

May 13, 1997

**GMP #87**

To: District Environmental Health Managers  
District Health Directors  
OEHS Staff

Through: Donald J. Alexander, Director  
Division of Onsite Sewage and Water Services

From: Anish R. Jantrania, Ph.D., P.E.  
Technical Services Engineer

Subject: Revision to GMP #67  
Drip Disposal System  
Onsite - Product Approval - Drip Disposal

The Department has completed a review of the request made by American Manufacturing Company, Inc., the distributor of the Perc-Rite® drip disposal system in Virginia, to make changes to the specifications on central control unit and operation and monitoring requirements listed in the GMP #67. This GMP replaces GMP #67 which is hereby rescinded.

The central control unit under this proposal uses counters that will keep cumulative logs of high water alarm events and the timer override events. The occupant of the dwelling will be notified by means of audio visual alarm when high water level conditions occur. However, the system manufacturer will not be notified automatically when the flow variation exceeds 20%. The telemonitoring scheme has been replaced by quarterly field testing of units and reporting scheme. Section I-F of this GMP lists the revised specifications for the central control unit, and the Section VII describe the revised operation and monitoring requirements.

No other sections of the GMP #67 are changed. The scope of the waiver, siting criteria, system sizing criteria, design criteria, installation, testing procedures, and permitting procedures are not changed. Please call Anish Jantrania at 804-225-4019 if you have any questions about this GMP.

Attachment

**GMP #87**  
Onsite - Product Approval - Drip Disposal

## Conditions of Waiver

### Perc-Rite®/American Septic Drip Waiver of Experimental

#### I. System description.

The Perc-Rite®/American Septic Drip disposal system shall consist of the following key components. This waiver is based on the specific components listed. Equivalent components may be used after receiving written approval from the Division of Onsite Sewage and Water Services.

A. Building Sewer. The building sewer used in conjunction with a Perc-Rite®/American Septic Drip disposal system shall comply with Part IV, Article 2 of the Sewage Handling and Disposal Regulations (the regulations).

B. Pretreatment system. The minimum pretreatment system preceding a Perc-Rite®/American Septic Drip disposal system shall be a septic tank designed and installed in compliance with Part IV, Article 3 of the Sewage Handling and Disposal Regulations.

C. Filtration. An automatic, self-flushing Arkal "disc" filter capable of removing solids larger than 115 microns is required prior to the drip field.

D. Conveyance system. Except as noted below, force mains shall comply with the requirements of Section 4.23 of the Sewage Handling and Disposal Regulations.

E. Emitter tubing. Netafim polytubing, 0.5 inch diameter with pressure compensating RAM emitters 2' o.c. shall be used in the absorption field.

F. Central control unit. A Perc-Rite®/American Septic Drip control unit shall be used which is capable of:

Monitoring the system to record cumulative flow using in-line flow meter;

Notifying the occupant of the dwelling by means of an audio visual alarm when a high water level condition in the pump tank exists;

Count and keep a cumulative log of high water level alarm events;

Count and keep a cumulative log of timer override events;

Automatic field flushing not less than once every 50 cycles;

G. Soil absorption system. The soil absorption system for a

Perc-Rite®/American Septic Drip system shall be time dosed at a predetermined dosing interval.

## II. Scope of Waiver.

This waiver is granted for facilities generating wastewater flows of 1,000 g.p.d. or less and of residential strength ( $BOD_5 < 250$  mg/l). Larger flows may be permitted but shall comply with the requirements of §2.25 of Sewage Handling and Disposal Regulations.

## III. Siting Criteria.

Perc-Rite®/American Septic Drip disposal systems may be used on any site meeting the site and soil criteria found in the Sewage Handling and Disposal Regulations for low pressure distribution systems and conventional gravity drain field systems. These criteria are found in Part III and Part IV, Section 4.30 of the regulations.

## IV. System sizing criteria.

Perc-Rite®/American Septic Drip disposal systems shall be sized in accordance with the proposal made by American Manufacturing as revised in their January 3, 1995 letter. Table 1 below contains specific hydraulic loading rates for various texture group soils as proposed to VDH.

The Department notes that Sandy Clay Loam is identified as a texture group III soil while the Sewage Handling and Disposal Regulations define it as a texture group II soil. In as much as this change reflects a somewhat more conservative design rate, we offer no objection to using this loading rate for design purposes. The following loading rates apply to flows with residential wastewater characteristics. When the  $BOD_5$  may be expected to exceed 250 mg/l, pretreatment shall be required.

## V. Design Criteria.

Unless otherwise stated, the components of the Perc-Rite®/American Septic Drip disposal system shall comply with the intent, objectives and requirements of the Sewage Handling and Disposal Regulations. All portions of the system shall be designed to provide wastewater treatment and disposal which is equal or superior to that which may be obtained with a low pressure distribution system. In general, the system must

Table I

Texture Group	Soil Group	U.S.D.A	Hydraulic
---------------	------------	---------	-----------

		<b>Textural Class</b>	<b>Loading Rate (g.p.d./ft<sup>2</sup>)</b>
I	Sands	Sand, Loamy Sand	0.4 - 0.3
II	Coarse Loams	Sandy Loam, Loam	0.3 - 0.15
III	Fine Loams	Sandy Clay Loam, Silt Loam, Clay Loam, Silty Clay Loam	0.15 - 0.10
IV	Clays	Sandy Clay, Silty Clay, Clay	<0.10

provide primary treatment, supplemental solids filtration, and a fluid handling system designed to optimize effluent distribution and application to soils capable of providing sufficient additional secondary treatment to render the wastewater harmless to humans and the environment. Specific deviations from the design practices contained in the Sewage Handling and Disposal Regulations are described below.

