

Part IV. Conservation Practices for Long Term Land Use

In Part IV, we learn about some of the conservation practices which will reduce soil erosion and help to sustain the productive potential of the land for the long term. ***Be sure that you review the Pit Information Card*** for more information on conservation practices.

Conservation Practices

This part lists the most important conservation practices used in Wisconsin. These practices are described briefly with the problem(s) they help to remedy. On your Scorecard, mark all practices “yes” if needed, or “no” if not needed, for the most intensive land use unless otherwise noted on the pit card.



1) Develop a nutrient management plan

This practice is defined as managing the amount, source, placement, form and timing of the application of nutrients and soil amendments. This nutrient management plan must follow established criteria to address the application and budgeting of nutrients for plant production. All nutrient sources, including commercial fertilizer, manure, organic byproducts, legume crops, and crop residues are accounted for and properly utilized. The purpose of a nutrient management plan is to prevent nutrients from getting into surface or groundwater while maintaining and improving the physical, chemical and biological condition of the soil. This plan should cover all the lands where fertilizers, manure or soil amendments are applied during the course of a crop rotation or grass production.



2) Use residue management and/or plant cover crop

This practice refers to managing the amount, orientation, and distribution of crop and other plant residues, on the soil surface year round. This practice may be applied as part of a conservation management system to reduce wind, rill, and sheet erosion. This practice applies to all cropland, and other land where crops are grown including grass. This practice includes mulch tillage methods, commonly referred to as chiseling, subsoiling, disking, and/or no-till, row-till, slot-plant, strip-till, zero-till, or zone-till.

Planting a cover crop refers to growing grasses, legumes, forbs or other herbaceous plants established for seasonal cover and conservation purposes. This practice may be applied as part of a conservation management system to support one or more of the following purposes: reduce erosion from wind/water, increase soil organic matter, manage excess nutrients in the soil profile, promote biological nitrogen fixation, increase biodiversity, weed suppression, provide supplemental forage, and soil moisture management.

Residue management and/or planting cover crops should be recommended for all cropable soils (cropland and pasture) throughout Wisconsin.



Contour strip cropping system with waterways

3) Apply contour farming, contour buffer strips, contour strip cropping, or terraces

“Contour farming” includes tillage, planting, and other farming operations performed on or near the contour of the field slope. “Contour buffer strips” include narrow strips of permanent, herbaceous vegetative cover established across the slope and alternated down the slope with parallel, wider cropped strips. “Contour strip cropping” includes growing row crops, forages, small grains, or fallow in a systematic arrangement of equal width strips across a field. Terraces are earthen embankments, channels, or combinations of ridges and channels.

These practices may be applied as part of a conservation management system to support one or more of the following purposes: to reduce sheet and rill erosion, to reduce transport of sediment and other waterborne contaminants, and to control water runoff allowing greater infiltration.

Contour farming, contour buffer strips, contour strips or terraces should be recommended for all cropland soils with slopes 2 - 20%.

4) Maintain existing terraces

Terraces will be maintained as part of a conservation management system to support one or more of the following: reduce soil erosion, reduce sediment content in runoff water, retain runoff for moisture conservation, and improve farmability. Terraces will be maintained where soil erosion by water is problem, there is a need to conserve water, the soils and topography are such that terraces can be constructed and farmed with reasonable effort, a suitable outlet can be provided, and excess runoff is a problem. Recommend maintenance for existing terraces only.



Grassed terrace

5) Construct or maintain grassed waterways, diversions, or erosion control structures

A grassed waterway is a natural or constructed channel that is shaped or graded to required dimensions and established with suitable vegetation.

Grassed waterways may be applied as part of a conservation management system to support one or more of the following purposes: to convey runoff from terraces, diversions, or other water concentrations without causing erosion or flooding, to reduce gully erosion, or to protect water quality. Grassed waterways may be needed to control erosion resulting from concentrated runoff and may be used alone or combined with other conservation practices. This practice is not applicable if construction would destroy important woody wildlife cover or wetlands.

A diversion is a channel constructed across the slope generally with a supporting ridge on the lower side. Diversions should be recommended where the directed or controlled flow or dispersal of water is necessary.



Grassed waterway



Erosion control structure



Erosion control structures are earthen dams, rock, soil or aluminum drop structures or pipe outlets, earthen embankments. These structures typically are positioned at or near the end of a grass waterway where volume and velocity of water require an additional measure to stabilize outlet of the waterway.

6) Renovate or otherwise improve pasture

Pasture renovation includes: killing existing vegetation by chemical and/or surface or subsurface tillage; liming and fertilizing according to soils test reports; and reseeding the pasture to be used for grazing purposes to a high producing legume-grass mixture. On steeper slopes renovation can be accomplished by mulching narrow strips or bands (tillage equipment width) across the slope during successive years, to minimize water runoff or wind (blowing) erosion.

Other methods of improving pasture range from basic weed control to eliminating undesirable brush, stones, etc.

Pasture renovation or other types of pasture improvements should be recommended on pasture or grazing land where feasible.

