

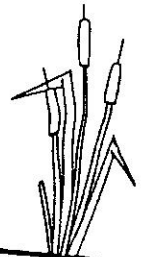
MANAGEMENT PRACTICES FOR WETLANDS AND RIPARIAN AREAS

STATE OF KANSAS

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Wetland & Riparian Areas Project



MANAGEMENT PRACTICES FOR WETLAND AND RIPARIAN AREAS

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FOREWORD

The *Wetland and Riparian Areas Project* (WRAP) represents a cooperative effort involving federal and state agencies and organizations for the purpose of addressing conservation issues related to wetland and riparian areas in Kansas. A primary goal of the project was to provide pertinent information to government agencies, private organizations and the general public regarding wetland and riparian resources.

We were fortunate to have the following agencies represented on the WRAP Technical Committee.

State Conservation Commission
K.S.U., Dept. of Landscape Architecture
K.S.U., Dept. of Regional Community Planning
K.S.U., State and Extension Forestry
Kansas Department of Health and Environment
U.S. Army Corps of Engineers
Kansas Biological Survey
U.S. Fish and Wildlife Service
Kansas Water Office
U.S. Geological Service
Kansas Department of Wildlife and Parks
U.S. Soil Conservation Service
State Board of Agriculture, Div. of Water Resources
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Wetland Protection Section
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INTRODUCTION

This manual is a catalog of best management practices (BMPs) that can be applied to restore or enhance wetland and riparian areas. Only practices that are found in selected technical guides and publications applicable to Kansas have been listed. The manual is intended to be used for initial identification of BMPs that may be appropriate for a given wetland or riparian site and as a guide to finding more detailed technical information on those practices among the references listed.

Given this manual's role as an initial screen, the descriptions of the BMPs are purposely abbreviated and nontechnical. Undoubtedly, some practices not listed in this manual might be suitable for specific applications in Kansas. However, such practices should be reviewed by technical experts before their use in wetland and riparian projects.

Many BMPs, identified in this manual as "Other Management Practices That May Apply..." (pgs 8-11), generally would not be used for the direct purpose of restoring or enhancing wetlands or riparian areas. These practices have been listed here because they are commonly applied for soil and water conservation and with modification can sometimes also benefit wetland and riparian areas. Some, if applied without consideration for wetland and riparian protection, can have negative consequences for these resources.

BMP Selection and Application

The proper selection and application of BMPs is essential for developing a successful wetland or riparian management project. Even the best BMP, improperly planned or applied, can result in more harm than good.

The first step in selecting the right BMP or BMPs is to have firmly established management objectives for the site that are compatible with the broader goals of wetland and riparian protection. One such goal identified in "Kansas Wetland and Riparian Resources: Conservation Goals and Strategies" is no-net-loss of remaining wetland and riparian resources, considering acreage, function and values. Priority should be given first to BMPs to protect existing wetland and riparian resources followed by practices to restore or enhance altered wetland or riparian sites. BMPs associated with the creation of new wetland or riparian areas generally are not as high of a priority except when they are used to create wetland and riparian types with unique values or particularly important function. Wetland creation is still a new and evolving science and such newly created wetlands seldom exhibit the biological diversity or high quality functions of natural and restored wetlands.

Another wetland and riparian resource goal is to maintain the diversity of wetland and riparian ecotypes and size classes across the state. Some BMPs, such as restoration of deep water marshes or ponds, may be favored by landowners and frequently used. Other BMPs, used to restore forested wetlands or wet meadows, may be infrequently considered. Maintaining a diversity of wetland and riparian ecotypes and size classes across the state should be encouraged to avoid losses of essential values and functions.

In all cases, BMPs must be selected that meet with individual landowner goals and objectives. In some cases, this may mean that "ideal" BMPs from a particular technical viewpoint may not be selected. Instead, BMPs that are compatible with other land-use objectives of the project sponsor and provide some wetland and riparian benefits may have to be applied. Landowner support of a management practice is essential for its long term maintenance and that of the wetland or riparian resources it sustains.

