



# Roadside and Diversion Ditches

## Forest Management Practices Fact Sheet Managing Water Series #9

### Introduction

**R**oadside ditches move water alongside a road or trail to a point where it can safely be diverted into vegetated areas away from lakes, wetlands, and streams. *Diversion ditches* lead water away from the road at a point where this doesn't occur naturally. This keeps runoff, which might be polluted with soil and other materials, from entering water bodies.

Best Management Practices (BMPs) can prevent or minimize the impact of forestry activities on rivers, lakes, streams, groundwater, wetlands, and visual quality.

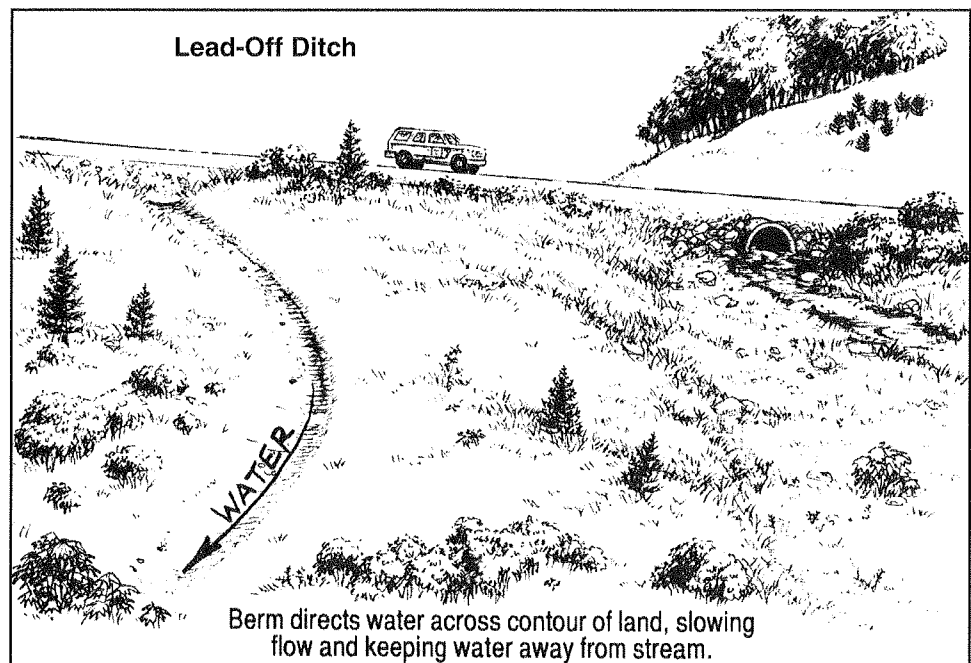
### Where Used

Operators use ditches wherever the natural topography doesn't let water move away from a road, trail, or landing. Roadside ditches are built when there are natural points where water drains away from the road. Diversion ditches are used when natural drainage points can't be found for long stretches. They may be placed every 300 to 500 feet. Operators may build them at low points where water could be trapped. They also can be used on the approach to a stream or wetland crossing.

### Application

When building ditches on forest roads:

- ▶ Build ditches during grading operations.
- ▶ Construct the side slopes of roadside ditches at a low angle (2:1 ratio) so they are stable and easily vegetated.



- ▶ Build the diversion ditch so it intersects the roadside ditch at a 30- to 45-degree angle. It should intersect the roadside ditch line at the same depth. The diversion ditch should turn slowly to follow the contour of the slope. Gradually reduce the ditch size along the contour to allow the water to spread out.
- ▶ Space diversion ditches along the roadbed to reduce the volume and velocity of roadside ditch waters and prevent ponding next to the road.
- ▶ Use the fill from cutting the diversion ditch to build a berm along the downhill side. This minimizes overflow.
- ▶ Stabilize exposed surfaces in a ditch until the area is vegetated. Seed, mulch, and or use hay bales.

### **Advantages**

Road and diversion ditches permit handling of water in locations where the topography limits other options. This improves drainage of the road or trail surface and base. The road dries faster and is less rutted and muddy.

### **Disadvantages**

Costs for constructing roadside diversion ditches are high.

### **Maintenance**

Ditches need to be maintained and kept free of clogging debris.

### **Related Fact Sheets in This Series**

*Project Planning: Locating Roads, Landings, Skid Trails, and Crossings (FS-6970); Managing Water on Roads, Skid Trails, and Landings (FS-6971); Earth-Berm Water Bars (FS-6972); Using Logging Debris or Logs to Build Water Bars (FS-6973); Conveyor Belt Water Bars (FS-6974); Broad-Based Dips (FS-6975); Open-Top Culverts (FS-6976); Shaping Roads and Trails (FS-6977); Cross-Drainage Culverts (FS-6979); Project Closure (FS-6980); Making and Using Measurement Tools—Basal Area (FS-6981); and Making and Using Measurement Tools—Slope (FS-6982).*

### **Cooperators**

University of Minnesota Extension Service, Minnesota Department of Natural Resources, Minnesota Logger Education Program, Michigan Department of Natural Resources, Michigan State University Extension, and Wisconsin Department of Natural Resources.



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