

Case Study of Recommended Program for Extraction of NAPL Contaminants at Hill Air Force Base, Utah

by Dr. Philip Bedient, Rice University

Rice University's Environmental Science and Engineering Department has been researching the methods for identifying and locating NAPL (non-aqueous phase liquid) contamination at two field sites on military bases in the U.S. The goal is to demonstrate the utility of using extraction enhancement technologies to remove NAPL contaminants from a hazardous waste source area. The first recommended site for evaluation is the Hill Air Force Base in Salt Lake City, Utah. Surfactants, co-solvents, and soil-vapor extraction are being tested for effectiveness in a se-

ries of isolated cells in the field. The ability to implement these processes and other evaluation criteria were incorporated into a technology selection methodology.

In addition to covering the traditional aspects of extraction process design, the scope of the project addresses some concerns unique to the contaminated Air Force base. Individual cells, 3 X 5 meters in size, are to be installed in the ground and fitted with multi-level samplers at 12 to 15 locations per cell. The subsurface characterization assesses the ability of certain technolo-

gies to delineate subsurface NAPL contamination and the applicable scale and resolution of the extraction technologies. The research plan accounts for both the saturated and unsaturated aquifers. The technology evaluation methodology determines both the technical feasibility and the practical implementation of the proposed process. The comprehensive nature of the assessments should result in a significant reduction in time prior to the widespread application of these technologies.

Biographical Sketch

Dr. Bedient is Professor and Chairman of the Environmental and Engineering Department of Rice University. Educated at the University of Florida, Phil Bedient received both a M.S. and Ph.D. in Environmental Engineering in 1972 and 1979, respectively. He is a member of Phi Beta Kappa and Sigma Xi and has been honored with the Shell Distinguished Chair in Environmental Science.

Dr. Bedient is licensed as a Professional Engineer in Environmental Engineering for Texas and a Professional Hydrologist through the American Institute of Hydrology. He is a member of the American Society of Civil Engineers, American Water Resources Association, International Water Resources Association, National Ground Water Association, and the Water Environment Federation.

Areas of research interest include ground water contaminant transport, hazardous waste site evaluation, hydrology, urban stormwater quality, and floodplain management.