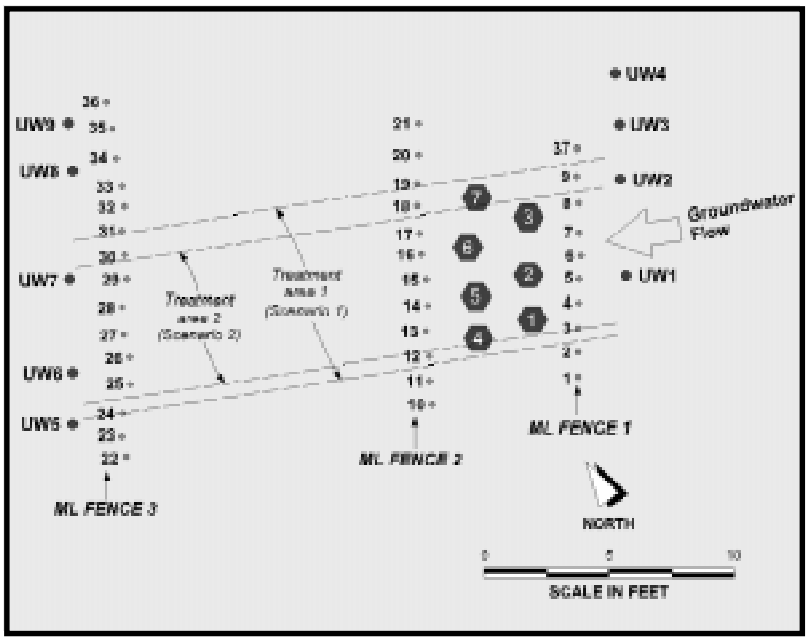
Oxygen Barrier BTEX Remediation Study with University of Waterloo in Strathroy, Ontario

Contaminants	Application Method	Soil Type	Groundwater Velocity
BTEX	Oxygen Barrier	Sand/Glacial Till	0.3-0.5 ft/day

Site Description and Remedial Design

A former gasoline service station located on an unconfined fine to medium sand aquifer, underlain with glacial till at about 30 feet, was contaminated with BTEX. A residual BTEX plume was present in a low concentration zone (2-4 ppm) and a high concentration zone (10-94 ppm). Groundwater velocity is about 3 to 6 inches per day. The water table is about 11 to 12 feet below ground surface. The aquifer is used as a source of local drinking water.

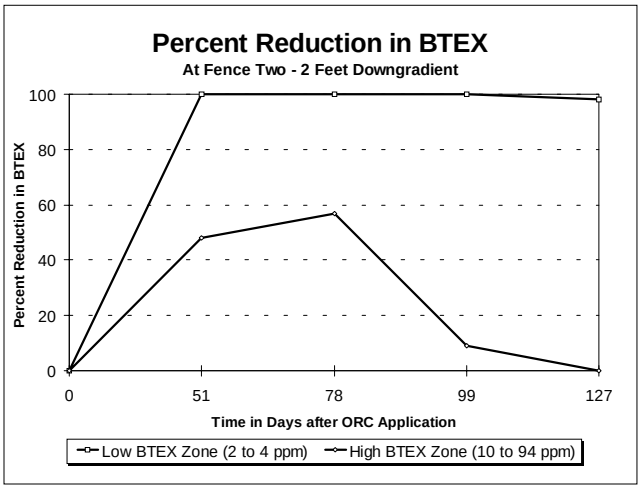
Control was attempted with an ORC oxygen barrier. The barrier was designed by installing seven 8" diameter ORC source wells in two rows on two foot centers. An extensive series of monitoring points were installed downgradient as shown.



Results

As shown in Figure 1, BTEX was virtually eliminated along flowpaths with concentrations below 4 ppm and significantly reduced for all flowpaths between 10 and 94 ppm; this occurred even though the average influent BTEX concentration increased almost three times during the course of the experiment. Figure 2 presents oxygen contour plots at Fence 1 (upgradient) and Fence 2 (downgradient) in vertical profile . Figure 3 presents the risk reduction data for two centerline points at Fences 2 and 3.

