

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD
DRAINAGE WATER MANAGEMENT

(Acre)

Code 554

DEFINITION

Control of water surface elevations and discharge from surface and subsurface drainage systems.

PURPOSES

The purposes of this practice are to:

- Improve water quality.
- Improve the soil environment for vegetative growth.
- Reduce the rate of oxidation of organic soils.
- Prevent wind erosion.
- Enable seasonal shallow flooding.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies where:

- The topography is relatively smooth, uniform, and flat to gently sloping.
- A water table may be maintained without excessive seepage and without having an adverse impact on adjoining properties.
- The field has a subsurface drainage system.

CRITERIA

General Criteria Applicable To All Purposes

The system shall be designed to remove the water required for adequate drainage. The rate of outflow and the level of the water table shall be controlled by structures or pumps.

Structures and pumps shall be located where they are accessible and subject to convenient control. Designs of critical components shall be in accordance with pertinent Natural Resources Conservation Service (NRCS) Field Office Technical Guide (FOTG) Practice Standards.

Water level control structure(s) shall be sized to provide adequate drainage flow and not to restrict drainage capacity.

For subsurface systems, there shall be at least 10 feet of solid drainage pipe installed with an anti-seep collar and connected to the control structure.

This practice shall comply with all Federal, State, and Local laws and regulations.

Additional Criteria To Improve Water Quality

The system shall prevent automatic discharge of storm water during minor rainfall events. The controlled discharge of excess water shall account for water not otherwise removed by evapotranspiration and seepage. The uniformity of storm water draw down shall be improved

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throughout the areas influenced by the designed system. The distance the water must travel in surface ditches before it reaches the main discharge point shall be maximized when practical.

Additional Criteria To Improve Soil Environment For Vegetative Growth

The combined capacity of the surface and subsurface facilities shall satisfy the appropriate drainage coefficient for the crops to be grown. The water table shall be held between predetermined elevations at all points in the design area when the system is being used for sub-irrigation.

Additional Criteria To Reduce The Rate Of Oxidation Of Organic Soils

Drainage beyond that necessary to provide an adequate root zone for a crop shall be kept to a minimum. When practicable, the water table shall be raised to the surface, or to a designated maximum elevation, for a sufficient time to return the saturated zone to anaerobic conditions.

Additional Criteria To Prevent Wind Erosion

The system shall provide sufficient moisture to the soil surface, either by ponding or capillary action, to prevent wind erosion when there is insufficient organic residue or plant material on the surface.

Additional Criteria To Enable Seasonal Soil Saturation Or Shallow Flooding

The system shall provide saturation to the surface or shallow flooding for a sufficient time to accomplish the desired pest control, provide wildlife habitat, or reduce the rate of oxidation of organic soils.

When shallow flooding for wildlife habitat is the primary purpose, NRCS FOTG Standard 646 *Shallow Water Management for Wildlife* shall be followed.

CONSIDERATIONS

The management of field water table elevations and drainage discharges from subsurface drainage systems should be performed to maximize crop yield and minimize water quality impacts.

Raising the water table during the growing season will generally increase evapotranspiration and may increase crop yield. Care must be practiced to maintain sufficient aerated crop root zone so as not to damage the crop.

The effect of managing the drainage system on adjacent fields should be evaluated. The installation and operation of a water level control structure should not impact adjacent fields or drainage systems.

The management system should be planned to prevent excessive maintenance and operation problems.

Consideration of the outflow water should be controlled to prevent erosion and sedimentation damage to downstream areas.

Movement of dissolved chemicals and nitrates should be considered in selecting disposal methods to prevent environmental damage.

The effect of drainage systems on wetlands should be evaluated.

PLANS AND SPECIFICATIONS

Plans and specifications shall be prepared in accordance with the criteria of this standard as necessary and shall describe the requirements for applying the practice to achieve its intended use or uses.

OPERATION AND MAINTENANCE

An operation and maintenance (O&M) plan shall be developed. The O&M plan will identify the intended purpose or purposes of this practice. The O&M plan will also identify critical dates and target elevations of the water level necessary to accomplish the intended purpose or purposes.

The O&M plan shall include the operation and maintenance of critical components of the infrastructure used to manage the drainage way.

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