

In Situ Gasworks Remediation: Challenges and Innovations

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Background/Objectives. Remediation technologies for former gasworks sites are largely dictated by site constraints which often determine whether the chosen strategy is in- or ex-situ. In situ approaches for significant free product impacted media usually comprise stabilization or thermal technologies, but buried utilities and site use constraints can preclude these approaches. The authors' company participated in an innovative in situ combined remedy pilot designed to evaluate injection/extraction approaches. The former gasworks site is located in a high profile development area beneath a busy inner city street in Sydney, Australia.

Approach/Activities. The project required well installation into a tar holder structure to facilitate injection of surfactants, co-solvents and oxidants. Multi-phase extraction wells and infrastructure were installed to remove groundwater, emulsions and tar. Site constraints such as adjacent buildings, full odor abatement, maintaining full use of the overlying city street and numerous subsurface utilities provided challenges in the design and construction phases.

Innovative approaches were required in reagent selection, injection sequencing, extraction strategies and waste handling. Field activities, designed to be flexible, proved a key factor in developing effective reagent distribution and maximizing product recovery.

Results/Lessons Learned. Project results indicate that the strategies employed were able to remove approximately 15 tons of tar (~17% of the estimated total). Despite significant mass removal, stage specific goals were not met and the project was terminated.

Even though negotiated goals were inappropriate for the technology, the method proved able to remove significant viscous tar from a confined space in a limited time. It is recognized that this approach is challenging (lessons learned will be highlighted) and is unlikely to be considered when other options are feasible. However, the technique can be applied successfully, given certain site limitations, drivers and suitable project specific goals. An injection/extraction approach allows the practitioner to consider less invasive options when determining which remediation strategy to adopt.