- A. Dosing. The dosing system shall be designed for timed dose application. The pump chamber shall be sized to provide for adequate flow equalization in order to avoid demand dosing.
- B. Field Design. The field network shall utilize ½-inch nominal size, Netafim polyethylene dripper tubing containing RAM pressure compensating emitters on two foot centers designed to deliver 0.61 gallons per hour per emitter (+/- 7%) at pressures of 10 to 60 pounds per square inch.
- C. Dripper lines shall be designed to be installed at a constant depth along the natural ground contour (+/- 6" per 100'). All joints shall be pressure rated and watertight. In general, connections shall be made using solvent welded and pressure rated barbed couplings; however, nothing shall prevent the use of other pressure rated fittings, provided they are watertight.
- D. Hydraulic design. The hydraulic design shall be based on achieving the following conditions:  
  - Separate zones may be dosed at different rates provided

the loading rates reflect the infiltrative capacity of the soil occurring in that zone.

A velocity of at least 2 feet per second but not more than 8 feet per second in each supply manifold segment shall be maintained during field flushing flows.

Scour velocities of at least two feet per second shall be maintained in each dripper line during field flushing.

A minimum pressure of 10 pounds per square inch shall be maintained during flushing flows and a maximum of 60 pounds per square inch may occur during irrigation flows.

E. Appurtenances. Appurtenances such as air release valves, isolation valves, cleanouts, pressure monitoring nipples, and solenoid valves shall be provided as required by Section 4.23 or as necessary. Said appurtenances shall be installed in recessed enclosures and protected against physical and frost damage.

F. The minimum installation depth shall be 18" for new construction, as requested. Repairs, or systems installed in compliance with GMP 20, which may be installed shallower, shall be protected against freezing and physical damage from vehicular traffic, cattle or other disturbances as may be deemed necessary by the District Health Department.

#### VI. Installation and Testing Procedures.

A. Installers shall be trained by Waste Water Systems, Inc./American Manufacturing, and be certified as having passed their minimum training qualifications prior to installing any systems in Virginia.

B. Field laterals shall be staked out on contour by use of an engineer's level and tape to assure that they conform with natural contours and design requirements for sizing, location, and separations.

C. Dripper tubing shall be installed in accordance with the manufacturer's recommendations. A vibratory plow, static plow or trencher are most typically used and soil moisture must be dry enough so that compaction will not occur in the soil around the tubing (See Section 4.5 of the regulations).

D. Care must be taken during system installation to assure no extraneous debris enters the tankage, supply lines, or

dripper tubing network. When necessary, or if questions exist about the cleanliness, the supply lines and manifolds shall be flushed out prior to system startup.

E. The manufacturer's recommendations shall be followed for system startup. All leaks from emitters and indications of wet spots during irrigation periods comparable to normal operating conditions and application rates shall be repaired. Irrigation and flushing flow rates and flushing pressures at the ends of the field supply and return manifolds shall be measured and determined in accordance with the design criteria.

F. All mechanical components, pump(s), control, filters, back washing, high water alarm, and counter must be demonstrated to be fully operational in accordance with their design.

#### VII. Operation and monitoring.

American Manufacturing shall perform quarterly field inspections on all those systems installed prior to April 14, 1998 in accordance with this waiver (including GMP 67 systems). Quarterly field inspections shall include manually dosing the system to determine flow variation, and keeping a log of all flow variations which deviate by 20% or more from the design flow. Said log shall include the following minimum information:

- system location (by tax map or owner's name and county),
- percent flow variation observed,
- cause of the flow variation,
- duration of flow variation,
- dose volume,
- high water alarm counts, and
- timer override counts.

Said log shall be reported to VDH on a quarterly basis and shall be provided by the 15th of the month following the end of the quarter. The log shall be available to VDH within 5 business days upon request. American Manufacturing shall provide a summary report by October 15, 1998 on the entire project (i.e., from April 1995 through April 1998) and the report shall also include census information on each household (wastewater data in terms of gallons per day per capita) serviced by this policy and the GMP 67.

#### VIII. Responsibilities and permitting procedures.

A. This approval has been granted specifically for the process described in the application made by American

- Manufacturing for the Perc-Rite® drip disposal system, and revised as of January 1997. Any changes to the components used in this process must be reviewed and approved by VDH on a case by case basis prior to use.
- B. No contractor may install a Perc-Rite®/American Septic Drip system unless they are first certified by Waste Water Systems, Inc./American Manufacturing, as meeting their minimum competency standards for contractors.
  - C. The Perc-Rite®/American Septic Drip system shall be considered a Type II system.
  - D. Permitting shall be done by the local health department based on their satisfactory site evaluation and review of plans and specifications prepared in accordance with the manufacturer's specifications and all applicable state regulations and policies and any relevant local ordinances.
  - E. American Manufacturing shall be responsible for providing up to six classes (up to 50 students each) during the first 6 months after this approval is granted and two classes annually thereafter. The training shall include a manual covering proper siting, sizing, construction, installation and inspection processes for the Perc-Rite® system. All training materials, the course syllabus and training locations shall be reviewed and approved by the Division prior to training occurring.
  - F. Should the Perc-Rite®/American Septic Drip disposal systems fail to perform to the satisfaction of the Department, the Department may rescind or modify this waiver. Prior to taking such action the Department shall notify American Manufacturing of nature of the problem and of the action the Department intends to take.