Cooper, P.E. at (804) 698-4033 or e-mail at Robert.Cooper@deq.virginia.gov.

Sincerely,

A handwritten signature in blue ink that reads "Erin Ervin Belt".

Erin Ervin Belt, Manager
Office of Stormwater Management

Appendix A
Certification letters from
New Jersey Department of Environmental Protection



State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Bureau of Nonpoint Pollution Control

Division of Water Quality

401-02B

Post Office Box 420

Trenton, New Jersey 08625-0420

609-633-7021 Fax: 609-777-0432

http://www.state.nj.us/dep/dwq/bnpc_home.htm

PHILIP D. MURPHY
Governor

SHEILA Y. OLIVER
Lt. Governor

CATHERINE R. MCCABE
Commissioner

August 3, 2020

Daniel J. Figola, P.E.
Director of Sustainability Development
Advanced Drainage Systems, Inc.
4640 Trueman Boulevard
Hilliard, OH 43026

Re: MTD Lab Certification
EcoPure BioFilter™ Stormwater Treatment Device
On-line Installation

TSS Removal Rate 80%

Dear Mr. Figola:

The Stormwater Management rules under N.J.A.C. 7:8-5.5(b) and 5.7(c) allow the use of manufactured treatment devices (MTDs) for compliance with the design and performance standards at N.J.A.C. 7:8-5 if the pollutant removal rates have been verified by the New Jersey Corporation for Advanced Technology (NJCAT) and have been certified by the New Jersey Department of Environmental Protection (NJDEP). Advanced Drainage Systems, Inc. (ADS) has requested an MTD Laboratory Certification for the EcoPure BioFilter™ stormwater treatment system (EcoPure BioFilter™).

The project falls under the “Procedure for Obtaining Verification of a Stormwater Manufactured Treatment Device from New Jersey Corporation for Advance Technology” dated January 25, 2013. The applicable protocol is the “New Jersey Laboratory Testing Protocol to Assess Total Suspended Solids Removal by a Filtration Manufactured Treatment Device” dated January 25, 2013.

NJCAT verification documents submitted to the NJDEP indicate that the requirements of the aforementioned protocol have been met or exceeded. The NJCAT letter also included a recommended certification TSS removal rate and the required maintenance plan. The NJCAT Technology Verification Report with the Verification Appendix (dated June 2020) for this device is published online at <http://www.njcat.org/verification-process/technology-verification-database.html>.

The NJDEP certifies the use of the EcoPure BioFilter™ stormwater treatment system at a TSS removal rate of 80% when designed, operated, and maintained in accordance with the information provided in the Verification Appendix and the following conditions:

1. The maximum treatment flow rate (MTFR) for the manufactured treatment device (MTD) is calculated using the New Jersey Water Quality Design Storm (1.25 inches in 2 hrs) in N.J.A.C. 7:8-5.5. The MTFR is calculated based on a verified loading rate of 1.0 gpm/ft² of effective filtration treatment area.
2. The EcoPure BioFilter™ shall be installed using the same configuration reviewed by NJCAT and shall be sized in accordance with the criteria specified in item 7 below.
3. This EcoPure BioFilter™ cannot be used in series with another MTD or a media filter (such as a sand filter) to achieve an enhanced removal rate for total suspended solids (TSS) removal under N.J.A.C. 7:8-5.5.
4. Additional design criteria for MTDs can be found in Chapter 9.6 of the New Jersey Stormwater Best Management Practices (NJ Stormwater BMP) Manual, which can be found online at www.njstormwater.org.
5. The maintenance plan for a site using this device shall incorporate, at a minimum, the maintenance requirements for the EcoPure BioFilter™. A copy of the maintenance plan is attached to this certification. However, it is recommended to review the maintenance website at <https://baysaver.com/resources/> for any changes to the maintenance requirements.
6. For an MTD to be considered “green infrastructure” in accordance with the March 2, 2020 amendments to the Stormwater Management rules at N.J.A.C. 7:8, the MTD must meet the GI definition noted at amended N.J.A.C. 7:8-1.2. Specifically, the MTD shall (1) infiltrate into the subsoil; and/or (2) treat stormwater runoff through filtration by vegetation or soil. The EcoPure BioFilter™ is a stormwater treatment system that filters polluted stormwater through bioretention filter media driven by hydrostatic head. The EcoPure BioFilter™ can be installed with a curb, gutter, grated inlet, or straight-in pipe inlet, and can be installed above (i.e. planter box), or at grade with a planting bed to allow maximum design flexibility. Any configuration that uses a bio-filtration media and incorporates plants within the bioretention media layer would meet the GI definition.
7. Sizing Requirement:

The example below demonstrates the sizing procedure for the EcoPure BioFilter™:

Example: A 0.25-acre impervious site is to be treated to 80% TSS removal using an EcoPure BioFilter™ treatment unit. The impervious site runoff (Q) based on the New Jersey Water Quality Design Storm was determined to be 0.79 cfs.

The selection of the appropriate model of EcoPure BioFilter™ is based upon both the maximum inflow drainage area and the MTFR. It is necessary to calculate the required model using both methods and to use the largest model determined by the two methods.

