Chapter 8
Erosion and Surface Runoff Control Practices at Septage Waste Land Application Sites

8.1 Erosion Control Methods at Application Land Sites
Septage waste applied to soil will tend to move away from the point of application, especially for surface applied septage. The degree of septage waste movement away from the point of application depends on the following factors:

- The quantity of septage waste applied.
- The viscosity (thickness) of septage waste.
- The uniformity of septage waste application.
- The type and thickness of vegetative cover, if any.
- Time of year.
- Amount and duration of rainfall.
- Soil type (e.g., loamy sand and sandy clay loam).
- Slope of the land.
- Soil moisture at the time of application.

Septage waste contains pathogens, nutrients, metals, and other pollutants that can adversely affect human health, wildlife, and the environment if it is not managed in accordance with state and federal laws. In order to reduce the movement of soil and septage waste from application sites to adjoining properties and waters, it is essential to reduce the runoff of surface water (rain and melting snow). There are methods that can be used to control soil erosion. These include, among others, vegetative border strips, cover crops, and tillage operations\(^1,2,3\).

8.2.1 Vegetative (grass) Filter Strip
A septage waste application area is either entirely or partially surrounded by permanent grass or vegetation filter strip to reduce movement of soil particles from the field (Figure 8-1). If partially surrounded, the grass strip must always be at the lower end of the slope where surface water exits the field. The wider and denser the vegetation, the more effective the control method. The width will depend on the slope and risk of soil loss from the site. A minimum of 50 feet is recommended.

![Figure 8-1. Vegetative Border Strip for Surface Erosion Control](image-url)
8.2.2 Cover Crop
Erosion and surface runoff can also be controlled by a cropping plan that includes cover crops that cover the soil surface during periods when septage waste is not land applied as shown in Figure 8-2.

Figure 8-2. Surface Erosion Control Using Cover Crop

Forage crops such as grasses and legumes are effective erosion control crops. See Section 8.3.2 for details about how planting of cover crops and septage waste application patterns can assist in erosion and runoff control. Cover crops are typically not harvested and can be plowed under.

8.2.3 Windbreak
Land site surrounded by thick and tall vegetation can assist in reducing wind erosion and odor problems as shown in Figure 8-3.

Figure 8-3. Use of Windbreaks to Control Wind Erosion
8.2.4 Tillage Operations
The time to incorporate after septage waste application to fallow land shall not exceed 6 hours or 48 hours if lime-stabilized. It is highly recommended that surface applied septage waste be incorporated and injected perpendicular to the slope. This will reduce the potential for septage runoff.

**Recommended Action:** Determine the flow of water from the application site. Run the septage applicator and incorporation vehicles perpendicular to the direction of flow as shown in Figure 8-4.

![Figure 8-4 Direction of Septage Application in Relation to Slope](image)

8.2.5 Slope of Land
The choice of a land site with a slope of 2 percent or less is an acceptable erosion and runoff control method. A flat field with vegetative filter strip even provides a better method than just the vegetative strip or slope alone.

8.2.6 Other Methods
Other approved methods of erosion control can also be used. The key point is to reduce, as much as possible, the movement of soil particles with septage from the application site to adjacent areas.

**Note:** The licensee will be required to implement an erosion and runoff control plan at the site if there is evidence of septage waste loss to adjacent properties and/or surface waters during a site visit for annual, follow-up, complaint, or other activity.

8.3 Septage Waste Application Pattern and Erosion and Surface Runoff Control
It is important to indicate how the hauler or land manager will control erosion and surface runoff issues at the land site. At some land sites, erosion may not be a problem due to the slope of the land. Many land sites may encounter surface runoff in one form or another. The degree of the problem will vary depending on the slope, soil type, method of septage waste application, and other factors. The land manager needs to show that he does not allow septage waste to be carried out of the application area to adjacent parcels or to surface waters.

Exposure of the bare soil of the land site to water and wind throughout the spring and summer months of septage waste application is counterproductive to proper soil management. In many land sites, it has been observed that the entire 4-, 6-, or 10-acre field is subjected to haphazard application of septage waste leaving the entire field open to water and wind erosion and run-off.
8.3.1 Open Field Septage Waste Application Pattern
This is the pattern where the septage waste is land applied over the entire field throughout the year with no planned crops. The entire field is exposed to water and wind erosion for several months of the year as shown in Figure 8-5. Open fields are not recommended.

8.3.2 Protected Field Septage Waste Application Pattern
In the protected field pattern, only a portion of the entire field designated for septage waste application in the current year is used at a given time until the maximum limit is reached, as seen in Figure 8-6. The other portion of the field is planted with cover crops to protect the soil. The hauler may plow in the cover crop and apply septage waste in that section. The portion that has reached the maximum rate of application is seeded with a crop to protect the soil.
Example:
Number of acres to be used for septage waste application this current year = 10.
1. Divide the 10-acre field into not more than two 5-acre pieces.
2. Apply septage to only 5 acres until the maximum annual application rate is attained. Plant cover crop to this half of the field to reduce erosion/run-off.
3. The other half that was under cover crops may now be used for septage waste application.

8.4 References


4. Ohio Department of Natural Resources. 2007. State Launches New Effort to Promote Planting Windbreaks to Reduce Erosion. Photo.