



Alternative Stormwater Technology Certification

Vendor Contact:

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Technology Name:

MWS Linear 2.0 Biofiltration System

Approval Type:

Pretreatment/Retrofits/WQBMP

Certification Dates:

Issued: November 23, 2015

Expires: November 23, 2020

The Technology Review Team which consists of members from the Department of Environmental Management (DEM), and the Coastal Resources Management Council (CRMC) have reviewed the MWS Linear 2.0 Application to for Technology Approval and accepted use for Stormwater Treatment in the State of Rhode Island.

In accordance with Section 3.2.3 of the Rhode Island Stormwater Design and Installation Standards Manual (RISDISM) amended March 2015, BioClean Environmental has petitioned the permitting agencies to add the MWS linear to the list of acceptable structural stormwater controls described in Chapter 5. They have submitted monitoring results and supporting information developed in accordance with the provisions of the Technology Assessment Protocol (TAP) included in Appendix J.

The Modular Wetland System – Linear (MWS-Linear) is a structural stormwater treatment system developed by Modular Wetland Systems, Inc. The MWS-Linear utilizes a multi-stage treatment process, including a pre-treatment chamber that houses a settling basin and media cartridge pre-filters that are designed to remove coarse to fine sediment from entering the subsequent wetland chamber. The wetland chamber media provides chemical and biological filtration and secondary physical filtration. This system is housed in a modular precast concrete structure that can be designed in many inlet configurations.

The manufacturer has demonstrated that this product meets the minimum water quality standards listed in Section 3.2.3 of the RI Stormwater Manual. The MWS Linear is approved for the following removals; **85% TSS, 70% removal of Pathogens, 64% removal of TP, and 45% removal of Nitrogen**. This device may be used as an approved BMP in accordance with section 5 of the Rhode Island Designs and Installations Standards Manual provided the following conditions are met.

I. GENERAL CERTIFICATION REQUIREMENTS

1. The pretreatment chamber and cartridge must be designed to the manufacturer's specifications.
2. The pretreatment chamber and cartridge must be designed to pre-treat the entire required Water Quality Volume, unless waived by the state permitting agency on a case-by-case basis (like retrofits).
3. This device is **certified as a pretreatment device** in Rhode Island provided the device treats the first inch of runoff from the capture area or is waived by the state permitting agency.
4. The Vendor must verify that each proprietary device was installed in accordance with the manufacturer's specifications and the approved design.

5. This device is **certified as a retrofit device** in accordance with Section 1.2 and Appendix C of the RISDISM. Retrofits are allowed flexibility with regards to the standards in the RISDISM, but in general they are considered effective if they capture at least 50% of the catchment, and meet the target water quality treatment of at least the first 0.5 inches of the water quality volume.
6. This device is **certified as a Water Quality BMP** in accordance with Section 5 of the RISDISM and meets the water quality performance criteria, provided:
 - a) The unit is sized to treat the first inch of runoff using flow or volume based design per requirements of the RI Stormwater Manual. Various pre-detention practices may be utilized as long as the first inch of runoff is treated. Should the permitting agency waive or relieve the applicant from the full water quality volume (i.e. for a redevelopment project or retrofit), the applicant is granted relief and may design the system to treat a smaller volume, as required by the permitting agency.
 - b) This product, as designed, does not meet the recharge volume requirements, as specified in Section 3.3.2 of the RISDISM. However, use of this unit is not prohibited as long as the applicant can demonstrate to the permitting agency that the required recharge is met within the subwatershed.

II. MAINTENANCE REQUIREMENTS

1. The device must be maintained in accordance with the manufacturer's specifications.
2. The Vendor must provide maintenance for the first year of operation of all installed MWS Linear 2.0 devices within Rhode Island.

III. REPORTING REQUIREMENTS

1. The Vendor must provide a recommended maintenance schedule to the applicant and the permitting agency after the first year of maintenance.
2. The Vendor shall provide a listing to the RIDEM Office of Water Resources of all systems within the State of Rhode Island on an annual basis.

IV. RIGHTS OF THE RIDEM AND CRMC

1. The RIDEM may suspend, modify or revoke this approval for cause, including but not limited to: non-compliance with any of the conditions or provisions of this approval, misrepresentation or failure to fully disclose all relevant data, or receipt of new information indicating that the use of the System is contrary to the public interest, public health or the environment.
2. This approval does not represent an endorsement of the System by the RIDEM. This letter of approval may be reproduced only in its entirety.


Brian M. Moore, P.E.
Chief, Groundwater and Wetlands Protection

11-23-15
Date