

Pump and Treat Can Still Yield Extraordinary Results

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Background/Objectives. In a former plant that was operated for 20 years for the manufacture of chlorinated organic solvents, leakages from the production process resulted in the release of 200 of DNAPL into a sandy layer, creating a pool that remained vertically retained in place by a layer of organic clay.

In addition to DNAPL, expressive concentrations of dissolved-phase were also present. For that reason, pump and treat (P&T) systems were implemented to hydraulically contain and remove mass. Pumping was done at locations of greater permeability of the sandy layer, with the extraction of water and DNAPL, showing that this remedial action could also be successfully applied to extract free-phase product.

Approach/Activities. Considering the volume of DNAPL being removed via pumping, a stage of additional investigation was conducted, focused on the study of stratigraphic details. This was aimed to determine the points where DNAPL accumulation and saturation were more likely to occur.

Based on this mapping, 3 additional pumping wells were installed, dedicated exclusively to the extraction of free-phase product. Over a 25-month period of operation, these wells have already removed 16 m³ of DNAPL.

Results/Lessons Learned. Preliminary studies suggest that it should be possible to remove an additional 21 m³ of DNAPL, approximately. This should take place over the next 2 years of operation, and stable monthly extraction rates seem to confirm this expectation.

This case proves that when based on a robust conceptual model and adequate design and implementation, this traditional technique (P&T) can achieve significant mass removal, at a low cost and with little operational complexity.