**NATURAL RESOURCES CONSERVATION SERVICE**

**CONSERVATION PRACTICE STANDARD**

# WETLAND ENHANCEMENT

## Texas Supplement

**(acre)**

**CODE 659**

### PREFACE

It is important to review statements in the Practice Standard regarding when this practice applies. Wetland Enhancement (code 659) is to be used when the purpose of the practice is to target one particular wetland function and elevate this function to levels in excess of its natural or historic level. The wetland may be in degraded condition, but if the intent is to exceed the historic levels of any wetland function, then the practice of Wetland Enhancement should be used rather than Wetland Restoration. In doing so, it is understood that other wetland functions will be impacted, often negatively.

For example, a common use of this practice is for the construction of a shallow-water impoundment for use by migratory waterfowl, and more specifically dabbling ducks. A shallow-water impoundment might be planned in an area currently in native herbaceous vegetation that is, or was historically, only subject to short-term but frequent flooding. This practice would increase the use of the area for dabbling ducks, but habitat for other wildlife species such as swamp rabbits, turkey, deer, small rodents, species associated with mud flats, and many song birds might be reduced.

Furthermore, after construction and flooding of the site, the capability of the area for removal of nitrogen would be impaired but the sequestration of phosphorus would be increased. Floodwater storage, during winter and early spring, would be reduced. Detailed conservation planning is important. The purpose of the impoundment may be to capture and hold floodwaters during the fall and winter but dewater in the spring. Follow-up and evaluation by NRCS staffs are critical to meeting the planned objectives. Careful considerations of all functions, as well as review of the NRCS wetland policy, should be made, prior to implementing the practice of wetland enhancement.

### FUNCTIONS AND VALUES

Floodwater Conveyance: Wetlands in floodplains often provide an essential function of providing “space” for floodwater flow and well as slowing floodwater velocities. Depending on the watershed, both functions might be equally important. Manning’s roughness coefficient is the recommended assessment technique to measure impacts to this function. The NRCS field office staffs are referred to the engineering manual, while non-NRCS users are referred to Arcement and Schneider (1989).

Water Storage: Wetlands often provide short to long term storage of water following storm events. This storage might be within the floodplain or high on the landscape such as depressions or flats. Typically wetlands function to store water only temporarily and are, therefore, very effective floodwater storage systems. Construction of waterfowl impoundments under this practice, particularly within a floodplain, can significantly reduce the capability of a wetland to function as an effective water storage area.

Sediment Storage: Wetlands are very effective sediment traps because of the dense vegetation

and very slow water velocities. For impoundments constructed within some watersheds, sedimentation rates can be so high that within a short period of time the site looses much of its capability to serve other functions such as floodwater storage or nutrient cycling.

Wildlife: Refer to Wetland Wildlife Habitat Management Texas Supplement (code 644).

Plant Communities: Wetlands are often very productive ecosystems. Bottomland hardwood systems are some of the more productive forested systems in the world. While coastal marshes are some of the most productive grasslands systems. Wetlands often support unique plant communities and provide essential landscape diversity such as playa lakes of the Southern High Plains and depressions common to the Gulf Coast Prairie.

Nutrient Cycling and Sequestration: Because wetlands often produce large volumes of plant biomass, the potential for nutrient cycling is high. Wetlands are particularly effective at reducing levels of nitrogen in water. Unlike nitrogen, phosphorous can not be exported from a wetland in gaseous state. However, due to the typically high levels of soil organic matter and fine soil particles (clay), wetlands can sequester large volumes of phosphorus.

Carbon Sequestration: Wetlands typically are very effective ecosystems regarding carbon sequestration. Bottomland hardwoods, for example produces (therefore stores) more plant biomass than droughty pine sites, Coastal marshes typically produce more biomass than adjoining pastures or cropland fields. But of more importance than total plant production is the amount of carbon which is retained in a wetland soil as muck, peat, or fine organic matter. Due to small amounts oxygen in wetland soils, decomposition of plant material is reduced and carbon based compounds are stored for long periods of time than upland systems.

**WETLAND TYPES**

Many efforts have been used to attempt to classify wetlands into different systems or types. One of the first efforts was Circular 39 *Wetlands of the United States, Their Extent and Their Value To Waterfowl and Other* Wildlife, by Shaw and Fredine, 1956. The Classification of Wetland and Deepwater Habitats of the United States, by Lewis Cowardin et. al., 1979 has generally replaced this work. The newest method, Hydrogeomorphic Classification for Wetlands, Brinson et. al. 1993 is slowly replacing the Cowardin system.

Regardless of the system used, caution should be exercised when implementing wetland enhancement practices that result in a change in a wetland type. The potential for negative impacts to other wetland functions increase dramatically when a change in wetland type is planned. These changes in type, also effect US Army Corps of Engineers, Section 404 permitting requirements as well as NRCS Wetland Policy.

**POLICY AND PERMITS**

Executive Order 11990 (1977): Directed Federal Agencies to minimize adverse impacts to wetlands where there is a practical alternative.

Wetland Provisions of the 1985 Food Security Act (Farm Bill) and subsequent bills (1990 and 1996): Prohibits participation in USDA programs by individuals who convert wetlands for the purpose or intent to increase agricultural production.

USDA NRCS Protection of Wetlands, Final Rule (FR Nov. 17, 1997, No 221, page 61215-61217): Directs NRCS employees to conduct an environmental evaluation to identify whether practicable alternatives exist that will maintain or improve wetland functions and values, or avoid or minimize the harm to wetlands. If not, mitigation of lost functions are required prior to continuing to provide assistance.

Section 404, Clean Water Act (1972) and subsequent legal decisions: Require that an individual must obtain a permit prior to placing any fill in waters of the US, including wetlands. Many wetland enhancement efforts involve placement of fill (dikes, levees, or water control structures) in wetlands. Nationwide Permit #27 Stream and Wetland Restoration Activities, is granted to all individuals working with NRCS on wetland “restoration” projects and those wetland “enhancement” projects where there is not a

change in wetland type. Projects, which will result in a change in wetland type, may require an individual Section 404 permit prior to construction. Some restrictions and limitations apply to NW Permit 27, and users are cautioned to read the entire permit (FR Vol. 65, NO 47/Thursday, March 9, 2000/Notices pages 128812889) prior to construction.

Texas Water Rights Permit: Texas Natural Resources Conservation Commission requires a permit prior to utilizing state waters (streams, creeks, bayous, lakes, etc.) for any purpose other than domestic use. Those that plan on using any wetland enhancement project for commercial hunting ventures should consult this permit.

National Environmental Policy Act (NEPA) and Subsequent Guidance: Requires that NRCS employees conduct environmental evaluations to document impacts to cultural resources, wetlands, and floodplains. Particular caution should be exercised when planning levees, dams, or dikes within the 100-year floodplain. Consultation with TNRCC and FEMA is advised if construction is planned within the 100-year floodplain and the impacts are potentially significant. According to TNRCC rules, for smaller impacts, consultation with the local Soil and Water Conservation District is sufficient.

**REFERENCES**

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**APPROVAL**

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Date