# PVC or HDPE Pipe Bundle Crossings

**Forest Management Practices Fact Sheet**
**Crossing Options Series #7**

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

## Introduction

Water quality and stream habitat can be harmed during forestry operations. Operators should plan for and use stream crossing techniques that minimize damage.

*PVC* (polyvinyl chloride) or *HDPE* (high-density polyethylene) *pipes* can be used to build temporary stream crossings. Pipes are cabled together to form mats and then layered on top of geotextile set into the streambed. (Geotextile is a fabric mat that lets water drain through it while supporting any material placed on top of it.) Operators can place wood mats, wood panels, or other materials over the pipes to add stability and traction. Water flows through the pipes while vehicles travel over them. HDPE pipes are recommended over PVC pipes because they tolerate cold better and do not need protection from sunlight.

## Where Used

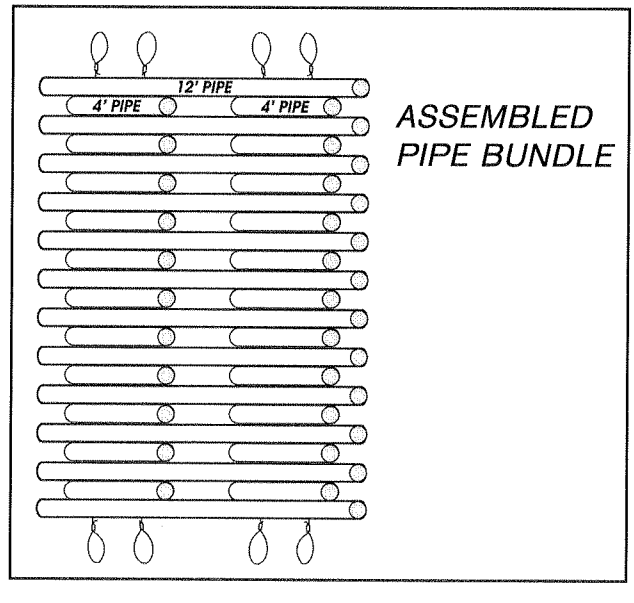
Operators use PVC or HDPE pipe bundle crossings on small streams with enclosing banks (a U-shaped profile) that are less than 10 feet wide and 4 feet deep. The channel should be straight with slow-moving water. Don't use pipe bundles on streams with lots of woody debris that might clog pipes. Use pipe bundles in flashy streams only when combined with appropriately sized culverts.

## Application

Don't install or use pipe bundles during fish spawning, incubation, or migration. Check with the appropriate regulatory agency in your state to see if permits are required.

When installing a pipe bundle crossing:

- Wash pipe bundles away from the stream before using to remove soil that could contaminate the water.
- Place geotextile on the stream bottom. Layer the bundles to the top of the stream bank. Tuck cable loop ends under the bundles so vehicles don't catch them and damage the crossing.
- Cover bundles with geotextile. Add surfacing materials such as wood mats, wood panels or pallets, or other materials for stability and traction.



- Use wood mats or pallets, corduroy, or other materials to protect approaches if the soil is weak.
- Securely anchor the pipe bundles to a nearby fixed object upstream.
- Revegetate all bank cuts immediately to keep soil from eroding into the stream. Check the crossing frequently to make sure that it doesn't become plugged.

**To construct a 12-foot-wide pipe bundle:**

Use 20-foot lengths of 4-inch-diameter Schedule 40 PVC or SDR11 HDPE. Saw pipes into 12-foot lengths; saw the remaining 8-foot sections in half. Drill four 1/4-inch holes completely through the 12-foot long pipes at locations 2 feet and 4 feet from either end. Drill two holes completely through each 4-foot section 1 foot from each end.

Alternate one 12-foot long section with one row made of two 4-foot wide sections placed 2 feet from each other.

String 3/16-inch galvanized steel cable through all sections. Make loops at the end of each cable, extending beyond the last pipe, and secured with 3/16-inch cable clamps. Each cabled section should be loose so pipes can conform to the stream channel.

### Advantages

Operators can purchase PVC construction materials from hardware or plumbing supply stores. Construction, transport, installation, and removal is easy. Operators can easily replace broken pipes.

### Disadvantages

Operators must cover pipes for traction. Sunlight can harm PVC pipes. HDPE pipes are only available through a national distributer. Pipes can become plugged.

### Maintenance

Check pipes periodically during use for clogging. Clean soil from pipes between uses at a location away from the stream. Inspect pipes for breakage between uses. Remove broken pieces by disconnecting the cable clamps and sliding off to replace broken sections.

### Related Fact Sheets in This Series

*Temporary Stream Crossing Options* (FS-7001); *Fords* (FS-7002); *Culverts* (FS-7003); *Ice Bridges* (FS-7004); *Timber Bridges* (FS-7005); and *Railroad Car, Steel, and Prestressed Concrete Bridges* (FS-7006).

### Cooperators

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

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