

Friendship Hill National Historic Site

This one-square-mile area lies in a bend of the Monongahela River in southwestern Pennsylvania. Polluted water coming from an abandoned coal shaft at the upper boundary of the park forms the headwaters of a small stream that flows for about a mile through the park. This coffee-colored stream is extremely acidic (2.6 pH), has high concentrations of metals, supports virtually no aquatic life, and has killed trees and other vegetation growing along its banks or on overflow areas. Routine chemical and engineering abatement procedures were considered impractical or economically unfeasible. Instead, an artificial bog is being tested to act as a biological filter to improve water quality—a technique that has proved useful elsewhere.

Under supervision of Robert Kleinman of the U.S. Bureau of Mines, the project in its first year included studies of water and soil chemistry, water flow rates, and vegetation tolerance of the water and soil characteristics. Some of the stream's flow was diverted through a vegetated area, and two species

of sphagnum moss were tested in a plexiglass experimental bog tank. *Sphagnum recurvum*, cattail (*Typhus latifolia*), and several sedges and grasses did not appear to have been injured by exposure to the acid mine drainage. Water chemistry data from sample points along the water diversion indicated that acidity, total iron, sulfate, calcium, magnesium, aluminum, and specific conductivity measurements were lowered. If further experimental plots are successful, a full-scale artificial bog will be established.