

A Case Study of Combining Geophysical Prospecting Techniques at a DNAPLs Contaminated Site

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Since 2008, site remediation was being conducted on both soils and groundwater which are impacted by dense non-aqueous phase liquid plumes (DNAPLs), in an old waste dump site of abandoned factory located in Hsinchu, Taiwan. This included continuous pumping and treatment on contaminated groundwater from wells. The DNAPLs existed for a long time and no records of previous operation were available. Therefore, significant quantity of DNAPLs remained in the subsurface and infiltrated downwards from the topsoil to lower bedding of fine sand embedded with gravel and siltstone.

In this study, we presented the investigation outcomes of electrical resistivity tomography (ERT) and ground-penetrating radar (GPR) at the DNAPLs-impacted site. Evaluation of RIP technique deployment in detecting buried DNAPLs and assessment of remediation efforts are also discussed. Results indicated zones with anomalously high resistivity to be associated with contaminated DNAPLs presence. Resistivity maps clearly outlined the subsurface distribution and the possible migration path of DNAPLs.

Keywords: Dnapls, electrical resistivity tomography (ERT), ground-penetrating radar (GPR)