BMPs may be used individually or collectively in various combinations to complete a wetland or riparian conservation project. BMPs may also be used sequentially over time. For example, some BMPs may be used during construction or while permanent vegetation is being established to reduce the potential for degradation until the final BMPs can be applied.

This manual will be a source of ideas for developing wetland and riparian conservation projects. In most cases, the next step would be to contact the appropriate technical experts; the District Biologist (Kansas Department of Wildlife and Parks), The District Conservationist (SCS), or the District Forester (State and Extension Forestry). These contacts can provide assistance with a particular wetland or riparian site and can also provide information on cost-share assistance or other incentives that might be available to encourage implementation of BMPs for wetland and riparian resources.

BMPs FOR WETLAND AND RIPARIAN AREAS IN KANSAS

SCS FIELD OFFICE TECHNICAL GUIDE - KANSAS

- 322 Channel Vegetation**
Establishing and maintaining adequate plants on channel banks, berms, spoil, and associated areas to stabilize channel banks and adjacent areas and reduce erosion and sedimentation.
Application: Proper vegetation selection for these areas produce excellent waterfowl nesting habitat and other wildlife habitat. Reduces sedimentation and provides riparian enhancement.
- 327 Conservation Cover**
Establishing and maintaining perennial vegetative cover to protect soil and water resources on land retired from agricultural production.
Application: Appropriate for crop fields adjacent to wetland or riparian areas to create vegetative buffers. Provides wildlife habitat and reduces erosion.
- 342 Critical Area Planting**
Planting vegetation such as trees, shrubs, vines, grasses, or legumes on highly erodible or critically eroding areas (Does not include tree planting mainly for wood products). Most beneficial along riparian areas.
Application: Reduces organic load in surface runoff entering wetlands and riparian areas. Slows water velocity allowing more absorption and can be used to stabilize banks in riparian areas. Provides excellent wetland/riparian habitat for wildlife.
- 356 Dike**
An embankment constructed to regulate water. Especially a class III dike constructed in rural or agricultural areas where damage likely to occur from dike failure is minimal.
Application: Can impound or regulate water in wetland and riparian areas.
- 382 Fencing**
Enclosing or dividing an area of land with a suitable permanent structure that acts as a barrier to livestock, big game, or people (does not include temporary fences).
Application: Reduces erosion, pollution and vegetation destruction. Improves wildlife habitat, natural vegetation, and water quality. Provides protection/enhancement of wetland or riparian areas.
- 386 Field Border**
A strip of perennial herbaceous vegetation or shrubs planted along the edge of a field.
Application: Effective in reducing sedimentation, slowing runoff, filtering out excess nutrients and farm chemicals, and providing wildlife habitat when established between an agricultural field and a wetland or riparian area.

393 Filter Strip

A strip of native grasses or other vegetation established in strategic locations below disturbed soil areas to slow surface runoff and filter out suspended organic matter.

Application: Reduces sedimentation and pollution entering wetlands and riparian areas and can provide nesting habitat for waterfowl and other wildlife.

410 Grade Stabilization Structure

A structure installed to discharge water from a higher to a lower elevation to control the grade and head cutting in natural or artificial channels.

Application: Can be used in combination with dikes to create wetland areas in which water levels can be regulated. Also used to restore surface and shallow alluvial aquifer levels in incised streams.

472 Livestock Exclusion

Excluding livestock from an area not intended for grazing to protect, maintain, or improve the quantity and quality of the plant and animal resources (includes temporary fencing).

Application: Allows the area to return to a natural system and provides typical wetland and riparian benefits. Reduces sedimentation and bank degradation and allows native vegetation to re-establish itself.

528 Proper Grazing Use

Grazing at an intensity which will maintain enough cover to protect the soil and maintain or improve the quantity and quality of desirable vegetation.

Application: Provides planning guidelines for grazing of wetland or riparian resources. Can be implemented along with the use of other practices (e.g. Livestock Exclusions) to maintain healthy wetland/riparian vegetation.

580 Stream Bank and Shoreline Protection

Using vegetation or structures to stabilize and protect banks of streams, lakes, estuaries, or excavated channels against scour and erosion.

Application: Planting of native wetland vegetation in these areas may provide both bank stabilization and small areas of wetland habitat. More specific techniques used to achieve the goals of this practice include cut-willow plantings and tree revetments.

