PARTNERS IN ENVIRONMENTAL TECHNOLOGY
TECHNICAL SYMPOSIUM & WORKSHOP

Meeting DoD’s Environmental Challenges

Marriott Wardman Park Hotel
Washington, D.C.
December 1–3, 2009
ABOUT THE SPONSORS

Partners in Environmental Technology is the hallmark of the annual Technical Symposium & Workshop hosted by the Strategic Environmental Research and Development Program (SERDP) and the Environmental Security Technology Certification Program (ESTCP).

The concept reflects not only the partnership formed by the two host organizations but, more significantly, highlights the many different alliances that play a pivotal role in the success of federal technology development—the partnership between Department of Defense (DoD) research and development programs; the partnership among DoD, the Department of Energy (DOE), the Environmental Protection Agency (EPA), and other federal agencies; the partnership among federal agencies, private industry, and academia; and the partnership among technology developers, the numerous end users of technology, environmental regulators, and policy developers.

The Symposium & Workshop brings together this nation’s best environmental researchers and technology developers with the defense user and regulatory communities to showcase cutting-edge environmental science and technologies. Managers and regulators responsible for implementing solutions can communicate the most difficult challenges of our defense establishment to the research community. Users in the field have the opportunity to learn about technologies and approaches that offer solutions to their most pressing environmental challenges.

SERDP is DoD’s environmental science and technology program, planned and executed in partnership with DOE and EPA, with participation by numerous other federal and non-federal organizations. The Program invests across the broad spectrum of basic and applied research, as well as exploratory development. SERDP focuses on cross-service requirements and pursues solutions to the Department’s most intractable environmental problems. Advances in the understanding and management of DoD’s resources support the long-term sustainability of training and testing ranges and facilities. Innovative environmental technologies significantly reduce current and future environmental liabilities. Advances in science and technology improve both the environment and the military performance of DoD systems.

ESTCP is DoD’s environmental technology demonstration and validation program. The Program’s goal is to identify and demonstrate cost-effective technologies that address DoD’s highest priority environmental requirements. Demonstrations are carried out at DoD facilities and sites to document improved efficiency, reduced liability, and direct cost savings. Innovative technologies are reducing the cost of environmental remediation and compliance, lowering life-cycle costs of weapons systems, and managing the impact of DoD’s operations on the environment, while enhancing military readiness.
MEETING DoD’S ENVIRONMENTAL CHALLENGES

The Department of Defense faces a broad range of environmental challenges. SERDP, ESTCP, and partnering organizations are responding to these challenges with scientific understanding and innovative technologies.

- The Department has stewardship responsibility for more than 30 million acres of land. In managing this vast amount of land, DoD officials must take into account the unique military aspects of the Department’s mission. Understanding the potential impacts of military activities on the sustainability of the installations’ natural resources will ensure the continued use of these unique training environments, while preserving the natural resources in perpetuity.

- DoD relies on extensive industrial operations, both within the Department and in the private sector, for manufacturing and maintaining military equipment. Eliminating the sources of hazardous materials will reduce the environmental impact of DoD’s industrial activities and the life-cycle costs of our weapons systems.

- DoD is subject to a variety of regulations and permitting requirements related to its operations and facilities. Improving the military’s ability to monitor, reduce, or eliminate wastes and emissions generated by DoD operations and infrastructure will mitigate future environmental impacts.

- Remediating the legacy of past practices will continue to be a major liability for DoD for decades to come. Innovative remediation technologies both improve outcomes and reduce costs.

This year’s Symposium & Workshop will highlight SERDP and ESTCP’s recent efforts to maintain readiness and achieve sustainable military operations.

www.serdp-estcp.org/symposium
ABOUT THIS YEAR’S EVENT

PLENARY SESSION

The Symposium & Workshop will commence on Tuesday morning with presentations by our distinguished Plenary Session speakers, including officials of the U.S. Department of Defense and a leading scientist addressing the pressing issues of our time related to conservation and global climate change. Together, these Plenary Session speakers will offer attendees key insights into current and emerging environmental and national security issues.

Dr. Dorothy Robyn is the Deputy Under Secretary of Defense for Installations and Environment. She provides management and oversight for military installations around the world and leads environmental, safety, and occupational health programs for the Department of Defense. In addition to her responsibilities for installation capabilities, programs, and budgets, Dr. Robyn has responsibility for environmental restoration at active and closing bases; conservation of natural and cultural resources; the integration of installations and environmental needs into the weapons acquisition process; pollution prevention; environmental technology; fire protection; and explosives safety. Prior to her recent appointment, Dr. Robyn was a principal with The Brattle Group—an economic consulting firm that specializes in competition and antitrust, energy, and the environment—where she focused on transportation and telecommunications policy. Other previous positions include Guest Scholar at the Brookings Institution; Special Assistant to President Clinton for Economic Policy and senior staff member of the White House National Economic Council; work with the Joint Economic Committee of Congress and the congressional Office of Technology Assessment; and assistant professor at Harvard’s Kennedy School of Government.

