Current methods for small area and supplemental removal of coatings from aircraft components are costly, time consuming, labor-intensive, and result in undesirable environmental conditions. Wastes associated with coating removal include chemical waste from chemical stripping operations and media waste generated from a variety of blasting processes. Such wastes are commonly found in the Environmental Protection Agency’s Toxic Release Inventory (TRI) Report. Approximately 20% of the 1994 TRI figures, in fact, came from coating removal activities.

In an effort to reduce the environmental effects of coating removal operations, ESTCP is funding the project Portable Laser Coating Removal System (PLCRS) (PP-0027) to evaluate the ability of hand-held lasers to supplement small area coating removal for maintenance and sustainment operations. This demonstration/validation effort is being led by the Headquarters Air Force Materiel Command (HQ AFMC) and the U.S. Air Force Research Laboratory (AFRL) with support from the Joint Group for Pollution Prevention (JG-PP) Program.

Hand-held laser demonstrates innovative coating removal capabilities.

PORTABLE HAND-HELD LASERS MODERNIZE MAINTENANCE AND SUSTAINMENT OPERATIONS, SUGGEST FUTURE FOR SUPPLEMENTAL COATING REMOVAL APPLICATIONS
Transport Optimization Improves Performance of Pump-and-Treat Systems

Recent studies completed by the U.S. Environmental Protection Agency and the U.S. Navy indicate that the majority of pump-and-treat systems are not operating as designed and have not been optimized since installation, which in many cases, was several decades ago. Even when initial pump-and-treat systems have been appropriately designed, changes in plume configuration, aquifer conditions, and regulatory standards result in the need for system optimization to maximize efficiency. Representatives from the Navy, EPA, the Army Corps of Engineers, GeoTrans, Inc., Minsker Consulting, the University of Illinois, the University of Alabama, and Utah State University collaborated to tackle this issue through the recently completed ESTCP project Application of Flow and Transport Optimization Codes to Groundwater Pump-and-Treat Systems (CU-0010). Their efforts have demonstrated that improved pumping designs can be identified through application of sophisticated optimization routines coupled with groundwater contaminant transport models, potentially leading to substantial cost savings.

The primary objectives of this project were to demonstrate the cost-effectiveness of applying transport optimization codes to three existing pump-and-treat systems relative to a parallel trial-and-error approach and to provide installations with alternate pumping strategies that are feasible and cost-effective to implement. Traditionally, pump-and-treat systems are designed or improved by applying a trial-and-error simulation approach that attempts to identify the “best” extraction/injection configuration based on numerous iterative runs of the flow and transport model. Transport optimization algorithms link mathematical optimization techniques with simulations of groundwater flow and contaminant transport to determine, in a largely automated fashion, the best combination of well locations and pumping rates for a pump-and-treat system. In this demonstration, transport optimizations were performed for Umatilla Chemical Depot in Hermiston, Oregon (existing system); Tooele Army Depot in Tooele, Utah (existing system); and the Former Blaine Naval Ammunition Depot in Hastings, Nebraska (planned system). The demonstrations employed existing groundwater flow and transport models. Three formulations, defining the problem to be solved and consisting of an objective function to be minimized and a set of constraints to be satisfied, were developed for each site to reflect the needs and interests of the installations. Formulation objectives included minimizing life-cycle costs until cleanup, minimizing total costs over 21 years, minimizing total contaminant mass in a specific period of time, and minimizing maximum total pumping. Constraints included that the modeling period consist of four 5-year management periods (20 years total), that the system modification occur only at the beginning of each management period, that cleanup of contaminants be achieved by the end of year 20, and that the total modeled pumping rate not exceed the current maximum treatment capacity when adjusted for the average amount of uptime.

The project used the simulation optimization software packages SOMOS (Simulation/Optimization Modeling System) and MGO (Modular Groundwater Optimizer) which were applied to the formulations by independent teams located at Utah State University and the University of Alabama. Experienced modelers at GeoTrans, Inc., functioned as the control group using a non-automated trial-and-error approach to finding the best possible solution to the same formulations.

