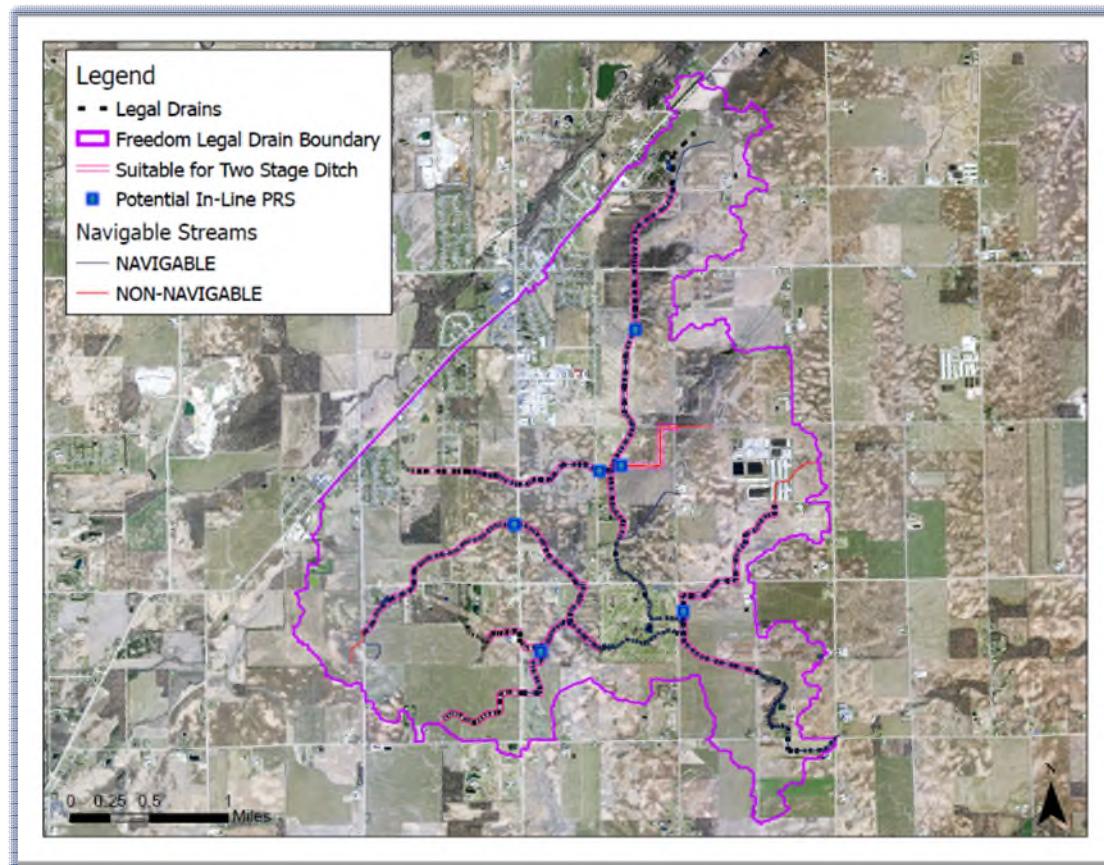


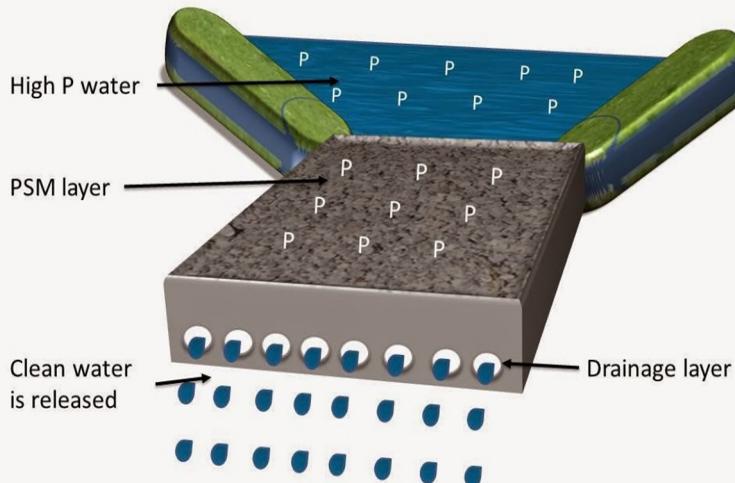
What's New in the Apple Creek Watershed?



