

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD**

**STRUCTURE FOR WATER CONTROL**

(No.)  
CODE 587

**DEFINITION**

A structure in a water management system that conveys water, controls the direction or rate of flow, maintains a desired water surface elevation or measures water.

**PURPOSE**

The practice may be applied as a management component of a water management system to control the stage, discharge, distribution, delivery or direction of water flow.

**CONDITIONS WHERE PRACTICE APPLIES**

This practice applies wherever a permanent structure is needed as an integral part of a water-control system to serve one or more of the following functions:

- Convey water from one elevation to a lower elevation within, to or from a water conveyance system such as a ditch, channel, canal or pipeline designed to operate under open channel conditions. Typical structures: drops, chutes, turnouts, surface water inlets, head gates, pump boxes and stilling basins.
- Control the elevation of water in drainage or irrigation ditches. Typical structures: checks, flashboard risers and check dams.
- Control the division or measurement of irrigation water. Typical structures: division boxes and water measurement devices.
- Keep trash, debris or weed seeds from entering pipelines. Typical structure: debris screen.
- Control the direction of channel flow resulting from tides and high water or back-flow from flooding. Typical

structures: tide and water management gates.

- Control the water table level, remove surface or subsurface water from adjoining land, flood land for frost protection or manage water levels for wildlife or recreation. Typical structures: water level control structures, flashboard risers, pipe drop inlets and box inlets.
- Convey water over, under or along a ditch, canal, road, railroad or other barriers. Typical structures: bridges, culverts, flumes, inverted siphons and long span pipes.
- Modify water flow to provide habitat for fish, wildlife and other aquatic animals. Typical structures: chutes, cold water release structures and flashboard risers.
- Provide silt management in ditches or canals. Typical structure: sluice.
- Supplement a resource management system on land where organic waste or commercial fertilizer is applied.
- Create, restore or enhance wetland hydrology.

**CRITERIA**

**General Criteria Applicable to All Purposes**

This practice must conform to all federal, state, and local laws and regulations. Laws and regulations of particular concern include those involving water rights, land use, pollution control, property easements, wetlands, preservation of cultural resources, and endangered species.

The criteria for the design of components not addressed in NRCS practice standards shall be consistent with sound engineering principles.

**Site selection.** The location will be such that the structure will give the desired protection or otherwise serve the purpose for which it is being designed. When the structure is a part of a wildlife habitat development, the site location will be determined by the topography of the area and the wildlife habitat requirements.

Necessary foundation investigations shall be made as a part of site selection. The extent of these investigations will depend on the size and importance of the structure, the geology of the area, and the findings during preliminary investigation. The foundation material shall have the required supporting strength, adequate resistance to sliding and piping, and should be reasonably homogeneous so as to prevent differential or uneven settlement of the structure.

**Capacity.** Structures shall have the capacity required to carry the design flow safely, control erosion where this may be one of its purposes, remain stable, and maintain the upstream water surface within the allowable limits.

**Structure design.** Structures shall not be installed that have an adverse effect on septic filter fields.

The water level upstream of water control structures shall not be raised on adjacent landowners without their written permission and/or easement.

If watercourse fisheries are important, special precautions or design features may be needed to facilitate continuation of fish migrations.

Water control structures that impound water shall be evaluated for floatation and seepage.

Water control structures endangered by over topping shall be designed as "island type" structures. The fill height shall be adequate to pass flows around the structure for the accepted level of risk (i.e. frequency of storm, maximum canal capacity, etc.)

**Materials.** Material selection shall be based on the service life of the structure, the pH and salinity of the soil, and the quality of the water to be controlled.

**Protective cover/vegetation.** Vegetation complying with Critical Area Planting standard (code 342) shall be established on all disturbed earth surfaces. Where soil, climate

or site specific conditions preclude establishing permanent vegetation, other protective means such as mulches or gravels, shall be used.

The structure shall be fenced, if necessary, to protect the vegetation.

## CONSIDERATIONS

When planning, designing, and installing this practice, the following items should be considered:

- Effects on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, deep percolation and ground water recharge.
- Potential for a change in the rate of plant growth and transpiration because of changes in the volume of soil water.
- Effects on downstream flows or aquifers that would affect other water uses or users.
- Effects on the field water table to ensure that it will provide a suitable rooting depth for the anticipated crop.
- Potential use for irrigation management to conserve water.
- Effect of construction on aquatic life.
- Effects on stream system channel morphology and stability as it relates to erosion and the movement of sediment, solutes and sediment-attached substances carried by runoff.
- Effects on the movement of dissolved substances below the root zone and to ground water.
- Effects of field water table on salt content in the root zone.
- Short term and construction-related effects of this practice on the quality of downstream water.
- Effects of water level control on the temperatures of downstream waters and their effects on aquatic and wildlife communities.
- Effects on wetlands or water-related wildlife habitats.

- Effects on the turbidity of downstream water resources.
- Existence of cultural resources in the project area and any project impacts on such resources.
- Conservation and stabilization of archeological, historic, structural and traditional cultural properties when appropriate.

Design alternatives presented to the client should address economics, ecological concerns and acceptable level of risk for design criteria as it relates to hazards to life or property.

### **PLANS AND SPECIFICATIONS**

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

The plan shall specify the location, grades, quantities, dimensions, materials, and hydraulic and structural requirements for the individual structure. Provisions must be made for necessary maintenance. Care must be used to protect the surrounding visual resources. If watercourse fisheries are important, special precautions or design features may be needed to facilitate continuation of fish migrations.

### **OPERATION AND MAINTENANCE**

An operation and management plan shall be provided to and reviewed with the land manager. The plan shall be site specific and include but not be limited to the following: Structures will be checked and necessary maintenance, including removal of debris, shall be performed after major storms and at least semi-annually. Water level management and timing shall be adequately described wherever applicable.