



US Army Corps  
of Engineers

Water Quality Technical Note MI-04  
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# *Using a Corrugated Metal Pipe Elbow to Trap Sediment and Improve Reservoir Water Quality*

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## **Purpose**

This technical note presents a possible solution for slowing flow through a corrugated metal pipe (CMP) in order to trap sediment, reduce erosion, and improve reservoir water quality.

## **Problem**

Traditional engineering solutions for drainage design attempt to move water in the fastest, most efficient manner possible. While such efficiency is good for moving water quickly, it often results in increased flow rates which in turn cause erosion, water quality degradation, and other environmental problems.

Under natural conditions flows are usually slow and inefficient, and do not result in significant erosion. A common method for conveying storm or natural drainage flows underneath paved surfaces is the use of CMPs. Project-associated construction such as roads, parking lots, and other water-impervious surfaces increases flow significantly and can result in a variety of environmental problems.

## **Solution**

One method of slowing flow rates cheaply and efficiently is to install a CMP elbow on the upstream side of a pipe conveying flows beneath existing roads (Figure 1). Materials are usually less than \$100, depending upon pipe diameter, and can be installed quickly and easily. The elevation of the CMP elbow must not cause water to flow over the road or trail. The small basins created by the installation of the CMP elbow will normally turn into wetlands. Vegetation in these basins will usually result in improved water quality, in addition to trapping sediment.



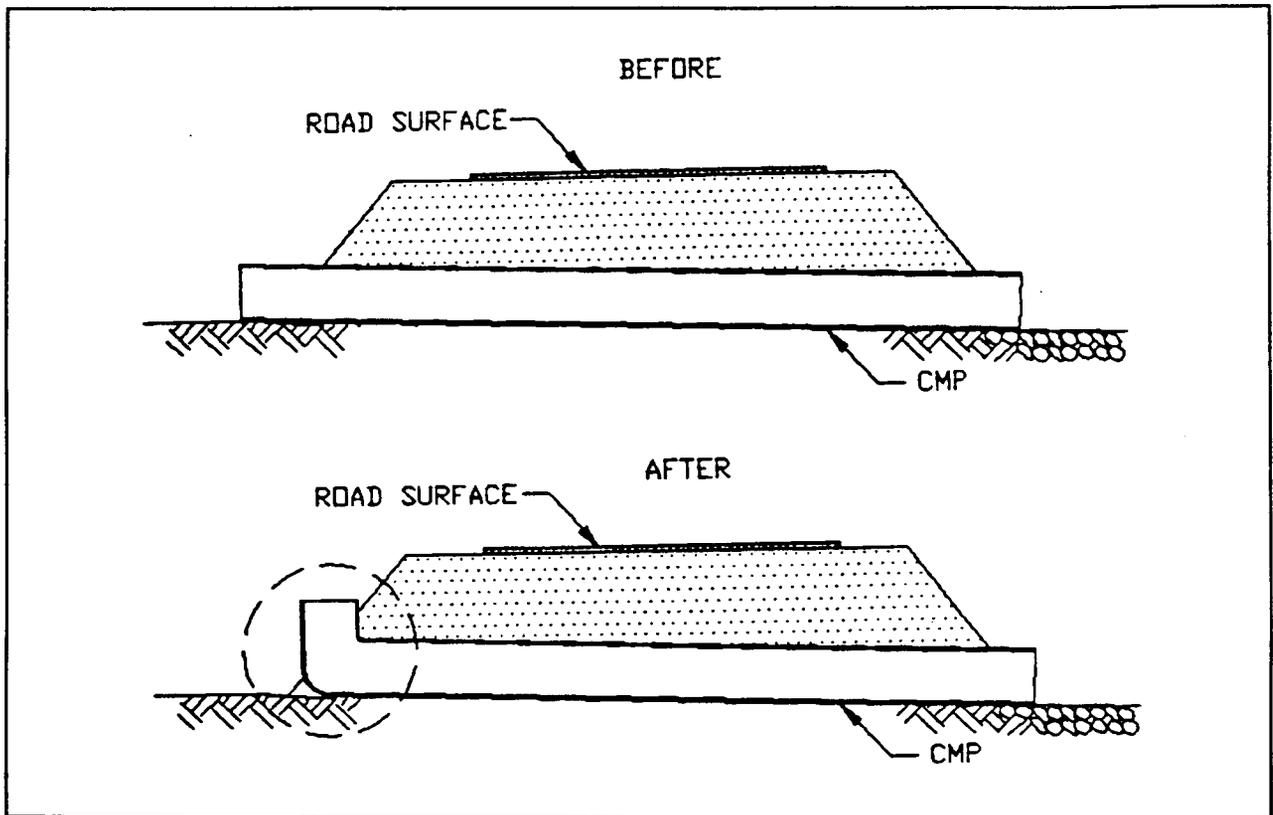


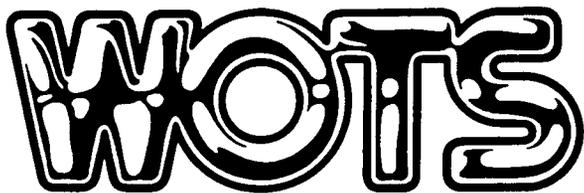
Figure 1. Design for use of corrugated metal pipe elbow to improve reservoir water quality

### Caution

Some cleanout may be necessary over time. Sediment associated with upstream construction may fill these basins quickly during a storm event. Up-gradient construction should use Best Management Practices to prevent damage downstream.

### Point of Contact

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