NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

DAM, MULTIPLE-PURPOSE

(no. and acre-feet)
CODE 349

DEFINITION

A dam constructed across a stream or a natural watercourse that has a designed reservoir storage capacity for two or more purposes, such as floodwater retardation and irrigation water supply, municipal water supply, and recreation.

Scope

This standard applies to dams that have separate storage allocation for two or more purposes. (Sediment storage is not considered a separate purpose except as indicated under sediment basins (350).

PURPOSES

A multiple-purpose dam must provide distinct and specific storage allocations for two or more of the following purposes: (1) floodwater retardation, (2) irrigation, (3) fishing, hunting, boating, swimming, or other recreational uses, (4) improve environment or habitat for fish and wildlife, (5) municipal, (6) industrial, and (7) other uses. (A reservoir for which multiple use is made of the same storage allocation is not a multiple-purpose dam; however, a dam designed for joint-use storage is a multiple-purpose dam.)

CONDITIONS WHERE PRACTICE APPLIES

This practice applies only to sites meeting all the following criteria:

1. Topographic, geologic, hydrologic, and soil conditions at the proposed site are satisfactory for constructing a feasible dam and reservoir.

2. The watershed is protected from erosion to the extent that the sediment yield will not shorten the planned effective life of the reservoir.

3. Water is available from a single or combined source of surface runoff base flow or from subsurface storage in sufficient quantity and adequate quality to satisfy the intended purposes.

CRITERIA

Foundation, embankment, and spillway

All dams designed under this standard shall meet or exceed the foundation, embankment, and spillway criteria called for in NRCS standard for ponds (378) or in TR-60, as appropriate.

Floodwater retarding pool and spillway

Dams having a floodwater retarding purpose shall meet or exceed the requirements of NRCS standard for floodwater retarding dams (402).

Outlet works

Outlet works discharging releases for several purposes shall have adequate capacity to carry the peak flow resulting from the combined demands at any time. Outlet conduits and appurtenances shall be designed according to criteria that are equal to or better that that called for in NRCS standard for ponds (378) or in TR-60, as appropriate.

Storage

The usable storage capacity shall be adequate for all purposes. Seasonal variations in demand and the expected losses from seepage and evaporation must be considered.

Sediment storage

The capacity, in addition to that required for all other purposes, must offset depletion by sediment accumulation for a period equal to the design life.

Type of structures

All dams and appurtenances shall be designed to meet applicable NRCS standards for the specific type and class of structure.

CONSIDERATIONS

Water Quantity

1. Effects on the water budget, especially of longer downstream flow duration, evaporation from the water surface, and infiltration in the bottom and sides of the pool area.

2. Effects of water taken from the reservoir for agricultural, industrial, or municipal use.

Water Quality

1. Effects on the movement of sediments, pathogens, and soluble and sediment-attached substances carried by runoff.

2. Effects of increased downstream bank saturation resulting in longer flow duration on erosion and sediment yield.

3. Potential use of the reservoir for recreation. Factors include increased use of pesticides, human waste, and other pollutants.

4. Effects of sediments pool on temperatures and dissolved oxygen.

5. Effects of location of the outlet structure on downstream water temperatures and dissolved oxygen.

6. Changes in ground water quality caused by increased infiltration of soluble substances.

Endangered Species Considerations

Determine if installation of this practice with any others proposed will have any 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 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 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.

Some species are year-round residents in some streams, such as, freshwater shrimp. Other species, such as steelhead and salmon, utilize streams during various seasons. Be aware that critical periods, such as spawning, eggs in gravels, and rearing of young may preclude activities in the stream that may directly affect the stream habitat during those periods. For example there should be no disturbance of stream gravel beds that may have eggs in them. That could include any equipment in the stream or even walking in the stream or work upstream that may result in sediment depositing in the gravel beds. Document any special considerations for endangered species in the Practice Requirements Worksheet.

PLANS AND SPECIFICATIONS

Plans and specifications for installing multiple-purpose dams 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 must be prepared by the Designer for use by the owner or other responsible for operating this practice. The plan should provide specific instructions for operating and maintaining the system to insure that it functions properly. It should also provide for periodic inspections and prompt repair or replacement of damage components.