Use of High-Resolution Site Characterization to Optimize Remediation Performance

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Historically, many remediation efforts have failed due to inadequate site characterization and/or over-generalized and misleading conceptual site models. Currently, many older remedial technologies are being reassessed, optimized and in many cases, replaced by newer emerging remedial technologies or a combination of technologies. However, the redesign of these technologies does not always create a cost-effective way to do business.

The need for total mass characterization including sorbed, dissolved, free-phase liquid and vapor phase site data, prior to application of the remedial technologies is critical to project success. In addition, an effective remediation effort requires a thorough assessment post-treatment to depict the reduction in contamination and to determine if additional treatments are required.

Using *High-Resolution Vertical Profiling* tools such as the Membrane Interface Probe, Optical Imaging Profiler, Hydraulic Profiling Tool, and Soil Electrical Conductivity probe to conduct site characterization, one can optimize the delineation of total mass characterization and target remediation treatments. With the emergence of *High-Resolution Vertical Profiling* tools much more information can be collected over a short period of time and more accurate site models can be built. These tools gather thousands of data points on the geology and hydrology, as well as exploring the nature and extent of the subsurface contaminants. Processing this data into high resolution 2D and 3D visualizations of the site using real-time data services such as *SmartData Solutions*® provides much more detail than what is otherwise available for designing a remediation approach. With this detail, both the owner and regulator can determine what areas can be remediated, resulting in more realistic expectations of the remediation effort.

High Resolution Vertical Profiling surveys are both time and cost-effective in providing a much more realistic assessment of subsurface conditions than a limited number of monitoring wells or discrete samples spread throughout the application area.