In every case, the groups applying the optimization algorithms found improved solutions relative to the trial-and-error group. The solutions found were 5% to 50% better than those obtained using the trial-and-error approach (measured using optimal objective function values), with a typical improvement of about 20%. The application of these algorithms could translate into millions of dollars in life-cycle cost savings per site. Because multiple sites and formulations for each site were evaluated, there is a high degree of

See TRANSPORT OPTIMIZATION, page 6
As part of the March 2004 meeting of the SERDP Scientific Advisory Board (SAB) in San Diego, the Board and SERDP staff toured some of the facilities at Naval Station North Island. The purpose of the tour was to inform Board members of the environmental challenges facing naval industrial and military operations as well as the research and technology needs to address these challenges. The first stop on the tour was the Naval Aviation Depot (NADEP) North Island. Board members and SERDP staff received a guided tour of the engine and aircraft rework facilities at NADEP. This was followed by an in-depth tour of the aircraft carrier USS Nimitz. Onboard Nimitz, Board members were briefed on environmental issues such as plastics processing and recycling as well as the hazardous materials management system. Captain Robert J. Gilman, Commanding Officer of the Nimitz, met with the SAB and discussed the nature of aircraft carrier operations and maintenance. Also, representatives from the Navy Environmental Leadership Program (NELP) presented to the Board an overview of successful NELP pollution prevention program initiatives. Board members agreed that the tour was extremely informative and enhanced their understanding of DoD’s environmental challenges.

**HAND-HELD LASERS, from page 1**

The use of laser energy for coating removal is an exciting new technology that is environmentally acceptable and less labor intensive than current removal methods. Laser coating removal is a non-intrusive, non-kinetic energy process that can be applied to a variety of substrates, including composites, glass, metal, and plastics. The high level of absorption of energy at the surface of a coating material results in the decomposition and removal of the coating. The energy that is applied by the laser is mostly absorbed and utilized in coating decomposition (i.e., instant evaporation, which transfers most of the radiation energy); therefore, the substrate experiences only a minimal increase in temperature. While laser technology currently is used in multiple manufacturing operations such as welding, cutting, drilling, and surface treatment and preparation, it is used only in aerospace coating removal applications on a limited basis.

Through this project, the Air Force has completed preliminary work, including investigations of commercial off-the-shelf laser technologies, an initial cost-benefit analysis to compare the laser technology against the currently used baseline coating removal technologies, test plans that identify the requirements to demonstrate and validate the laser technologies, and safety and occupational health testing. The laser systems that were selected for use in the coating removal demonstration and validation testing include hand-held yttrium aluminum garnet crystal doped with neodymium ions (Nd: YAG), transversely excited at atmospheric pressure-carbon dioxide (TEA-CO₂), and diode laser technologies. These systems were selected because of their highly portable and maneuverable system design that enables use in small spaces as well as their relatively low cost.

The demonstration and validation testing is being conducted at Wright-Patterson Air Force Base (WPAFB) using numerous coating systems and substrates. Each one of these coating system/substrate combinations is being subjected to four coating application and coating removal cycles. At the conclusion of this project, results from this testing will be made available.

For more information about this technology, please contact Ms. Debora Meredith, HQ AFMC, WPAFB, at (937) 257-7505 or via e-mail at debora.meredith@wpafb.af.mil, or Mr. Gerard Mongelli, Concurrent Technologies Corporation, WPAFB, at (937) 257-7693 or via e-mail at gerard.mongelli@wpafb.af.mil.
Development of a Mass Flux Toolkit to Quickly Evaluate Groundwater Impacts, Attenuation, and Remediation Alternatives (CU-0430)
Principal Investigator: Chuck Newell/Groundwater Services, Inc.
The goal of this project is to develop an easy-to-use, free software tool for site selection and design of natural attenuation (MNA) systems. The tool will enable users to compare different mass flux approaches, calculate mass flux over time, and predict and observe remediation outcomes.