Lieutenant General Robert Van Antwerp is the U.S. Army Chief of Engineers and Commanding General of the U.S. Army Corps of Engineers (USACE). General Van Antwerp serves as the senior military officer overseeing the nation’s civil works infrastructure and military construction and is responsible for approximately 33,000 civilian and 600 military employees who provide project management and construction support to 250 Army and Air Force installations in nearly 100 countries. He oversees hundreds of environmental protection projects and the regulatory permit program to protect, restore, and enhance thousands of acres of wetlands. In addition, he is responsible for USACE’s emergency response mission to support the Federal Emergency Management Agency in restoration and repair after a disaster, whether natural or manmade. Before taking command of the USACE, General Van Antwerp served as Commanding General of U.S. Army Accessions Command, helping to recruit and train thousands of soldiers.

Dr. Peter Kareiva is Chief Scientist at The Nature Conservancy (TNC), where his responsibilities include reporting to the Board of Directors on the state of science in The Nature Conservancy, mentoring TNC scientists, identifying opportunities warranting scientific attention, advising leadership on emerging conservation challenges, and serving as an external spokesperson for TNC science. Prior to his move to The Nature Conservancy, Dr. Kareiva served for 20 years as a professor at more than eight universities around the world and led Pacific salmon conservation efforts for three years at National Oceanic and Atmospheric Administration (NOAA) Fisheries. His past publications and research have focused on such diverse fields as agricultural ecology, fisheries science, risk analysis, genetically engineered organisms, and global climate change. He has authored six books, has received a Guggenheim Fellowship, and was recently elected to the American Academy of Arts and Sciences. In addition to his responsibilities at The Nature Conservancy, Dr. Kareiva continues to teach and advise students at several universities.
PROJECT-OF-THE-YEAR AWARDS

During the Plenary Session, SERDP and ESTCP will recognize top researchers with the annual Project-of-the-Year Awards. Dr. Jeffrey Marqusee, Executive Director of SERDP and ESTCP, and Dr. Anne Andrews, Deputy Director of SERDP and ESTCP, will present these awards to Principal Investigators who, through their outstanding efforts, have helped DoD achieve its mission while improving its environmental performance.

TECHNICAL SESSIONS AND SHORT COURSES

During the three-day Symposium & Workshop, attendees will have the opportunity to choose from among 11 technical sessions and five short courses. Technical sessions will highlight research and innovative technologies that assist the Department of Defense in addressing increasingly complex environmental and mission sustainability challenges. Short courses will offer unique training opportunities on recent advancements in select technologies and approaches in environmental restoration and munitions management. Again this year, Professional Development Hours (PDH) will be available for short courses.

Be sure to review the technical program and listing of short courses on the pages that follow to identify the offerings that match your areas of interest. Space in short courses is limited, so we encourage you to register soon.

EXHIBIT HALL

This year’s Symposium & Workshop will continue the highly successful poster and exhibit booth sessions showcasing technologies and scientific advancements from a variety of environmental research programs. These sessions, featuring two groups of posters, more than 450 in all, also will enable you to learn first-hand about many ongoing and recently completed SERDP research projects and ESTCP technology demonstrations.

FUNDING OPPORTUNITIES BRIEFING

On Thursday afternoon, SERDP and ESTCP Executive Director Dr. Jeffrey Marqusee will present an overview of the proposal submittal processes and discuss opportunities for interested scientists to conduct research and technology demonstrations. This “how to play” briefing will offer valuable information about new funding opportunities in SERDP and ESTCP.

EVENING TECHNICAL EXCHANGE RECEPTIONS

Join your colleagues on December 1 and 2 at the popular evening technical exchange receptions that will offer opportunities for attendees to tour posters and exhibit booths, exchange information, and discuss opportunities for technology transfer and partnerships.
SYMPOSIUM TECHNICAL PROGRAM

PLENARY SESSION

Symposium Opening
Dr. Jeffrey Marqusee
Executive Director, SERDP and ESTCP

Challenges the Department of Defense Faces Managing Military Installations
Dr. Dorothy Robyn
Deputy Under Secretary of Defense for Installations and Environment
U.S. Department of Defense

Going from Good to Great in Environmental Stewardship
Lt. Gen. Robert Van Antwerp
U.S. Army Chief of Engineers and Commanding General of the U.S. Army Corps of Engineers

Using Climate Adaptation to Get Ahead of the Next Environmental Crisis
Dr. Peter Kareiva
Chief Scientist
The Nature Conservancy

Plenary Session Closing
Dr. Anne Andrews

TECHNICAL SESSION 1A

Topic: Field Applications of Advanced Diagnostic Tools
Chairs: Dr. Michael Kavanaugh and Dr. Rula Deeb
Malcolm Pirnie, Inc.

