

## Using HRSC to Rapidly Assess LNAPL Distribution, Optimize Well Placement and Accelerate Remedial Design

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**Background/Objectives.** A release of petroleum hydrocarbons was discovered during a limited site investigation with multiple potential sources and mobile light non-aqueous phase liquid (LNAPL) present in several of the initial monitoring wells placed in late 2021. The initial discovery indicated that additional assessment was necessary to assess the associated risk and to further advance the conceptual site model (CSM).

**Approach/Activities.** Rather than proceeding with a next round of monitoring well placement, the project team (client, consultant, regulator) agreed upon a more dynamic assessment strategy to accelerate our understanding of the release, the development of the CSM, and the remedial design strategy. A high resolution site characterization (HRSC) approach to assess LNAPL and non-LNAPL distribution was proposed by Terracon. While the regulator was unfamiliar with an HRSC approach, the project team agreed that such an approach would best help us achieve our project goal.

The Triad Approach was central to the scope development. Terracon partnered with Dakota Technologies, Inc. and established a data transfer process such that spatial and HRSC data were transferred to the Terracon data management and visualization team as it was gathered. Daily calls, pre-commencement to field activities, included the Terracon data and project management team as well as the Terracon and Dakota field teams occurred during which the evolving 3-D model was reviewed and discussed. Discussion focused on developing the current day's field objective including location, depth and number of HRSC borings. In total, 32 LIF and eight MIP borings, as well as 11 correlation soil borings were advanced over the five-day investigation.

**Results/Lessons Learned.** The rapid data collection and evaluation led to the critical placement and construction of eight assessment monitoring wells that were screened in selected discrete vertical intervals based on the LNAPL distribution and established source, mid-plume, and point of compliance wells based on the contaminant distribution identified by the HRSC approach.

Multiple LNAPL types and sources were confirmed with the HRSC approach. In-house data management allowed for Terracon to develop visuals and incorporate other site data sets into the exhibits, which really exemplifies the saying that "a picture is worth a thousand words". LNAPL transmissivity testing is expected to be performed in the coming months and a developed CSM is anticipated along with a remedial alternatives screening evaluation, which should be completed by the time of the presentation.