

## NEAR SURFACE GEOPHYSICAL MONITORING OF ORGANIC CONTAMINANTS

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The ability to monitor near-surface sediment and ground water for contaminants is vital. This task can be challenging, however with the use of various geophysical techniques it can be done. In this study, we examined how well organic contaminants can be detected using the geophysical method, SIP (Spectral Induced Polarization). Column containers were packed in the lab with 30 millilitres worth of varying ratios of deionized water, toluene (organic contaminant), pure quartz silica sand, and sodium-montmorillonite clay until fully saturated. SIP tests were conducted on the sediments in order to compare their corresponding impedance phase and magnitude values. Though data processing is still underway, we expect to calculate conductivity values from the impedance data in the hopes of forming a measurement of how contaminated the sediment is. This study could benefit the environment greatly when applied to the clean-up of harmful chemical spills. In addition, it may be highly useful to environmental and oil companies facing the problem of evaluating a contaminated area of the subsurface. This method could help quantify the volume of porous media contaminated, and the degree of contamination in order to keep their project area clean and cost-efficient.