

The Concept...

How can we better use drainage systems in a way that makes them part of the solution and not part of the problem?

According to the Natural Resources Conservation Service (NRCS) and University researchers, agricultural producers now have a variety of choices to consider. Among these choices for conservation drainage are:

- Drainage Water Management
- Denitrifying Bioreactor
- Saturated Buffer
- Constructed Wetland

Putting more than one of these conservation practices together as a system on your farm offers even more benefit! Consider adopting one or both of these practices as well:

- Cover Crop
- Nutrient Management

Sound like options that may fit your operation? Call your local NRCS office or visit www.il.nrcs.usda.gov to learn more.



Water & Drainage...

Ag producers know how water works—there's either too much of it or not enough. They need a way to control water; to fine-tune water delivery on THEIR terms.

It might be time to consider adding conservation drainage practices to your operation. Talk to NRCS today. See how well these techniques could work for you!



Conservation Drainage Benefits...

The practices in a conservation drainage system can have many different benefits—each practice has its own set of purposes. This is a partial list of benefits you might achieve from your conservation drainage system:

- Reduce nutrient, pathogen, and pesticide loading from drainage systems into downstream receiving waters
- Improve crop productivity, health, and vigor
- Reduce oxidation of organic matter in soils
- Maintain or increase soil health and organic matter content
- Improve water quality by using excess soil nutrients
- You decide when your drainage system will drain and when to hold water back

Call NRCS to discuss these options today!



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United States Department of Agriculture

Conservation Drainage

What's Right for Your Farm?



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Drainage Water Management...

Drainage Water Management (DWM) allows you to hold water in the root zone when crops need it and drain the field when there's too much. This practice works best on relatively flat crop fields but can be made to work on more sloping ground if the tile laterals are laid across the slope instead of straight up and down.

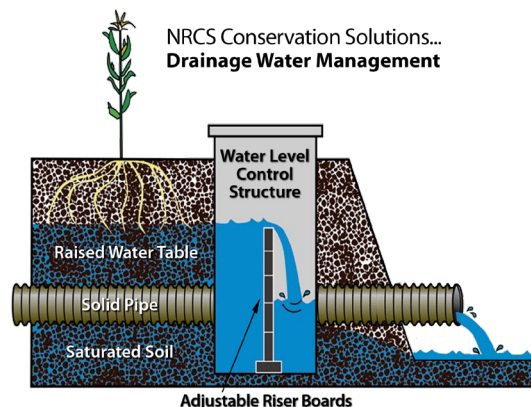


Illustration courtesy of Purdue University

The idea is to raise the water table as uniformly as possible over as much of the crop field as we can. To accomplish DWM, you'll need at least one water level control structure – you'll need more if your ground is not very flat. This will give you the ability to decide when it's time to hold back your drainage water and when to release it. NRCS recommends you develop a DWM Plan so you can tell what is suitable for your ground.



Denitrifying Bioreactor...

Place a Denitrifying Bioreactor near the end of a tile line, just before the drainage water leaves your farm. Though bioreactors can work on larger systems, about 100 acres of drainage is a practical limit for effective treatment. Using water control structures, you can send some or all



the water from your drainage tile through a trench filled with wood chips. Denitrifying bacteria in those wood chips can remove any nitrates in the water. Flat ground or sloping, and whatever soil you might have—this practice works wherever you want it to.

If your crop field is higher on the landscape than where you're thinking of placing a bioreactor, you may even be able to "set it and forget it." On flatter ground, you can pair the bioreactor with DWM.



Saturated Buffer...

The Saturated Buffer treats tile water by running some of the water to a lateral distribution pipe placed along the length of a ditch or streambank. Bacteria in the soil work to remove nitrates and the plants in the buffer take up nutrients as well. The saturated buffer works in places where the soil has plenty of organic matter, and where it's possible to maintain a high water table.

Above ground, the saturated buffer doesn't look much

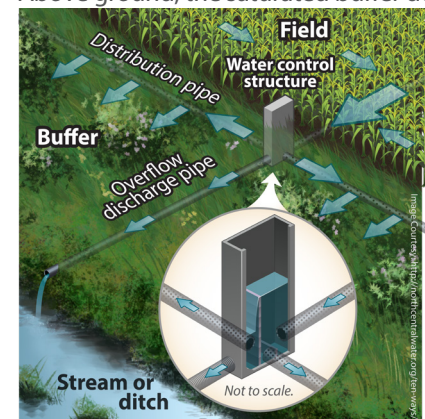


Image courtesy: <http://northcentralwater.org/ten-ways/>

different from a DWM structure—all the action occurs underground. Like the bioreactor, you may be able to "set it and forget it" if the crop field is higher than the buffer area where you install the lateral pipe. You can accomplish DWM with your saturated buffer structure if the land is relatively flat.

Constructed Wetland...

Another treatment option for the end of a tile line is the Constructed Wetland—sometimes nicknamed "Nature's Kidneys." The wetland is sized to remove nitrates from tile water through plant uptake and denitrifying bacteria. The wetland can also remove phosphorus and provide wildlife habitat—added benefits! The wetland surface area should be at least 1% of the acres drained by the tile system.

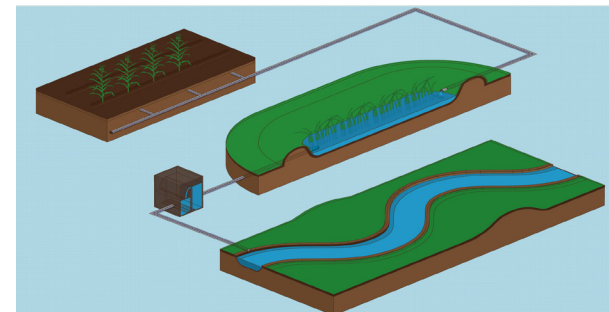


Illustration courtesy of Illinois Water Resources Center