Emulsified Zero-Valent Nano-Scale Treatment of Chlorinated Solvent DNAPL Source Areas (CU-0431)
Principal Investigator: Thomas Krug/GeoSyntec Consultants, Inc.
The objective of this project is to demonstrate emulsified zero-valent iron injection in a chlorinated ethane DNAPL source zone.

Multiphase Flow Monitoring of Water and Contaminant Migration at the Groundwater-Surface Water Interface (CU-0422)
Principal Investigator: Bart Chadwick/Space and Naval Warfare Systems Command
The project will demonstrate and validate the application of mass flux approach to estimate and predict the impact of contaminant migration on groundwater and surface water. The demonstration will incorporate critical design parameters such as trichlorofluoromethane (CFC-113) concentrations, biowall composition, contaminant residence time, degradation halflives, and contaminant destruction efficiency that are required to successfully implement this technology on a broader scale.

In Situ Bioremediation of Energetic Compounds in Groundwater (CU-0425)
Principal Investigator: Paul Hatzinger/Shaw Environmental & Infrastructure, Inc.
The objective of this project is to demonstrate in-situ bioremediation of energetic compounds [e.g., hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX), octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX), and 2,4,6-trinitrotoluene (TNT)] in a contaminated aquifer using cosubstrate addition to stimulate indigenous bacteria capable of degrading these explosives.

Optimizing Infrastructure for Hydrogen Fuel Cell Vehicles (CP-0402)
Principal Investigator: David Cook/Naval Facilities Engineering Service Center
This project seeks to further demonstrate and validate new gaseous hydrogen delivery infrastructure to produce, store, and dispense hydrogen is necessary to support hydrogen fuel cell vehicles being developed to reduce or eliminate most criteria pollutants and fluid wastes associated with conventional combustion engine vehicles. This project will demonstrate and validate a compact steam methane reformer with optimized costs and emissions and no undue safety or security risks.

Demonstration of Anaerobic Percolating Biofilters for Treating Perchlorate in Wastewater Generated During Rocket Motor Testing (CP-0403)
Principal Investigator: Richard Clark/Intercontinental Ballistic Missile (ICBM) System Program Office, Hill Air Force Base
The goal of this project is to demonstrate, document, and evaluate the effectiveness of a low-cost anaerobic percolating biofilter (APB) technology for treating perchlorate in wastewater generated during rocket motor testing and rocket launching while developing a design approach for applying the technology across DoD sites where solid rocket fuel is tested and deployed.

Demonstration of Diesel Engine Air Emissions Reduction Technologies (CP-0404)
Principal Investigator: Bruce Holden/Naval Facilities Engineering Service Center
This project will demonstrate and validate new gaseous hydrogen delivery infrastructure to produce, store, and dispense hydrogen is necessary to support hydrogen fuel cell vehicles being developed to reduce or eliminate most criteria pollutants and fluid wastes associated with conventional combustion engine vehicles. This project will demonstrate and validate a compact steam methane reformer with optimized costs and emissions and no undue safety or security risks.
and regulatory standpoint. This project seeks to demonstrate five technologies for reducing nitrous oxide (NOx) and PM emissions from DoD diesel engines using low-sulfur fuel. The cost and performance data obtained will be critical in selecting the most appropriate technology for future engine purchases and in complying with expected future diesel engine retrofit regulations.

**Low Impact Technologies to Reduce Pollution from Storm Water Runoff** (CP-0405)

Principal Investigator: Gary Anguiano/Naval Facilities Engineering Service Center

Military installations must comply with National Pollutant Discharge Elimination System (NPDES) storm water permit requirements, and their point and non-point sources may be subject to discharge allocations set by the EPA. In order to stay in compliance, many organizations are now developing and implementing cost-effective structural control of storm water runoff from industrial or military operations by employing innovative filtration trench systems that mimic natural sediment traps to remove metals and suspended solids.

