

# **ASCE Geo-Institute (G-I)**

## **Geophysical Engineering Committee**

**Lectures on Offer from the GEC Committee (2019-2020)**  
**Expenses associated with any visiting lecturer will be covered by the G-I**

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### **Using non-invasive geophysical methods for levee evaluation: a case study of the Melvin Price Reach of the Wood River Levee** **Clinton W. Wood (University of Arkansas)**

Levees in the United States protect millions of people, properties, and agricultural lands from damaging flood waters. However, as much as 20% of the US levee system is considered at a very high to moderate risk of failure. Non-invasive geophysical methods offer a rapid and nearly continuous approach to evaluating levees to identify potential problematic areas that contribute to the high risk of failure. This presentation details the geophysical evaluation of the Melvin Price Reach of the Wood River Levee, a section of levee that has experienced sand boil formation during large flooding events. From the geophysical results, we were able to resolve areas in the foundation where old river bars had eroded parts of a subsurface clay layer. The erosion of the clay layer is believed to contribute significantly to the high hazard of the levee.

### **Advancements from 2D to 3D Imaging for Geotechnical & Environmental Site Characterization** **Phil Sirles (Olson Engineering)**

Three-dimensional (3D) geophysical surveys are not new; oil and gas companies have used the technology for decades. The cost to perform 3D surveys is now getting competitive for engineering-scale investigations, where the results can often optimize expensive and commonly multiple-phase drilling investigations. In addition, 3D surveys can be especially effective for identifying and imaging complicated and amorphous geologic targets, such as Abandoned Mine Land (AML) and karst features, where standard 2D (line) geophysics are limited. Two key factors regarding the application of 3D geophysical investigations have changed: 1) the time for delivery of results is quicker; and, 2) the 3D digital data allows for manipulation and visualization of the subsurface. This talk will focus on the time in the field to collect the data, the time to see preliminary results and examples of 3D imaging for applications such as groundwater, AML, karst and lava tubes.