7) Eliminate or manage grazing

Eliminate grazing means excluding livestock from an area where grazing is undesirable at all times. All woodlands to be used for commercial purposes and wildlife habitat areas should be fenced to keep livestock out. This practice helps reduce runoff and the resulting erosion, as well as enhances the natural beauty of the area.

Control grazing refers to prevention of overgrazing by excessive livestock numbers particularly during periods of drought or prolonged wetness when temporary or permanent damage to pasture land may occur. Manage grazing refers to the controlled harvest of vegetation with grazing or browsing animals, managed with the intent to achieve a specified objective. The purposes of this practice are as follows: improving the quality and quantity of forages for the benefit of the producer, livestock, wildlife, and environment, protecting water quality, improving and maintaining the health of livestock, plants, and soil, and reducing soil erosion. This practice may be applied on all lands intended to provide forage or vegetative food for grazing or browsing animals.

Eliminate or manage grazing should be recommended on all areas intended for wildlife habitation as well as on all pasture land and woodland. It is expected that all cropland already has eliminated or controlled grazing and therefore should not be considered for this practice.



8) Improve timber stand or plant adapted trees in woodland

Improving woodlands and timber stands includes removing undesirable or unwanted trees, shrubs or vines, etc. It particularly applies to woodlands where removing part of a stand will improve stand quality, recreational, wildlife, or aesthetic values. It includes protection from uncontrolled fire, insects, disease, and grazing livestock. The cutting of trees should be done in accordance to a management plan.

Planting trees adapted to a site is to establish or reinforce an existing stand of trees; conserve soil, and soil moisture infiltration; beautify an area; protect a watershed; provide wildlife habitat or to produce a woodlot crop.

Improve timber stand or plant adapted trees should be recommended where land use includes the sale of marketable lumber or woodlot products, and where aesthetic beauty of wildlife in its natural habitat is of prime concern.

When the predominant ground vegetation is grass, the site will be considered grassland. Therefore, this practice would not be applicable on these sites.

9) Establish windbreaks

Windbreaks are linear plantings of single or multiple rows of trees or shrubs or sets of linear plantings.

This practice may be applied to reduce soil erosion from wind, to protect plants from wind-related damage, to alter the microenvironment for better plant growth, to manage snow drifts, to provide shelter for structures, livestock, and recreational areas, to enhance wildlife habitat by providing travel corridors, to provide living noise screens, to provide living visual screens, to provide living barriers against airborne chemical drift, to delineate property and field boundaries, to improve irrigation efficiency, and to enhance aesthetics.





10) Protect stream banks or lakeshore

Stabilizing and/or protecting stream banks or lakeshores by vegetative or structural means prevent scour and erosion. This includes planting of grasses and legumes, as well as needed mechanical measure such as bank grade stabilization and rock riprapping. The use of selected plant species, such as willows, etc., may aid greatly in holding stream banks and/or lakeshores, reducing erodibility, as well as providing habitat for certain wildlife species.

Stream bank protection reduces sediment load resulting in less downstream damage (sedimentation). Stream banks need protection so as to prevent loss of tillable acreage; or damage to utilities, roads, bridges, fence lines and floodgates, and buildings; as well as rendering the surrounding area useless for recreation or as habitat for fish and wildlife.

Lakeshore protection reduces sedimentation along shorelines. Shorelines need protection from wave action resulting from wind and wakes from power boats, otherwise, damage to utilities, roads, etc., will occur and the surrounding area may become useless from recreation or as a habitat for fish and wildlife.

Protection of stream banks or lakeshores should be recommended when they are present within the site area. Streams will be considered streams where water is flowing.

11) Improve fish and wildlife habitat



Retaining, creating or managing wildlife on upland or wetland keeps, creates or improves habitat for desirable wildlife species. These include: upland birds, waterfowl, songbirds, fur bearers, game and non-game animals and others. These areas are commonly developed on “odd corners,” and places not readily suited for agriculture including permanent fence rows, and non-tilled areas along fence rows, but need not be confined to such areas.

Wildlife habitat development may include providing grain, grasses, legumes, upland herbaceous plants, woody plants including hardwood trees, coniferous trees and shrubs, wetland herbaceous plants, deep and shallow water areas, etc.

Opportunities exist in lakes and streams to create and improve fish habitat. Practices such as LUNKERS* fish cribs, spawning, reefs, and gravel bars are excellent fish habitat practices.

Wildlife habitat improvement should be recommended for areas not suitable for agricultural purposes (crops or pasture); “odd areas” including permanent fence rows, as well as other places normally frequented by wildlife (woodlands, etc.)

LUNKERS structure (above) and improved streambank with LUNKERS installed in-stream.

*Little Underwater Neighborhood Keeper Encompassing Rheostatic Salmonids



12) Establish/maintain riparian forest buffer or grass filter strip

Riparian forest buffers or grass filter strips are strips or small areas of grass, trees or shrubs established along streams, ditches, wetlands or other water bodies. Riparian buffers trap sediment, filter nutrients, and provide habitat and corridors for fish and wildlife.