Keynote: Dr. Michael Kavanaugh

Advanced diagnostic tools, such as molecular biological tools (MBT) and compound-specific isotope analysis (CSIA), are increasingly being used at field sites to support remediation efforts. Recent research has explored how these tools can be used to improve remedial design and operation. This session will highlight technology advancements and their application to the design, performance, and monitoring of remedial systems.

TECHNICAL SESSION 1B

Topic: Challenges Associated with Regional Predictions of Climate Change Impacts
Chair: Dr. Christopher Weaver
U.S. Environmental Protection Agency – Global Change Research Program

Keynote: Dr. Daniel Sarewitz
Arizona State University – Consortium for Science, Policy & Outcomes

Current climate models indicate the potential changes in climate that will occur at the global scale. The capability to predict accurately how climate will change on a regional basis—the minimum spatial scale at which DoD will need information to assess impacts and develop adaptation strategies for its installations and other assets—has, however, not yet been realized. This session will address the current state of the science and future projections of improvement regarding downscaling the information from General Circulation Models, the limitations and appropriate use of currently developed downscaled climate information, and how to appropriately assess risk and consider adaptation strategies under the current uncertainties associated with regional climate projections of interest to DoD.

TECHNICAL SESSION 1C

Topic: Emerging Contaminants – From Assessment to Action
Chairs: Ms. Shannon Cunniff
U.S. Department of Defense – Chemical and Material Risk Management Directorate
Dr. Rominder Suri
Temple University – Water and Environmental Technology Center

Keynote: Ms. Shannon Cunniff

This session will provide an overview of current emerging contaminant issues relevant to the research, development, and testing communities. The processes DoD uses to identify and assess its interests in and options for proactive management of emerging contaminants will be described. Specific risk management options—focusing on research needs—will be discussed for several emerging contaminants, including hexavalent chromium, sulfur hexafluoride, RDX, and nanomaterials. Criteria developed to enhance understanding of risks from new materials and chemicals lacking EPA toxicity values also will be presented. Time will be allocated for audience dialogue on expanding effective communication on emerging contaminant issues.
SHORT COURSE 1

**Topic:** Geophysical System Verification – Alternative to Geophysical Prove-Outs (GPO)

(This half-day course will be held from 1:45 – 5:00 p.m. Refer to page 10 for more information.)

TECHNICAL SESSION 2B

**Topic:** Classification Methods for Military Munitions Response (Part I)

**Chair:** Mr. Robert Sadorra
Naval Facilities Engineering Command

**Keynote:** Mr. Christopher Evans
U.S. Army Corps of Engineers, Baltimore District

Innovative munitions response technologies are making a transition to the field through demonstrations on live munitions response sites. Presentations in this two-part session will focus on recent classification demonstration results at the former Camp San Luis Obispo, California.

WEDNESDAY, DECEMBER 2 (8:30 – 11:45 a.m.)

**Morning Concurrent Technical Sessions and Short Course**

TECHNICAL SESSION 2A

**Topic:** Amendments for Contaminated Sediment Caps

**Chair:** Dr. Charles Menzie
Exponent, Inc.

**Keynote:** Mr. Stephen Ells
U.S. Environmental Protection Agency – Office of Superfund Remediation and Technology Innovation

While traditional capping techniques are a less invasive approach to sediment remediation, they do not address the concern of reducing contaminant mass. Active approaches to sediment capping technologies have been demonstrated that are capable of sequestering and degrading contaminants in situ through the application of amendments. This session will examine the use of amendments and amended capping as a contaminated sediment management tool and present recent advancements in understanding biological and chemical processes in treated sediments.

TECHNICAL SESSION 2C

**Topic:** Environmentally Sustainable Energetics

**Chairs:** Dr. Robin Nissan
Naval Air Warfare Center – Weapons Division
Mr. William Ruppert
Hughes Associates, Inc.

**Keynote:** Mr. Anthony Melita
U.S. Department of Defense – Portfolio Systems Acquisition, Land Warfare and Munitions

To prepare for combat operations, the warfighter must “train as they fight.” This means that real or realistic munitions are required to simulate the stress of combat and to allow the warfighter to understand the capabilities and limitations of their weapons. These munitions use energetic materials with the potential for environmental, safety and occupational health impacts. In order for warfighters to continue to train to standard, environmentally sustainable energetic materials are required for their weapon systems. This session will highlight efforts to address this need, which also encompasses safer insensitive munitions.
SHORT COURSE 2
Topic: Long-Term Monitoring Optimization
(This half-day course will be held from 8:30 – 11:45 a.m. Refer to page 10 for more information.)

