

# ABANDONED MINE DRAINAGE

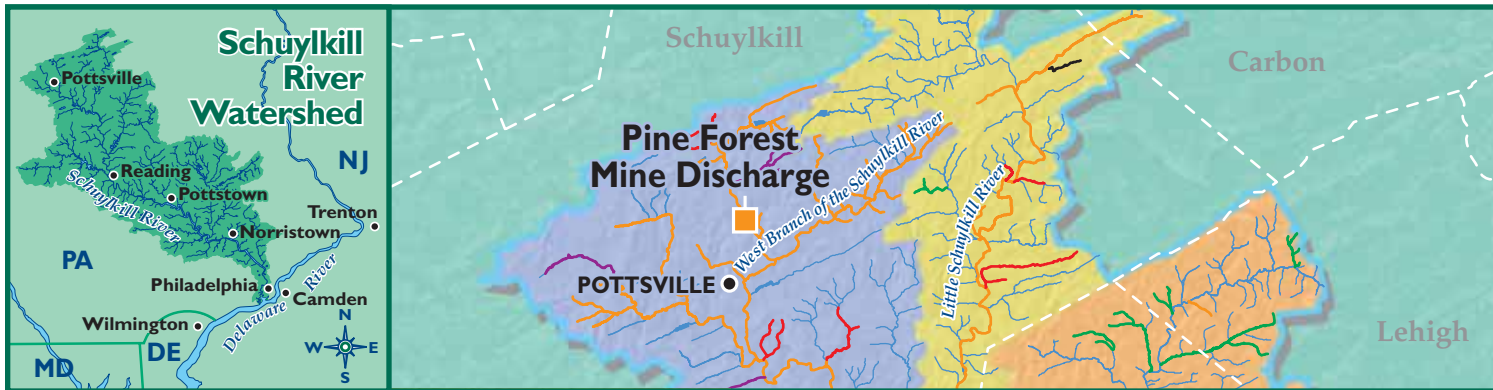


## *Pine Forest Project*

Abandoned Mine Drainage from the Pine Forest Mine formerly discharged aluminum, iron, manganese, and acidity into Mill Creek, a Schuylkill River headwaters tributary. Using funds from the Schuylkill Watershed Initiative Grant, an anoxic limestone drain (ALD) was installed at this site by the Schuylkill Headwaters Association. The ALD neutralizes acid and removes up to 316-lbs of iron per day from the Schuylkill River.

ALD's are basically buried ditches of limestone. As mine water flows through the drain, the limestone dissolves and increases the alkalinity and pH levels. Water treated in this way needs to be anoxic, meaning it contains very little dissolved oxygen. Otherwise, iron hydroxides form and ultimately clog the drain. An ALD is buried under a clay cap, keeping oxygen out and trapping carbon dioxide, which increases the limestone's dissolvability. When exiting the drain, the treated water comes into contact with oxygen as it cascades over rocks and is captured in settling ponds. These ponds keep collected water calm for a period of time, allowing iron to sink to the bottom for periodic removal.





Treated water from the Pine Forest project is released into Mill Creek with significantly reduced metals and a healthier pH level. Sections of the Schuylkill headwaters are designated cold-water fisheries, meaning improved water quality in smaller tributaries such as Mill Creek creates a healthier ecosystem to support stocked and natural trout populations. Healthy waterways encourage a robust aquatic recreational tourism industry, and improve overall quality of life in the region.



The Schuylkill Watershed Initiative Grant is a targeted watershed grant awarded by the U.S. Environmental Protection Agency for the completion of a suite of water quality improvement demonstration projects in the Schuylkill River Watershed. The Pine Forest project is one of more than 40 projects that received funding from this source, in addition to other funds and/or support. The grant is administered by the Partnership for the Delaware Estuary and the Philadelphia Water Department.