Soil-type estimation beneath a coastal protection levee, using resistivity and shear wave velocity.

Juan M Lorenzo, Derek S Goff,, Department of. Geology and Geophysics, Louisiana State University, Baton Rouge LA, e-mail: gllore@lsu.edu; Koichi Hayashi, Geometrics, San Jose CA; * presenter*

Summary

Unconsolidated Holocene deltaic sediments comprise levee foundation soils in New Orleans, USA. Whereas geotechnical tests at point locations are indispensable for evaluating soil stability, the highly variable sedimentary facies of the Mississippi delta create difficulties to predict soil conditions between test locations. Combined electrical resistivity and seismic shear wave studies, calibrated to geotechnical data, may provide an efficient methodology to predict soil types between geotechnical sites at shallow depths (0-10 m).

The London Avenue Canal levee flank of New Orleans, which failed in the aftermath of Hurricane Katrina, 2005, presents a suitable site in which to pioneer these geophysical relationships. Preliminary cross-plots show electrically resistive, high-shear-wave velocity areas interpreted as low-permeability, resistive silt. In brackish coastal environments, low-resistivity and low-shear-wave-velocity areas may indicate both saturated, unconsolidated sands and low-rigidity clays.

Preferred presentation format: **ORAL**
Selected Session**: 05 Engineering Geology and Geotechnical Investigations**