Phosphorus Best Management Practices
Protecting Water Quality

Barnyard/Feedlot Runoff Management

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Definition:

A planned system for collection, treatment and reduction of runoff from a barnyard/feedlot to improve water quality.

Purpose:

To control the rate, quality and amount of runoff or leachate from barnyards, feedlots or other concentrated animal-waste areas.

How Does This Practice Work?

Barnyard/feedlot runoff management controls phosphorous and other potential pollutants by reducing the volume of water entering the barnyard/feedlot and the concentration of contaminants in the runoff water. The practice also collects and/or treats the runoff, which lessens the impact on receiving waters. Careful planning to determine the location and size of the barnyard/feedlot helps minimize the risk of water entering the barnyard/feedlot, the amount of water running off from a precipitation event and the potential for pollution.

Intercepting or preventing outside water from entering the barnyard/feedlot using roof gutters, drip trenches or surface water diversions can keep clean water out of the barnyard/feedlot. Subsurface drainage may be needed to prevent underground water from surfacing in the barnyard/feedlot, adding to the potential flow from the area. Reducing or eliminating the amount of water entering the barnyard/feedlot can also reduce the amount of effluent needing collection and/or treatment. Less water in the barnyard/feedlot decreases the velocity and carrying capacity of flows in the area, so there is less detachment of manure particles. Less flow also slows the water, which can allow manure particles to settle where a sediment trap is designed in the runoff management system.

Grading and paving allows the barnyard/feedlot to be cleaned while maintaining flow paths that lead to collection areas. The barnyard/feedlot needs to be on a surface that can be cleaned so that manure can be removed, thereby limiting the quantity of manure that potentially could be washed off. Providing a hard surface allows the cleaning operation to be done without forming pockets that collect leachate or changing where runoff flows. Curbing along the edge of the barnyard/feedlot is often needed to allow the scraping operation to occur, while preventing manure from being pushed off the edge of the barnyard/feedlot.

The runoff water should be collected so it can be stored or treated. If it is to be stored, gravity flow to an appropriately sized waste-storage facility is preferred. If a pump is needed, often a storage area to contain the peak flow will reduce the size of the pump needed. If the runoff will be treated, pretreatment by settling to remove most of the solids will be beneficial. Treatment can be done by a properly designed filter area, wetland or lagoon system.

Where This Practice Applies and Its Limitations:

This practice applies when an overall waste-management system is being planned or upgraded; where concentrated livestock areas result in a potential for pollution of water; and where soils, site conditions

and topography are suitable for improved barnyard/feedlot construction.

Effectiveness:

This practice can be very effective because the amount of water needing collection and storage for land application or treatment can be reduced. Also, the land application or treatment of the runoff can substantially reduce the risk of pollution. There may also be health benefits to cattle housed on a clean, well-drained barnyard/feedlot.

Cost of Establishing and Putting the Practice in Place:

The cost of this practice varies greatly. Costs can be very high for large barnyard/feedlots with nearby sensitive water bodies. Costs may be low or modest for small barnyard/feedlots that are located far from water bodies. Costs include those for outside runoff control; grading and shaping the barnyard/ feedlot; paving the barnyard/feedlot with curbing; and collecting, treating and storing systems.

Operation and Maintenance:

Scraping the barnyard/feedlot and collecting and storing or treating runoff are ongoing operational requirements. Fences need to be maintained. Outside water-control practices such as roof gutters, drip trenches and diversions need to be maintained. Waterers should be maintained so they do not leak. An estimate of the expected life of the practice can be made by consulting with conservation districts, agency personnel and land users. The type of paving will determine life expectancy.

References:

Local USDA-NRCS technical references and standards may be available at local county offices.

For Further Information:

Contact your local soil and water conservation district, USDA-NRCS or Cooperative Extension Service office. Cost share may be available for barnyard/feedlot runoff management from the Consolidated Farm Service Agency (CFSA).