

GEOPHYSICAL MAPPING FOR LANDFILL DELINEATION IN SUPPORT OF CONCEPTUAL SITE MODEL DEVELOPMENT

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Digital geophysical mapping (DGM) has been a time-proven process to provide qualitative and quantitative subsurface information for environmental investigations and used to develop site investigation and remediation strategies. A majority of DGM surveys are conducted in the initial phases of site characterization efforts and often form the basis of conceptual site models (CSMs) . With increasing redevelopment and reuse of former industrial sites, cost effective methods to adequately assess potentially impacted properties that limit risk to proposed land reuse are needed. As a result of client-driven objectives or local, state or federal regulatory requirement, detailed knowledge of the subsurface is often needed to implement a focused, high resolution sampling program at former industrial sites for site characterization or to fill data gaps that may exist from previous investigations. At an active railyard site in northern Ohio, an integrated geophysical investigation was conducted in an area of landfilling based on anecdotal evidence. Previous investigations had not been conducted. Information on the location and extents of the landfilled areas from historical maps and aerial images was sparse at best, making selection of strategic sampling locations a challenge. Electromagnetic and ground penetrating radar surveys were conducted to delineate suspected landfilled areas and focus subsequent sampling investigations. The electromagnetic and ground penetrating radar investigation was effective in delineating the location of the landfilled areas and allowed for the strategic placement of test pit and confirmation sampling locations. When properly integrated and sequenced, these surveys can reduce costs, increase margins of safety, improve project efficiency, and enhance subsurface detail.