



State of Delaware
Department of Natural Resources & Environmental Control
Division of Water Resources
Ground Water Discharges Section

Innovative and Alternative System Approval

ISSUED TO: Presby Environmental
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FOR: Advanced Enviro-Septic® Treatment System

APPROVAL DATE: 4/24/12

In accordance with the Regulations Governing the Design, Installation, and Operation of On-Site Wastewater Treatment and Disposal Systems (Regulations), an application dated October 10, 2009 has been submitted by Presby Environmental for the approval of the Advanced Enviro-Septic® Treatment System as an Innovative & Alternative On-Site Wastewater Treatment Unit and Disposal System.

Based on the information submitted, the Department approves the use of the Advanced Enviro-Septic® Treatment System as an Innovative & Alternative On-Site Wastewater Treatment Unit and Disposal System. The following conditions, limitations, and requirements must be adhered to:

1. Product Description

Advanced Enviro-Septic® (“AES”) is an innovative onsite wastewater treatment system that is passive, non-mechanical and does not use pressure distribution. The primary component is a large diameter perforated, multi-layer fabric-wrapped pipe

that is installed in a bed of specified System Sand. The Advanced Enviro-Septic® System is designed to purify wastewater that has received primary treatment in a septic tank and to disperse the treated wastewater into the underlying soils.

The AES uses a combined biological process. The system utilizes both suspended growth and attached growth processes for treatment of the wastewater. Suspended growth is achieved in the wastewater as it is distributed through the rows of pipes. Attached growth is achieved through the three layers of geotextiles surrounding the pipes and the first millimeters of sand around the pipes.

2. Approved Advanced Enviro-Septic® Systems

The AES must utilize gravity distribution and follow the d-box configuration as shown in the manufacturer's design and installation manual for Delaware.

3. Scope of Use

The system may be used for residential, community and commercial applications with flows < 2,500 gallons per day. Use for flows >2,500 gallons per day shall be reviewed on a case by case basis.

4. Siting Criteria

- a. Percolation rates are to be based on the most restrictive texture within the upper 60" of soil. See the attached chart for loading rate associated with a percolation rate.
- b. Landscape position is also a necessary consideration. Systems are not to be sited within a closed depression or where water tends to pond during heavy rainfall events.
- c. The system cannot be installed on slopes >2%.

5. Separation Requirements

- a. A 36" separation distance must be maintained from the bottom of the pipe to the limiting condition (LZ).
- b. Full depth installation = 60" or greater to LZ.
- c. Capping Fill installation = 48-59" to LZ.

6. Design Criteria

- a. The AES system may be designed for new and replacement disposal systems.
- b. A septic tank shall precede the AES system. The septic tank must incorporate an effluent filter.
- c. An on-site wastewater treatment and disposal system permit application incorporating an AES system must be designed in accordance with the Regulations and manufacturer's specifications. The design shall be completed by

- a DNREC licensed Class C Design Engineer. The permit application shall include: system specifications, disposal field layout, and calculations.
- d. The system bed size shall be determined using the equation given for seepage bed systems in the Regulations with an additional 25% bed size reduction.
- e. The amount of AES pipe required shall be determined using the manufacturer's guidelines.
- f. The System Sand that surrounds the AES pipes is an essential component of the system. It is critical that the correct type and amount of System Sand is used when constructing the system. System Sand must be coarse to very coarse, clean, granular sand, free of organic matter. It must adhere to all of the percentage and quality restrictions as given in the AES design and installation manual.
- g. A sample unit must be included with the design.
- h. No additional area reductions shall be granted for the use of water saving fixtures.

7. Installation Procedures

- a. The AES system shall be installed by a DNREC licensed Class E System Contractor under the supervision of a manufacturer's representative, or by a DNREC Class E System Contractor who has been certified for installation. Proof of certification shall be provided in writing to the Department.
- b. Start up of the system and initial operational checks shall be conducted by the Class E System Contractor (trained by the manufacturer), Design Engineer, and a Ground Water Discharges Section (Large System Branch) representative. If the Class E System Contractor is not certified, a manufacturer's representative shall perform the operational checks of the system at start up. If the manufacturer's representative cannot be on site at the time of start up, they must provide final start up approval to the Department in writing.

8. Operation and Maintenance

- a. The AES system shall be operated and maintained in accordance with the manufacturer's specifications.
- b. The manufacturer shall comply with all Department mandated requirements as specified in permit conditions. This shall include operation and maintenance requirements.

9. Sampling and Approval

The Department reserves the right to sample any system at any time.

10. General Conditions

- a. The manufacturer is responsible for providing the Department a list of all local distributors and their associated contact information. This list must be kept current and shall be submitted to the Department on a yearly basis.

- b. In the event that the product fails to perform as claimed by the applicant, the use of the unit for new installations shall cease. Use of the unit shall not resume until such time the applicant and the Department have reached an acceptable agreement for resolving the situations.
- c. Any changes that deviate from the specifications as submitted with this approval shall be approved by the Department prior to use.
- d. Use of the system for wastes other than residential shall be on a case by case basis.