CLEANOX CASE STUDY
CHLORINATED SOLVENT AND PETROLEUM HYDROCARBON CONTAMINATION AT FORMER NEWS PUBLISHER FACILITY IN FRAMINGHAM, MASSACHUSETTS

Closure assessment activities performed in conjunction with an underground storage tank (UST) closure encountered chlorinated solvent and petroleum hydrocarbon contamination stemming from a dry well used for waste disposal by the former site owner, a newspaper publisher. Interim remedial actions (IRA) at the site included: disposal of over 6,000 gallons of hazardous liquids and contaminated cleaning water from the sump; disposal of fifteen 55-gallon drums of hazardous sludge from the sump; and application of CleanOX treatment to the sump area to address groundwater contamination.

A pilot-scale application was performed in order to evaluate site-specific geochemistry, and to demonstrate the effectiveness of the chemical oxidation process to address the contaminants of concern in site groundwater: 1,1-dichloroethene, 1,1,1-trichloroethane, and vinyl chloride. Site lithology consisted of silty fine grained sands with some gravel to a depth of 15 to 16 feet below grade where bedrock was encountered. Soils permeability had been estimated at 10^{-4} cm/s.

Two CleanOX application points were used for treatment within the 30 ft wide sump area during the field application. The four-inch diameter, stainless-steel wells along with other surrounding wells were sampled prior to and three weeks following application of the CleanOX process. Volatile organic compound analysis of groundwater samples indicated that the CleanOX application effectively reduced contaminant concentrations in the treatment area without any appreciable change in surrounding wells (i.e., contaminants were oxidized, not just dispersed).

CHEMICAL PARAMETER	MW-301		MW-302	
	BEFORE	AFTER	BEFORE	AFTER
Tetrachloroethene (ug/l)	440	10	110	53
1,1,1-trichloroethane (ug/l)	40,600	440	4,800	2,300
1,1-dichloroethene (ug/l)	129	BDL	BDL	22

Based on the amount of source material removed in performing IRA tasks at the site and the dramatic reduction of chlorinated hydrocarbon contaminants in the sump area, the site owner petitioned the State for site closure with a restriction on groundwater use at the site. The state did not require additional CleanOX treatment and closure of the sump area was granted.