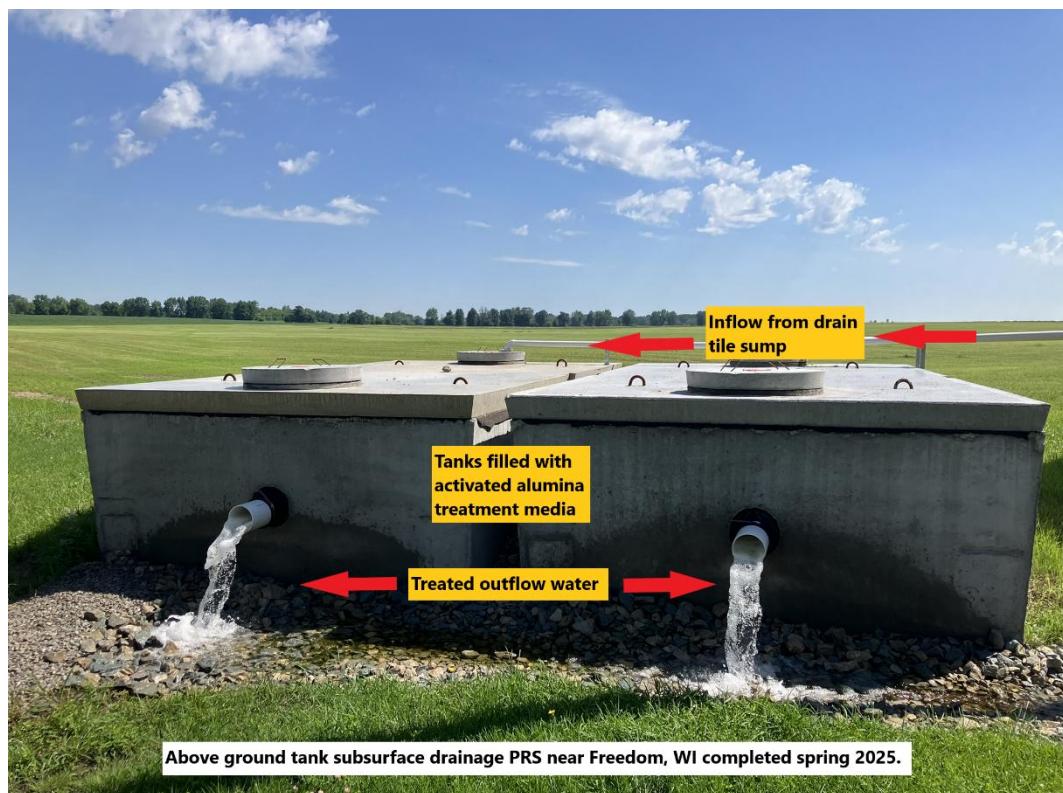
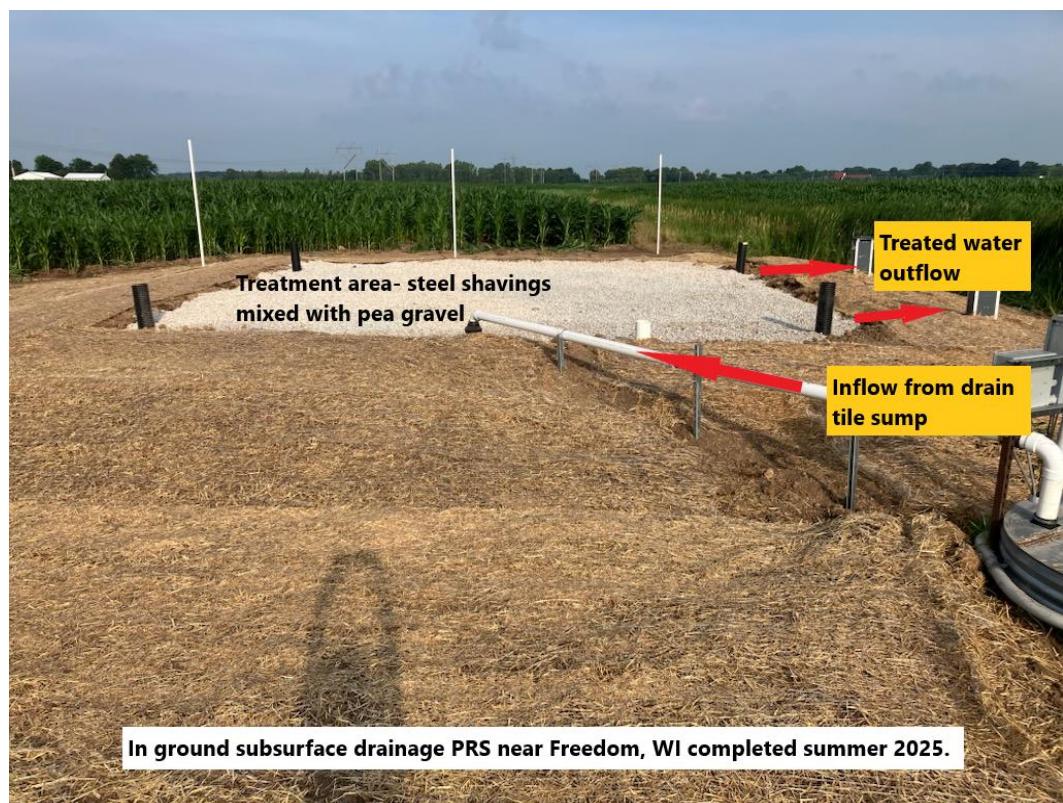


Phosphorus Removal Systems



Cooperating Partners:



The Outagamie County Land Conservation Department (LCD) works with landowners and farmers on various projects related to water quality improvement. A new best management practice (bmp) that the engineering technicians at the LCD have been installing is a Phosphorus Removal System (PRS). The PRS treats either surface or subsurface runoff from a farm field and as it goes through the system, it removes dissolved phosphorus by flowing through a media such as iron and aluminum-based materials.

The first PRS in our county was installed in 2025. Since then, five more have been installed by Outagamie County. This is one of the only available bmps that treat the dissolved form of phosphorus. Dissolved phosphorus causes excessive growth of algae which can lead to low dissolved oxygen in surface waters resulting in fish kills.

There are multiple different styles of PRS's such as above ground in tanks and below ground, but they all have three components. The first component it needs is a distribution system for un-treated water flowing in. This is usually perforated pipe. The second component it needs is a bed for filter media. Some examples of media are metal filings, steel slag, activated alumina, and steel metal shavings. Many times the media can be industrial by-products. As the water flows through the media, the dissolved phosphorus will attach to it and remove the dissolved phosphorus in the water. Finally, the last component is drainage/collection pipes for removing treated water from the structure.

In Outagamie County, the PRS's are often at the end of tile drainage in farm fields. Tile drains are below the surface and remove excess water from the field. This is common in the county as the soil has a lot of clay, which has low water infiltration.

The systems are often designed to capture dissolved phosphorus over a ten-year period. After ten years, the filter material will need to either be regenerated or removed and properly disposed of and new material will need to be added.

The Phosphorus Removal Systems in Outagamie County were made possible by utilizing a combination of funds provided by the Wisconsin Department of Natural Resource through the Great Lakes Restoration Initiative (GLRI) from the U.S. Environmental Protection Agency (EPA) and also directly through the EPA.