

NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD

**HILLSIDE DITCH**

(feet)

**CODE 423**

**DEFINITION**

A channel that has a supporting ridge on the lower side constructed across the slope at defined vertical interval and gradient, with or without a vegetative barrier.

**Scope**

This standard applies to the planning and design of hillside ditched on steep land.

**PURPOSE**

To safely control the flow of water by diverting runoff into a protected outlet, thus minimizing erosion and runoff.

**CONDITIONS WHERE PRACTICE APPLIES**

This practice applies to sloping sites where surface flow is damaging sloping upland, and there is sufficient soil depth for constructing a hillside ditch system.

**CRITERIA**

**Location**

Hillside ditch systems shall be designed to fit land conditions including soil texture and field slope. They shall drain from the ridge to a stable outlet.

**Outlets**

Adequate outlets with enough capacity to dispose of discharge water without creating an erosion hazard shall be provided before beginning construction. Such outlets may be a natural or constructed waterway, a stable watercourse, or a stable disposal area, such as well-established pasture. Criteria for a grassed waterway shall be that in Conservation Practice Standard 412 - Grassed Waterway.

**Length**

Maximum length draining in one direction should be 400 feet. This length may be extended if necessary to reach a stable outlet. In no case shall the maximum length exceed 500 feet.

**Grade**

The ditch grade may be either constant or variable but must not exceed 3 percent.

**Permissible velocities**

Velocity in the channel shall be compatible with the soil and shall not exceed the limits in EFH Part 650, Chapter 14, Table 14-3.

**Horizontal spacing and cross-section area**

The maximum horizontal spacing and minimum cross-sectional area per 100 ft of ditch shall be as specified in Table 1.

**Table 1**

Average Slope (percent)	Maximum Spacing (feet)	Minimum cross-sectional area per 100-ft length (square feet)
12 or less	40	0.35
12-25	35	.3
25-40	25	.2

Establishment of vegetative barriers will be required in areas where average slopes exceed 25%. Follow guidance of vegetative barrier installation found in Conservation Practice Standard 601 - Vegetative Barrier.

**CONSIDERATIONS**

When planning this practice, consider the following as applicable:

**Cultural Resources Considerations**

NRCS's objective is to avoid any effect to cultural resources and protect them in their original location. Determine if installation of this practice will have any effect on any cultural resources.

Document any specific considerations for cultural resources in the design docket and the Practice Requirements worksheet.

GM 420, Part 401, the California Environmental Handbook and the California Environmental Assessment Worksheet provide guidance on how the NRCS must account for cultural resources. The Field Office Technical Guide, Section II contains general information, with Web sites for additional information.

### **Endangered Species Considerations**

Determine if installation of this practice, along with any others proposed, will have an effect on any federal or state listed Rare, Threatened or Endangered species or their habitat. NRCS's objective is to benefit these species and others of concern, or at least not have any adverse effect on a listed species. If the Environmental Evaluation indicates that the action may adversely affect a listed species or result in adverse modification of habitat of listed species which has been determined to be critical habitat, NRCS will advise the land user of the requirements of the Endangered Species Act and recommend alternative conservation treatments that avoid the adverse effects. Further assistance will be provided only if the landowner selects one of the alternative conservation treatments for installation; or at the request of the landowners, NRCS may initiate consultation with the U.S. Fish and Wildlife Service, National Marine Fisheries Service and/or California Department of Fish and Game. If the Environmental Evaluation indicates the action will not affect a listed species or result in adverse modification of critical habitat, consultation generally will not apply and usually would not be initiated. Document any special considerations for endangered species in the Practice Requirements Worksheet.

### **Water Quantity**

1. Effects upon components of the water budget, especially effects on volumes and rates of runoff, infiltration, evaporation, transpiration, deep percolation, and ground water recharge.
2. Effects of snowcatch and melt on water budget components.

### **Water Quality**

1. Filtering effects of vegetation on movement of sediment and dissolved and sediment-attached substances.
2. Short-term and construction-related effects of this practice on the quality of downstream water.
3. Potential for development of saline seeps or other salinity problems resulting from increased infiltration in the presence of restrictive layers.
4. Effects on the visual quality of the water resources.
5. Effects on erosion and movement of sediment, pathogens, and soluble and sediment-attached substances by runoff.

### **PLANS AND SPECIFICATIONS**

Plans and specifications for constructing hillside ditches shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.

### **OPERATION AND MAINTENANCE**

An Operation and Maintenance plan shall be prepared for use by the landowner or operator. The plan shall include provisions to address the following, as a minimum:

Maintaining hillside ditch capacity, ridge height and the outlets.

All vegetative growth and/or debris interfering with the proper functioning of the ditch shall be removed as necessary.

All debris interfering with the outlet operation shall be removed as necessary.

Well-established vegetation shall be maintained in the outlet at all times in order to provide stability.

Sediment accumulated after rainfall period in the ditches shall be removed and disposed of properly, as needed, to maintain the required minimum cross section and grade. Repairs should be made as soon as possible.