Afternoon Concurrent Technical Sessions

TECHNICAL SESSION 3A
Topic: Risk-Based Contaminant Management on Active Training Ranges
Chairs: Dr. Thomas Jenkins
Private Consultant
Ms. Catherine Vogel
Noblis, Inc.
Keynote: Dr. Thomas Jenkins

The long-term sustainability of the Department of Defense’s operational ranges is crucial for mission-critical testing and training activities. Such testing and training activities may be endangered if release and migration of munitions constituents from ranges occurs. This session will address recent advances in understanding the fate of energetic materials in the environment and improving sampling and assessment strategies.

TECHNICAL SESSION 3B
Topic: Classification Methods for Military Munitions Response (Part II)
Chair: Mr. Guy Warren
Alaska Department of Environmental Management
Keynote: Ms. Stephanie Cappa
U.S. House of Representatives – Office of the Honorable Earl Blumenauer

Please refer to the description for the Technical Session Classification Methods for Military Munitions Response (Part I) on page 7.

TECHNICAL SESSION 3C
Chairs: Ms. Maureen Sullivan and Mr. William Van Houten
U.S. Department of Defense – Environmental Management Directorate

TECHNICAL SESSION 3D
Topic: Aircraft Emissions: Future Impacts and Alternative Fuels
Chairs: Dr. Mel Roquemore
Air Force Research Laboratory
Dr. Richard Miake-Lye
Aerodyne Research, Inc.
Keynote: Dr. Ian Waitz
Massachusetts Institute of Technology – Department of Aeronautics and Astronautics

Increasing costs of aviation fuel and the growing dependence on foreign sources of petroleum are driving the development of high fuel efficient gas turbine engines and alternative fuels. High engine operating pressures and temperatures are critical for high fuel efficiencies but are conducive to the formation of nitrogen oxides (NOx) and particulates (PM2.5). Alternative fuels can affect aircraft emissions but not always in predictable ways, especially at high pressures. Modeling and measurements of emissions of NOx, hydrocarbons, and particulate emissions are advancing rapidly, in parallel with the understanding of how these emissions, in concert with the primary emission of carbon dioxide, affect air quality and the global atmosphere. This session will provide an overview of future impacts of gas turbine engine technology and alternative fuels on aircraft emissions.

WEDNESDAY, DECEMBER 2 (8:30 – 11:45 a.m.)

Keynote: Dr. Richard Birdsey
U.S. Department of Agriculture – Forest Service, Northern Global Change Program

Without a complete understanding of an installation’s carbon footprint, it will not be possible to target the most cost-effective and environmentally friendly mitigation strategies. Various protocols are now available to assist an installation in estimating its direct emissions, those emissions that arise indirectly through its purchase of energy, and those emissions that arise from its purchase of products, travel, and other indirect sources. What is largely missing is an understanding of how land use and management on the installation can either contribute to greenhouse gas emissions or act as a mitigation mechanism through appropriate management of the carbon cycle commensurate with other land management goals. This session will focus on the role of land use in an overall strategy for understanding and managing an installation’s carbon footprint, how appropriate management may differ by ecosystem, and important data, tool development, and science gaps.

WEDNESDAY, DECEMBER 2 (1:45 – 5:00 p.m.)
Morning Concurrent Technical Session and Short Courses

TECHNICAL SESSION 4A

Topic: Ecology and Management of DoD Coastal and Estuarine Ecosystems
Chair: Dr. William Boicourt
University of Maryland – Center for Environmental Science
Keynote: Dr. W. Michael Kemp
University of Maryland – Center for Environmental Science

DoD assets include a number of installations that occur along the coastline. Some of these locations also are associated with estuarine ecosystems. The importance of these installations extends beyond their proximity and access to blue water. The physical features that define these areas—barrier islands, marshes, and shore-upland interfaces—are important backdrops for military training and testing. These ecosystems also contain significant biodiversity, are otherwise threatened by development outside the installation boundary, and are susceptible to additional adverse impacts from climate change. This session will address the current importance and vulnerability of these ecosystems, ongoing research that is investigating ecosystem-based approaches to understanding and managing these ecosystems within a military context, and future information needs associated with these ecosystems, especially under the threat of climate change.

SHORT COURSE 3

Topic: Tools for Management of Chlorinated Solvent-Contaminated Sites

(This full-day course will be held from 8:30 a.m. – 5:30 p.m. Refer to page 10 for more information.)

SHORT COURSE 4

Topic: Visual Sample Plan – Unexploded Ordnance Module

(This full-day course will be held from 8:30 a.m. – 5:00 p.m. Refer to page 11 for more information.)

