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by **John R. Larson**
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Depositional Environment Characterization for Effective Remediation

This presentation focuses on the use of a depositional model for demonstration and prediction of contributing factors for effective groundwater remediation of a chemically impacted site. Through several years of data collection, a subsurface geologic depositional model was developed to portray source area limiting factors for site restoration. The development of the model was needed to support remediation efforts that proved difficult due to complex site stratigraphy. Initial physiochemical data and aquifer fate and transport characteristics provided clues for groundwater restoration. However, discovery of unique stratigraphic variations across the site were more significant for effecting cleanup. A common approach for environmental remediation projects is the use of simple models to describe subsurface stratigraphy largely due to limited databases and lack of understanding the regional depositional history. This study demonstrates the importance of incorporating a regional geologic stratigraphic model with site hydrogeologic factors to drive successful remediation. The site-specific depositional environment model was the key tool to enhance cleanup of this chemically impacted site.

Environmental geologists should use a depositional model to enhance subsurface predictions for remediation sites especially for studies that include limited local databases. As embodied in Walther's 1893 studies, "the most satisfying genetic explanations of ancient phenomena were by analogy with modern geologic processes". This study demonstrates the value of using a regional geologic analog to a site-specific depositional model to accurately portray stratigraphic factors that resulted in successful remediation. ■

Biographical Sketch

JOHN R. LARSON (TRC Environmental Corporation, Kansas City, Missouri 64102; 816-260-6926; jrlarson@trcsolutions.com)
John R. Larson is a licensed professional geologist with a Bachelor

of Science in Geology from Southern Methodist University and a Masters of Public Health in Environmental Health Sciences from the University of Texas-Houston. He has published on topics that range from health effects



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associated with community

water supplies, impacts of effluent loadings on estuarine environments, in-situ bioremediation, and most recently, on environmental justice. His expertise is providing cradle-to-grave risk management for environmental projects. Mr. Larson has delivered cost-effective risk-based closures for a diverse range of clients from electronics manufacturers, oil and gas producers and shippers, transportation carriers, and real estate developers in 21 states. Larson has also directed projects that include significant public involvement, regulatory agency interface, and legal aspects for complex development projects involving National Environmental Policy Act issues.

Prior to joining TRC in January 2004, John's career spans both industry and consulting. His previous positions are listed below:

- Assistant Vice President and Environmental Group Manager, TranSystems Corp., Kansas City, Missouri, 1999-2003
- Senior Risk Assessor, Dames & Moore, Houston, Texas, 1993-1994 and 1996-1999
- Project Manager, DuPont Environmental Remediation Services (DERS), Houston, Texas, 1994-1996
- Exploration Geologist, Marathon Oil Co. and Texas Oil and Gas Corp. (TXO), Houston, Texas, Shreveport, Louisiana, and Oklahoma City, Oklahoma, 1984-1992