

# Applying landforming to reclamation: A case study in Central Appalachia <sup>1</sup>

L.C. Hopkinson\*, J.D. Quaranta, J. Hause, J. Lorimer, R. Park, and I. Santos<sup>2</sup>

**Abstract:** One reclamation technique, geomorphic landform design, may offer opportunities to improve aspects of mine reclamation in Central Appalachia. The approach designs landforms in a steady-state, mature condition and considers long-term climatic conditions, soil types, slopes, and vegetation. While applied successfully in semi-arid regions of the United States as well as in Spain, Canada, and Australia, geomorphic reclamation has not yet been applied in Central Appalachia. This work describes a case study where landforming techniques are being applied to a coarse coal refuse pile in West Virginia. The reclamation design includes four geomorphic watersheds that radially drain the pile. Each watershed has one central draining channel and compound slope profiles. The watersheds are connected by conventional bench slopes that also have surface drains. The intent is to reduce infiltration rates which will decrease water quality treatment costs at the site. Cut and fill volumes (approximately 250,000 yd<sup>3</sup>) are comparable to those of more conventional designs, and all hillslopes are at 2:1 (H:V) or less. If proven successful, the technique can be part of a cost-effective solution to improve water quality at active and future refuse facilities, abandoned mine lands, bond forfeiture sites, landfills, and major earthmoving activities within the region.

Additional Key Words: geomorphic landform design

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<sup>2</sup> Leslie C. Hopkinson, Associate Professor, Civil and Environmental Engineering, West Virginia University, Morgantown, WV 26506; John D. Quaranta, Associate Professor, Civil and Environmental Engineering, West Virginia University, Morgantown, WV 26506; Jennifer Hause, West Virginia Water Research Institute, West Virginia University, Morgantown, WV 26506; Jeffrey Lorimer, Civil and Environmental Engineering, West Virginia University, Morgantown, WV 26506 (student); Rogan Park, Civil and Environmental Engineering, West Virginia University, Morgantown, WV 26506 (student); Iuri Santos, Civil and Environmental Engineering, West Virginia University, Morgantown, WV 26506 (student).