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## **Nicole Iannacchione**

*GAI Consultants, Pittsburgh, PA*

## **Anthony Iannacchione and Michael Keener**

*University of Pittsburgh, Pittsburgh, PA*

### **“Selected Factors Affecting Longwall Mine Layouts in the Pittsburgh Coalbed of Southwestern Pennsylvania”**

Between 1971 and 2013, 596 longwall panels have been mined at 12 different mines in the Pittsburgh coalbed of southwestern Pennsylvania. This represents one of the largest concentrations of longwall mining experience within North America. Originally, longwall mine layouts were designed to fit within existing room-and-pillar operations where production panels were a few hundred feet wide by a few thousand feet long. In these early designs, the gate entries were comprised of chain pillars similar to those found along main entry systems or within pillar recovery sections. The modern longwall mine has little in common with their 1970's predecessors. Today the entire mine layout is designed around the longwall mining method. The longwall panels have grown to well over 1,400-feet in width with lengths now measured in miles. Some of the more important mine layout design criteria include, a) minimize the impacts from the vertical and horizontal stress fields, b) maintain the stability of the strata around the mine openings under diverse geologic and loading conditions, and c) reduce the effect of subsidence to surface structures, water sources (wells, springs and ponds), and streams

Nicole E. Iannacchione is a Senior Geological Specialist with GAI Consultants, Inc. in Homestead, PA. Her education experiences include a degree in geology from Kent State University and a mining engineering certificate from the University of Pittsburgh. Nicole currently serves on the Board of Directors for the Pittsburgh Section of SME and the Pittsburgh Coal Mining Institute of America.

Anthony T. Iannacchione is an associate professor and director of the mining engineering program at the University of Pittsburgh.

Michael Keener is a graduate student in civil and environmental engineering at the University of Pittsburgh. He is currently part of Pitt's ACT 54, 4th Assessment Period, research team. He is tasked with analyzing the impacts of coal mine subsidence to surface structures and water resources.

**Tuesday, September 24, 2013, 2:00 p.m. MDT (4:00 p.m. EDT)**

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