**UNITED STATES DEPARTMENT OF AGRICULTURE**
**NATURAL RESOURCES CONSERVATION SERVICE**

**CONSERVATION PRACTICE STANDARD**

# SHALLOW WATER DEVELOPMENT AND MANAGEMENT

**(Acre)**

**Code 646**

## DEFINITION

The inundation of lands to provide habitat for fish and/or wildlife.

## PURPOSE

To provide habitat for wildlife such as shorebirds, waterfowl, wading birds, mammals, fish, reptiles, amphibians and other species that require shallow water for at least a part of their life cycle.

## CONDITIONS WHERE PRACTICE APPLIES

On lands where water can be impounded or regulated by diking, excavating, ditching, and/or flooding.

On floodplain areas that provide refuge habitats for native fish during high flow periods.

This practice does not apply to following Alabama NRCS conservation practice standards (CPS):

- Wildlife Watering Facility - Code 48 intended to provide watering places for wildlife;
- Wetland Restoration – Code 657 intended to rehabilitate a degraded wetland where the soils, hydrology, vegetation community, and biological habitat are returned to a close approximation of the original conditions;
- Wetland Enhancement – Code 659 intended for modification of an existing wetland where specific attributes are targeted by management objectives, possibly at the expense of other attributes, or the rehabilitation of a degraded wetland where the result is a wetland that is different than what previously existed on the site;
- Wetland Construction – Code 656 intended to treat point and non-point sources of water pollution;
- Wetland Creation – Code 658 for creating a wetland on a site which historically was not a wetland; or
- Fish Pond Management - Code 399.

## CRITERIA

- Soils should have low permeability to inhibit subsurface drainage and allow for maintenance of proper water levels.
- Shallow water impoundments require an adequate water supply for reflooding and a water control structure for removing water when necessary. Winter and spring rainwater may need to be retained if late summer/fall migratory shorebird habitat is to be provided.
- Landowner shall obtain all local, state, and federal permits necessary.

Site must be free of hazardous materials.

Water supply for flooding the area during periods of planned inundation must be adequate.

An adequate method for dewatering is required when water levels must be artificially lowered in order to produce desired habitat condition.

> Water levels must be able to be maintained between 1 to 18 inches in depth over the majority of the area during periods of planned inundation.

Where active habitat management is planned (such as disking or water level management) a point of access will be planned and developed to facilitate management activity.

Invasive plant species and federally/state listed noxious and nuisance species shall be controlled on the site.

Existing drainage systems shall be utilized, removed or modified as needed to achieve the intended purpose.

***Criteria for Waterfowl Habitat***

Areas planned to provide waterfowl feeding and resting habitat shall be designed to facilitate gradual flooding of areas containing food plants to an average depth of 6 to 18 inches.

Areas containing food plants shall be flooded during seasonal periods of waterfowl use.

***Criteria for Shorebird Habitat***

Areas planned to provide shorebird habitat shall have exposed mudflats and areas with 1 to 4 inches of water during seasonal periods of shorebird use. To provide habitat for migratory shorebirds, water should be removed beginning August 15th at the rate of 2 to 3 inches per week through November 30th.

***Criteria for Amphibian Habitat***

Inundation shall be planned to last throughout the local breeding period of at least one endemic amphibian species.

Surrounding upland habitat shall be of sufficient quality and quantity to support the complete life-cycle requirements of at least one endemic amphibian species.

Structures shall be designed to prevent fish access to areas planned for amphibian breeding habitat.

***The following AL NRCS CPSs will be used as appropriate:***

***Dike – Code 356***
***Pumping Plant for Water Control – Code 533***
***Structure for Water Control – Code 587***

***Refer to National Engineering Field Handbook, Part 650, Chapter 6, Structures for additional design information. Existing drainage systems will be utilized, removed, or modified as needed to achieve the intended purpose.***

**CONSIDERATIONS**

Consider the effects of the timing of the flooding and drawdown, as well as the type of drawdown, on plant species composition (moist soil areas).