BRIEFING/Q&A SESSION

Topic: SERDP/ESTCP Funding Opportunities
Speaker: Dr. Jeffrey Marqusee
SERDP and ESTCP Executive Director

During this briefing, Dr. Marqusee will provide an overview of SERDP and ESTCP investment strategies, funding levels, and areas of emphasis as well as a summary of opportunities for interested scientists to conduct research and technology demonstrations. This “how to play” briefing will offer valuable information on the solicitation processes for those who wish to understand how to submit proposals for upcoming funding opportunities.

THURSDAY, DECEMBER 3 (1:00 – 5:30 p.m.)

Afternoon Concurrent Short Courses

SHORT COURSE 3

(Course continued, 1:00 – 5:30 p.m.)

Topic: Tools for Management of Chlorinated Solvent-Contaminated Sites

SHORT COURSE 4

(Course continued, 1:00 – 5:00 p.m.)

Topic: Visual Sample Plan – Unexploded Ordnance Module

SHORT COURSE 5

Topic: Multi-Increment Sampling (MIS) Applications for Environmental Remediation

(This half-day course will be held from 1:00 – 5:30 p.m. Refer to page 11 for more information.)
SHORT COURSE 1

Geophysical System Verification – Alternative to Geophysical Prove-Outs (GPO)

SERDP and ESTCP will present a short course to highlight a more rigorous physics-based alternative to geophysical prove-outs (GPO): Geophysical System Verification (GSV). Over the last 15 years, numerous GPOs have been performed and a significant body of knowledge has accumulated documenting technology performance. This accumulated understanding, along with the recognition that responses of munitions may be reliably predicted from physical models, presents the opportunity for both streamlining and enhancing the traditional GPO with a more rigorous physics-based approach. This course will describe the physics basis of this evolution, outline key elements of the GSV including an instrument verification strip and a production blind seeding program, and describe implementation of this approach on an example site.

Participants will receive 3 Professional Development Hours (PDH) upon course completion.

Instructors:
Mr. James Austreng (California Department of Toxic Substances Control), Dr. Thomas Bell (Science Applications International Corporation [SAIC]), Dr. Herb Nelson (SERDP/ESTCP), Mr. Andrew Schwartz (U.S. Army Corps of Engineers), and Mr. Jeffrey Swanson (Colorado Department of Public Health and Environment)

SHORT COURSE 2

Long-Term Monitoring Optimization

Long-term monitoring (LTM) of groundwater contamination post-cleanup is estimated to cost DoD agencies millions of dollars annually. Costs could potentially be reduced by optimizing sample collection and analysis. This course will examine the various tools available for optimizing LTM programs and their relative advantages and disadvantages. Participants will gain an improved understanding of the steps involved in LTM in addition to an introduction to available tools for determining the potential for optimization of an existing monitoring system.

Participants will receive 3.5 Professional Development Hours (PDH) upon course completion.

Instructors:
Mr. David Becker (U.S. Army Corps of Engineers), Dr. Kirk Cameron (MacStat Consulting, Ltd.), Dr. Charles Davis (EnviroStat), Mr. Robert Greenwald (GeoTrans, Inc.), Ms. Karla Harre (Naval Facilities Engineering Command – Engineering Service Center), Mr. Philip Hunter (Air Force Center for Engineering and the Environment), and Mr. Robert Stewart (SAIC)

SHORT COURSE 3

Tools for Management of Chlorinated Solvent-Contaminated Sites

The objective of this full-day course is to provide training on the use and implementation of several recently developed decision and management tools for dense nonaqueous phase liquid (DNAPL) source zones. Four different decision and management tools will be presented: (1) a screening tool for selection of DNAPL source area remedial technologies; (2) a decision tool for optimization of chlorinated solvent source and plume remediation considering uncertainty; (3) a design tool for planning aqueous amendment injection
systems; and (4) a tool for using multiple lines of evidence in conjunction with source zone models to assess changes in mass discharge. In addition, an overview of a recent decision guide on DNAPL source zone management will be provided. Participants are encouraged to bring laptops for real-time review of these tools.

Participants will receive 8 Professional Development Hours (PDH) upon course completion.

Instructors:
Dr. Robert Borden (North Carolina State University), Dr. Ronald Falta (Clemson University), Dr. Jason Gerhard (University of Western Ontario), Dr. Michael Kavanaugh (Malcolm Pirnie, Inc.), Dr. Julie Konzuk (Geosyntec Consultants), Dr. Bernard Kueper (Queens University), Ms. Carmen Lebrón (Naval Facilities Engineering Command – Engineering Service Center), Dr. David Major (Geosyntec Consultants), Dr. Charles Newell (GSI Environmental, Inc.), Dr. Thomas Sale (Colorado State University), and Dr. Hans Stroo (HydroGeoLogic, Inc.)

