General Services Administration
Federal Supply Service
Authorized Federal Supply Schedule Price List

Corporate Contract Services: Environmental Advisory (EAS, CF899) and Management, Organizational, and Business Improvement Services (MOBIS, CR499)

Contract Number: GS-00F-0007L
January 29, 2010 - July 31, 2014
(Options extend to 2021)

Business Size: Large

Versar, Inc.
6850 Versar Center
Springfield, VA 22151

703-642-6736 (phone)
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February 2010

GENERAL SERVICES ADMINISTRATION

Federal Supply Service

Authorized Federal Supply Schedule Price List

On-line access to contract ordering information, terms and conditions, up-to-date pricing, and the option to create an electronic delivery order is available through **GSA** *Advantage*!, a menu-driven database system. The INTERNET address for **GSA** *Advantage*! is **http://www.gsa.gov.**

Schedule for Multiple Award
Contract Number: GS-00F-0007L
Contract Award: January 1, 2001 **Contract End Date: July 31, 2014 (Option 2)**

Contractor: **VERSAR, INC.**
6850 Versar Center
Springfield, VA 22151

Business Size: Large

DUNS Number: 066764747

Telephone: (703) 750-3000
Fax Number: (703) 642-6954

Contract Administration: David Bottimore, Vice President

CUSTOMER INFORMATION

- **Special Item Numbers (SINs): CF899 and CR499**

  Management, Organizational, and Business Improvement Services (MOBIS)
  Environmental Planning Services and Documentation
  Environmental Compliance Services
  Waste Management
  Hazardous Material Management Advisory Services
  Remediation

- **Maximum Order Limitation:** $5,000,000.00 **3. Minimum Order:** $100.00
- **Geographic Coverage (Delivery Area): World Wide, Domestic, and Overseas Delivery**
- **Point(s) of Production: (city, county, and State or foreign country): N/A**
- **Discount from list prices or statement of net price: N/A**
- **Quantity discounts:** See Attachment 1
- **Prompt payment terms: Net 30**

9a. Annotate if Government commercial credit card is accepted: Government commercial credit cards are accepted for orders below the $2,500 micropurchase threshold.

CUSTOMER INFORMATION (Continued)

9b. Discount for payment by Government commercial credit card: N/A

- **Foreign items (list items by country of origin): None**

11. Time of Delivery: To be negotiated with ordering agency on each task order.

- **FOB Point(s): Destination**

- **Ordering Address(es): CF 899**

  Versar, Inc.
  6850 Versar Center
  Springfield, VA 22151
  Attention: Mr. David Bottimore
  Telephone: (703) 750-3000
  Fax Number: (703) 642-6954
  E-mail: dbottimore@versar.com

  CR499

  Versar, Inc.
  6850 Versar Center
  Springfield, VA 22151
  Attention: David Bottimore
  Telephone: (703) 750-3000
  Fax Number: (703) 642-6954
  dbottimore@versar.com

- **Payment Address(es):** Versar, Inc.
  P.O. Box 631105
  Baltimore, MD 21263-1105

- **Warranty provision: N/A**

- **Export Packing Charges: N/A**

- **Terms and conditions of Government commercial credit card acceptance: (see #9 above)**

CERTIFICATION

Versar, Incorporated certifies that the items, discounts, prices, terms, and conditions presented in this catalog are identical to those accepted by the Government under Contract No. GS-00F-0007L, and only those products and services accepted by the Government are included herein.

David Bottimore
Vice President

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1.0 ADVANTAGES OF USING THE GSA SCHEDULE

The General Services Administration's (GSA) Federal Supply Schedule Program helps Federal agencies obtain commercial services faster and more easily, efficiently, and cost-effectively. Under this program, GSA has established a Management, Organizational, and Business Improvement Services (MOBIS) and Environmental Advisory Services (EAS) Federal Supply Schedule to provide Federal agencies with a fast, efficient way to address their environmental and management needs. GSA has reviewed Versar's capabilities, negotiated the rates, and prequalified Versar to provide specific types of services. Federal agencies place orders directly with the schedule contractor (i.e., Versar), who in turn makes deliveries directly to the customer. The following are examples of specific advantages of using the MOBIS and Environmental Advisory Services schedules:

- Ordering is easy.
- It is open to all Federal agencies and the District of Columbia as well as other selected agencies.
- Competition requirements have been met (FAR 6.102(d)(3)).
- Prices have been determined to be fair and reasonable.
- All applicable regulations apply; including small business set-aside determination (see FAR 19.502-1).
- The customer and Versar have a direct relationship, so there is no transfer of funds to GSA.
- Customers select the schedule holder based on best value.
- Volume discount pricing saves money.
- A teaming arrangement allows a total solution approach to customer needs.
- Blanket Purchase Agreements can be used to tailor services to customers' needs.

