

THE WHITESIDE RUN RESTORATION PROJECT: WETLANDS AND STREAM MITIGATION AND RESTORATION OF A PREVIOUSLY POLLUTED STREAM

by

Alan Bigatel¹, William W. Hellier², John G. Foreman³, and Steven Kepler⁴

Abstract. A 1,146,000 m³ (1,500,000 yd³) coal refuse pile from the operation of a now abandoned Lower Kittanning (B) coal deep mine had been the source of over 95% of the mine drainage pollution in Whiteside Run, a tributary of Moshannon Creek in Gulich and Woodward Townships, Clearfield County, Pennsylvania. Representative water quality upstream of the refuse pile was: pH = 6.9; alkalinity = 31 and acidity = 0 mg/L as CaCO₃ equivalent; [Fe] = 0.85 mg/L; [Mn] = 0.31 mg/L; and [Al] = 0.25 mg/L. Representative water quality downstream of the refuse pile before the project was: pH = 3.0; alkalinity = 0 and acidity = 358 mg/L as CaCO₃ equivalent; [Fe] = 7.08 mg/L; [Mn] = 0.81 mg/L; and [Al] = 46.86 mg/L. Present downstream water quality is: pH = 5.9; alkalinity = 14.3 and acidity = 8.1 mg/L as CaCO₃ equivalent; [Fe] = 1.57 mg/L; [Mn] = 0.92 mg/L; and [Al] = 0.97 mg/L. There has been a significant improvement in the diversity of aquatic life since the project was undertaken.

Power Operating Co., Inc., a local coal mining company, applied for authorization to conduct coal mining activities which would affect a wetland with an area of 1.6 ha (4.0 A) and 790 m (2600 ft) of an unnamed tributary of Moshannon Creek. Although part of this wetland was anthropogenic, having developed because earlier mining activities by others had affected the channel of the unnamed tributary of Moshannon Creek, the major portion of the area was a natural wetland. Power Operating proposed developing a 2.4 ha (6.0 A) wetland to replace the wetland to be disturbed by mining. The refuse pile was removed and placed in the backfilled area of Power's adjacent surface mine permit, and the mitigation wetland was constructed on the area formerly occupied by the refuse pile. As a result, 6.5 km (4 mi) of formerly polluted stream are now capable of supporting fish.

Additional Key Words: wetlands, mitigation, refuse pile, mine drainage

¹Alan Bigatel, P.E., Senior Civil Engineer, Commonwealth of Pennsylvania, Hawk Run District Mining Office.

²William W. Hellier, Ph.D., P.E., Technology Transfer Coordinator, Bureau of Mining and Reclamation, PO Box 209 Empire Road, Hawk Run PA 16840.

³John G. Forman, P.E., President, U.S. Environmental Research Service, 1111 E. Walton Ave., Altoona, PA 16601.

⁴Steven Kepler, Fisheries Biologist, Commonwealth of Pennsylvania Fish and Boat Commission, 450 Robinson Lane, Bellefonte PA 16823.