

Agricultural Longwall Subsidence Mitigation Utilizing Subsurface Drainage Systems: Why Can't We Make It Better?¹

G. Spinner² and D. Barkley

Abstract: Underground coal mining in Illinois has a lengthy history dating back to the early 1800's. Since then, surface subsidence has resulted intentionally from high extraction mining methods as well as random delayed occurrences above standard room and pillar mining. Modern mechanized longwall mining methods were introduced in the 1960's and currently account for a large percentage of Illinois coal production. Regulations governing subsidence from underground coal extraction and the requirement to mitigate impacts to surface structures and surface land became effective in 1983. Restoration of drainage on agricultural land after subsidence is an important issue confronting the coal industry's use of full extraction mining technology. Through decades of experience, much has been learned about various approaches to achieve acceptable results. Reestablishing surface drainage is readily achievable. A second distinct issue is the impact of surface subsidence relative to the near surface water table. Supplementing surface drainage work with subsurface drainage systems can achieve better control of moisture levels in the rooting zone. With an eye towards management of water levels throughout the seasons, implementing subsurface drainage systems that control flow can have the added benefit of retaining soil nutrients by limiting leaching. This presentation will provide an overview of specific subsurface drainage systems being installed in longwall areas and the anticipated long-term benefits to highly productive farming systems in Illinois.

Additional Key Words: Water level control structures, drainage tile.

-
1. Oral paper presented at the 2018 National Meeting of the American Society of Mining and Reclamation, St. Louis, MO: The Gateway to Land Reclamation, June 3 - 7, 2018. Published by ASMR; 1305 Weathervane Dr., Champaign, IL 61821.
 2. Gerry Spinner, E&G Construction, 18067 Deer Trail, Hillsboro IL 62049; Daniel Barkley, P.E., Illinois Department of Natural Resources, Office of Mines and Minerals, One Natural Resources Way, Springfield IL 62702.