

TOPIC: TWO-STAGE DITCH DESIGN

Overview

The two-stage ditch design takes a conventional drainage ditch, which was originally of trapezoidal design, to a more naturalized channel with a floodplain, side slopes, and vegetation within the ditch. The low-flow channel effectively moves water and loose sediment during low-flow conditions and small rainfall events. This allows for enough flow velocity to minimize deposition. The in-channel floodplain is called a bench and is considered the second stage utilized during high flows. The new side slopes provide stabilization of the banks and additional water capacity within the ditch. It is self-sustaining and requires little to no maintenance. To date it has been implemented primarily on rural drainage ditches, but many urban ditches would also be ideal candidates for this practice.

Impacts on Our Water

Properly designed two-stage ditches prevent bank erosion, reduce sediment and nutrient export, limit out-of-bank flooding, and improve water quality for habitat and drinking.

More Information

www.nature.org/ourinitiatives/regions/northamerica/unitedstates/indiana/howwework/two-stage-ditches.xml

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Excavated section of two-stage on the Shatto Ditch project before seeding



Visual of conventional drainage ditch in conversion to two-stage ditch design