



## State of New Jersey

### DEPARTMENT OF ENVIRONMENTAL PROTECTION

**PHILIP D. MURPHY**  
*Governor*

DIVISION OF WATERSHED PROTECTION AND RESTORATION  
BUREAU OF NJPDES STORMWATER PERMITTING & WATER QUALITY MANAGEMENT

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**June 10, 2022**

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

Re: Revised MTD Lab Certification  
EcoPure BioFilter™ Filtration System  
Online Installation

#### **TSS Removal Rate 80%**

Dear Mr. Figola:

This revised certification letter supersedes the Department's prior certification dated August 4, 2021. This revision was completed as a result of a change to size of the models. No other modifications were made to this certification.

The Stormwater Management rules under N.J.A.C. 7:8-5.2(f) and 5.2(j) 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. has requested a Laboratory Certification for the EcoPure BioFilter™ Filtration 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 Department of Environmental Protection Laboratory 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 Verification Report with the Verification Appendix (dated June 2020 and last revised May 2022) 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™ by Advanced Drainage Systems, Inc. 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 2 gpm/ft<sup>2</sup> of effective filtration treatment area.
2. The EcoPure BioFilter™ shall be installed using the same configuration reviewed by NJCAT, and sized in accordance with the criteria specified in item 7 below.
3. This device 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 11.3 of the New Jersey Stormwater Best Management Practices (NJ Stormwater BMP) Manual, which can be found online at [www.njstormwater.org](http://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://www.adspipe.com/water-management-solutions/water-quality/greeninfrastructure/ecopure-biofilter#additional-assets> 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. Any configuration that uses a bio-filtration media and can be configured "above ground" and incorporate a tree box, planter box, or shrubs, etc., would meet the GI definition. Any MTD with bio-filtration media that would be placed "below ground" as a vault without any vegetation can be considered GI (for NJ purposes) only if the device infiltrates the entire Water Quality Design Storm into the subsoil. Further, the below ground device (vault) would need to meet the NJDEP Stormwater BMP Manual conditions of having the soil below the MTD meet the minimum tested infiltration rate of one inch per hour, have at least two feet of separation from the seasonal high water table, and infiltrate into the subsoil.
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™. The impervious site runoff (Q) based on the New Jersey Water Quality Design Storm was determined to be 0.79 cfs or 354.58 gpm.

The selection of the appropriate model of an 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 74, Fig. 5-21 of Chapter 5 of the NJ Stormwater BMP Manual)

c = 0.99 (runoff coefficient for impervious)

$Q = ciA = 0.99 \times 3.2 \times 0.25 = 0.79$  cfs (354.58 gpm)

(Note: 1 cfs = 448.83 gpm)

Given the site runoff is 0.79 cfs and based on Table 1 below, the minimum size unit to be used to treat the runoff without exceeding the MTFR is the EcoPure 360 (10 ft x 12 ft) Model.

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:

**Table 1. EcoPure BioFilter™ Model MTFRs and Maximum Allowable Drainage Area.**

<b>Model</b>	<b>Filter Bed Dimensions (ft x ft)</b>	<b>Effective Filtration Treatment Area (ft<sup>2</sup>)</b>	<b>MTFR (cfs)</b>	<b>Maximum Allowable Drainage Area (acres)</b>
EcoPure 60	5 x 4.5	60	0.13	0.324
EcoPure 120	5 x 8	120	0.27	0.648
EcoPure 180	5 x 12	180	0.40	0.972
EcoPure 240	10 x 8	240	0.53	1.297
EcoPure 360	10 x 12	360	0.80	1.945

Be advised a detailed maintenance plan is mandatory for any project with a Stormwater BMP subject to the Stormwater Management Rules, N.J.A.C. 7:8. The plan must include all of the items identified in the Stormwater Management Rules, 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 Lisa Schaefer of my office at [lisa.schaefer@dep.nj.gov](mailto:lisa.schaefer@dep.nj.gov).

Sincerely,

A handwritten signature in blue ink that reads "Gabriel Mahon". The signature is written in a cursive style with a large initial 'G'.

Gabriel Mahon, Chief  
Bureau of NJPDES Stormwater Permitting & Water Quality Management  
Division of Watershed Protection and Restoration  
New Jersey Department of Environmental Protection

Attachment: Maintenance Plan

cc: Richard Magee, NJCAT

# EcoPure BioFilter™

## Maintenance Guide

The ADS 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" (25 mm) of intensity within an hour or 3" (75 mm) 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 the stormwater solids concentration (mg/L as TSS) 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 for Metals Removal). 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 setup, 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 pretreatment 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).

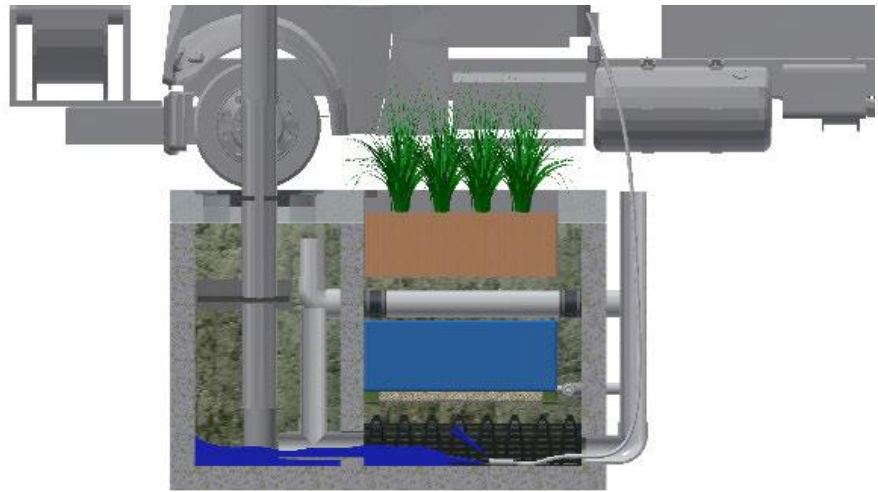
Once it is deemed that most of the chamber "floor" sediment from the planting cell has been backflushed, the introduction of the "cleaning" water flow should cease. The pretreatment cell should be vacuumed dry (during this backflushing procedure), the trash rack reinstalled/repositioned, and the manhole 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 and Optional Third Cell

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 bio media bed is compromised or has reached its service life, total replacement of the media treatment cell is recommended.

When a “three-cell” EcoPure BioFilter is installed, an inspection of the third cell can be conducted. Removal of the manhole cover for this cell should be performed similar to the pretreatment cell with appropriate safety precautions. A visual inspection with a flashlight will inspect the appearance of the metals media bed. If visual sediment is observed on the surface of the metals media or the media bed appears to have been greatly disturbed during preceding storm events (i.e., media or visual water line up the sides of the concrete walls, 12”-18” (300-450 mm) from the base or resting media surface), further inspection during a storm event should be undertaken to see if the system is going into bypass. If bypass is occurring during a normal 1-2 year storm event, media replacement may be recommended. ADS Field Engineering can assist with this analysis. It is generally agreed if the second or bio-media cell media is at the end of its service life, that the metals bay media is as well and should be replaced.

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.

# EcoPure BioFilter Inspection and O&M Log Sheet

Project Name: \_\_\_\_\_

Location: \_\_\_\_\_

Date	Inspection or O&M	Observation/Actions	Operator comments and general description	Inspector