The above map of the Apple Creek Watershed identifies potential sites for Phosphorus Removal Systems (PRS) and two-stage ditches.

Phosphorus Removal System

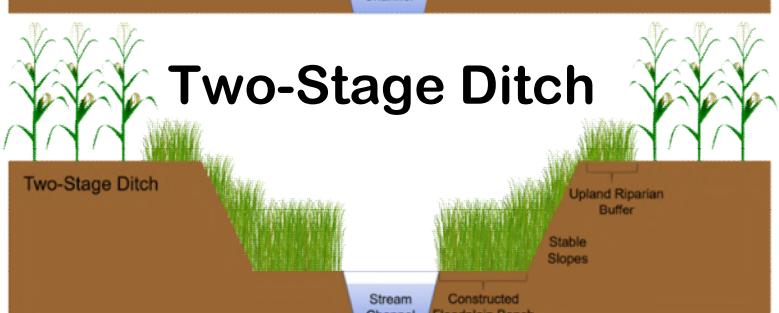
Phosphorus Removal Systems (PRS) remove dissolved phosphorus from drainage water leaving a field.



Traditional Ditch



Two-Stage Ditch



Two-Stage Ditches slow the flow of water and allow sediment and nutrients to settle on the benches before they enter the stream channel.

Sage Tanck

Engineering Technician



Outagamie County Drainage Board



United States Environmental Protection Agency

In July of 2022, the Outagamie County Land Conservation Department (LCD) received a grant for a pilot program that aims to reduce impairments which contribute to degraded water quality in the Lower Green Bay & Fox River AOC (Area of Concern). This grant will fund the installation and monitoring of best management practices in the headwaters of Apple Creek through 2025. Funding for this project is provided by the Wisconsin Department of Natural Resources through the GLRI (Great Lakes Restoration Initiative) from the U.S. Environmental Protection Agency.

The Apple Creek subwatershed was selected for this project due to the significant amount of agricultural drainage coming off the land which flows into the Lower Green Bay & Fox River AOC. This subwatershed also happens to be within the Freedom Legal Drain. The Outagamie County LCD is working cooperatively with the Outagamie County Drainage Board to access areas within the District corridors and provide great opportunities for installing best management practices.

Outagamie County LCD will install two types of best management practices in the Apple Creek watershed this year: Two-stage ditches and Phosphorus Removal Systems (PRS).

A two-stage ditch mimics the natural way water spills out onto a floodplain. This is done by modifying the geometry of an existing ditch to form a main flow channel (first-stage) with benches on either side (second-stage). The main channel remains wet most of the year and floods out onto the benches during large rain events. The vegetated benches slow the flow of water and allow sediment, nutrients, and other heavier material to settle. Two-stage ditches help reduce bank erosion and failure, and require less maintenance in comparison to a standard dredging ditch clean-out process.

A Phosphorus Removal Structure (PRS) is an edge of field practice that removes dissolved phosphorus from drainage water leaving a field. The practice diverts concentrated flows of water into a structure containing a phosphorus sorption material (PSM). As water flows through the material, the dissolved phosphorus will attach to the media, lowering the phosphorus levels in the water. As a result, the water leaving the site has a reduction in the amount of dissolved phosphorus levels.

PRS structures can take on many styles and forms. There are several media types available with different absorbance efficiencies allowing for design and cost flexibility. Depending on site specific needs, PRS systems can look and function slightly different, but have the same function-to remove dissolved phosphorus from drainage water and surface runoff at the edge of a field.

Two-stage ditching systems combined with PRS systems form an effective system for removing as many target nutrients from the water as possible. Implementation of these practices will directly reduce total phosphorus, total suspended solids, and dissolved phosphorus loading into the Lower Green Bay & Fox River AOC. The Outagamie LCD has plans underway to modify approximately a mile and a half of existing drainage ditches into two-stage systems and install at least two phosphorus removal systems by the end of 2023. - **Sage Tanck**