

# AGRICULTURAL GUIDE

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Soil and Water

## Maintaining small dams\*

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Dams are a valuable asset. They usually impound water with little input from the owner, and problems that occur are often minor.

Problems can worsen, however, and can become more expensive to repair if not fixed promptly. When a dam needs work, do it as soon as possible. A minor problem can turn into a major reconstruction project or even result in dam failure. This guide describes actions you should take and items you should check to keep your small dams in good repair.

### Inspections

Inspect a dam the first time a reservoir fills and after unusually large storms, especially those that cause flow through the emergency spillway.

In addition, perform at least one inspection each year. It is a good idea to write down the inspection date, the conditions you find and any actions you take. Use the inspection checklist at the end of this guide for your records.

### Erosion control

Good vegetative cover controls erosion on dams and in emergency spillways. Fill in rills and gullies, and fertilize, seed and mulch all bare areas. Follow recommendations for fertilizing, seeding and mulching provided with the original drawings and specifications for the dam. (If you don't have these drawings, refer to UMC Guide G4805, "Establishing and maintaining vegetation on critical areas.") You may need



Figure 1. Wave action can cause excessive erosion to the face of the dam.



Figure 2. Fescue, reed canary or other heavy grass may be sufficient to protect the dam from wave action. To apply fertilizer annually to maintain a vigorous vegetative growth.

In critical areas where faster restoration of vegeta-

\* Dams less than 35 feet high that are located so that any damage that may occur from dam failure is limited to farm buildings, agricultural land or township and country roads.





Figure 3. Rock rip-rap may be required to protect a dam from wave action, especially if the dam faces the prevailing wind or has a large pool.



Figure 4. Keep dams mowed to help maintain an effective grass cover.

tive cover may be required (for example, in the emergency spillway), you may be justified in sodding bare spots.

If vegetation will not control erosion at the waterline, consider using rock rip-rap.

### Mow vegetation

Mow vegetation on the dam and emergency spillway to control weeds and to keep trees and brush from becoming established. Delay mowing until July 15 of each year to avoid destroying nesting wildlife. Cut and remove large, woody vegetation.

Tall, heavy weeds and brush invite undesirable rodent habitation and burrowing.

### Burrowing animals

Burrowing animals can cause seepage through a dam, which may lead to dam failure. Fill burrows with compacted soil. Usually it is necessary to remove the animals from the area of the dam to control their activities. For more information, see UMC Guide G9400, "Controlling muskrat damage in ponds".

Rock rip-rapping to well below the water line will discourage muskrat burrowing.

### Seepage on downstream side

Unless special drainage features are constructed in the dam, water should not pass through, under or around it.

If you notice seepage on the downstream side of a dam, ask someone who understands dam design and construction to look at the site or see UMC Guide G1555, "Reducing pond seepage."



Figure 5. Don't allow trees and brush to grow on the dam or in the emergency spillway.



Figure 6. Eliminate animal burrows in the dam to prevent failure.



Figure 7. Remove debris from the pipe spillway inlet area.



Figure 8. Keep livestock fenced away from the dam and the emergency spillway to maintain a vigorous vegetative cover for erosion control.

## Pipe spillways

Pipe spillways (the pipe through the dam) can become partially or fully plugged by floating debris. Remove all debris whenever it collects in or around the spillways.

Be sure pipe spillways are sound and properly aligned. Use a small hammer to determine if the pipe wall is weak. Replace pipes that have holes in them. Be sure inlet structures such as trash racks and antiscum baffles are firmly attached.

## Fences

Fences keep livestock off the dam and emergency spillway and away from the waterline around the pool area. Repair broken-down or worn-out fences.

## Safety equipment

Be sure ponds used for swimming are equipped with safety devices and are in good condition.

## Rebuilding or changing the dam

A dam is designed to fit the specific conditions of its construction site.

Don't change the design dimensions and elevations shown on the drawings without consulting someone familiar with the design and construction of dams.

## Changes downstream

Although dam failures are rare, design criteria for them consider downstream features that would be damaged if the dam should fail.

The greater the chance of loss of life or damage to

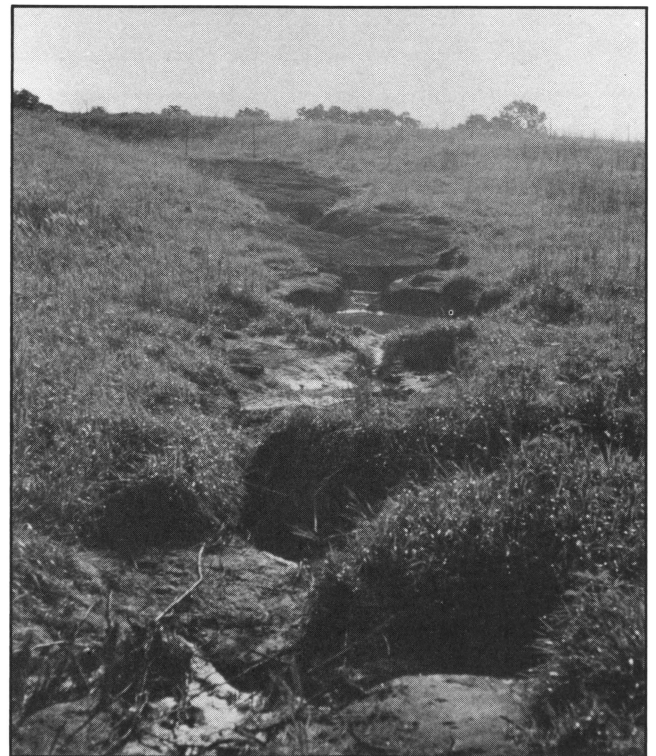


Figure 9. A livestock path can cause failure of the grass cover in the emergency spillway and, ultimately, if not repaired, dam failure.

valuable property, the safer the design should be. Dams described in this guidesheet are located in rural areas and are classified as "low hazard" dams. If they fail, damage is limited to farm buildings, agricultural land or township and country roads. If additional development occurs downstream, a more hazardous condition could be created if its relationship to the dam and a possible dam failure is not properly considered.

## Changes in the watershed upstream

The size of the spillways and the storage volume are based on the expected runoff from the contributing watershed. The runoff is greatly influenced by land features in the watershed.

If significant changes occur in the land features, review the design criteria. Pay special attention to areas with new urban development, which may greatly increase runoff.

## Inspection checklist for small dams

Dam location \_\_\_\_\_

(Use a different column for each inspection date.)

Date of inspection?									
Good vegetative cover?									
Vegetation mowed?									
Vegetation fertilized?									
Trees and brush cut?									
Rills and gullies repaired?									
Shoreline erosion?									
Debris around spillways?									
Burrowing animals?									
Seepage?									
Fences adequate?									
Safety equipment in place?									
Any new construction downstream?									
Any significant changes in watershed?									
Inspected by?									