SHORT COURSE 4
Visual Sample Plan – Unexploded Ordnance Module

SERDP and ESTCP have supported the development of several modules focused on munitions response sites within the Visual Sample Plan (VSP) software. In this full-day course, VSP methods for transect design, target area identification and delineation, anomaly density mapping and estimation, and final verification sampling will be presented and demonstrated. Hands-on case studies will be used during the course, requiring each participant to bring a laptop. In addition, many new features will be demonstrated including the target area delineation tool, map layering, window size selection tool, improved verification sampling design, and improved file transfer between Geosoft and VSP. Please visit the Symposium website for additional information on software requirements and data set for the course.

Participants will receive 7.5 Professional Development Hours (PDH) upon course completion.

Instructors:
Mr. John Hathaway (Pacific Northwest National Laboratory), Mr. Brent Pulsipher (Pacific Northwest National Laboratory), and Dr. Barry Roberts (Sandia National Laboratories)

SHORT COURSE 5
Multi-Increment Sampling (MIS) Applications for Environmental Remediation

Multi-increment sampling (MIS) is a structured sampling protocol that reduces data variability. This short course will provide an update on the merits and usage of MIS and U.S. EPA Method 8330B sample processing for the analysis of energetic compounds and metals on active and nonactive military training and testing ranges. The course is composed of several presentations and brief visual demonstrations. Topics include an overview of MIS using case studies to illustrate several attributes, discussion of the laboratory sample preparation changes recommended in Method 8330B, a summary of studies using MIS and Method 8330B for characterizing energetic residues on military training ranges, and a report on the current status of Method 8330B. Special attention will be given to sampling tools and the laboratory sampling processes required to address the physical characteristics of munitions and propellant residues. In addition, an update will be provided on a program that is evaluating the processing of soil by Method 3050B, and modifications of this method, for the determination of acid extractable metals.

Participants will receive 4 Professional Development Hours (PDH) upon course completion.

Instructors:
Mr. Alan Hewitt (U.S. Army Engineer Research and Development Center-Cold Regions Research and Engineering Laboratory [ERDC-CRREL]), Mr. Charles Ramsey (EnviroStat, Inc.), Ms. Marianne Walsh (U.S. Army ERDC-CRREL), and Mr. Michael Walsh (U.S. Army ERDC-CRREL)
GENERAL SYMPOSIUM INFORMATION

VENUE
The Symposium & Workshop will be held December 1–3, 2009, at the Marriott Wardman Park Hotel in Washington, D.C.

REGISTRATION
For your convenience, we encourage you to register for the Symposium online at www.serdp-estcp.org/symposium using your credit card. You may also register by mail using the registration form at the back of this brochure. Payment in full or a purchase order must accompany your mailed registration form. Please mail the registration form (or a photocopy of the form) along with payment to arrive no later than 8:00 p.m. EST on Wednesday, November 18, 2009.

Checks and purchase orders should be made payable to HydroGeoLogic, Inc. and mailed to:

HydroGeoLogic, Inc.
SERDP/ESTCP Registrar
11107 Sunset Hills Road, Suite 400
Reston, VA 20190

You may also register by sending a completed registration form with credit card information by fax to (703) 478-0526. All registrations received by November 18 will be confirmed via e-mail.

REGISTRATION FEE
The full three-day Symposium & Workshop registration fee ($290 through November 18, $325 on site) includes admission to the Plenary Session, technical sessions, short courses, Exhibit Hall, poster receptions, morning coffees, and lunches. There is also a $25 materials fee for each short course. Symposium registration materials will include the final program agenda and an electronic program guide containing abstracts of all Symposium & Workshop technical, poster, and booth presentations. Technical presentations and a final list of attendees will be made available to participants after the event. A student fee ($50) and a one-day registration fee ($150 through November 18, $165 on site) are also available.

NOTE: Advance registration is available through November 18. Registrations received after 8:00 p.m. EST on November 18 will be processed at the on-site rate of $325 for full three-day registration and $165 for one-day registration. Please remember that attendance for short courses is limited, so register early.

LIST OF ATTENDEES
A list of pre-registered attendees will be available upon check-in at the Symposium & Workshop. To be included in this listing, you must register no later than Wednesday, November 18. To receive the final attendee list following the event, you must include your e-mail address when registering.

EXHIBITS
The Symposium & Workshop will feature more than 450 posters, half of which will exhibit on Tuesday and the other half on Wednesday. A select group of booths offering information about funding opportunities in related research programs also will be on display both days. The informal one-on-one format of the posters and booths provides a unique opportunity to network with colleagues and gather information on topics important to you. Exhibitors will be available to talk with you and answer your questions during scheduled times.

