

HOW HISTORICAL WELL CONSTRUCTION MAY AFFECT LNAPL CLEANUP STRATEGY

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Monitoring wells were installed in 1993 across a marine property in Portland, Oregon, to support an investigation of releases from an underground pipeline. LNAPL thicknesses of up to 14 feet were observed in several of the wells and an interim removal program was initiated to protect the adjacent waterway. These efforts were largely unsuccessful and removed less than 100 gallons of LNAPL over a two year operating period. A second set of wells were installed in 2003 to support the design of a remedial action to remove the LNAPL. However, no measurable LNAPL thicknesses were observed in these wells and a review of the site was conducted to identify the cause of the inconsistency. The oldest wells were found to have been installed with well screens that connected two sandy aquifers separated by a thin silt layer, while the newer wells were installed exclusively within the upper sand unit. A downward vertical gradient was also observed between the two aquifers that created a cone of depression around these older wells that allowed LNAPL to accumulate. The remedial action approach was therefore modified to include the installation of an adsorbent barrier along the waterway and passive skimmers in two older wells.

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