ENVIRONMENTAL FRACTURING APPLICATIONS

FRACTURE-ENHANCED EXTRACTION OF GASOLINE

… the combination of environmental fracturing and Dual-Phase Extraction (DPE) technologies was shown to be extremely effective in removing gasoline contamination from glacio-lacustrine clays.

PROBLEM

Subsurface gasoline contamination at a Fuel Storage and Distribution Terminal. Contamination is present in glacio-lacustrine clays and silts across an area of 2 hectares.

OBJECTIVES

- to assess the performance of fractured wells vs. conventional wells for removing free-phase and residual hydrocarbons.

FIELD PROGRAM

A total of 43 fractures were induced at seven fracture well locations within the contaminant plume. Fractured and conventional wells were individually tested by connecting each to a high vacuum, Dual Phase Extraction (DPE) pump to extract both liquid and vapour phase contaminants. Each well was tested for 24 hours at four stages of increasing vacuum to assess its performance.

TECHNICAL EVALUATION

Compared to conventional wells, fracturing resulted in:

- up to **10^2 times** greater hydraulic conductivity and air permeability in clay soils;
- over **3 times** greater radius of influence for liquid and vapour contamination.

Contaminant removal was greatest at maximum vacuums.

Below: Monitoring vacuum pressures in fractured recovery wells.

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