**Passive Reactive Berm (PRBerm) to Provide Low Maintenance Lead Containment at Active Small Arms Firing Ranges** (CP-0406)

Principal Investigator: Steven Larson/U.S. Army Engineer Research and Development Center, Watertown Field Research Station

Live fire training performed on DoD ranges results in the deposition of metals such as lead and copper, ranging in size from whole projectiles to microscopic dust, into berm soils. The PRBerm technology is designed to reduce lead migration in high acidity soils and soils with high clay content.

### POLLUTION PREVENTION

**Scale-Up of Environmentally Friendly Non-Destructive Inspection for Corrosion Through Coatings** (PP-0407)

Principal Investigator: Paul Ret/Air Force Research Laboratory, Materials & Manufacturing Directorate

The objective of this project is to demonstrate the capability of the infrared-reflection non-destructive inspection (IR2NDI) technique to detect corrosion under typical aircraft and ground system coatings. In minimizing the removal of coating systems, this additional method to inspect for corrosion will significantly reduce pollution and costs.

**Demonstration/Validation of Environmentally Compliant Low Observable Coating That Facilitates Rapid Removal and Repair** (PP-0408)

Principal Investigator: Alan Fletcher/Air Force Research Laboratory, Materials & Manufacturing Directorate

This project will demonstrate and validate the laboratory-verified ultraviolet (UV), curable, low observable (LO) coating technology and transition the material to the B-2 and F-18 by tuning it for weapons-specific use. Scale-up, production, and application parameters will also be validated. The project will demonstrate compliance with these platform-specific performance requirements, as well as assess transition costs for implementation on other platforms.

**Demonstrate/Validate an Environmentally Advantageous Aircraft Deicing Fluid as an Alternative to Ethylene and Propylene Glycol** (PP-0409)

Principal Investigator: Mary Wyderski/Aeronautical Systems Center (ASC/ENVV), Wright-Patterson Air Force Base

The objective of this project is to demonstrate the field application and environmental benefit of a non-toxic, biodegradable, low biochemical oxygen demand (BOD) alternative to the current aircraft deicers (i.e., propylene glycols) that are used throughout the DoD. Environmental monitoring and computer-based modeling of the runoff water quality will allow further analysis, including predicting the impact during a variety of weather conditions and side-by-side comparison with other deicing fluid formulations.

**Improved Large-Area Surface Cleaning Verification with Visual Cleaning Performance Indicator (VCPI) Technology** (PP-0410)

Principal Investigator: Steve Rasmussen/Ogden Air Logistics Center (OO-ALC), Hill Air Force Base

A consistent, widespread, high-priority need for the DoD, DOE, and private industry is the confirmation of large surfaces such as aircraft, submarines, ships, and ground-based equipment. Insufficient cleaning, even in small areas, will eventually lead to coating failures and a subsequent concentration of the unprotected metal substrates. Implementation of the VCPI surface cleaning verification technique will result in reduced coating adhesion failures, significant operating cost savings, and reduced flow time.

**Nanocrystalline Cobalt Alloy Plating for Replacement of Hard Chrome and Thin Dense Chrome on Internal Surfaces** (PP-0411)

Principal Investigator: Bruce Sartwell/Naval Research Laboratory

The objective of this project is to demonstrate and validate pulsed electrodeposition of nanocrystalline cobalt-phosphorous coatings (either in bath or brush plating) as a viable alternative to electrolytic hard chrome (EHC) plating on internal surfaces and complex geometries. This technology is a direct drop-in for the existing EHC process and can be incorporated into existing plating lines. The superior corrosion and sliding wear performance should lead to reduced life-cycle costs, and the elimination of hydrogen embrittlement concerns will result in significantly reduced turnaround times for component repairs.

**UNEXPLODED ORDNANCE**

### Decontamination of Test Range Metal Debris Using a Transportable Flashing Furnace** (UX-0412)

Principal Investigator: Ralph Hayes/El Dorado Engineering

Military test ranges produce large quantities of metal debris that may be contaminated with explosives. The objective of this project is to demonstrate the use of a transportable flashing furnace (TFF) to treat range scrap thermally.

