
Delineation of a Produced Water Plume in Pointe Coupee Parish, Louisiana

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ABSTRACT

Three pits were excavated in the 1960s at the Fordoche Oil Field in Lottie, Louisiana, as evaporation pits for oil well produced brines. The pits were closed and completed in the 1980s. Previous studies indicate that produced water has leached into the subsurface within the area to the south and southeast of the pits. Ground penetrating radar (GPR) was utilized in an attempt to delineate the present location of the plume as well as test the feasibility of GPR within a clayey soil in south Louisiana. In addition to GPR data, electrical conductivity logs and soil cores (including core sampling for sediment classification and chloride analysis) were collected. Electrical logs confirmed the presence of permeable zones interbedded with impermeable zones. Core sampling for chloride confirmed the presence of the produced water within the study area. GPR was unsuccessful in delineating the plume at the site because of the high conductivity of the shallow sediments which inhibited penetration of radar waves. A calibration GPR study was completed at a grave site in north Louisiana which proved successful due to favorable soil conditions.

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