

## **Landslides in the Greater Pittsburgh Area**

**Dan Mesmer, Gateway Engineers**

In the Greater Pittsburgh Area, we have many unique geologic features that can create potential hazards for land development, commerce and transportation. Some are naturally occurring in the form of ancient landslides, landslide susceptible soil and rock and pockets of perched groundwater. Some are manmade as the result of underground coal mining that has contributed to landform instability as mines collapse resulting in structure settlement, the formation of acidic water and acid mine drainage. Several of the bedrock units prevalent in Western Pennsylvania are highly weatherable, weakly bonded claystones and clay shales. In the presence of moisture and exposed to the atmosphere, the rock breaks down and becomes more clay soil like than rock. In the late 1970s and early 1980s as part of an Appalachians-wide study of landslides surveys were conducted and produced maps that were prepared by the U.S. Geological Survey depicting landslide features and areas of landslide susceptible soils.

On September 19, 2006 a massive landslide occurred on a commercial property being developed for a new Walmart Superstore in Kilbuck Township, Pennsylvania. Approximately 500,000 cubic yards of material, which included most of the newly placed embankment fill, slid and covered Pennsylvania State Route 65 (Ohio River Boulevard) and two Norfolk Southern rail lines below the slope, effectively blocking this transportation corridor.

A Task Force was assembled consisting of members of the local and state government agencies, engineering consultants and attorneys. Their task was to assess and evaluate the conditions that led to the slope failure considering the permitting stage for construction, the site design process and construction operations. The final report, published in 2008 laid the foundation for new State Legislation that is known as The Geologically Hazardous Areas Act. The Act establishes the required framework for evaluating and reporting the potential for encountering geologic hazards on any site development project.