

Petroleum Bioremediation by Delta Remediation's BioLogix Remediation Product in California Case Studies

BioLogix bioremediation was used to remediate petroleum contaminated soil and ground water to facilitate property redevelopment and meet regulatory obligations at sites throughout the US. While every site is unique, the following case studies provide a basis for confidently selecting BioLogix bioremediation for your project.

Santa Barbara UST Remediation

BioLogix bioremediation was implemented to treat residual contamination in ground water and soils following the removal of a gasoline underground storage tank (UST). Pre-treatment sampling showed that the dissolved oxygen levels were relatively low due to the presence of hydrocarbons. Approximately 500 liters of BioLogix microbes were injected into soils and ground water on December 2, 2009. In addition to BioLogix, forty pounds of an oxygen supplement was added to support the aerobic metabolism. The injection was by direct push methods at 12 locations within the 1,600 square foot plume. The depths of impacts were between 15 and 19 feet below ground surface.

	Sampling Date	TPH	Benzene	Toluene	Ethylbenzene	Xylene
Pre-Injection	10/6/09	1,200	320	7.2	22	70
Post-Injection	4/26/10	<50	<0.5	<0.5	<0.5	<1.0

*All concentrations are in µg/L.

Redding UST Remediation

BioLogix bioremediation was implemented to treat residual contamination bordering property boundaries in conjunction with soil excavation and on site ex-situ treatment using BioLogix. Remediation began following the removal of a gasoline UST. BioLogix was also used to treat the excavated soil by es-situ treatment on-site. Approximately 2400 liters of inoculated BioLogix microbes were injected into the soil and groundwater plume. In addition to BioLogix, 100 pounds of an oxygen supplement was added to support the aerobic metabolism. The injection was by direct push methods at 11 locations within the 7,000 square foot ground water plume with depth ranging from 12 – 27 feet below surface.

	Sampling Date	TPH	Benzene	Toluene	Ethylbenzene	Xylene
Pre-Injection	5/29/08	8,500	240	53	670	63
Post-Injection	11/24/08	650	1.7	4.5	5.9	1.9
	2/24/09	57	<0.50	<0.50	<1.0	<0.50
	8/27/09	<50	<0.50	3.2	<1.0	<0.50

*All concentrations are in µg/L.

Southern California Gasoline UST Release Site

After removal of USTs, piping and surrounding soils ground water was treated with 400 liters of BioLogix® by direct injection in December 2009. Post treatment sampling shows the bioaugmentation reduced the contaminant levels to below regulatory standards by the next semi-annual sampling round

	Sampling Date	TPHg	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
Pre-bioaugmentation	10/6/09	1,200	320	7.2	700	70	5
Post-bioaugmentation	4/26/10	<50	<0.5	<0.51	<1	<5	<0.5

All concentrations shown in µg/L.

Florida Panhandle Gas Station

BioLogix was injected through horizontal drilling to address a ground water plume with limited surface access. After a single BioLogix application there was significant reduction in the contaminant concentrations.

	Sampling Date	Benzene	Toluene	Ethyl benzene	Xylene	Naphthalene	2-Methyl naphthalene
Pre-bioaugmentation	11/11/05	4,300	3,000	1,300	5,300	240	48
	10/23/07	2,700	4,200	860	5,700	240	41
Post-bioaugmentation	11/06/08	1.7	8.5	0.71	5.1	0.49	0.45
	1/22/09	0.88	0.64	0.43	1.3	0.49	0.45

All concentrations shown in µg/L.

Georgia Gas Station

Several years after the USTs, piping and surrounding soils were removed, residual gasoline and diesel fuel were found in soil and ground water. Despite the presence of free product in the source area, bioaugmentation achieved significant contaminant reduction and free product was no longer observed.

	Benzene	Toluene	Ethylbenzene	Total Xylenes
Pre-treatment (5/18/07)	13,000	19,000	1,600	11,700
Post-treatment (5/20/08)	140	180	13	201

All concentrations shown in µg/L.

Conclusions

Every site presents unique challenges, but the use of BioLogix microbes removes much of the uncertainty regarding remedial performance. Delta Remediation provides site evaluations and background biological testing to determine whether a site is appropriate for BioLogix bioremediation. Contact Delta Remediation to discuss your site at info@deltaremediation.com or 780-962-7991.