USDA United States Department of Agriculture

Illinois

Conservation Practice Overview

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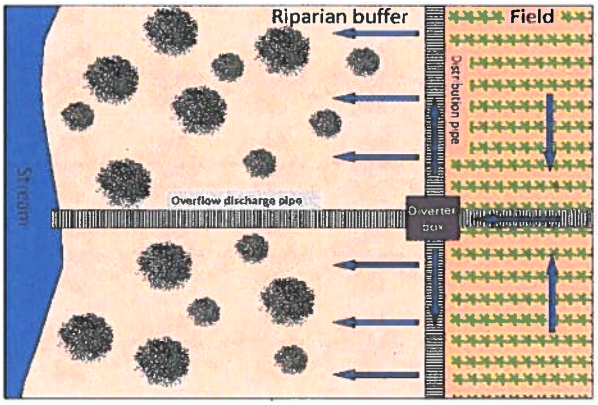
Saturated Buffer (Code 604)



A saturated buffer is a vegetated, riparian buffer in which the water table is artificially raised by diverting much of the water from a subsurface drainage system along the buffer to reduce nitrate loading to surface water via enhanced denitrification.

Practice Information

The saturated buffer is one of several practices that may be used to help prevent excessive nitrate contribution from tile drainage water leaving crop fields.

Typically, the saturated buffer is implemented by providing a secondary outlet for a subsurface drainage system. This is accomplished by installing a water control structure in the main drainage outlet. The structure diverts the flow from the tile outlet to a lateral, perforated distribution line running parallel to the watercourse, along the field edge of the vegetated buffer strip. During periods of high flow in the tile system, the structure is set to bypass excess flow to the main drainage outlet. As the drain water is introduced to the buffer through the distribution line, the soil becomes saturated.

As saturation of the buffer occurs, along with lateral water movement through the buffer, the vegetation and denitrifying soil organisms remove nitrates from the water, reducing the nitrates discharged to the streams.

An onsite soil investigation is critical to good saturated buffer planning and design. The amount of organic matter in the soil and the presence of a restrictive layer are critical to the function of the saturated buffer. The soil carbon provides a food source for denitrifying bacteria, and the restrictive layer is needed so that saturated conditions can be maintained in the buffer. The buffer should be at least 30-feet wide, and have vigorously growing plants. These plants can be either herbaceous or woody shrubs and trees, or a combination of the two.

Common Associated Practices

Saturated Buffers (Code 604) are a part of an overall strategy of to reduce nitrate export to surface water. Saturated buffers work well in conjunction with a strategy of the four '4-R's' of nutrient management detailed in Conservation Practice Standard (CPS) Nutrient Management (Code 590). Applying nutrients from the right source, at the right rate, and the right time in the right place minimizes the amount of nutrients in the drainage water.

Drainage Water Management (Code 554) can also be successfully used together in the conservation system, using structures to manage the drainage water in the field and further reduce nitrate export.

For further information, contact your local NRCS field office.