**Standardized Analysis for UXO Demonstration Sites** (UX-0413)

Principal Investigator: Thomas Bell/AETC, Inc.

The objective of this project is to conduct a standardized, data-level evaluation of the demonstration performance of various magnetometers and electromagnetic induction sensors. These evaluations will be conducted at the Standardized UXO Test Sites that represent various geological and geophysical environments affecting UXO sensors in different ways.

**Man-Portable Simultaneous Magnetometer and Electromagnetic System (UX-0414)**

Principal Investigator: Robert Selbridge/U.S. Army Corps of Engineers, Huntsville

This project will develop a man-portable system that simultaneously applies total field magnetometers and pulsed electromagnetic induction sensors, which are highly effective in the detection of UXO. Man-portability will expand application to difficult terrains.

**Adaptive and Iterative Processing Techniques for Overlapping UXO Signatures (UX-0415)**

Principal Investigator: Dean Keiswetter/AETC, Inc.

A primary goal of the UXO research community is to develop technologies that find and locate buried UXO. The objective of this project is to develop iterative and adaptive processing techniques for characterizing anomalies at environments with complex ordnance and clutter distributions.

**Airborne, Multi-Sensor, Wide-Area Assessment of Ordnance-Contaminated Sites** (UX-0416)

Principal Investigator: John Foley/Sky Research

Wide-area assessment (WAA) of military ranges is one of the most significant UXO problems facing the DoD community. This project will demonstrate the integrated capabilities of airborne synthetic aperture radar (SAR), fused with hyperspectral imagery (HSI), light detection and ranging (LiDAR), and orthophotographic datasets to provide WAA of UXO-contaminated areas from a fixed-wing aircraft platform.

**Predicting the Mobility and Burial of Underwater UXO Using the Modified VORTEX Model (UX-0417)**

Principal Investigator: Barbara Sugiyama/Naval Facilities Engineering Service Center

The goal of this project is to support risk assessment analyses for the DoD in making informed decisions regarding the movement of UXO underwater. The VORTEX model, developed to track mine mobility, has been modified to predict UXO mobility and burial in the underwater environment. This project will demonstrate and validate the model’s predictions of exposure, mobility, and burial.

**Coaxial Electromagnetic Induction Sensor for UXO Detection and Discrimination (UX-0418)**

Principal Investigator: I.J. Won/Geophex, Ltd.

Wide-area coverage requiring cart-mounted or towed platforms for electromagnetic induction (EMI) sensors has been difficult to achieve because of inadequate signal/noise ratios for discrimination. The objective of this project is to develop and test an EMI sensor for detection and discrimination of UXO with improved immunity to platform motion-induced noise and ambient electromagnetic (EM) noise.

**Detection and Classification of Buried Metallic Objects** (UX-0437)

Principal Investigator: Erika Gasperikova/Lawrence Berkeley National Laboratory

This project seeks to build a multi-sensor active electromagnetic (AEM) system that can perform target characterization from a single position of the sensor permitting discrimination of UXO-like bodies from non-UXO scrap. The system will make informed decisions regarding the movement of UXO underwater. AEM systems have been developed at the SERDP Project UX-1225.
Program Development Update

Recent actions by the Congressional committee indicate that Congress is fully supportive of the current SERDP budget request of $56.9 million for FY 2005. Similarly, Congressional appropriation committees have concurred with the ESTCP FY 2005 budget request of $32.6 million, a decrease from that received in FY 2004. At this time, SERDP and ESTCP FY 2005 proposals are entering their final review stage, and announcements of project selection/contract award should be made by November 1.