These strips or small areas of land in permanent vegetation help control pollutants and provide other environmental benefits:

- ◆ Provide Habitat - provide habitat and corridors for aquatic and terrestrial plants and animals, increase the diversity of plant and animal species in riparian areas, provide shade to lower water temperatures and increase dissolved oxygen for better aquatic organism habitat; also provide a source of debris and woody cover for aquatic organisms.
- ◆ Reduce Flooding - permanent trees and herbaceous cover in floodplain areas subject to out-of-bank flow and/or scour erosion may reduce flood flows and mitigate flood damage.
- ◆ Protect Water quality - buffers reduce amounts of sediment, organic matter, nutrients, pesticides, and other pollutants in surface runoff and reduce the amounts of nutrients and other chemicals in shallow groundwater.

Grass filter strips should be applied to areas where conditions associated with sediment and pollutant delivery from the contributing drainage area are identified and where the installation of this practice, as part of a conservation management system, will provide a direct benefit to water quality and/or riparian stability.

Riparian Forest Buffers and Grass Filter Strips are primarily water quality practices and not forestry practices. Therefore, “planting adapted trees (# 8)” is not applicable on these sites. However, these sites provide excellent wildlife habitat as a secondary benefit. Selecting (#11) Improve Fish and Wildlife Habitat would be correct.

13) Control invasive species that are present

Invasive species control is the removal, reduction, or manipulation of certain herbaceous and non-herbaceous invasive plants. This practice may be applied as part of a conservation management system to accomplish one or more of the following purposes: restore natural plant community balance, create the desired plant community, reduce competition for space, moisture, and sunlight between desired and unwanted plants, restore desired vegetative cover to protect soils, control erosion, reduce sediment, improve water quality and enhance stream flow, maintain or enhance wildlife habitat including that associated with threatened and endangered species, improve forage accessibility, quality and quantity for livestock, and improve visibility and access for handling livestock.

These six and other plants, animals, and pests are invading Wisconsin lakes, rivers, forests, wetlands, and grasslands.

They displace native species, disrupt ecosystems, and affect citizens' livelihoods and quality of life. They hamper boating, swimming, fishing, hunting, hiking, and other recreation, and take an economic toll on commercial, agricultural, forestry, and aquacultural resources.

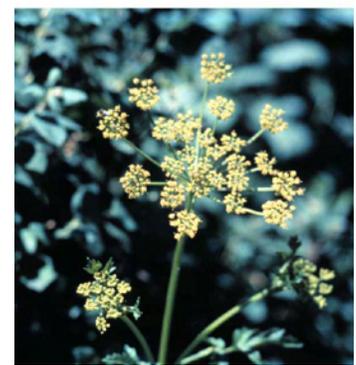
Contestant will be asked to identify the presence of any of these six (6) major invasive plants.



Garlic Mustard



**Purple
Loosestrife**



Wild Parsnip



Multiflora Rose



Honeysuckle



Box Elder

Other references for non-native or invasive plants:

USDA NRCS Invasive and Noxious Weeds <http://plants.usda.gov/java/noxious>

DNR Invasive Species Photo Gallery <http://www.dnr.state.wi.us/invasives/photos>

UW Botany Dept <http://www.botany.wisc.edu/herbarium/>

Part V. Non-Ag Land Use Limitations

Land suitable for agricultural production may not always be suitable for other uses. Soil scientists and land managers may have to evaluate the suitability of land for uses such as building sites, construction materials, recreational areas, sanitary facilities, landfills, wastewater treatment, and water retention ponds. Specific criteria have been developed for evaluating land for these and other uses.

The tables below show the criteria for indicating if a particular site has limitations for building houses with basements, septic systems, and roads or streets. Judges should indicate on scorecards that limitations for these uses exist if site and soil characteristics meet *any* of defined criteria. Soil characteristics such as depth to high water table, depth to bedrock, and stoniness refer only to what is observed within the control section. Any criteria unusual to the site and soil characteristics will be indicated on the site information card (i.e. flooding frequency). Mark **Yes** if limitations are present for the following, **No** if not.

1) Houses with Basements

- Site is subject to any flooding frequency
- Depth to high water table is less than 40”
- Depth to bedrock is less than 60”
- Slope is greater than 12%
- Stones larger than 3” make up greater than 25% of the volume of the control section

2) Septic Tank Absorption Fields

- Site is subject to any flooding frequency
- Depth to high water table is less than 48”
- Depth to bedrock is less than 72”
- Slope is greater than 12%
- Stones larger than 3” make up greater than 25% of the volume of the control section
- Any texture of subsoil except sandy loam

3) Local Roads, Streets and Driveways

- Site is subject to any flooding frequency
- Depth to high water table is less than 36”
- Depth to bedrock is less than 60”
- Slope is greater than 12%
- Stones larger than 3” make up greater than 25% of the volume of the control section
- Texture of the subsoil is medium, moderately fine, fine or organic

