

Incorporation of WBI into NR 151:
Grass Filter and Phosphorus Index Performance Standard

Background:

In 1997, Act 297 required the creation of agricultural performance standards to meet water quality standards. The Department promulgated NR 151 which contains performance standards and prohibitions for agricultural facilities and practices designed to meet water quality standards as required by s. 281.16(2) and (3), Stats. A critical component of the performance standards was believed to be agricultural buffers. After several years, a consensus could not be reached on a minimum width for buffers due to factors such as cost-sharing requirements for land out of production, inadequate science on buffer performance, and competing environmental and agricultural production interests.

The May 22, 2002 resolution from the Natural Resources Board called for agricultural buffer research managed by the University of Wisconsin College of Agricultural and Life Sciences and implemented through the Wisconsin Agricultural Stewardship Initiative. A report titled “The Wisconsin Buffer Initiative” (WBI) was delivered on December 22, 2005. Based on this report, the Department is to initiate revision of the non-point source pollution performance standard administrative rule to incorporate a performance standard.

Synthesis of Rule Language from WBI:

As the reader digests the following text, the first question that will inevitably come to mind is “Where’s the buffers?” Prior to proceeding it is extremely important to clarify terminology. The WBI is not about buffers; it is about grass filters working in conjunction with upland management practices to enhance water quality. A riparian buffer is a corridor adjacent to surface water in which grasses, shrubs, and trees provide water resource protection, esthetics, and habitat and movement corridors for terrestrial organisms. The minimum width of such a buffer is highly dependent on the habitat needs of the organisms that inhabit it.

A grass filter is created primarily to improve water quality by reducing sediment and nutrients transported by overland flow from upland areas. To function properly, it needs to be comprised of grasses and requires a width between 30 and 50 feet for optimal performance. An important finding from the WBI is that grass filters can work as well if not better for water quality than the “ribbon style buffer strips” originally proposed for incorporation into NR 151.

A significant portion of the controversy surrounding the WBI stems from this confusion between buffers and grass filters. A more accurate title for the WBI is the “Wisconsin Grass Filter Initiative” but even this title falls short given the additional sweeping recommendations contained within the WBI. The following recommendations focus on water quality benefits as required in NR 151 and s. 281.16(2) and (3), Stats. Neither the following changes to NR 151 nor the WBI address other inherent benefits of buffers such as promoting and restoring native vegetation and providing habitat and movement corridors for aquatic and terrestrial organisms.

Implicit in the WBI is that the effectiveness of grass filters is tied to soils, slopes, upland practices, and many other variables that when simplified into code language either becomes

unwieldy and confusing or may render the practice ineffective. As a result, a more effective means of obtaining water quality goals is through promulgating a performance standard revolving around the PI.

1. Craft a performance standard in NR 151 requiring agricultural operations to meet a specific phosphorus index (PI) target value. This approach mirrors the urban performance standards in NR 151 in which an overall non-prescriptive performance standard is required (i.e. reduce sediment by 80%) accompanied by a series of prescriptive measures. It is important to note that unlike other current agricultural standards that are based on agronomic production rates, a PI standard can be linked to water quality standards.

The PI uses a set of equations to estimate P losses from an individual field to nearby surface water for an "average" weather year. The Wisconsin Nutrient Management Standard 590 has established a standard of PI=6. The majority of Wisconsin farms already achieve a PI=6 and those currently not in compliance can be brought into compliance with existing and reasonable practices. The Department also needs to evaluate the yearly variation in PI values over a rotation to address both chronic and acute water quality issues. Options include setting both a rotational PI value (6) with an annual not to exceed PI value (10). In addition to a performance standard, several additional prescriptive measures would be mandated as outlined below.

- a. A minimum setback from water bodies defined either by the floodway of a stream or a distance from the defined ordinary high water mark or the defined bed and bank. This setback is not a buffer but rather an area that can be harvested provided it stays in continuous vegetation and is not subjected to tillage operations. The purpose of the setback is to provide bank stabilization and prevent soil from being directly deposited in water bodies through tillage operations. The current PI calculations also assume this condition exists.
 - b. Additional clarifications of current prohibitions contained in NR 151.08 especially language contained in NR 151.08(5)(a) to minimize direct access of livestock to waters of the state. Current language just requires adequate sod cover. The Department should clarify adequate sod cover to help minimize livestock access or incorporate language to limit unrestrained cattle access. The current PI calculations assume minimal to no direct access of livestock to water bodies.
2. A statewide performance standard can not meet the water quality requirements for every unique water body in the state. Therefore, a means to develop targeted performance standards has been placed in NR 151 which allows alternative and lower PI values to be specified for particular watersheds. The creation and implementation of the targeted performance standard will be done through the Department's TMDL process in which the TMDL will be used to determine the required phosphorus index to meet water quality goals. This approach will also bridge the current gap between the numeric load allocation specified in TMDLs and the implementation of the management practices to meet water quality standards.

3. Wisconsin NRCS Standard 393 (SOC) should be modified as recommended in the WBI to include the size of the contributory area in addition to soil and slope parameters in the design of a grass filter. This should be conducted using the SOC process; however, since the performance standards must be completed prior to December 31, 2007, an interim standard should be written to accompany the release of NR 151. The SOC process can accommodate both interim and final technical standards.
4. The Department shall attempt to dovetail the implementation strategy and targeting methodology outlined in the WBI with the Department's 303d list of waters impaired by agricultural sedimentation and nutrients. Such an approach will allow the Department to better prioritize watershed selection for TMDL development.
5. Adoption and implementation of a PI based performance standard and dovetailing it into the Department's TMDL program will require some additional initiatives.
 - a. The Department should fund an additional component of the WBI to develop regression equations that relate numeric water quality criteria to the PI. This could allow the Department to efficiently address large numbers on non-point TMDLs. The development of these regression equations can be accomplished through funding a graduate student at UW-Madison. Portions of this initiative can be funded through current UW funding sources from the Department or EPA TMDL development funding sources. This effort is ongoing.
 - b. The Department needs to ensure continued development and support of the SNAP-Plus model used to calculate PI values. This responsibility should be shared with NRCS and DATCP.

Background on Phosphorus Index:

The Wisconsin Phosphorus Index (PI) is a runoff phosphorus loss risk assessment tool for cropland management planning. It uses information that is readily available to farmers and agricultural consultants to evaluate the potential for phosphorus in runoff from a specific field entering a nearby stream. The PI uses a set of equations to estimate P losses from an individual field to nearby surface water for an "average" weather year.

PI values are calculated using the SNAP-Plus nutrient management and soil loss assessment software program. DATCP has already provided significant training in the use of SNAP-Plus to both county and state regulators and agricultural consultants. The PI calculations assume that producers are already following all of the appropriate practices for minimizing entry of nutrients to surface and groundwater in the NRCS 590 Nutrient Management Standard, such as establishing grassed waterways in areas with recurring gullies, avoiding manure and fertilizer applications directly on concentrated flow channels, and avoiding tillage operations immediately adjacent to water bodies. Adopting these prescriptive measures will not lower P Index values because the equations assume they are already in place.