



# Dry Cleaning Site Remediation

## Miami, Florida

### Project Summary

Dry cleaning solvents were found in the ground water at a shopping center at the former location of a dry cleaning facility at commercial shopping center. Most of the mass of ground water contamination was located under a bank built that was built over the former dry cleaners, which restricted access for remediation. BioLogix CL® bioremediation was implemented to reduce the volume of contamination in the source area and down gradient. BioLogix CL® is a consortium of *Pseudomonas sp.* that produces constitutive enzymes to cometabolize PCE and other halogenated aromatic compounds. Dextrose is added with BioLogix CL® to provide a substrate for microbial growth. Application of BioLogix CL® bioremediation at this site reduced the total chlorinated solvent concentrations by more than 99% in two months.

### Geology and Hydrogeology

The site is located in South Florida on a coastal plain where the geology is characteristically interbedded sandy limestone. The hydraulic conductivity is relatively high with a calculated range of 1.1 to 37 ft./day. The ground water was naturally aerobic at the site, with background and pre-treatment dissolved oxygen concentrations of greater than 2 mg/L.

### Contamination

The PCE and low concentrations of daughter products were found in ground water under the former dry cleaners and down gradient. The PCE plume was estimated to be 30,000 square feet. The PCE concentration was greater than 10,000 µg/L under the building in sampling events prior to bioremediation. The daughter product concentrations were less than 10% of the total CVOC concentrations and no vinyl chloride was detected.

### Remediation Design

BioLogix CL bioremediation was implemented in the ground water around the building as close as possible to the source area. Injection into the source area was not possible due to access limitations during construction of the bank. Five 55-gallon drums of a BioLogix CL slurry was injected in late December 2001.

Monitoring wells in the source area and surrounding area were sampled to assess the progress of the remediation. The following table shows the pre-treatment and post-



treatment VOC concentrations in a source area monitoring well (MW-1) and a side gradient monitoring well (MW-4).

**Source Area (MW-1)**

Sampling Date	CVOC Concentrations (µg/L)				DO (mg/L)
	PCE	TCE	DCE	VC	
7/30/01	12,800	452	535	BDL	1.85
1/29/02	580	23.4	30	1.9	4.32
2/5/02	66	18	40	BDL	2.06
2/12/02	3.0	14	21	BDL	2.93
2/19/02	560	11	35	BDL	2.07
3/19/02	709	15	26	1.4	2.92
4/19/02	398	8.7	18	BDL	1.32
1/8/03	542	41	3.7	BDL	2.91
4/3/03	876	43	3.0	9/10/04	2.74

**Side Gradient Plume (MW-4)**

Sampling Date	CVOC Concentrations (µg/L)				DO (mg/L)
	PCE	TCE	DCE	VC	
7/30/01	13	1.1	BDL	BDL	3.69
1/29/02	120	1.8	BDL	BDL	4.65
2/5/02	BDL	BDL	BDL	BDL	1.56
2/12/02	10	BDL	BDL	BDL	2.47
2/19/02	1.2	BDL	BDL	BDL	2.97
3/19/02	8.24	BDL	BDL	BDL	2.57
4/19/02	BDL	BDL	BDL	BDL	1.23
1/8/03	BDL	BDL	BDL	BDL	1.84
4/3/03	4.7	BDL	BDL	BDL	2.37