If you are unable to participate in the complete technical program but would like to tour the exhibits, you may do so free of charge on Tuesday, December 1, or Wednesday, December 2, between the hours of 12:30 and 4:00 p.m. Presenters will be on hand from 12:30 – 1:45 p.m. In order to have an entrance badge ready for you, please fill out and submit a registration form prior to the registration deadline.
HOTEL RESERVATIONS

A block of rooms for Symposium & Workshop participants has been set aside at the prevailing government per diem rate. To make reservations, please contact the hotel directly and identify yourself as a Partners in Environmental Technology Technical Symposium & Workshop attendee (code “HYDHYDA”). Reservations may also be made online at the hotel web address listed below. To receive this special rate, hotel reservations must be made no later than Thursday, November 5, 2009. You are encouraged to make your reservations early as the hotel will sell out of rooms.

Marriott Wardman Park Hotel
2660 Woodley Road, NW
Washington, DC 20008
Phone: (800) 228-9290
Web Site: cwp.marriott.com/wasdt/partnersinenvirotech
Rate: $209 (plus tax) or prevailing government rate

All hotel changes and cancellations must be made directly with the hotel (202-328-2000). It is the responsibility of each participant to make changes or cancellations no later than 7 days prior to scheduled arrival. Rooms generally are not available for check-in until 3:00 p.m. on the day of arrival.

Special Note to Army Participants

A non-availability number is not required for conferences held in Washington, D.C.

TRAVEL

The Washington, D.C. metropolitan area is served by three major airports (Ronald Reagan Washington National, Washington Dulles International, and Baltimore-Washington International) and by Amtrak. Ronald Reagan Washington National Airport is the closest airport to the hotel. The efficient Metrorail system is a convenient mode of transportation from Ronald Reagan Washington National Airport and for local attendees. The hotel is located one block from the Woodley Park-Zoo/Adams Morgan Metro Station (on the Red Line).

PARKING

Self-parking is available at the hotel for approximately $32 per day and/or overnight. Valet parking is available at the hotel for approximately $37 per day and/or overnight.

CANCELLATIONS & SUBSTITUTIONS

All requests for refunds must be received in writing no later than Wednesday, November 18. The registration fee minus a $25 processing charge will be refunded. No refunds will be made after November 18. If you must cancel after this date, you may send a substitute.

INQUIRIES

For additional information, please visit www.serdp-estcp.org/symposium, e-mail partners@hgl.com, or call our contact line at (703) 736-4548.

Specific questions about registration may be directed to Ms. Jen Rusk at (703) 326-7801 or via e-mail to jrusk@hgl.com.

Poster and booth questions may be directed to Ms. Lucia Valentino at (703) 736-4549 or via e-mail to lvalentino@hgl.com.

NOTE: The Call for Poster Abstracts deadline was July 31, 2009.
SYMPOSIUM REGISTRATION

SPACE IS LIMITED FOR SHORT COURSES AND WILL BE MADE AVAILABLE ON A FIRST-COME, FIRST-SERVED BASIS. THE LIST OF SHORT COURSE TITLES IS PROVIDED BELOW TO ASSIST YOU IN COMPLETING THE REGISTRATION FORM ON PAGE 15. WHEN MAKING YOUR SELECTIONS, NOTE THAT THE SHORT COURSES OFTEN RUN CONCURRENTLY WITH TECHNICAL SESSIONS. PLEASE REFER TO PAGES 6-9 FOR THE FULL TECHNICAL PROGRAM AGENDA.

TUESDAY AFTERNOON
Short Course 1
1:45 – 5:00 p.m.
Geophysical System Verification – Alternative to Geophysical Prove-Outs (GPO)

WEDNESDAY MORNING
Short Course 2
8:30 – 11:45 a.m.
Long-Term Monitoring Optimization

THURSDAY ALL DAY
Short Course 3
8:30 a.m. – 5:30 p.m.
Tools for Management of Chlorinated Solvent-Contaminated Sites

Short Course 4
8:30 a.m. – 5:00 p.m.
Visual Sample Plan – Unexploded Ordnance Module

THURSDAY AFTERNOON
Short Course 5
1:00 – 5:30 p.m.
Multi-Increment Sampling (MIS) Applications for Environmental Remediation

Professional Development Hours (PDH) will be available for all short courses.

WHO SHOULD ATTEND THIS SYMPOSIUM
With approximately 1,000 participants last year, this annual event is a nationally recognized conference focusing on DoD’s priority environmental issues. Attendees span the military services; academic and research institutions; private sector technology and environmental firms; and federal, state, and local regulatory/policymaking organizations.

By registering for this event, you will have access to:
• Networking opportunities with approximately 1,000 environmental professionals
• Eleven technical sessions highlighting the latest in environmental research and technological innovations
• Five short courses providing unique training opportunities on recent advancements in science and technology
• Information about world-class research and demonstrations being conducted on persistent environmental challenges
• More than 450 posters supporting the technical program theme
• Booths offering information about funding opportunities in related research programs

Registering is easy...

