

Our skill and experience implementing in situ bioremediation and other sustainable technologies creates high-value solutions to complex groundwater and soil contamination and related issues at lower cost than competing approaches.

### Sustainable Solutions. Partner-Level Involvement.

Geosyntec is a reliable partner for creative, cost effective and successful solutions because we approach remediation with an environmental management perspective. For each client, we develop a clear understanding of how to achieve best-value outcomes using the most appropriate technologies and management strategies for each project.

### Innovative Technologies. Practical Applications.

Our professionals set the standard for engineered control of processes for environmental remediation. From advanced vapor intrusion evaluation strategies to sophisticated bioaugmentation techniques and beyond, Geosyntec delivers practical environmental management solutions that meet project-specific needs and achieve our clients' objectives.

### Research Leaders. First-to-Field.

Geosyntec scientists pioneered the use of bioaugmentation to profoundly refashion in situ biodegradation processes in groundwater. Our scientists are active in applied research and development with the DOD ESTCP and SERDP programs, NASA, the University of Toronto, Cornell, Georgia Tech, and others on topics such as bioremediation, metals biogeochemistry, reactive metals, chemical oxidation, waste water treatment, vapor intrusion, and the treatment of energetic, chlorinated and recalcitrant compounds and dense nonaqueous phase liquids.



Expanding Bioremediation and Other Sustainable Solutions for Complex Environmental Issues.



Geosyntec led the development of a successful groundwater remediation strategy at Aberdeen Proving Ground. We developed detailed designs for six sites and assisted in negotiations with regulators to achieve Agency approvals.

### Client Service. Project Solutions.

At Geosyntec, our vision of success builds on a long-held belief that exceptional client service coupled with exceptional project solutions will result in long-term business relationships of mutual reward. We support our client service and project solutions approach through an internal culture of technical excellence and collegial relationships, common commitment to our core values, and the innovation and practical thinking our staff bring to every assignment.

Beyond bioremediation, Geosyntec also delivers solutions in many areas of environmental studies and cleanup, infrastructure engineering and design, and natural resources assessment and restoration. Since our founding in 1983, Geosyntec has completed nearly 10,000 projects worldwide with an outstanding and, always improving, safety record. Our experience delivers on the potential of innovative applications of proven and emerging technologies.

BREADTH OF EXPERIENCE





## Our Experience Benefits Your Project Results

### INNOVATIVE APPLICATION OF BIOAUGMENTATION IN A FRACTURED ROCK ENVIRONMENT

TCE concentrations observed in groundwater wells approaching 16,000 parts per billion (ppb) have been reduced in the test plot area to less than 1 ppb in less than one year. The wells in the test plot are compliant with NJDEP groundwater quality standards for the first time in decades. The results have been so promising that the USGS and Geosyntec have been awarded a research grant by the Strategic Environment Research and Development Program (SERDP) to further study the mechanisms involved in bacterial transport in this geology.

Learn more at <http://practices.geosyntec.com/bioremediation>

### ENHANCED IN SITU BIOREMEDIATION OF GROUNDWATER IMPACTED BY CHLORINATED SOLVENTS

Geosyntec's remedy has controlled the off-site migration of contaminated groundwater, and successfully treated site soils and groundwater to achieve remediation targets. PCE and TCE are now being completely reduced in the bioactive zone to ethene, and concentrations of CVOCs in groundwater have decreased to below drinking water standards over more than one-half of the site.

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### BIOREMEDIATION IN OVERBURDEN AND BEDROCK TO ADDRESS CHLORINATED SOLVENTS

Geosyntec successfully demonstrated that bioremediation is a feasible approach for TCE remediation in overburden and bedrock at this site, resulting in the approval of a full-scale biobarrier as the long-term remedy to prevent off-site migration of VOCs. The total concentration of chlorinated VOCs (i.e., TCE, cis-DCE and vinyl chloride) has decreased approximately 85% in the source area and more than 95% in the downgradient plume.

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### FULL-SCALE BIOREMEDIATION OF CHLORINATED SOLVENTS IN GROUNDWATER

Geosyntec led the development of a successful groundwater remediation strategy and met the client's objective of a rapid design/build/implementation of groundwater remedy. We developed detailed designs for all six sites and assisted in negotiations with regulators to achieve Agency approvals. We provided design-build services and completed start-up operation of multiple ERD systems at the six OAA sites within a compressed schedule of only 18 months. Geosyntec is now in the process of monitoring and optimizing each of the six ERD systems.

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### VAPOR INTRUSION ASSESSMENT AND INNOVATIVE TECHNOLOGIES HELP REDUCE COSTS

Geosyntec's detailed analysis of the existing data, strategic and innovative sampling program and applied research for passive sub-slab venting demonstrated to the satisfaction of the NJDEP that there is no complete pathway for vapor intrusion into indoor air. This reduced the Corps' long-term liability from approximately \$1 million to approximately \$120,000. Our negotiation with NJDEP for acceptance of passive diffusive samplers for monitoring the sub-slab soil gas and indoor air could result in at least a 50 percent reduction in the annual monitoring costs.

Learn more at <http://practices.geosyntec.com/bioremediation>

### VAPOR INTRUSION INVESTIGATION AND MITIGATION SYSTEM DESIGN IN MALAYSIA

Geosyntec used two proprietary investigative and sampling methods, High Purge Volume sub-slab testing and WMS passive quantitative samplers, to cost-effectively characterize the concentrations of VOCs in the subsurface, significantly reducing the client's costs associated with characterizing a large manufacturing facility. Passive quantitative samplers were also easier to use than traditional sampling methods considering the challenges of shipping canisters to and from Malaysia.

Learn more at <http://practices.geosyntec.com/bioremediation>

## For More Information

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## About Geosyntec

Geosyntec is a specialized consulting and engineering firm that works with private and public sector clients to address their new ventures and complex problems involving the environment, our natural resources, and our civil infrastructure. Geosyntec has a staff of 820 engineers, scientists, and related technical and project support staff located in more than 50 offices throughout the U.S. and in Canada, Malaysia, and the United Kingdom.

for more information visit:  
<http://www.geosyntec.com>  
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consultants

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