SERDP

In early May, the independent review of all proposals was completed. Of the 162 Core full proposals received by SERDP and subjected to independent peer review, 87 were forwarded to the multiagency Technology thrust Area Working Groups (TTAWG). In late June, the TTAWGs deliberated to select the very best of these competitive proposals. While considering transition potential, cooperative development, and cost issues, the TTAWGs integrated the comments of the peer reviewers regarding technical merit and personnel to develop a priority listing of proposals that could best meet the requirements as stated in each of the 21 Statements of Need. This prioritized list was forwarded by each TTAWG Co-Chair to the SERDP Technical Director and Executive Director. The SERDP Executive Director then forwarded these top proposals to the SERDP SAB for the final technical review, scheduled to be held this year in September and October. Using the recommendations of the SAB, the Executive Director will integrate these New Start projects into the continuing project list to formulate a draft FY 2005 Program Plan. This Plan will be submitted first to the Executive Working Group in mid-September, then to the SERDP Council for final approval in late September. Approved projects can expect to receive funds about 2 to 4 months after Congress appropriates FY 2005 funding. Unsuccessful bidders will be notified and provided Peer Reviewer comments upon request.

In addition to the Core Solicitation discussed above, two SERDP Exploratory Development (SEED) Program Statements of Need were issued for the FY 2005 Solicitation. The SEED Program is a means for researchers to test proof-of-principle concepts during an effort of 1 year or less in duration. Successful SEED projects may lead to more extensive follow-on development efforts. Of the 40 proposals received in response to the SEED solicitations, 11 went to the TTAWGs for review. These proposals will follow the same future path as the Core proposals.

ESTCP

In June, the ESTCP Review Committees evaluated 88 Department of Defense preproposals and selected 28 of these preproposals to return with a full proposal and briefing to the committees at their Phase II reviews in September. In a parallel effort, 98 preproposals submitted by industry, academia, or non-DoD federal organizations that passed initial relevancy screening were linked with DoD points-of-contact who assisted the project leads to identify DoD sites with relevant DoD problems. ESTCP has asked 23 of these proposers to submit full proposals and brief them at the Phase II reviews in September. The ESTCP Review Committees will develop a prioritized list of projects for the ESTCP Director’s consideration when preparing a draft FY 2005 Program Plan. This Plan will be submitted, after Congress has appropriated funding, to the Deputy Under Secretary of Defense for Installations and the Environment for final approval. All bidders will receive notification of the Review Committees’ results.

TRANSPORT OPTIMIZATION, from page 2

The results of this project have valuable implications for Department of Defense pump-and-treat systems that are in operation or in the planning stages. When applying transport optimization, however, computational complexity poses challenges, and sufficient expertise is required to develop and solve these problems. For further information, please contact Ms. Karla Harre, U.S. Navy, Naval Facilities Engineering Service Center, at (805) 982-2636 or via e-mail at karla.harre@navy.mil. For codes, user manuals, example problems, and reports from the Federal Remediation Technologies Roundtable, see www.frtr.gov/estcp.

confidence in the conclusion that the application of optimization algorithms provides improved solutions.

The estimated cost of applying transport optimization algorithms for problems like those formulated in this project is approximately $25,000 to $60,000 per site. The cost for the trial-and-error group was approximately $30,000 per site, although that group reported that it performed more simulations than would be expected under normal field conditions. For comparable projects, it is assumed that the cost for the trial-and-error approach would be approximately $20,000 to $25,000. The premium, therefore, for applying the transport optimization may be as little as zero or as much as $40,000. However, the potential savings over the life of each pump-and-treat system far exceeds the additional costs for applying the transport simulation optimization methods. For example, at the Former Blaine Naval Ammunition Depot, potential cost savings of approximately $10 million were identified relative to the trial-and-error solutions. For sites with high operating costs and/or high durations, such as a yet-to-be constructed pump-and-treat system with fewer fixed cost and design parameters, the potential life-cycle cost savings may become more significant.
MARK YOUR CALENDAR FOR SERDP AND ESTCP’S ANNUAL PARTNERS IN ENVIRONMENTAL TECHNOLOGY TECHNICAL SYMPOSIUM & WORKSHOP TO BE HELD NOVEMBER 30-DECEMBER 2, 2004, at the Marriott Wardman Park Hotel in Washington, D.C. To register or to learn more about this event, visit www.serdp.org or www.estcp.org, call the contact line at (703) 736-4548, or send an e-mail to partners@hgl.com.

