

Sinkhole Collapse Induced by Disappearing of groundwater in Karst Aquifer

Felik Destian Putra¹, Rungroj Arjwech¹

¹ Department of Geotechnology, Faculty of technology, Khon Kaen University, Thailand

There are many sinkholes occurred near the limestone quarry in Nong Bua Lamphu province, Northeastern Thailand. Field investigation found that many groundwater wells supply water to agriculture running dry near the sinkhole collapse zones. This draws attention to study about the occurrence of sinkholes related to groundwater in the karst aquifer. The 2D electrical resistivity tomography (ERT) profiles were deployed across the sinkhole zones to provide an overview of the subsurface conditions of sinkhole profiles adjacent to a limestone quarry. The 2D ERT result was combined to delineate the possibility of continuous features and cavities. The surficial collapse features were generally observed to be in alignment with the interpreted subsurface cavities and fractures. Declinations of ground water table, most likely related to management of the dewatering in mining activities in the quarry, are the factor that induce the formation of sinkhole collapse to air-filled cavities.

Keyword: Electrical Resistivity Tomography, Karst Aquifer, Limestone quarry, Sinkhole