

Lined Waterway or Outlet

USDA Natural Resources Conservation Service
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WHAT IS A LINED WATERWAY OR OUTLET?

A lined waterway or outlet is a waterway or outlet having an erosion resistant lining of concrete, gabion mattresses, concrete blocks, riprap or other permanent material.

HOW IT HELPS THE LAND

Lined waterways or outlets provide outlets for the safe disposal of runoff from other conservation practices or from natural concentrations of flow without damage by erosion or flooding.

WHERE THE PRACTICE APPLIES

Lined waterways or outlets are used in locations where steep grades, wetness, soils, climatic conditions or other factors preclude using vegetation. Lined waterways or outlets may also be used as outlets for other conservation practices, such as waterways, diversions and terraces.

WHERE TO GET HELP

For assistance in planning, designing and establishing lined waterways or outlets on your farm, contact your local Natural Resources Conservation Service or Conservation District office.

REQUIREMENTS FOR LINED WATERWAYS OR OUTLETS

Lined waterways or outlets are designed to provide for the safe disposal of runoff from other conservation practices or to stabilize the grade in channels.

Lined waterways or outlets are designed to carry peaks from the 10-year frequency, 24 hour duration storm. A combination of both concrete and vegetated earth establish a freeboard to prevent overtopping of the liner.

Lined waterways or outlets have maximum limits of fall depending on type of lining and entrance depths. Concrete block lined outlets are limited to a maximum fall of 10 feet.

The steepest permissible exit slopes for gabion, concrete block and riprap lined outlets are 3 horizontal to 1 vertical. The steepest permissible exit slope for concrete lined outlets is 2 horizontal to 1 vertical.

APPLYING THE PRACTICE

The practice is considered applied when the lined waterway or outlet has been constructed to the lines and grades shown on the designs and drawings and permanent vegetation has been established.

OUTLETS

All lined waterways or outlets require stable outlets. Stable outlets are essential for maintaining tailwater depths and preventing undermining of the structure.

VEGETATION

All exposed areas of the slopes, supporting dikes, borrow area and other areas disturbed during

construction shall be established to vegetation according to Conservation Practice Standard, Critical Area Planting (342).

MAINTAINING THE PRACTICE

Inspect the lined waterway or outlet regularly especially following heavy rains and spring runoff. Inspect all areas of the approach channel, outlet channel and all areas along the edges of the linings.

Repair any damage to vegetated areas with compacted earth fill, reshaping, sodding, reseeding

and mulching as needed. Fertilize as needed to maintain vigorous growth. Control undesirable weeds as needed.

Control rodents or burrowing animals.

Remove silt blocks in inlet or outlet channels to maintain the required capacity.

If rills or other erosion occurs on channel slopes, repair immediately with compacted earth fill, vegetation and mulching as needed.

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