Inflow Drainage Area Evaluation:

The drainage area to the EcoPure BioFilter™ in this example is 0.25 acres. Based upon the information in Table 1 below, all of the EcoPure BioFilter™ models would be able to treat runoff without exceeding the maximum allowable drainage area.

Maximum Treatment Flow Rate (MTFR) Evaluation:

The site runoff (Q) was based on the following:

time of concentration = 10 minutes

i = 3.2 in/hr (page 5-8, Fig. 5-3 of the NJ Stormwater BMP Manual)

c = 0.99 (runoff coefficient for impervious)

Q = ciA = 0.99 x 3.2 x 0.25 = 0.79 cfs

Given the site runoff is 0.79 cfs and based on Table 1 below, the EcoPure BioFilter™ 8 x 24 model with an MTFR of 0.836 cfs would be the smallest model that could be used for this site to remove 80% of the TSS from the impervious area without exceeding the MTFR.

The MTFR evaluation results will be used since that method results in the highest minimum configuration determined by the two methods.

The sizing table corresponding to the available system models is noted below. Additional specifications regarding each model can be found in the NJCAT Technology Verification Appendix under Table A-1.

Table 1. EcoPure BioFilter™ Models and Associated MTFRs and Drainage Areas

Model	Effective Filtration Treatment Area (ft²)	Maximum Treatment Flow Rate (MTFR) (cfs)	Drainage Area (acres)
4 x 8	60	0.134	0.324
4 x 10	75	0.167	0.404
4 x 12	90	0.201	0.486
4 x 14	105	0.234	0.566
4 x 16	120	0.268	0.648
8 x 12	180	0.401	0.973
8 x 16	240	0.535	1.297
8 x 20	315	0.702	1.702
8 x 24	375	0.836	2.026

A detailed maintenance plan is mandatory for any project with a stormwater BMP subject to the Stormwater Management rules under N.J.A.C. 7:8. The plan must include all of the items identified in the Maintenance requirements section of the Stormwater Management rules under N.J.A.C. 7:8-5.8. Such items include, but are not limited to, the list of inspection and maintenance equipment and tools, specific corrective and preventative maintenance tasks, indication of problems in the system, and training of maintenance personnel. Additional information can be found in Chapter 8: Maintenance and Retrofit of Stormwater Management Measures.

If you have any questions regarding the above information, please contact Jim Murphy of my office at (609) 633-7021.

Sincerely,



Gabriel Mahon, Chief
Bureau of Nonpoint Pollution Control

Attachment: Maintenance Plan

cc: Chron File
Richard Magee, NJCAT
Jim Murphy, NJDEP-BNPC
Vince Mazzei, NJDEP - DLUR
Brian Salvo, NJDEP - BNPC

Maintenance Guide

EcoPure BioFilter™

June 2020



PRETREATMENT CELL

BIORETENTION MEDIA CELL

The EcoPure BioFilter system requires periodic inspection and maintenance for it to operate at the design efficiency. The inspection process helps in deciding when and what level of maintenance will be needed to bring the unit up to or near peak efficiency. As with ADS' other water quality products, the maintenance cycle of the EcoPure BioFilter system will be driven mostly by the actual solids and trash/debris load brought into the system.

ADS recommends inspecting the EcoPure BioFilter quarterly for the first year of service, and after every significant storm event occurring during the first six months. The definition of a significant storm event will vary depending on the geographic area, but if the event is greater than 1 inch of intensity within an hour or 3 inches within a 24-hour period, the system should be inspected. After the first year, systems should be inspected at least bi-annually and ideally before the spring or rainy season and after the summer season, or prior to fall or winter seasons. It is recommended that some general "good housekeeping" maintenance be performed at the beginning of the rainy or spring season every year. Since stormwater solids loads can be variable, it is possible that the maintenance cycle could be more or less than the projected duration.

For most maintenance needs, the EcoPure BioFilter planting component follows the practices used for handling standard bioretention systems (i.e., general landscaping, cover management, and replacement planting of surface plants).

It may be advisable to “water” or irrigate the EcoPure BioFilter plant area in geographical regions experiencing droughts or prolong periods without rainfall during the first year of service. Watering the plant life will help to ensure the plants can take hold and be established for future growth and treatment capabilities.

Inspection and General Maintenance Equipment

The following is a list of equipment recommended for inspection and general maintenance.

- Personal Protection Equipment (pants, steel-toed shoes, safety glasses, gloves, safety vest, hard hat, etc.)
- Manhole Hook
- Traffic Cones and Signage
- Stadia Rod and Tape Measure
- Inspection Operation and Maintenance Log or other recording method (included at end of guide)
- Flashlight
- Trash Removal “Net” Device
- Shovel, rake, broom and trash receptacle
- Vactor Truck (if more extensive maintenance is required)
- Light Duty Construction Equipment (if bioretention media replacement is required)

General Inspection and Maintenance Procedures

Routine inspection will ensure that the system is performing at optimal conditions and that the risk of public flooding is low. EcoPure BioFilter inspection involves a visual inspection of the plant surface area, structure inlet, pretreatment cell, clean-out ports, and the tertiary cell (if applicable). This can all be done at the surface and requires no confined-space entry into the EcoPure BioFilter unit. An Inspection O&M log should be used, and dates and weather conditions should be noted.

