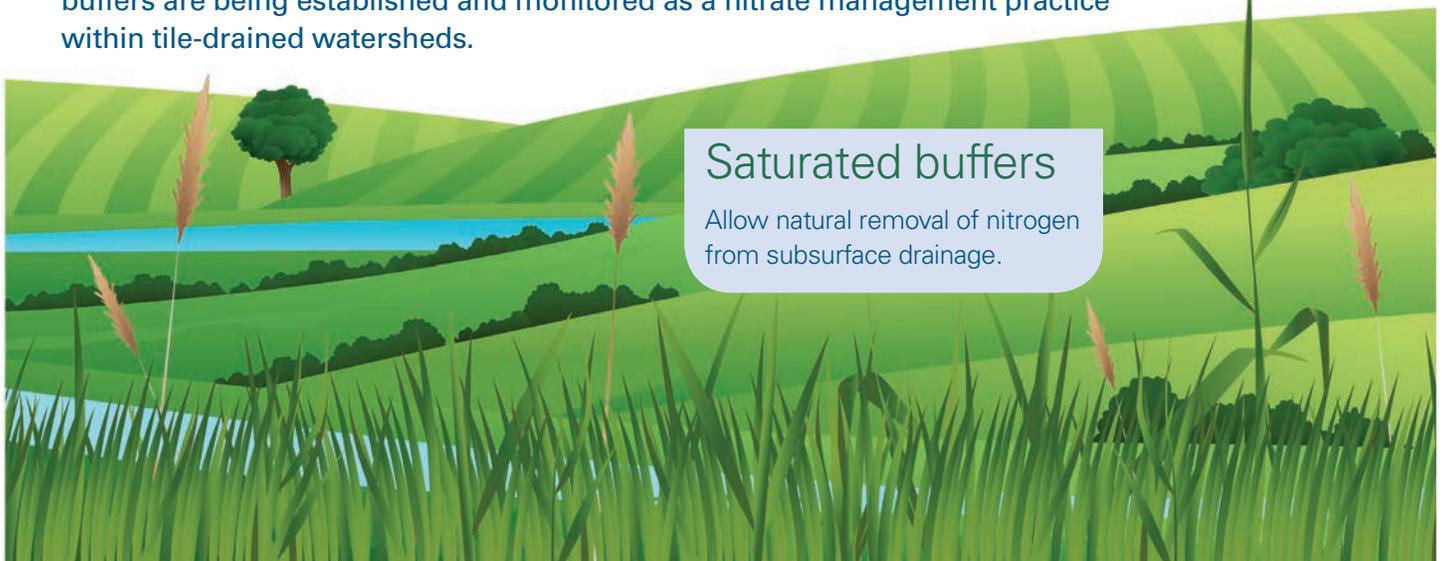


# Cleaning Iowa's Waters with Saturated Buffers in Iowa Watersheds

Working with private land-owners in Iowa Water Quality Initiative watersheds, saturated buffers are being established and monitored as a nitrate management practice within tile-drained watersheds.



