



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

Innovative and Alternative System Approval

ISSUED TO: American Manufacturing Company, Inc.
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FOR: American Manufacturing PercRite Drip Dispersal System -QM

APPROVAL DATE: November 18, 2003
AMENDED DATE: July 12, 2006
June 12, 2007 (Dose Volume)

In accordance with the Regulations Governing the Design, Installation, and Operation of On-Site Wastewater Treatment and Disposal Systems (Regulations), an application dated May 16, 2006 has been submitted by American Manufacturing Company, Inc. for the approval of the QM PercRite drip dispersal system as an Innovative & Alternative On-Site Wastewater Treatment and Disposal System.

Based on the information submitted, the Department approves the use of the QM PercRite drip dispersal 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

The QM American PercRite Drip Dispersal System is a fluid handling system for dispersal of secondary treated wastewater effluent into the soil. The system requires advanced treatment by an DNREC approved advanced treatment unit, followed by flow equalization, filtration, time and level controlled application with ultra low rate drip distribution.

Following treatment, the wastewater is to collect in a final dosing chamber sized to hold a minimum storage for emergency and flow equalization. The effluent will be time dosed via a four float operating system. High head submersible or skid mounted centrifugal pumps as provided as part of the system package are controlled by a state of the art Siemens PLC Controller. The effluent will undergo filtration prior to final dispersal. The system contains a primary filter that is automatically back flushed at the beginning cycle. The backwash filter must be manually cleaned when the pretreatment system is serviced. The system is equipped with a high alarm that will signal if the filtration process becomes clogged, thus the term Quality Monitor "QM".

Once through filtration the effluent will be dosed through pressure compensating emitters located every two feet on-center inside the ½" tubing, Netafim Bioline polyethylene pressure compensating dripper tubing.

The system contains the following

- a. Filtration: Automatic self cleaning primary filter and a manually cleaned backwash filter assembly as part of the hydraulic unit. This must be located as a separate unit outside of the dosing chamber.
- b. Air Vents: Air vacuum breakers installed at the high point of each drip field to keep soil from being aspirated into the drip emitters due to back siphoning or back pressure after the pump shuts off.
- c. Field Flushing: Automatic field flushing valve used to enable accumulated debris and sediment to be flushed from the dripline back to the pretreatment units.
- d. Netafim Tubing: Netafim PC dripline with pressure compensating emitters spaced uniformly in the tubing.
- e. Controls: Control/software package controlling all functions including filter flushing, system dosing and flushing and audible/visible alarms.

2. Approved PercRite Drip System Packages

Model Number	Descriptions
ABD121-S121	1Zone QM Skid Mount with LCD Control
ABD121-S122	2 Zone QM Skid Mount wit PLC Panel
ABD 121-S121SV2	2 Zone QM Skid With Sequencer & LCD Control

3. Scope of Use

The drip dispersal system may be used for residential waste with flows <2,500 gallons per day. Other usages will be based on a case by case basis. This system can only be used in conjunction with a DNREC approved advanced treatment unit.

4. Siting Criteria

- a. Loading rates are to be based on the most restrictive texture within the upper 24" of the surface. See the attached chart for loading rate associated with a percolation rate.
- b. For at-grade systems, the tillage depths are to be 6-8", although slightly deeper depths may be necessary in the case of shallow thick plow pans or similar restrictive layers within 12" of the surface.
- c. 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.

5. Separation Requirements

New Construction:

Separation requirements;

- 12" from limiting zone must be maintained
 - * Full Depth installation = 18" limiting zone, 6" trench depth
 - * Surface installation (At-grade systems) = 12-17" limiting zones require that 3" sandy fill be added, then place tubing 1" into sandy fill and add 6" topsoil cap (*See Design and Construction Notes for Site Preparation*).

Replacement System;

Separation requirements:

- Same as above
- Less than 10” limiting zone **shall be determined on a case by case basis.**

7. Design Criteria

- a. The drip dispersal system may be designed for new and replacement disposal systems.
- b. Advanced treatment requirements shall be in accordance with the above siting limitations.
- c. An on-site wastewater treatment and disposal system permit application incorporating an American Manufacturing PercRite Drip Dispersal system must be designed in accordance with the Regulations, and manufacturer’s specifications. The design shall be completed by a DNREC Class C Design Engineer. The permit application shall include system specifications, zone layout and calculations.
- d. The design shall utilize an approved package system as outlined above. If any other system or components are to be utilized, they must seek prior approval from the Department.
- e. The attached guideline dated November 18, 2003 shall be utilized for sizing the disposal area.
- f. The design shall be in accordance with both the Department’s and American Manufacturing’s drip design guidelines.
- g. Controls shall provide for delivery of designer specified preprogrammed volumes of effluent to each field zone at the designer specified time intervals; automatic flushing of integral unit filters, initiated by a timer; and automatic flushing of the drip laterals for specified duration.
- h. Control and float levels shall be synchronized to assure the minimum dose is available prior initiating a dosing cycle to a zone. Minimum dose volume per zone shall be 3.5 times the liquid capacity of the drip laterals or otherwise as approved by the Department.
- i. The drip system shall be designed to provide a minimum flushing velocity of 2 ft per second at the distal end of the pipe network.
- j. The hydraulic unit shall be placed on an aggregate base and must incorporate a thermostat control system.

- k. The control panel may not be placed in an enclosed structure for residential applications.
- l. The system shall be designed so that it is installed on contour, on at least two foot centers.

8. Installation Procedures

- a. The drip dispersal system shall be installed by a DNREC 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 unit 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 can not be on site at the time of start up, they must provide final start up approval to the Department in writing.
- c. The drip field(s) shall be installed in accordance with manufacturer's recommendations for each site. A vibratory plow, static plow or trencher is most typically used and soil moisture must be dry enough so that soil compaction will not occur.
- d. The drip field(s) shall be finished graded to shed surface water. A vegetative cover shall be established to prevent erosion and to allow for effective system operation.
- e. The drip field(s) shall be staked out and kept free from disturbance.

9. Operation and Maintenance

- a. The American Manufacturing PercRite Drip Dispersal 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.

10. General Conditions

- a. Use of the system for wastes other than residential shall be on a case by case basis.

- b. In the event that the system does not perform as claimed by the applicant, the use of the system for new installations shall cease. Use of the system 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. The manufacturer is responsible in ensuring the Department is aware of all local distributors, representatives and certified contractors. An updated list with contact information shall be provided to the Department annually.