

**Electrical Resistivity Surveys for Seepage Detection at Huai Mat Dam,
Ouan Subdistrict, Pua District, Nan Province**

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Abstract

Electrical resistivity (ER) surveys were performed to determine seepage areas of Huai Mat Dam which is located in Ouan subdistrict, Pua district, Nan province. The survey involved acquiring 2-D ER data along five parallel lines on the dam ridge and downstream slope. These lines were spaced at 3-meter intervals with a length of around 120 meters. The survey utilized a dipole-dipole electrode configuration, maintaining a minimum spacing of 1.5 meters between electrodes. The obtained 2-D ER data underwent inversion processes to visualize subsurface resistivity distributions for each survey line. To enhance the understanding of the subsurface, the 2-D ER data were amalgamated to create a pseudo 3-D dataset, which was subsequently inverted to construct a 3-D ER section. The interpretation of these sections was enriched by incorporating geological and reclamation soil data from the dam ridge. Intriguingly, the interpretation revealed diminished ER anomalies in both the dam ridge and downstream slope regions, suggesting potential seepage zones. These areas of interest were predominantly situated at the junction of the land reclamation and the dam base. The outcomes of this study offer valuable insights for the remediation of the dam. By identifying possible seepage locations, the study contributes to the dam's maintenance and structural integrity.

Keywords: 2-D electrical resistivity survey, pseudo 3-D electrical resistivity, dam seepage detection