## Saturated buffers

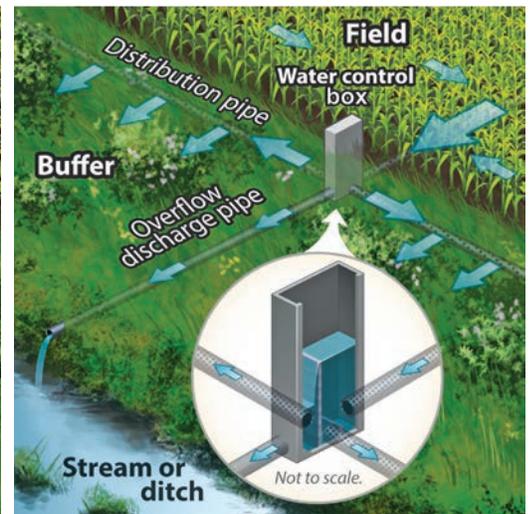
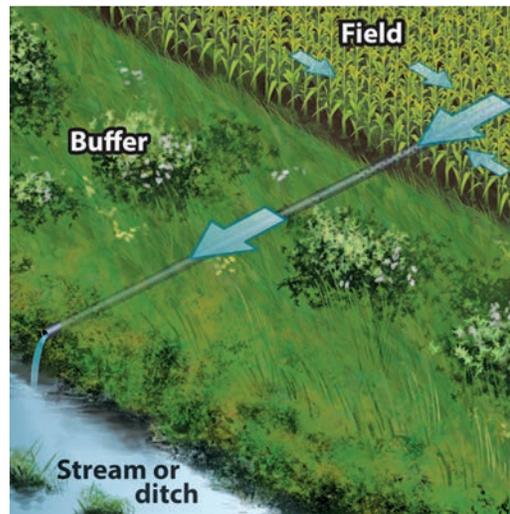
Allow natural removal of nitrogen from subsurface drainage.

CONVENTIONAL OUTLET

OUTLET with SATURATED BUFFER

## Tile-drained lands

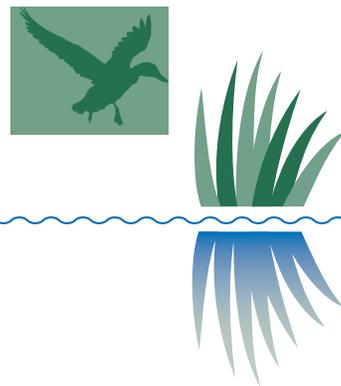
Underground pipes divert water from cropland, reducing stress on plants. A box diverts water flow into the buffer, increasing the shallow groundwater level and nutrient removal. This is a saturated buffer.



Source: Frankenburger et al., unpublished

## BENEFITS OF A SATURATED BUFFER

- Existing buffer removes sediment, phosphorus and pesticides and provides **wildlife habitat**
- Nitrate** is removed through denitrification and plant uptake



## Flooding

- 5% streamflow reduction
- Reduces peak flow in streams

## INITIAL RESEARCH

Initial research is being conducted within two saturated buffers on privately owned fields located in Hamilton and Story counties, north-central Iowa. Sites were established in 2010 and 2013. Additional monitoring is needed to demonstrate performance at other sites across the state.

## DRAINAGE TILE FLOW

first 4 years



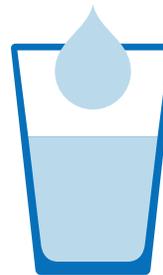
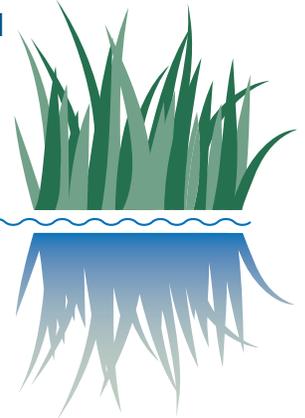
35% to 59% tile flow  
diverted into buffers

Study: Bear Creek Watershed

## NITRATE REMOVAL WITHIN SATURATED BUFFERS

most NITRATE entering the **BUFFER**

removed by plant uptake, microbial immobilization, and denitrification



the end result is **CLEANER WATER**

## IOWA WATER QUALITY INITIATIVE SITES

Additional saturated buffers are being established within Iowa Water Quality Initiative watersheds. Data is being used to develop criteria for installing saturated buffers as a **conservation practice**.



Construction of saturated buffer

For more information go to

[www.extension.iastate.edu/waterquality](http://www.extension.iastate.edu/waterquality)

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This project is supported by the Iowa Nutrient Research Center. Initial support was provided by the Leopold Center for Sustainable Agriculture. Additional support is provided by the USDA Agriculture and Food Research Initiative Competitive Grant no. 2013-67019-21384.

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