**DETECTION OF POTENTIAL ZONES OF HIGH PORE PRESSURE BENEATH A LEVEE USING TEM TECHNIQUES**

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**Abstract**

Certain geomorphic conditions can lead to the development of high pore pressure in the soils underlying levees. Depending on flood levels and the site stratigraphy, the high pore pressures can result in internal erosion, which can lead to levee failure. It is difficult to adequately characterize the subsurface stratigraphy along many levees because floodplain stratigraphy can be very heterogeneous and complex, and levees can have extensive lengths spanning several miles. We propose to use a towed transient electromagnetic imaging system (tTEM) system for fast and efficient mapping of electrical resistivity of the soils near levees. The resistivity maps will be interpreted to identify areas where the subsurface stratigraphy is likely to result in high pore pressures during a flood. To prepare for field work, different geologic scenarios that often result in high pore pressures were modeled using the AarhusInv code. Forward modeling results indicate that the tTEM could map the sediments near the levees and could detect fine-grained surficial materials if the top layer was more than 2 m thick. However, fine-grained layers that were less than 2 m thick could not be accurately imaged. Field work is planned for Feb. 2023, and field results will be compared to the forward modeling results to determine the effectiveness and limitations of the tTEM system in characterizing subsurface geology beneath levees.