

OHIO DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF RECLAMATION

**\*\*POLICY/PROCEDURE DIRECTIVE\*\***

Engineering 89-2

SUBJECT: Impoundment and Sediment Pond Design Methods  
EFFECTIVE: August 1, 1989  
PURPOSE: To clarify impoundment and sediment pond design requirements when computer design applications are not available.

The following minimum design standards for impoundments and sediment ponds are provided as an alternative to computer design applications. These standards are based on current, prudent engineering practices.

1. IMPOUNDMENTS INCLUDING SEDIMENT PONDS - 1501:13-9-04(H)

The following standards may be used in the design of impoundments, including sediment ponds, instead of using a computer program to determine the 6 hr. peak flow or to prove a safety factor of 1.5 through a stability analysis. These standards are for non-MSHA sized impoundments.

A. Stability

1. The embankment's combined upstream and downstream side slopes shall be no steeper than the sum of 5H:1V, with neither slope steeper than 2H:1V (example: if downstream slope is 3H:1V then upstream slope can be no steeper than 2H:1V. The maximum combined slope requirement of 5H:1V refers to the 3H and 2H added together).
2. The minimum top width shall be  $(H+35)/5$ , where H is the embankment height as measured from natural ground at the upstream toe to the top of the embankment.

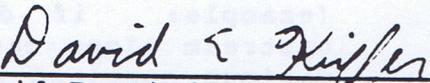
B. Freeboard - There shall be a minimum of one foot of freeboard provided between the design flow depth in the emergency spillway and the dam top after settlement.

C. Emergency Spillway Design Storm Event - The combined principal and emergency spillway system of either a temporary or permanent non-MSHA sized impoundment shall be designed to pass the peak runoff from a 25 year, 24 hour rainfall event.

2. ADDITIONAL STANDARDS FOR SEDIMENT POND ONLY - 1501:13-9-04(G)(3)

The following design standards, adopted from past practices, may be used in lieu of a Sedimot II/SedCad + Computer design. A design that meets the following minimum standards will be considered in compliance with the applicable regulations.

- A. Principal Spillway Design Storm Event - the principle spillway shall be designed to pass the peak runoff from the 10 year, 24 hour precipitation event without discharging through the emergency spillway.
- B. Principal Spillway Freeboard - there shall be a minimum of one foot of freeboard provided between the top of the principle spillway and the crest of the emergency spillway.
- C. Two Separate Spillways - ponds must be provided with a pipe principle spillway and a separate emergency spillway except for excavated ponds where no more than 3' of water is maintained against the embankment.
- D. Sediment Storage - sediment ponds shall be designed to provide 0.1 acre-foot of sediment storage for each acre disturbed. This volume shall be provided below the principle spillway invert.
- E. Pond Cleanout - sediment shall be removed from a sediment pond when the volume of accumulated sediment reaches 60 percent of the required sediment storage volume.

  
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