ONLINE
www.serdp-estcp.org/symposium

MAIL
HydroGeoLogic, Inc.
SERDP/ESTCP Registrar
11107 Sunset Hills Road, Suite 400
Reston, VA 20190

FAX
SERDP/ESTCP Support Office
(703) 478-0526

Register Now! Advance Registration Deadline is November 18.
SYMPOSIUM & WORKSHOP REGISTRATION FORM

(Please type or print clearly)

□ Mr.  □ Ms.  □ Mrs.  □ Dr.  Preferred salutation ____________________________

Name __________________________________________  Title __________________________

Company/Organization __________________________________________

Mailing Address __________________________________________

City __________________________ State/Province ______________ Zip/Postal Code __________

Country __________________________ Telephone __________________________

E-Mail __________________________

Preferred Name for Badge __________________________

Is this the first time that you will be attending our Symposium & Workshop? □ Yes  □ No

How did you first learn about this Symposium & Workshop?
□ This mailing □ Another conference (please specify) __________________________
□ The SERDP or ESTCP web site □ Colleague __________________________
□ The SERDP/ESTCP Information Bulletin □ Other (please specify) __________________________

Type of Organization (check one)
□ Government Employee □ Industry/Contractor □ Academia □ Press

Type of Registration (check one)
□ Attendee (including poster presenters) □ Session Chair/Keynote/Technical Presenter/Instructor

Booth Presenter □ Session/Course Name __________________________

Booth Name __________________________   □ Tuesday/Wednesday Exhibit Tour Only

Have you made your hotel reservations? □ Yes  □ No  □ Not Applicable

If you have a special need that requires assistance, check here and we will contact you.

Symposium Registration (check one)

□ Full Three-Day Registration ($290) (through November 18) □ One-Day Registration ($150) (through November 18)
□ Student Registration ($50) (Student ID required) □ Tuesday/Wednesday Exhibit Tour Only

□ Short Course 1 □ Short Course 2 □ Short Course 3 □ Short Course 4 □ Short Course 5

Short Course Registration

There is a $25 materials fee for each short course. Refer to page 14 for the schedule of short courses, and check below each course that you plan to attend.

Payment

Symposium Fee + Total Short Course Materials Fee = Total Due

Method of Payment (check one)

□ Check # ____________________________

(Checks must be drawn on a U.S. bank and payable in U.S. funds to HydroGeoLogic, Inc., Federal ID # 54-1404852.)

□ Purchase order or SF 182 (Make payable to HydroGeoLogic, Inc.)

Please charge my □ Visa □ MasterCard □ American Express □ Discover

(Note: HydroGeoLogic, Inc. will appear as the “payee” on your credit card statement.)

Account # ____________________________  Security Code ____________________________

Name Imprinted on Card ____________________________  Exp. Date ____________________________

Cardholder Billing Address (including zip code, if different from above) __________________________________________

Signature ____________________________

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<table>
<thead>
<tr>
<th>Schedule at a Glance</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MONDAY, NOVEMBER 30</strong></td>
<td><strong>WEDNESDAY, DECEMBER 2</strong></td>
</tr>
<tr>
<td>3:00 – 7:00 p.m. Registration Open</td>
<td>7:30 a.m. – 6:00 p.m. Registration Open</td>
</tr>
<tr>
<td><strong>TUESDAY, DECEMBER 1</strong></td>
<td>7:30 – 8:45 a.m. Morning Coffee Exhibits Open (Poster Group 1)</td>
</tr>
<tr>
<td>7:30 a.m. – 6:00 p.m. Registration Open</td>
<td>9:00 – 11:30 a.m. Plenary Session</td>
</tr>
<tr>
<td>7:30 – 8:45 a.m. Morning Coffee Exhibits Open (Poster Group 1)</td>
<td>11:45 a.m. – 1:00 p.m. Buffet Lunch</td>
</tr>
<tr>
<td>9:00 – 11:30 a.m. Plenary Session</td>
<td>12:30 – 1:45 p.m. Exhibits Open (Poster Group 2)</td>
</tr>
<tr>
<td>11:45 a.m. – 1:00 p.m. Buffet Lunch</td>
<td>1:45 – 5:00 p.m. Afternoon Concurrent Technical Sessions</td>
</tr>
<tr>
<td>12:30 – 1:45 p.m. Exhibits Open (Poster Group 1)</td>
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</tr>
<tr>
<td>1:45 – 5:00 p.m. Afternoon Concurrent Technical Sessions and Short Course 1</td>
<td>5:00 – 7:00 p.m. Technical Exchange Reception Exhibits Open (Poster Group 1)</td>
</tr>
<tr>
<td>5:00 – 7:00 p.m. Technical Exchange Reception Exhibits Open (Poster Group 1)</td>
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</tbody>
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For the most up-to-date Symposium & Workshop information, visit [www.serdp-estcp.org/symposium](http://www.serdp-estcp.org/symposium).