THE COMBINED SERDP AND ESTCP IN PROGRESS REVIEW (IPR) MEETINGS FOR THE FALL SEASON will be held in Arlington, Virginia, during October. The tentative schedule calls for the IPRs to be held on the following dates: UXO (October 4-6); Cleanup (October 7-8); Conservation (October 19); Compliance (October 20); and Pollution Prevention (October 21-22).

SERDP AND ESTCP’S ONLINE LIBRARY OF TECHNICAL DOCUMENTS now features more than 300 reports and 500 fact sheets describing SERDP research and ESTCP demonstration projects. If you have not checked out this online technology transfer resource that is searchable by technology, contaminant, or other relevant key words, be sure to visit it at http://docs.serdp-estcp.org/.

QUARTERLY PROGRESS REPORTS (i.e., the quarter’s technical accomplishments, updated completion dates for milestones, and any concerns regarding technical/financial progress) for the fourth quarter of government FY 2004 are due October 15, 2004. For assistance, SERDP PIs should contact their Program Manager Assistant.

THE SERDP SCIENTIFIC ADVISORY BOARD (SAB) is scheduled to meet September 8-9 and October 13-14 in Arlington, Virginia, to review primarily New Start projects. Contact Veronica Rice at (703) 696-2119 or via e-mail at Veronica.Rice.ctr@osd.mil for additional information.

THE FY 2006 SERDP CORE SOLICITATION AND FY 2006 SERDP EXPLORATORY DEVELOPMENT (SEED) SOLICITATION will be released on or around November 11. Watch the SERDP web site (www.serdp.org under the Funding & Opportunities link) for specifics about the solicitations and deadlines.

NEW PUBLICATIONS NOW AVAILABLE ON THE ESTCP WEB SITE (www.estcp.org under the Documents link)

Cost and Performance Reports:
Pollution Prevention

Demonstration/Validation of Low Volatile Organic Compound (VOC) Chemical Agent Resistant Coating (CARC) (PP-0024)

UXO

Man-Portable Adjuncts for the Multi-Sensor Towed Array Detection System (MTADS) (UX-9811)
# Calendar for SERDP and ESTCP

## August 2004
- **August 23**: Call for Poster Abstracts closes for SERDP and ESTCP’s Partners in Environmental Technology Technical Symposium & Workshop

## September 2004
- **September 8-9**: SERDP Scientific Advisory Board (SAB) meeting
- **September 13-14**: ESTCP UXO Phase II Review Committee meeting
- **September 15-17**: ESTCP Cleanup Phase II Review Committee meeting
- **September 20**: SERDP Executive Working Group meeting
- **September 21**: ESTCP Pollution Prevention Phase II Review Committee meeting
- **September 23-24**: ESTCP Compliance Phase II Review Committee meeting
- **September 28**: SERDP Council meeting

## October 2004
- **October 4-6**: UXO In Progress Review (IPR) meeting
- **October 7-8**: Cleanup In Progress Review (IPR) meeting
- **October 13-14**: SERDP Scientific Advisory Board (SAB) meeting
- **October 19**: Conservation In Progress Review (IPR) meeting
- **October 20**: Compliance In Progress Review (IPR) meeting
- **October 21-22**: Pollution Prevention In Progress Review (IPR) meeting

## November-December 2004
- **November 30-December 2**: SERDP and ESTCP’s Annual Partners in Environmental Technology Technical Symposium & Workshop, Marriott Wardman Park Hotel, Washington, D.C.

## Related Conferences & Events
- **August 22-27**: Department of Defense Conservation Conference, Savannah, Georgia
  - For more information, visit www.dodconservationconference.com.
- **October 18-21**: The 20th Annual International Conference on Soils, Sediments, and Water, Amherst, Massachusetts
  - For more information, visit www.umasssoils.com, call 413-545-1239, or e-mail info@UMassSoils.com.
- **November 14-18**: The Fourth Society of Environmental Toxicology and Chemistry (SETAC) World Congress, Portland, Oregon
  - For more information, visit www.setac.org/portland.html.