Consider the species flooding tolerances and the composition of seed in the soil at the site (moist soil areas).

Consider effects on wetlands or wildlife habitats that would be associated with the practice.

Consider the effects of residual herbicides (moist soil areas).

Consider the targeted plant species' tolerances with respect to timing and type of drawdown.

Water volume, rates of runoff, infiltration, evaporation and transpiration will affect performance of the practice.

Nearly level sites will allow for larger units while keeping planned water depths within the optimum range over most of the unit.

Where impoundments are developed, shorelines with irregular shapes and varying side slopes from 9:1 to 20:1 along water surface margins may increase habitat diversity.

Nutrient and pesticide residues may affect plant species composition and the site's capability to grow desirable plants.

Consider effects on movement of dissolved substances to groundwater and to downstream surface waters.

Consider effects on downstream flows that would affect other water uses or users.

Consider disease vectors such as mosquitoes.

The practice may function as a link in a habitat corridor that aids the site's use and colonization by wetland flora and fauna.

The composition and extent of surrounding upland vegetation may influence this practice's habitat functions.

Installation of vegetated buffers on surrounding uplands may improve water quality in the shallow water area.

The practice may raise downstream water temperature, causing detrimental impacts to associated aquatic and terrestrial communities.

Soil disturbance may increase the probability of invasion by unwanted plant species.

Added water depth and duration may be used as a method to control unwanted vegetation.

Biological control of undesirable plant species and pests (e.g., using predator or parasitic species) may be the least damaging alternative for pest control.

Human and livestock activities in and surrounding the practice may disturb wildlife, thereby decreasing habitat suitability and function. Vegetative screens,

fences, or gates are means of reducing unwanted disturbance.

**PLANS AND SPECIFICATIONS**

Plans and Specifications for installing structures for water control shall be in keeping with this standard and shall prescribe the requirements for applying the practice to achieve its intended purpose.

Specifications shall be recorded using approved specifications sheets, job sheets, narrative documentation in the conservation plan or other acceptable documentation. Specifications shall be reviewed and approved by a person with appropriate training in the design and implementation of shallow water areas to benefit fish and wildlife.

**OPERATION AND MAINTENANCE**

The following actions shall be carried out to ensure that this practice functions as intended throughout its expected life. These actions include normal repetitive activities in the application and use of the practice (operation), and repair and upkeep of the practice (maintenance).

Waterfowl and shorebird feeding and resting areas that can be hydrologically controlled or have natural dry periods should be burned, disked, or surface disturbed every three to five years to set back succession and control the growth of undesirable plants. Such burning, disking, or surface disturbance shall be scheduled to encourage desirable habitat plants.

Any use of fertilizers, mechanical treatments, prescribed burning, pesticides and other chemicals shall not compromise the capability of the practice to provide habitat for the target species.

Operation and maintenance shall include monitoring and management of structural components and habitat quality provided.

**REFERENCES**

Helmers, Doug. 1992. Shorebird Management Manual. Western Hemisphere Shorebird Reserve Network, Manomet, MA 58 pp.

Kingsbury, Bruce & Joanne Gibson, 2002. Habitat Management Guidelines for Amphibians and Reptiles of the Midwest. Partners in Amphibian & Reptile Conservation, Fort Wayne, Indiana, 57 pp.

Smith, Loren M. and Roger L. Pederson. 1989. Habitat management for migrating and wintering waterfowl in North America. Texas Tech University Press, 574 pp.

Alabama NRCS Conservation Practice Standards:

Dike – Code 356, Construction Specification
Pumping Plant for Water Control – Code 533
Structure for Water Control – Code 587
Wetland Restoration – Code 657
Wetland Enhancement – Code 659
Wetland Creation – Code 658

National Engineering Field Handbook, Part 650, Chapter 6, Structures.