If the EcoPure BioFilter is located in a traffic area (i.e. roadway or automobile travel way), and inspection is not possible without entering the vehicular area, safety measures should be employed -- safety cones set up, etc. -- prior to performing the inspection and maintenance.

Inspection and Maintenance for the Pretreatment Cell and Chamber Cavity

For inspection of the pretreatment cell, the manhole cover should be safely removed (i.e., using a manhole hook). A visual inspection of the condition of the surface concrete and any inlet grates should be noted. If grates are missing or inlets are damaged, contact ADS for recommendation of repair. The suspended trash grate area should be relatively clear of debris. If excessive debris is observed, a trash capture net should be employed, and debris removed. Next a stadia rod should be sent down to the bottom of the pretreatment cell and the level of debris should be recorded in the maintenance log. The trash “tray” will have to be unfolded and opened to allow this to happen. The trash screen has lifting “ports” to pull up and fold the horizontal portion of the screen to the sides of the unit. At the sides, there are “locking” tabs to hold the screen panels to the concrete wall. When the debris in the sump reaches 10” (250mm) in average depth, a vactor truck should be used to remove the accumulated sump debris. Employing a vactor truck for cleaning the pretreatment cell follows the typical guidelines used for cleaning underground BMPs, e.g., hydrodynamic stormwater devices.

For inspection and cleaning of the chamber section of the EcoPure BioFilter (open cavity under the media cell), it is generally recommended that if the 10” (250mm) sediment mark has been reached in the pre-treatment cell, the owner or O&M contractor should backwash the chamber section of the media cell. With the pre-treatment cell

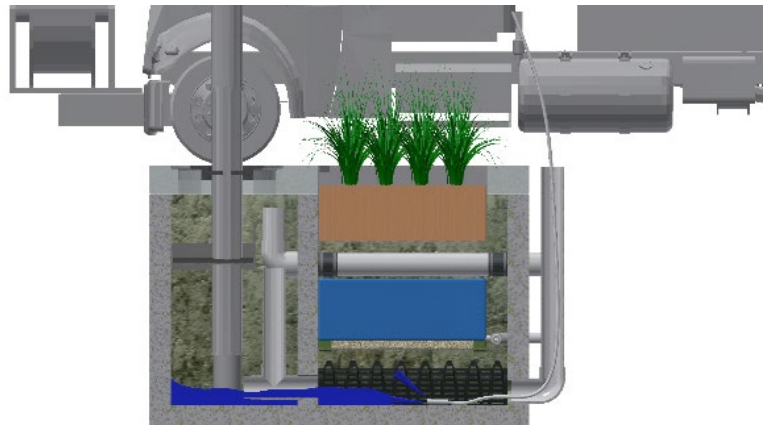
cleaned and dewatered, the cleanout risers should be exercised and low-pressure water (60-80 psi) should be introduced to force and move sediment within the chamber cavities into the pretreatment cell. (The riser tees have a removable cap or “duckbill” valve to facilitate a “bottom” exit at the floor of the chamber cell to the pretreatment cell). See the O&M video for details of backflushing this unit.

Once it is deemed that most of the chamber “floor” sediment from the planting cell has been backflushed, the introduction of the “cleaning” water flow should cease. The pretreatment cell should be vacuumed dry (during this backflushing procedure), the trash rack reinstalled/repositioned, and the manhole cover replaced. The backflushing process may require confined space entry and all rules and precautions should be adhered to, based on the local jurisdiction regulations or requirements.

Inspection and Maintenance for the Planting and Bioretention Media Layer

A visual inspection of the general appearance of the EcoPure BioFilter should be performed, and notes should be taken detailing the condition of the surface plant life, invasive species intrusion, vandalism, erosion in the planting area and any signs of standing water or disturbed or “shifted” surface soil bed area. This general system condition should be noted in the inspection/maintenance log.

If the plant life and surface media show signs of distress, general landscaping O&M should be performed, i.e., raking, weeding (removal of invasive plants), and general planting replacement to maximize the cover area in the planting bed/media treatment cell. If ponding of water is present in the media treatment cell and the last rain event was greater than 24 hours prior, further inspection should be performed to ensure the effluent pipe is not blocked. All blocked pipes should be cleared and cleaned. If the inspection results in the conclusion that the media is compromised or has reached its service life, total replacement of the media treatment cell is recommended. ADS should be contacted for material specifications and replacement parts. Media cell replacement will involve utilizing small construction excavation equipment.



Disposal of material from the pretreatment cell, trash debris rack, and chamber cavity should be in accordance with the local municipality’s requirements. Typically, traditional municipal landfills can be used for disposal of solids and trash obtained from servicing the EcoPure BioFilter. The same disposal methods should be used if the media cell is replaced. Call ADS at 800-821-6710 for further information.

