

ENVIRONMENTAL FRACTURING APPLICATIONS



REMEDIATION USING PHYSICAL EXTRACTION, BIOVENTING, AND CHEMICAL INJECTION

... *in situ* chemical oxidation proved immediately effective in destroying residual phase hydrocarbon contamination to non-detectable levels in soils and groundwater.

PROBLEM

A former gasoline service station site contains historical petroleum hydrocarbon impacts (BTEX) in shallow subsoils. Residual levels of benzene and light-ended aliphatics persisted after treatment using soil vapour extraction and bioventing.

OBJECTIVE

To reduce residual phase hydrocarbon contamination to below Tier 1 groundwater remediation criteria.

FIELD PROGRAM

A total of 4,000 litres of 10 to 15% stabilized Hydrogen Peroxide (i.e. Modified Fentons Reagent) was sequentially injected as 100 L volume increments into 8 wells located in the former tank nest and pump island areas. Injection flow rates and pressures were monitored using an on-board data acquisition system. The entire volume of oxidant solution was delivered in a single afternoon.

TECHNICAL EVALUATION

Pressurized injection of Hydrogen Peroxide into affected soils in the former tank nest and pump island resulted in:

- reduction of BTEX and F1 hydrocarbons in all wells to non-detectable concentrations; soil levels below AENV Tier 1 criteria
- application for a Remediation Certificate from Alberta Environment.

Pressurized injection of a stabilized peroxide solution (Modified Fentons Reagent) into BTEX-impacted subsoils at a former gasoline service station site.

