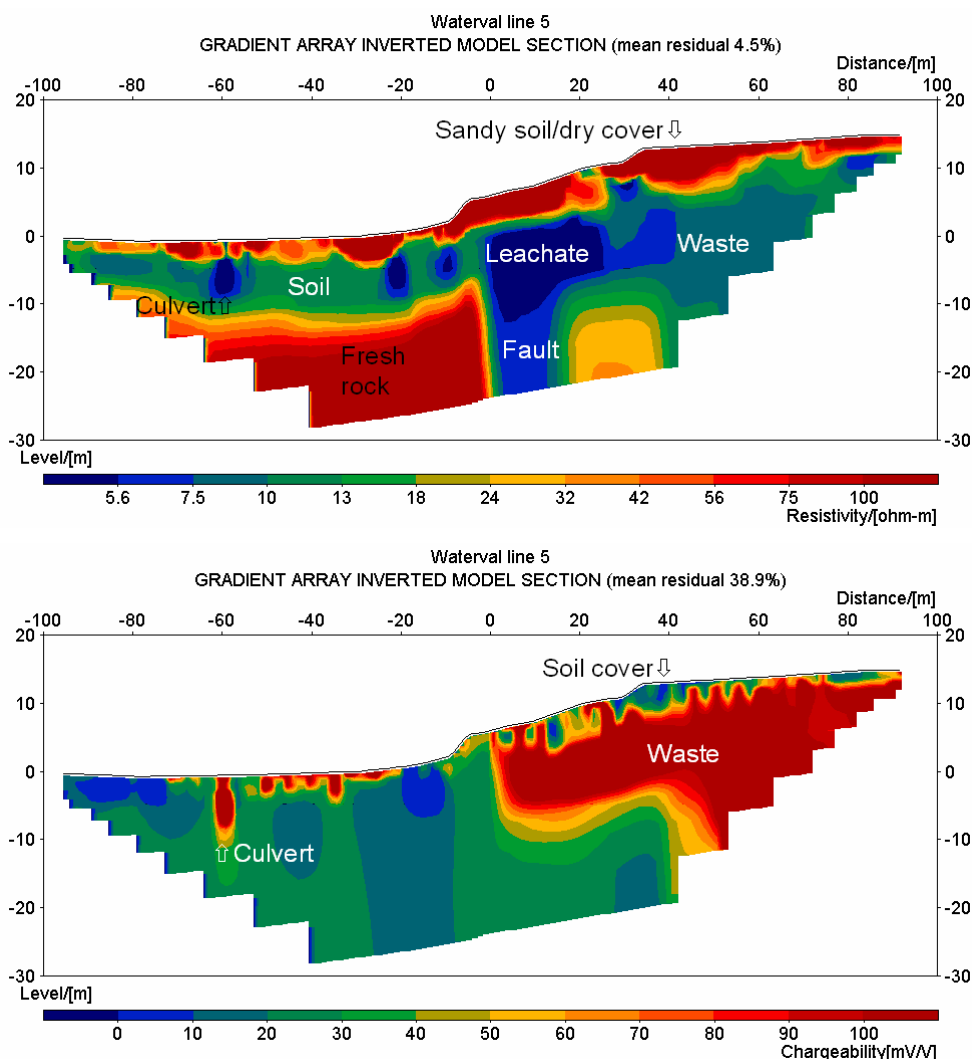


Resistivity and IP for Mapping of Waste Deposits

Combined resistivity and IP (induced polarisation) imaging is a powerful tool for mapping of waste deposits. There are often several issues that need to be known about existing waste deposits for environmental protection or land re-use purposes. There is often contamination of the ground as a result of contaminant leakage from the waste, which poses a threat to the groundwater.

Resistivity imaging valuable for outlining the geological and hydrogeological setting of the site. It can usually also be used for detecting the contaminants since these generally have a very low resistivity. The resistivity section shown here, which is one of 10 parallel sections at the site, serves these purposes. The section was measured across the edge of an old waste deposit in Johannesburg, South Africa, where the soil consists of in-situ weathered Basement rock¹. The lowest resistivity in the soil layer outside the waste body correlates with elevated groundwater conductivity, as verified by drilling and sampling in spots selected on basis of the resistivity sections, and are interpreted as preferential flow paths for the contaminants.

The extent of the buried waste is often unknown. It is difficult to establish from resistivity surveys alone, due to the extreme heterogeneity and associated variation in moisture content. Time-domain IP surveying has proved to be an efficient technique for mapping the extent of buried waste because of the high chargeability that occurs in the waste.



¹ The survey was carried out in cooperation by Lund University, Swedish Geotechnical Institute and University of the Witwatersrand (for details see Rosqvist, H., Dahlin, T., Fourie, A., Röhrs, L., Bengtsson, A. and Larsson, M. 2003. Mapping of leachate plumes at two landfill sites in South Africa using geoelectrical imaging techniques, *Procs. Ninth International Waste Management and Landfill Symposium*, S. Margherita di Pula (Cagliari), Sardinia, Italy, 6-10 October 2003, 10p).