

ORC Barrier MTBE Remediation in New Jersey

Contaminants	Application Method	Soil Type	Groundwater Velocity
MTBE, BTEX	ORC Barrier	Coarse Gravel	0.04 ft/day

An industrial site in New Jersey was contaminated with benzene and MTBE. The site had 13 USTs which were either abandoned in place or excavated and removed. The contaminant plume area was approximately 275 feet in width and 8 feet thick. Ground water flow direction is to the north at a velocity estimated to be approximately 0.04 foot per day.

Based on the contaminant type and the hydrogeological conditions of the site, an ORC barrier was selected as the best remedial alternative. The barrier was constructed within a trench. In order to enhance the microbial degradation process at the barrier, ORC socks were placed into two rows of 4 inch diameter wells spaced 12 feet on center within the trench. A single row of five wells was installed along the upgradient edge of the trench to oxygenate groundwater immediately as it flowed into the trench. A second row of five wells was installed in offset locations to supply supplemental oxygen. A map of the site detailing the ORC placement wells and monitoring well locations is presented in Figure 1.

Two wells (MW-1 and MW-3) were used to monitor the reduction of benzene and MTBE. Six months after application of ORC, with a changeout of socks occurring at three months, the concentration of benzene dropped from 1,940 to 1,470 ppb and the concentration of MTBE dropped from 1,570 to 1,160 ppb in MW-1 (Figure 2). In MW-3, the concentration of benzene decreased from 329 to 90 ppb and the concentration of MTBE decreased from 1,070 to 9 ppb (Figure 3).

NOTE: The data set represented in the following graphs shows that BTEX levels decrease before MTBE levels. The ORC Technical Bulletin entitled “Potential for the Bioremediation of Methyl Tertiary Butyl Ether (MTBE)” discusses this mechanism in more detail, pointing out that the presence of background hydrocarbons (i.e. BTEX) may interfere with the metabolism of MTBE. Thus, the impact of ORC on BTEX is an important secondary factor in MTBE bioremediation.

Figure 1

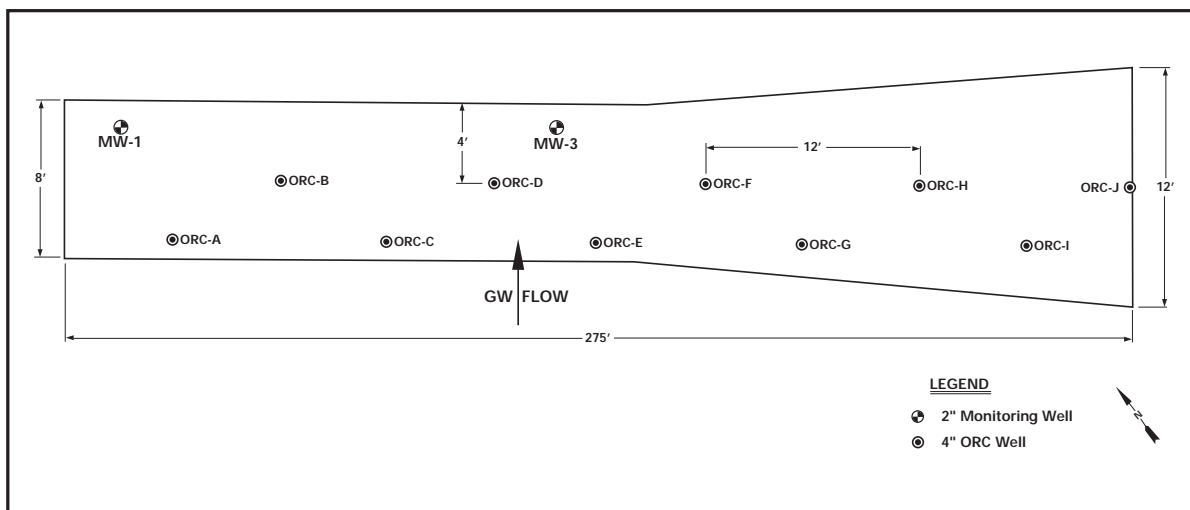


Figure 2

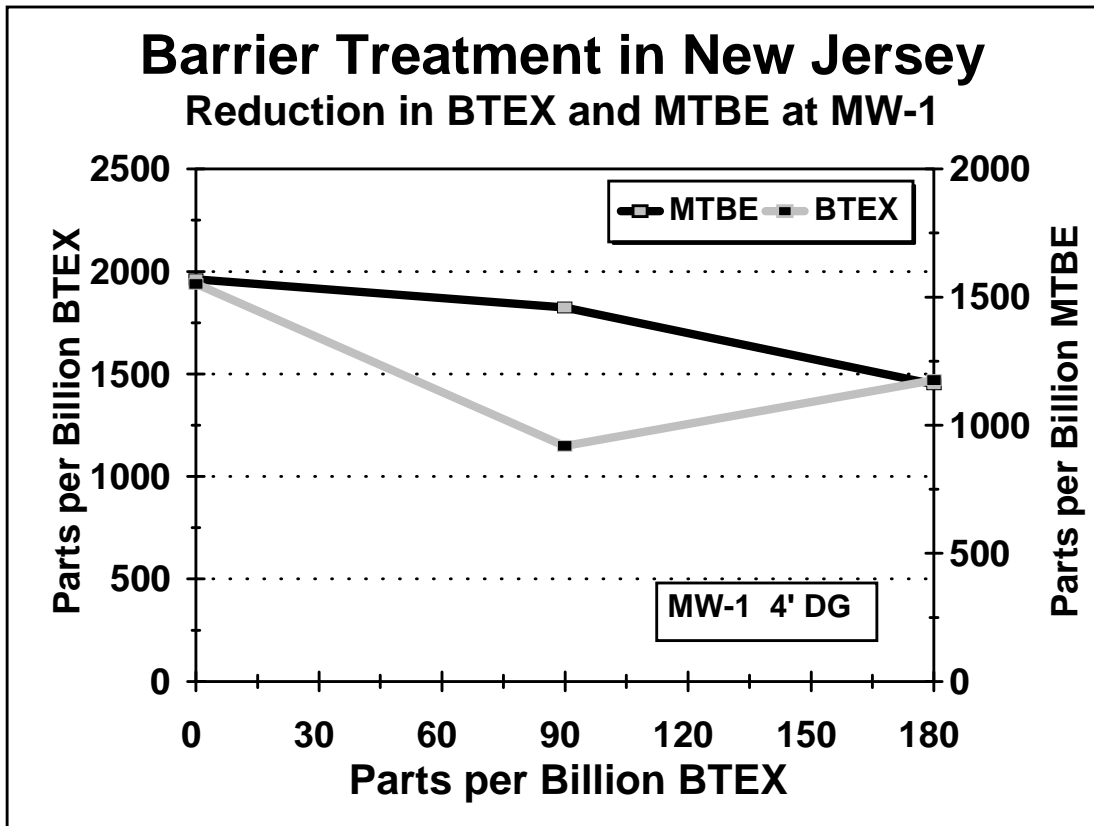


Figure 3

