

Reclamation of Refuse Piles using Fluidized Bed Combustion Ash in the Blacklick Creek Watershed, Pennsylvania¹

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Abstract: Refuse piles from abandoned, pre-SMCRA underground mining operations have been a major source of acid mine drainage in the Blacklick Creek watershed located in Cambria County, Pennsylvania. Beginning in 1988, five of the largest refuse piles in the watershed were permitted for refuse reprocessing. The refuse was to be removed, screened, and hauled to a nearby fluidized bed combustion (FBC) power plant, specifically designed to burn coal refuse. At the FBC power plant, ground lime is injected into the boiler to aid in air pollution control by removing sulfur dioxide. The FBC ash would then be returned to the site and mixed along with the reject refuse material. As a result of the lime addition in the combustion process the FBC ash that encapsulates the reject material is alkaline and has a low permeability resulting in reduced water infiltration and acidity generation. The sites are revegetated once all combustible refuse is removed and ash placement is completed. Of the five refuse piles, two have been fully reclaimed and three are still in the process of removing refuse or placing ash. As of 2015 more than seven million metric tons of refuse has been reprocessed from the five sites. A total of twenty three individual discharges are being monitored on the five sites. As refuse reprocessing has been progressing there has been a substantial reduction in the loadings of pollutants to Blacklick Creek watershed. Prior to reclamation the total average acidity loading from the twenty three discharges was 4,826 kilograms per day. After reclamation was fully or partially completed the total average acidity loading is now 204 kilograms per day. The water quality of the immediate receiving streams had been net acidic for several decades since the refuse piles first were placed, but is now consistently or intermittently net alkaline.

Additional Key Words: None

¹ Oral paper presented at the 2017 National Meeting of the American Society of Mining and Reclamation, Morgantown, WV: *What's Next for Reclamation?* April 9 - 13, 2017.

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