

Technical Bulletin

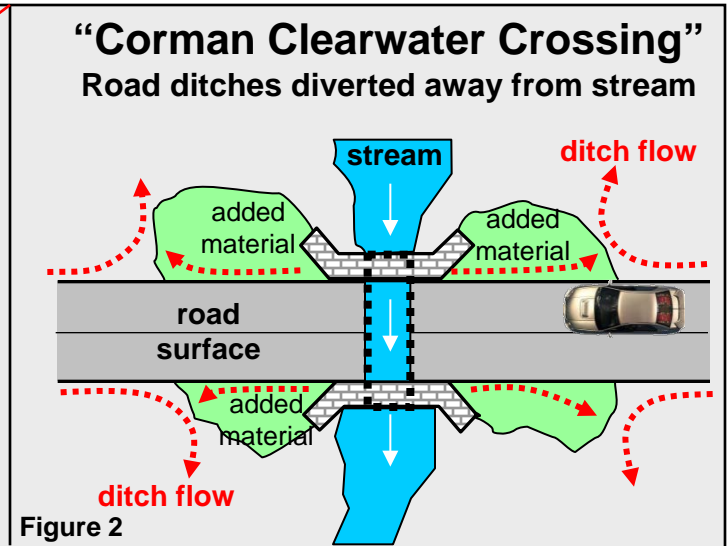
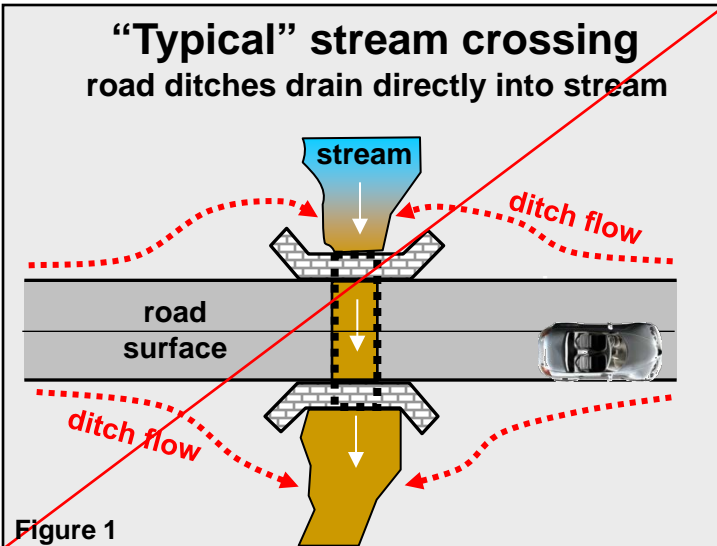
Corman Clearwater Crossing



6/2014



CORMAN CLEARWATER CROSSING (CCC) - The practice of re-profiling parallel road ditches around a stream crossing in such a way that drainage is directed away from the crossing and into a stable vegetated buffer



