Passive System Rehabilitation of a High Flow Acidic Coal Mine Discharge[1]

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Abstract: The multi-component Maiden Mine Passive Treatment System (Maiden PTS) was constructed in 2006 to address two acidic metal-laden coalmine discharges that degraded an unnamed tributary to Dunkard Creek in Greene County, Pennsylvania. This case study highlights the ability to restore a treatment system's functionality after almost a decade of the Maiden PTS not functioning as designed due to needed maintenance being prevented by lack of access. The rehabilitation project is part of a larger ongoing watershed restoration approach led by MEPCO, LLC. Once property ownership was transferred to MEPCO, LLC in 2015, Stream Restoration Incorporated (SRI) spearheaded a public-private partnership effort to rehabilitate the largest passive treatment system in the Dunkard Creek Watershed. Monitoring has shown that the system is performing as well, if not better than a decade ago. The average raw discharge characteristics are 20.3 L/sec (321 gal/min), 2.88 pH, 354 mg/L hot acidity, 46 mg/L Fe, 4 mg/L Mn, and 19 mg/L Al. After system rehabilitation, the treated effluent average values were 20.6 L/sec (327 gal/min), 7.1 pH, 76 mg/L alkalinity, 0.4 mg/L Fe, 0.3 mg/L Mn, and 0.5 mg/L Al. Future system modifications to further improve treatment efficacy are being explored and will be discussed.

Additional Key Words: AMD, vertical flow ponds, solar powered valve actuator.

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