612 Tree Planting

To set tree seedlings or cuttings in the soil for the purpose of establishing or reinforcing a stand of trees, conserving soil moisture, improving wildlife habitat, protecting a watershed, producing wood crops, or increasing the aesthetic value of the land.

Application: Important in maintaining values and characteristics of naturally forested wetland or riparian areas.

638 Water and Sediment Control Basins

A short earth embankment or a combination ridge and channel generally constructed across the slope and minor watercourses to form a silt or sediment basin for the purpose of reducing erosion, sediment content in water, and peak rate of flow at down-slope locations.

Application: Reduces the speed and turbidity of surface runoff resulting in cleaner water entering the wetland or riparian resource. Can be used in wetland construction.

644 Wildlife Wetland Habitat Management

Retaining, creating, or managing wetland habitat for wildlife to keep, make, or improve habitat for waterfowl, furbearers, or other wildlife.

Application: Wetland management and/or enhancement. Also, applies to wetland areas associated with rivers and streams.

645 Wildlife Upland Habitat Management

Creating, maintaining, or enhancing areas, including wetlands, for food and cover for upland wildlife.

Application: Often applies to areas adjacent to wetlands managed as a filter strip while also providing food, cover, and nesting habitat for wildlife. Areas adjacent to flooded wetland basins (playas) are one example.

657 Wetland Restoration, Enhancement, or Creation

Rehabilitation of a degraded wetland or an area that was previously a wetland (restoration); improvement, maintenance, and management of existing wetlands (enhancement); or conversion of a non-wetland area into a wetland area (creation). Standards and specifications are being developed for Kansas.

Application: May be used for erosion control, flood storage, flood conveyance, habitat for threatened and endangered species, sediment control, water quality improvement, and wildlife habitat.

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B.1 Wetland Restoration on CRP

Restoration of drained or partially-drained wetlands on CRP lands, normally for the period of the contract unless a longer agreement can be obtained.

Application: Re-establishment of wetlands on CRP lands.

B.2 Wetland Restoration not on CRP

Restoration of drained or partially-drained wetlands on private lands other than CRP, with contract periods ranging from one year to perpetuity.

Application: Re-establishment of wetlands on non-CRP lands.

B.3 Wetland Creation

Artificial creation of ponded water via construction of stock dams, wildlife ponds, and excavation basins.

Application: Creating artificial wetlands.

EPA - SUMMARY OF STATE MANUALS OF FORESTRY BEST MANAGEMENT PRACTICES

AR Streamside Management Zones (SMZ's)

Delineated zones located along streams to protect water quality and stream characteristics. Widths may vary depending on the slope of the land, soil type, vegetative cover, flow, and stream classification.

Application: Riparian area enhancement and protection.

MISCELLANEOUS SOURCES

Fredrickson Green-Tree Reservoir Management

Managing water levels in natural or impounded pools where the predominant vegetation is live trees. Usually restricted to flooding during dormant seasons to provide mast and invertebrates for waterfowl. Timing of water application is critical to maintaining the health of tree stands.

Application: Specific management for living tree reservoirs, usually associated with waterfowl management.

Fredrickson Moist-Soil Management

Techniques to create exposed, saturated soils for the establishment of annual plant species (e.g., barnyard grass and smartweed) for waterfowl foods and shore bird foraging areas. Managed to create water conditions appropriate for different times of the year.

Application: Useful in providing natural foods for waterfowl and shore birds.

MDOC Riffle Structure

Rock structure constructed in stream channels to stabilize and protect stream beds and provide water level control. Also used to stabilize and protect stream-banks and to reduce sediment loads causing downstream habitat damage and nonpoint pollution, and to improve the stream for recreation and fish and wildlife habitat.

Application: Most common where stream has had gradient increased due to channel straightening. Used to reduce gradient of such a channel prior to attempting to protect the bank from further erosion. Also, useful in developing fish habitat.

MDOC Cut-Willow Plantings for Stream Bank Stabilization

Cut-willow plantings placed directly into eroding stream banks to provide stabilization and reduction of sedimentation. Size of cuttings vary depending on the stream and severity of the erosion.

