

Phosphorus Removal System

The United States Department of Agriculture Natural Resources Conservation Service (NRCS) is offering Phosphorus Removal System as an interim conservation practice standard, # 782. This system is installed to intercept subsurface (tile) flow and reduce the concentration of phosphorus.

Sources of agricultural outflows to surface waters include agricultural tile drains. The Phosphorus Removal system is designed to achieve a reduction in the phosphorus concentration of water flowing through subsurface drains by directing the flow through a filtering media with a certain retention time.

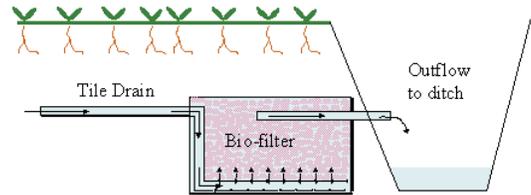
Many farms have installed subsurface drainage systems to remove excess water from the soil in order to enhance crop production. While maximizing crop yields is a goal of all producers, subsurface drainage systems can have negative effects on water quality.

Phosphorus and nitrate losses from tile drains can be high because the nutrients are very soluble and easily flow through soil fractures, worm and root channels and then into the drainage lines. The Phosphorus Removal System's purpose is to decrease the amount of nutrients, especially phosphorus, in tile drain discharge.

The practice lifespan for the Phosphorus Removal System is ten years, but the filtering media is anticipated to need replacement once within that time frame. The media may require landfill disposal.

This system can also be used to treat small surface runoffs by application inside a ditch.

A 1,000 gallon tank is needed. The tank may require a second chamber to restore pH of discharge water.



Top: Heavy equipment is used to position container of filtering media above tank

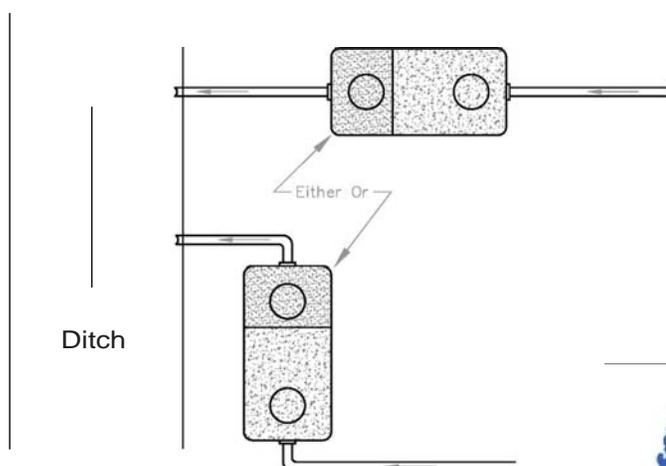
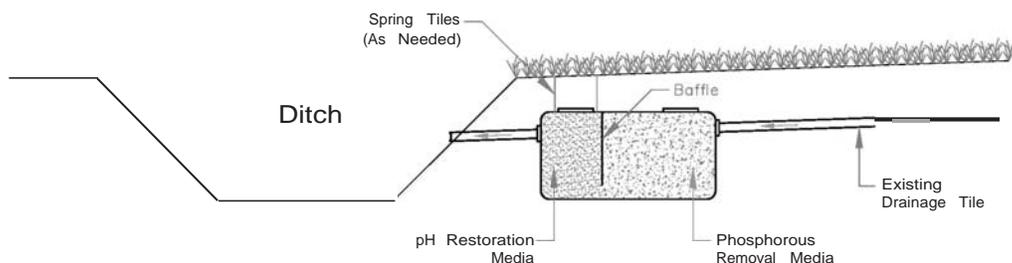
Bottom left: Filtering media being loaded into tank

Right: Filled tank positioned below surface level

photo credits: Ehsan Ghane and Larry C. Brown (Ohio State University), and Norman R. Fausey (USDA-ARS Soil Drainage Research Unit)

Phosphorus Removal System

Interim Conservation Practice Standard # 782



The system is installed to intercept subsurface (tile) flow, ground water or surface runoff flow, and reduce the concentration of phosphorus. The collection tank can be oriented depending on the system and producer needs.

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