

April 21, 1999

To: Environmental Health Managers  
District Directors  
Virginia Tech Contract Soil Scientist  
OEHS

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

Subject: Generic Drip Disposal Policy **GMP #96**

Attached please find GMP #96, which addresses all drip disposal systems. This policy is effective immediately and supercedes GNP #87 and GMP #88, which are hereby rescinded.

All applications for drip dispersal systems made after the effective date of this policy shall comply with this policy. This policy is intended to provide greater flexibility in the design of drip systems than allowed in previous policies and to clarify the manner by which the absorption area is to be calculated.

This policy may be used in conjunction with **GMP #97** to allow for installations as shallow as 12 inches. Please note the engineering requirements. These requirements do apply to the design of drip systems; however, these requirements do not apply to any pre-engineered pretreatment system, such as but not limited to, ANSI/NSF Standard 40 Class I aerobic treatment units.

Should you have any questions regarding this policy, please call me.

**Drip systems under 1,200 GPD**  
**Conditions for Use**  
**GMP #96, April 21, 1999**

**Introduction.** Drip dispersal of wastewater is a rapidly developing technology. As requests for varying drip dispersal design approaches have been received and reviewed, providing separate but equal policies for each manufacturer have become increasingly difficult. This policy is intended to provide guidance on the design, use, and application of drip dispersal systems used in Virginia regardless of manufacturer. Effective immediately, drip systems must be installed in accordance with this policy.

**Process Description.** Drip dispersal is a method of applying wastewater effluent in an even and controlled manner over an absorption area where final treatment and dispersal occurs. Drip systems components include a septic tank or aerobic treatment unit, a filtration system designed to protect the tubing emitters against clogging, small diameter pipe with emitters designed to evenly disperse effluent along the tubing and over an absorption area and a control center that operates the electromechanical components of the system. Additional components may be used as deemed appropriate by the manufacturer or design engineer to treat and disperse wastewater.

**Scope of Policy.** This policy addresses all drip systems where the design flow is less than 1,200 G.P.D and where the effluent strength is not greater than 300 mg/l BOD<sub>5</sub> and/or 200 mg/l TSS.

**Submission of Plans.** Pursuant to the requirements of §54.1-400 et. sec., only a professional engineer licensed to practice in Virginia may submit a design to the Department for review. In accordance with §§12 VAC 5-610-250 and 260 formal plans and specifications are required for all drip dispersal systems.

**Site and Soil Requirements.** All sites where drip dispersal is utilized shall meet the site and soil requirements contained in the *Sewage Handling and Disposal Regulations* (12 VAC 5-610-10 et. sec., the *Regulations*) for low pressure distribution systems.

**Absorption Area.** Absorption area as used in this policy means the total soil area used to treat and disperse effluent. For conventional trench systems, §950 of the *Regulations* defines the absorption area as the soil between and around the absorption trenches. The absorption area therefore describes the "footprint" of the absorption system and not just the trench bottom area.

This policy intends in part to provide a uniform method of calculating the absorption area for a drip system that is substantially equivalent to that use for a low pressure distribution system. Where slopes and restrictive horizons are not a consideration (see §950D of the *Regulations*) the absorption area for a drip system shall be calculated by multiplying the trench bottom area required for a low pressure distribution system in Table 4.6 of the *Regulations* by three. Where slopes and/or restrictive horizons are a consideration, the following table shall be used to increase the absorption area required.

<b>Absorption Area Increase (percent)</b>				
<b>Depth to Impervious Strata</b>	<b>Slope of site (percent)</b>			
	<b>10-19</b>	<b>20-29</b>	<b>30-39</b>	<b>40-50</b>
Drip Tubing <24" off rock, pans, or impervious strata	17%	33%	50%	67%
Drip Tubing 24" or more off rock, or impervious strata	0%	17%	33%	50%

**Design Requirements and Recommended Considerations**

**General.**

Nothing contained herein is intended to prevent the application of accepted engineering practice when designing a drip dispersal system.

A minimum of 6 hours of storage (above alarm condition) shall be provided. An additional volume equal to 18 hours of storage is recommended below the alarm level for flow equalization.

Demand dosing of drip disposal systems is prohibited. Time dosing with frequent small doses is the preferred method of applying effluent to the soil.

All materials shall meet applicable ASTM standards and be resistant to common household chemicals. Drip tubing must be certified by the manufacturer as designed and manufactured for the dispersal of wastewater. The drip tubing must be color coded by the manufacturer to be easily identified as tubing designed for wastewater disposal.

Filtration shall be provided for on all systems to prevent solids from clogging emitters.

Provisions shall be made to allow the field lines to be flushed on an automatic basis in order to remove solids that accumulate over time. Drip systems shall be designed to provide a minimum velocity of 2 feet per second at the distal end of the pipe network to keep solids in suspension. All systems shall be designed to be capable of delivering velocities sufficient to remove accumulated organic solids. Automatic field flushing shall be designed to occur on a routine schedule in order to prevent excessive solids accumulation rather than respond to clogging. Flush water shall be returned to the inlet of the treatment facility.

The maximum flow variation between any two emitters in a single zone shall not exceed 10 percent. When determining flow variation consideration shall be given to the effect of "drain down", an effect which occurs in the field laterals after the pump shuts off that results in unequal distribution and excess flows in the runs of pipe placed at the lowest elevation.

All systems shall be provided with an audiovisual alarm meeting the requirements of the *Sewage Handling and Disposal Regulations* or the *Sewage Collection and Treatment Regulations*.

For components not specifically addressed in this policy, such as the septic tank (if required), the pump tank, and effluent conveyance components, the *Sewage Handling and Disposal Regulations* shall be used to establish the design, installation, and location criteria.

#### **Absorption (Dispersal) Area Criteria and Considerations**

The minimum linear requirement for tubing shall be calculated by dividing the absorption area required by two. However, no increase in the linear feet of tubing is required when the absorption area is increased as a result of slope. Drip dispersal tubing shall be placed in the landscape in a manner that distributes effluent over the absorption area in a manner consistent with the manufacturer's recommendations and the design engineer's specifications. This policy is not intended to prevent the installation of more than the minimum tubing with a properly sized absorption area.

The minimum installation depth shall be as specified in the *Regulations* for trench systems or as established by policy.

All tubing shall be placed on contour. When designing the dispersal field area, linear loading rates shall be considered. To the greatest extent practical, the engineering design community is strongly encouraged to optimize hydraulic dispersal and soil based treatment by using long narrow designs placed on contour as opposed to many short runs "stacked" on contour.

#### **Other Requirements.**

In addition to preparing the plans and specifications for the system design, the professional engineer shall be responsible for establishing the installation method(s) and preparing an operation and maintenance manual for the system owner.

No operation permit shall be issued until the following conditions are met.

1. The Department has inspected the system and confirmed that the permitted system components have been installed and that the drip tubing was placed in the permitted location.
2. A professional engineer (preferably the design engineer) certifies in writing to the Department that system was installed substantially in accordance with plans on which the construction permit was based.
3. The Department receives a recommendation from a professional engineer that an operation permit should be issued for the system.

8/3/2000 Rescinded