

Impacts of Volunteer Cattail Wetlands on Drainage Quality from Reclaimed Mined Land in Northern West Virginia. Edward Jamison, Hydrogeologist, GHR Hausler Company, Horshan, Pennsylvania, and Henry W. Rauch, Professor of Geology, West Virginia University, Morgantown, West Virginia.

A study was conducted of selected volunteer cattail wetlands located near reclaimed surface coal mines in northern West Virginia to test the effects of the wetlands on mine drainage throughout 1986 for both water entering and exiting each wetland. Eight wetlands were investigated in Monongalia County and five wetlands were studied in Preston County. The Monongalia County mine sites exhibited mildly adverse water, with mean values of 6.92, 4.91 mg/L, and 4.37 mg/L for pH, iron, and manganese respectively, reflecting drainage from Waynesburg coal mines. In contrast, the Preston County mine sites produced water with notably worse quality, with mean values of 4.87, 12.30 mg/L, and 10.04 mg/L for pH, iron, and manganese respectively, representing drainage from Upper or Lower Freeport coal mines. The Monongalia County wetlands on average reduced total iron concentration from mine drainage by 32.8 percent, decreased total manganese concentration by 11.4 percent, and increased the pH by 5.2 percent. Thus these wetlands improved mine drainage water quality significantly. The Preston County wetlands on average reduced total iron concentration by 65.7 percent, reduced total manganese concentration by just 2.6 percent, and decreased pH by 2.9 percent. Some wetlands had additional mine drainage seepage originating within them, which served to complicate the study of wetland effectiveness in mitigating mine drainage quality. In summary, these wetlands were significantly effective in reducing iron concentration, but not in reducing manganese or sulfate concentration or in raising pH.

ADDITIONAL KEY WORDS: Preston County, Monongalia County; iron, manganese, pH, sulfate.