

Optimized In Situ Reagent Delivery Using High Resolution Mass Distribution Data

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Background/Objectives. Achieving contact between contaminants of concern (COCs) and reagents is a critical component of achieving mass reduction. High resolution data sets from tools such as the Membrane Interface Probe (MIP), Hydraulic Profiling Tool (HPT) and High Resolution Injection Tool (HRIT) can be rendered in three dimensional (3D) views to develop targeted remediation strategies. The effective delivery of reagents (e.g. oxidants, reductants, bioremediation amendments) to achieve contaminant contact now becomes the next step of remediation optimization. Pilot testing is needed to develop the critical full scale design parameters required for contact including, but not limited to, reagent distribution verification (e.g. radius of influence), optimal injection pressure (fracturing versus not fracturing), injection flow rate, and injection tooling that can then be integrated into the final full scale design. Three specific projects will be discussed where this optimization approach has been implemented successfully.

Approach/Activities. Each of the subject sites utilized one or more of the high resolution site characterization technologies to redefine the conceptual site model and evaluate contaminant mass distribution and lithology as part of a pre-design investigation phase. Based on the existing and collected data, a pilot test was performed at each site to collect the key distribution and performance parameters. Distribution verification, using either a visual or geochemical change, was used to confirm if the reagents were delivered to the impacted zoned identified in the high resolution site characterization phase. Performance parameters were closely monitored to determine the injection flow rates and pressures, including fracture pressure if applicable, for input into the full scale planning and costing. In some circumstances, several injection tools and techniques were tested in order to optimize the reagent delivery. Once complete, all data was compiled and integrated into a full scale remediation strategy for each site.

Results/Lessons Learned. In this platform presentation, project data will be presented illustrating the successful use of remediation approaches to capitalize on the high resolution data sets resulting in improved COC contact and better remediation performance.

Speaker Biography. Scott Wisher, Rocky Mountain Regional Manager. Scott has been involved with in-situ remediation for over twelve years as both a consultant and in his current role as the Regional Manager for Vironex, the largest provider of specialized remediation services in the U.S. Scott manages both personnel, clients, and P&L for Vironex in this region, and also provides technical oversight to all remediation projects throughout the Texas region.

Prior to joining Vironex in 2010, Scott was the Geosciences and Remediation Manager for Bureau Veritas, a multi-national consulting firm based in Paris, France. Scott is a graduate of Indiana University holding a degree in Geological Sciences.