



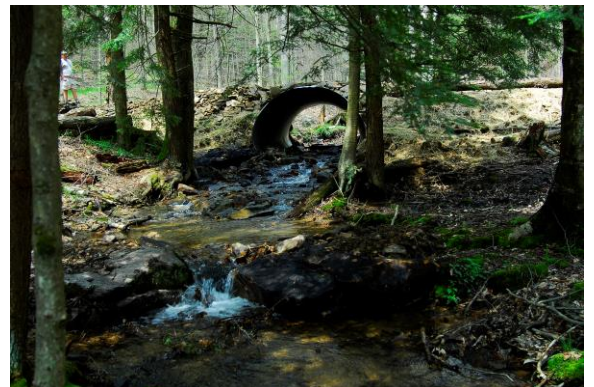
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ALLEGHENY NATIONAL FOREST FISH PASSAGE CULVERTS, LUDLOW, PA

RedHorse Environmental, in cooperation with the Western Pennsylvania Conservancy, US Forest Service, and National Fuel Gas, managed the installation of eight oversized AOP culverts on tributaries to the East Branch of Tionesta Creek south of Ludlow (PA) in Allegheny National Forest. The new culverts (squash pipes and arch plates) replaced undersized pipes on Forest Service and gas company roads that restricted fish passage from the East Branch of Tionesta Creek into tributaries that sustain reproducing Brook Trout populations.

The new culverts were designed and installed to facilitate the formation of stable native substrate in the bottom of the pipe to reduce flow velocities and enhance channel roughness. Natural stream channel substrates inside the culvert permits aquatic organism movement through the oversized culvert into upstream reaches.

In-stream channel enhancements (grade controls, bank stabilization, flow deflectors) were installed in channel below and above the pipes to provide reduced flow velocities and stabilize bank and channel conditions. Riparian enhancements and native plantings were also completed.



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