PURPOSE

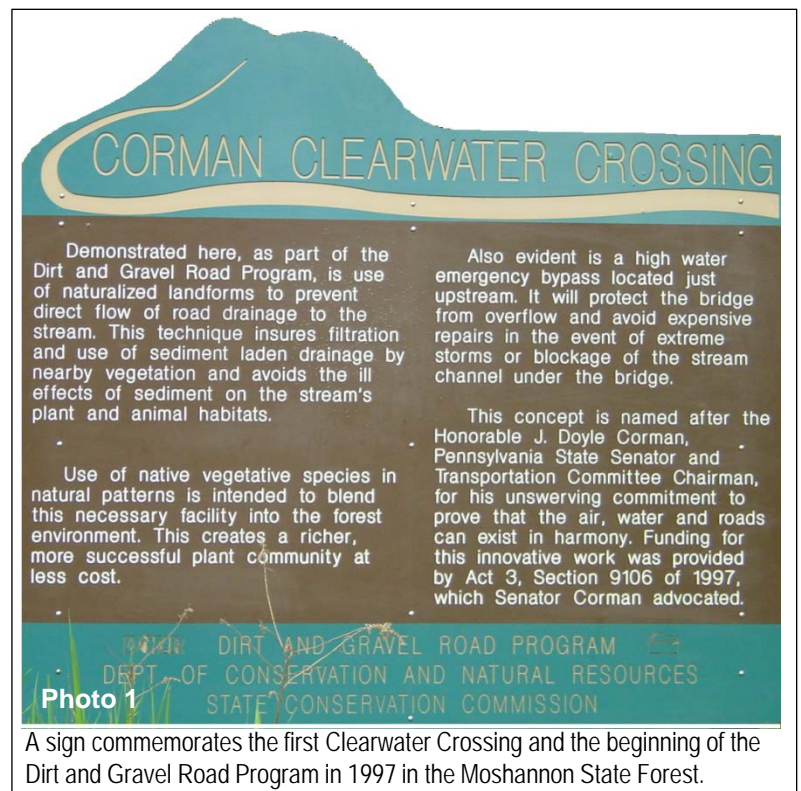
A Corman Clearwater Crossing is designed to minimize road drainage and sediment impacts at stream crossings. Drainage is directed away from stream crossings and outletted into stable vegetated buffers. The practice is named for former State Senator J. Doyle Corman who was instrumental in the establishment of the Dirt and Gravel Road Maintenance Program.

BENEFITS OF A CLEARWATER CROSSING

- reduces chronic sediment pollution caused by parallel road ditches that flow into streams at crossings
- reduces direct stormwater contribution to the stream.
- encourages infiltration and sediment filtration using natural vegetation
- effective on all sizes of bridges or culverts
- simple, effective, and low cost
- reduces maintenance of ditches and bridges

CONSIDERATIONS

- This practice is most effective in flatter areas where road ditches have little slope. Trying to re-profile steep ditches may prove to be problematic.
- Whenever possible, plant native vegetation in any fill material imported to diver water.
- Addition of new drainage outlets such as turnouts and culverts may be needed to handle ditch flow that previously drained directly into stream.



A sign commemorates the first Clearwater Crossing and the beginning of the Dirt and Gravel Road Program in 1997 in the Moshannon State Forest.



This picture illustrates a typical stream crossing. The ditch area covered with rip-rap in the center of the picture was used as a temporary ford during bridge construction. The road has four parallel ditches, each bringing road drainage and sediment directly into the stream. Rip-rap was used in an attempt to stabilize the ditch where it entered the stream. This rip-rap may stabilize the end of the ditch, but it does nothing to prevent the large volume of runoff and sediment entering the stream. The four ditches combined to funnel over 1,500 feet of road and ditch drainage into the stream at the bridge.



A Clearwater Crossing was created by filling and re-profiling the road ditches to drain away from the bridge and stream. Notice the amount of additional material present just above the wing wall of the bridge in the center of the image. This ditch now carries road drainage and sediment away from the stream. A culvert was installed approximately 200' away to carry the ditch drainage across the roadway and into a stable wooded area. The same practice was applied on all four corners of the bridge to eliminate any direct discharge into the stream.

CONSTRUCTING A CLEARWATER CROSSING

Because of the great variety of situations that occur at stream crossings, there are no specific standards for creating a CCC. Remember that the main purpose of a CCC is to force drainage to dissipate into a vegetative filter before reaching the stream. In some cases, re-profiling of ditches may be sufficient to accomplish this goal. In other locations, as in the pictures above, fill material must be used in order to achieve the desired ditch elevations. Look for ready sources of fill material on the site including berm material along the roadway. In some situations, as illustrated in **Photo 3** above, a CCC may benefit from a new crosspipe that can carry road drainage across the road and into a filter area. When possible, fill material and vegetative filter areas should be planted with native species. The CCC illustrated on this page was constructed with a bulldozer, backhoe, and a few loads of shale.



Road and ditch runoff pool in a vegetative buffer area during a very heavy rain event. This is drainage from a single ditch that previously drained directly to the stream!