Stormwater and Agriculture

Stormwater is water that comes from precipitation in the form of rain, snow, or ice melt. Stormwater either infiltrates into the ground or turns into surface runoff that collects in lakes, ponds, rivers or streams.

This runoff can carry with it various types of pollutants, so collecting and treating it before it reaches a natural water body is critical for protecting our natural resources and is an important part of stormwater management. A watershed, or any area of land where precipitation collects and drains to a common point, often needs to be modeled to evaluate how stormwater needs to be managed. When a watershed's land use changes through development or agricultural activity, the runoff amount, composition and path, changes as well. It is essential to consider and mitigate the downstream impacts this changed runoff has on water quality.

The way in which a farm is managed can either positively or negatively impact the health of a watershed. The application of pesticides, fertilizers and manure may be needed to increase crop yields, but these products can easily leave the field as runoff and contaminate natural water bodies. An excess of nutrients in a water body can encourage aquatic plant growth. When these aquatic plants die, the water oxygen levels can drop low enough to kill other organisms, such as fish. Farms are also subject to upstream contamination affecting their fields. For example, urban areas upstream from agricultural land, if left untreated, can deposit pollutants such as oil, dirt, and lawn fertilizers. Those chemicals disrupt the fertility of soil and contaminate crops.

There are many practices farmers can implement to ensure that stormwater is treated and erosion is controlled before it becomes a problem. Some of the more common practices include nutrient management, contour farming practices, cover crops, field buffers, and conservation tillage. The Dane County Land Conservation Division (LCD) is committed to working with local farmers to help implement these practices on farmed lands. While LCD works with farmers to reduce agricultural runoff from fields, the Dane County Water Resource Engineering Division (WRE) regulates development and land disturbance that is not directly related to the growing of crops. Before developing any part of a farmstead, it should be determined if a stormwater management permit is necessary from WRE.

Stormwater Management Permit and Standards

A stormwater management permit is necessary when a cumulative 20,000 square feet of impervious surface is added to a farmstead. Only areas constructed after 2001 are counted, but any addition no matter how small counts toward this trigger. Impervious surfaces can be anything that prevents the infiltration of stormwater into the ground including graveled areas and permanent water pools such as manure storage facilities.

The most important part of the permit application process is developing a stormwater management plan that shows how the standards detailed below will be met. These standards can be achieved in many different ways, so it is highly recommended that you discuss all your options with whomever is preparing your plan before you submit your application.

1. **Runoff Rate Control:** When impervious surfaces are added to a watershed, the speed and flow of runoff increases. This standard requires that the post development runoff rate remains the same to prevent downstream flooding and erosion.
2. **Stable Outlet:** Development often changes where and how much water leaves a site. This standard requires that water leaves in a way that doesn't cause downstream erosion or flooding.
3. **Sediment Control**: Impervious surfaces generate sediment that can carry pollutants and collect in downstream water bodies. This standard requires that 80% of the generated sediment is collected by stormwater practices.
4. **Thermal Control:** Impervious surfaces and ponded water can increase the temperature of stormwater runoff. If the runoff drains to a cold-water habitat, this standard requires practices be designed to reduce the temperature of runoff.

The Dane County stormwater management standards are enforced to ensure a healthy ecosystem, economy and a sustainable environment for generations to come. Caring for our environment and land is a team effort, and collectively following the County guidelines guarantees uniform attention to our community's water. Staff from LCD and WRE are happy to meet with agricultural producers prior to beginning projects to discuss creative ways to meet these requirements. Our goal is to both ensure the quality of stormwater and for the producers to be successful with their operations.