Application: Stream bank stabilization and riparian enhancement.

MDOC Tree Revetments For Streambank Stabilization

Tree revetments located in the outside bends of rivers and streams to stop bank erosion. Cut cedar trees anchored into the bank allow sediments to deposit behind the revetment and natural re-vegetation holds the bank in place.

Application: Stream bank stabilization, sediment reduction, and riparian enhancement

OTHER MANAGEMENT PRACTICES THAT MAY APPLY TO WETLAND AND RIPARIAN AREA RESTORATION AND MANAGEMENT

SCS FIELD OFFICE TECHNICAL GUIDE - KANSAS

- 314 Brush Management**
Managing and manipulating stands of brush on rangeland, pastureland, and recreation and wildlife areas by mechanical, chemical, or biological means or by prescribed burning.
- 338 Prescribed Burning**
Using fire under conditions where the area to be burned is predetermined and the timing and intensity of the fire controlled. Used to control undesirable vegetation, reduce fire hazard, improve or maintain wildlife habitat, and improve or maintain forage quality and production.
- 349 Dam, Multi-Purpose**
A dam constructed across a stream or a natural watercourse that has a designed reservoir storage capacity for two or more purposes, such as flood-water retardation and irrigation water supply, municipal water supply, and recreation.
- 350 Sediment Basin**
A basin constructed to collect and store debris sediment to preserve the capacity of reservoirs, tailwater pits, ditches, canals, diversions, waterways, and streams.
- 402 Dam, Floodwater Retarding**
A single-purpose dam designed for temporary storage of floodwater and for its controlled release.
- 490 Woodland Site Preparation**
Treating areas to encourage natural seeding of desirable trees or to permit reforestation by planting or direct seeding.
- 512 Pasture and Hayland Planting**
Establishing and reestablishing long-term stands of adapted species of perennial, biennial, or reseeding forage plants to reduce erosion, produce high-quality forage, and to adjust land use.
- 533 Pumping Plant for Water Control**
A pumping facility installed to transfer water for a conservation need, including removing excess surface or ground water; filling ponds, ditches or wetlands; or pumping from wells, ponds, streams, and other sources.
- 543 Land Reconstruction, Abandoned Mined Land**
Restoring land and water areas adversely affected by past mining practices and increasing the productivity of the areas for a beneficial use.

- 554 Regulating Water in Drainage Systems**
Controlling the removal of surface or subsurface runoff, primarily through the operation of water-control structures.
- 556 Planned Grazing System**
A system in which two or more grazing units are rested from grazing in a planned sequence throughout the year or during the growing season of the key plants to improve efficiency of grazing, protect soil, and improve or maintain the habitat for wildlife.
- 561 Heavy Use Area Protection**
Protecting heavily used areas by establishing vegetative cover, by surfacing with suitable materials, or by installing needed structures with the intent of stabilizing urban, recreation, or facility areas frequently and intensely used by people, animals, or vehicles.
- 570 Runoff Management System**
A system for controlling excess runoff caused by construction operations at development sites, changes in land use, or other land disturbances.
- 574 Spring Development**
Improving springs and seeps by excavating, cleaning, capping, or providing collection and storage facilities to improve the distribution of water or to increase the quantity of water for livestock or wildlife.
- 587 Structure for Water Control**
A structure in an irrigation, drainage, or other water management systems that conveys water, controls the direction or rate of flow, or maintains a desired water surface elevation (SCS National Handbook).
- 614 Trough or Tank**
A trough or tank, with needed devices for water control and waste water disposal, installed to provide drinking water for livestock.
- 636 Water Harvesting Catchment**
A facility for collecting and storing precipitation for future use.
- 648 Wildlife Watering Facility**
Constructing, improving, or modifying watering places to provide drinking water for wildlife.
- 652 Woodland Direct Seeding**
Planting tree seed by hand or machine to establish a stand of trees to conserve soil, moisture, produce wood crops, and provide other benefits.
- 654 Woodland Improved Harvesting**
Removing mature crop trees in a manner that will encourage regeneration and normal development of a new stand.
- 666 Woodland Improvement**
Improving woodland by removing unmerchantable or unwanted trees, shrubs, or vines.