Figure 1



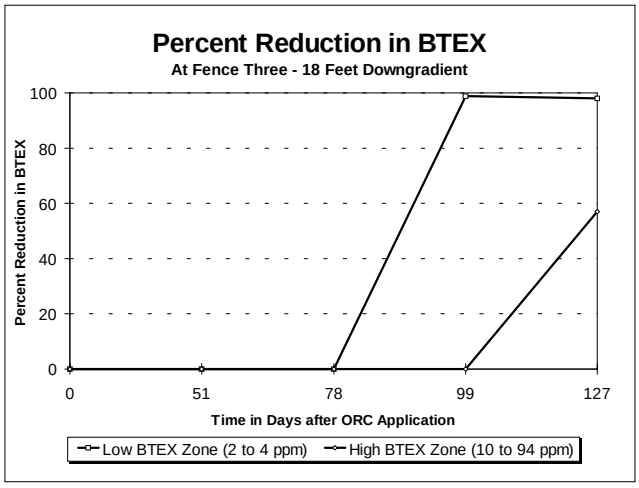
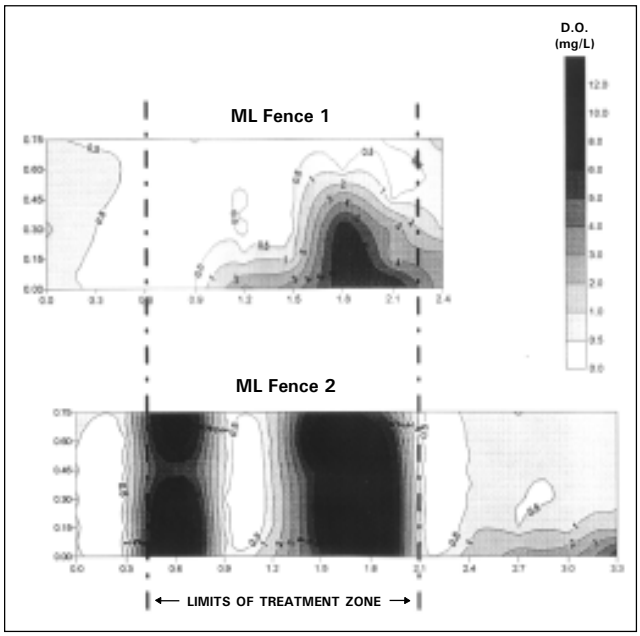
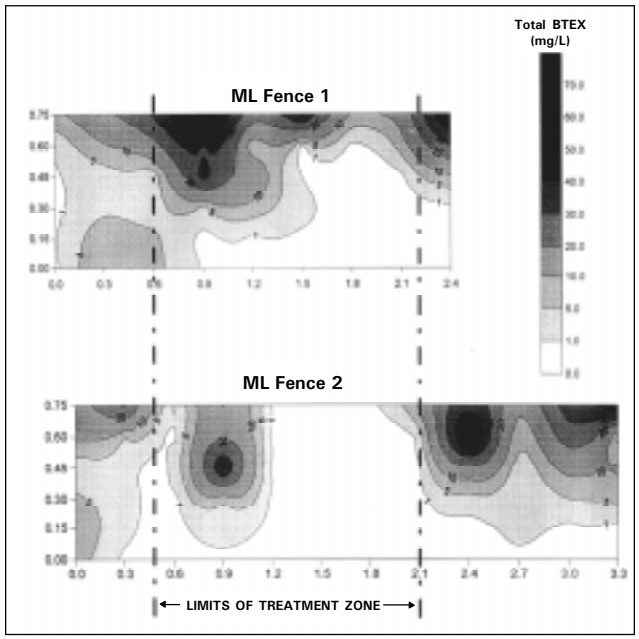


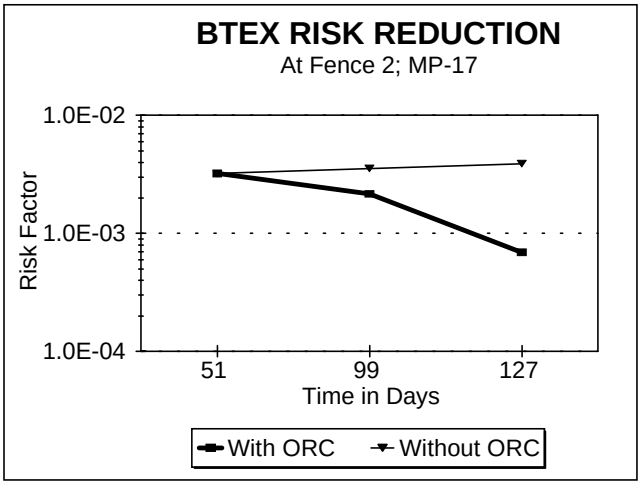
Figure 2

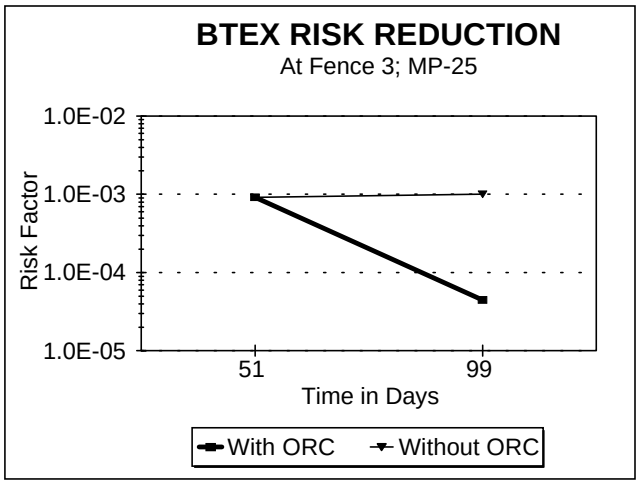




Dissolved Oxygen ⟵ **Day 51** ⟶ **Total BTEX**

Figure 3





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