

**GENERAL SOIL, SITE, AND DESIGN CRITERIA FOR SPRAY
IRRIGATION SEWAGE SYSTEMS**

I. General Site Criteria

- A. Spray irrigation systems may not be installed in drainage ways, swamps, marshes, or concave landscape positions (See sections 3.3.A, 3.3.C.1, 3.3.C.2 of the Sewage Handling and Disposal Regulations).
- B. Systems may not be installed in floodplain areas which would be prohibited for installation of a conventional onsite sewage disposal system (See section 3.3.G of the Sewage Handling and Disposal Regulations).
- C. Slope
 - 1. Non Forested-type sites
 - a. Slopes of less than 12% are acceptable in the spray area.
 - b. Acceptable vegetative cover must be present prior to utilization of the sewage system.
 - 2. Forested-type sites
 - a. Slopes of less than 20% are acceptable in the spray area.
 - b. Forested-type sites must have mature trees with humus and leaf litter. No major landscaping is to be done. At least 50 percent of the buffer area shall be forested.
 - 3. Slopes greater than those stated in C.1 and C.2 and less than or equal to 30 percent may require a special design. Sites with slopes greater than 30 percent can not be used.

II. General Soil Criteria

- A. The minimum depth of acceptable natural soil must be at least 12 inches.
- B. Acceptable natural soil must be free of restrictive features but may have a percolation rate in excess of 120 MPI. Restrictive features include, but are

not limited to, fragipans, ironpans, and similar restrictive features.

- C. Soils which contain more than 50% rock fragments are not acceptable.
- D. Acceptable soil must be free of wetness indicators in the top 12 inches.

III. General Design Criteria

A. Reserve Area

- 1. A reserve area requirement of 25 percent is necessary for sprayirrigation sewage systems for general statewide installations.
- 2. This application of Section 2.25 of the Sewage Handling and Disposal Regulations does not supersede the requirements of the Chesapeake Bay Preservation Act or any local ordinance which requires a reserve area or other criteria more stringent than contained in the Sewage Handling and Disposal Regulations.

B. Pretreatment

- 1. Pretreatment shall consist of one of the following methods:
 - a. A sandfilter system designed in accordance with GMP #33, or
 - b. An aerobic treatment unit certified to the Class I standards of ANSI/NSF International Standard 40 followed by a single pass sand filter with a design loading rate of 14 gallons (or less) per day per square foot.
- 2. Adequate disinfection shall be provided.

C. Storage

- 1. Adequate storage for treated wastewater shall be provided.
- 2. Storage shall not be less than 1200 gallons above the high water alarm in the pump chamber for the treated wastewater.

D. Vegetative Cover for Non-Forested Sites

1. Acceptable vegetative cover for non-forested type sites must be established prior to utilization of the spray irrigation system and the vegetative cover in the spray area must be properly maintained during use of the system. Characteristics of an acceptable vegetative cover are as follows:
 - a. Utilizes nutrients
 - b. Tolerates wet conditions
 - c. Successful on poor soils
 - d. Excellent erosion control
 - e. Long periods of active growth
 - f. Cold hardiness
2. A suitable vegetative cover for most spray sites will be a grass (e.g., fescue or Bermuda grass) or an established forest.

E. Buffer Requirements

1. Adequate distances must be provided to allow for buffer requirements from the spray area.
2. Table 1 below states the buffer requirements which are to be applied to spray irrigation systems.

Table 1
Spray Irrigation System Buffer Requirements

Property Lines	100 ft
Private Roads and Driveways	25 ft
Dwellings	100 ft
Outbuildings	25 ft
Streams, Watercourses, Lakes, Ponds	100 ft
Swimming Pools	100 ft
Wells, Springs, Other Water Supplies	100 ft
Rocks Outcrops	10 ft
Utility Lines	10 ft
Tidal Shellfish Growing Areas and Food Processing Plants	200 ft*

*May be reduced to 100 ft. provided increased bacteria and viral reduction and spray drift control are provided in the design to the satisfaction of the Department.

F. Fencing

1. Fencing of spray application areas is desirable, but is not mandatory except as stated below.
2. Grazing animals must be fenced from spray areas.

G. Application Rates

1. Application rates are to be developed and submitted to the local/district health department for review as part of the plans and specifications for each specific spray irrigation system.
2. The area requirements for the maximum weekly loading rates are stated below in Table 2.
3. Loading rates are to be designed on the most restrictive texture in the top 12 inches.

Table 2
Area Requirements for Maximum Weekly Loading Rates

Soil Texture Group	Maximum Weekly Rates (inches)	Spray Area per Bedroom (Sq.ft.)	Requirements per 100 Gal (Sq.ft.)
I	1.0	1680	1120
II	0.75	2240	1490
IIIA ¹	0.5	3360	2240
IIIB ¹	0.375	5000	3330
IV ²	0.25	6720	4480

¹Soil Texture Group IIIA includes perc rates from 46-70 MPI and soil Texture Group IIIB includes perc rates from 71-90 MPI

²Loading rates for soils that have estimated or measured percolation rates greater than 120 minutes per inch, will need to be based on measured saturated hydraulic conductivity data.

H. Irrigation Equipment

1. Equipment must be of materials, construction, and design to assure proper use and function for a spray irrigation sewage system.
2. Impact and pop-up sprinklers may be used. Sprinkler risers greater than 24 inches in height must be braced.
3. Sprinklers must be of low trajectory type designed to reduce aerosols.

I. Pumps Chambers, Pumps, Controls, and Alarms

1. Pump chambers, pumps, controls, and alarms must comply with applicable portions of Section 4.23 of the Sewage Handling and Disposal Regulations.
2. Irrigation pumps are not required to have open faced impellers.
3. Irrigation pumps may be single or multistage pumps (ex: submersible well pumps).
4. Irrigation pumps must be designed to handle the flow and head requirements of the sprinkler heads and system.