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- B.4 Wetland Manipulation/Management for Cropland**
Installation of water control structures to manipulate water levels in drained, partially-drained, or created wetlands rather than simply restoring them. Structures are used to retain spring runoff, followed by a drawdown on a certain date determined in the individual agreement.
- B.5 Wetland Manipulation/Management for Hayland**
Installation of water control structures to manipulate water levels in drained, partly-drained, or created wetlands rather than simply restoring them. Provides wetland values and increased forage production for the cooperator.
- D.2 Island Creation**
Small islands created to provide secure nesting cover for waterfowl and other wildlife. Islands are generally built in large, shallow wetlands that have a good wetland complex nearby.

EPA - SUMMARY OF STATE MANUALS OF FORESTRY BEST MANAGEMENT PRACTICES

- KY Filter Strips**
Established between water bodies and areas of disturbance, such as roads, skid trails, landings, and site prepared areas to reduce soil erosion and sedimentation.
- CT Post-Harvesting Considerations**
Stabilization of skid trails and landings upon completion of harvesting operations, and removal of any temporary structures placed in water courses.
- ME Protection of Streams and Water Bodies from Temperature Increase**
Areas of vegetation designed to remain undisturbed during harvesting to ensure canopy shading of stream and filtration of runoff.
- KY Protection from Livestock**
Use of a fence or barrier to protect eroded, newly planted, or rundown areas and areas planted for wildlife food and cover from livestock grazing.
- KY Reforestation**
Planting trees for erosion control and watershed protection in addition to producing future wood crops. May include establishment of herbaceous cover to control erosion until trees are established (5-10 years).

- CT Revegetation**
Seeding of disturbed areas to establish grass and/or legume vegetation within the first 15 days of the next seeding season after construction or close of timber harvesting,
- CT Site Planning**
Planning prior to the start of timber harvesting operations to avoid steep slopes, springs, wetlands, poor drainage areas, rock outcrops, and other obstacles. Includes elimination of environmentally-sensitive areas from timber harvest.
- ME Slash Management**
Management of harvesting activities to avoid slash disposal in water bodies and to utilize slash for erosion control.
- AK Stream Crossing**
Pre-planning road sites to limit the number of stream crossings. When stream crossings are unavoidable, cross perpendicular to the stream.
- LA Timber Harvesting**
Planning and conducting harvesting operations to minimize soil compaction, erosion, and sedimentation.

MISCELLANEOUS SOURCES

- Hammer Constructed Wetlands for Waste Management**
Construction of wetlands designed specifically for managing liquid and solid waste, including runoff from concentrated waste areas in a manner that does not degrade air, soil, or water resources while providing other wetland characteristics and benefits.

REFERENCES

- SCS Field Office Technical Guide (FOTG) - Kansas**
Soil Conservation Service, U.S. Department of Agriculture, (1990)
The SCS Field Office Technical Guide is available in all counties of Kansas at the County Conservation District office. Practices listed in this BMP manual may not be specifically designated as wetland or riparian practices in the FOTG, however, with appropriate application, they may be used to develop or enhance wetland/riparian areas.
Address: Soil Conservation Service, 760 S. Broadway, Salina, Kansas 67401
- Partners for Wildlife, North Dakota Wildlife Extension Program Procedures Manual.**
U.S. Fish and Wildlife Service, U.S. Department of Interior, (1991)
This is the manual used in the USFWS Partners for Wildlife Program. It offers descriptions of practices and incentive payment information for wetland habitat improvement on private lands.
Address: USFWS, North Dakota Wetland Habitat Office, 1500 Capitol Ave. Bismarck, North Dakota 58501.
- Summary of State Manuals of Forestry Best Management Practices**
U.S. Environmental Protection Agency, (1992)
This product of EPA is a summary of 39 BMP manuals and/or state regulations. It is intended to provide general information on forestry BMPs used by each state to prevent detrimental impacts on water quality.
Address: Nonpoint Source Control Branch; Office of Wetlands, Oceans, and Watersheds; U.S. Environmental Protection Agency, Washington, DC. 20460
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