2.0 WHY VERSAR

Versar, Inc., is a nationally recognized environmental and infrastructure management consulting firm. Headquarters are in Springfield, Virginia, with more than 14 other offices nationwide and over 400 employees. Sales in fiscal year 2009 were approximately $112 million. Versar (VSR) is owned largely by its employees, and its stock is publicly traded on the American Stock Exchange.

Founded in 1969, Versar has three decades of success in helping public and private sector organizations execute their environmental missions. During the past 5 years, the firm has performed over $130 million of environmental work through task orders for Federal agencies such as the U.S. Environmental Protection Agency (EPA), Department of Defense (DoD), GSA, National Aeronautics and Space Administration (NASA), Department of the Interior (DOI), Department of Energy (DOE), and Department of Commerce (DOC), among others. Other clients include State, local, and regional agencies; financial institutions; major corporations; law firms; and real estate developers.

Versar performs hundreds of environmental task orders at Federal facilities annually, encompassing such diverse efforts as: site investigation, remedial design, soil and groundwater remediation, water quality, drinking water testing and compliance, pollution prevention, lead and asbestos abatement, radon testing, environmental assessment, ambient and indoor air quality assessment, environmental risk assessment, management, and communication. The firm has extensive experience providing environmental planning and documentation, environmental compliance, hazardous waste management, hazardous materials management, and site remediation at Federal and other facilities in all 50 States and Territories (e.g., Guam, Puerto Rico, and the Virgin Islands) and overseas (e.g., Canada, Greenland, Venezuela, Russia, Iraq.)

In addition to its environmental support work, Versar provides a full range of management, organizational, and business improvement services (MOBIS) to its clients. These services include: communication and community relations support, policy and management consulting, research, training, benchmarking of existing practices, process improvement, facilitation, alternative dispute resolution, and survey design and execution.

Because of Versar's extensive experience and nationwide staff, we offer services under the following SINs:

Management, Organizational, and Business Improvement Services (MOBIS) (CR499)

- Consulting
- Facilitation
- Survey Services
- Program Integration and Management

Environmental Advisory Services (CF899)

- Environmental Planning Services and Documentation;
- Environmental Compliance Services;
- Risk Assessment;
- Peer Review;
- Waste Management Services;
- Hazardous Materials Management Advisory Services; and
- Remediation.

3.0 WHO CAN USE THIS SCHEDULE

In accordance with contract provisions and ADM 4800.2D, organizations that are eligible to use this GSA Environmental Advisory Services Schedule include:

- All Federal agencies and activities in the executive, legislative, and judicial branches;
- Government contractors authorized in writing by a Federal agency pursuant to CFR 51.1;
- Mixed ownership Government corporations (as defined in the Government Corporation Control Act) such as the U.S. Postal Service;
- The government of the District of Columbia; and
- Other activities and organizations authorized by statute or regulation to use GSA as a source of supply.

4.0 HOW TO USE THIS SCHEDULE

Using this schedule and putting a Task Order in place is quick and efficient. It entails the five-step process shown in Figure 1 and described below:

- **Step 1: Buyer Identifies Requirement.** The Technical Buyer identifies a requirement, prepares a Scope of Work (SOW), and sends it to a Contracting Officer. Typically the SOW will identify discrete tasks, deliverables, and a schedule.

- **Step 2A: For Task Orders of $2,500 or Less.** Place the Task Order directly with the schedule holder of your choice.

- **Step 2B: For Task Orders Over $2,500.** The Technical Buyer and Contracting Officer work together to prepare a Request for Quote (RFQ). In addition to the SOW, the RFQ describes the basis for selection and may include specific evaluation criteria. The RFQ may ask for a technical approach, staffing plan, rates, and information about the schedule holders' experience. The RFQ should be sent to three approved GSA Environmental Advisory Services or MOBIS schedule holders. GSA encourages Federal agencies to keep the burden on schedule holders to a minimum by not requesting lengthy written responses to RFQs.

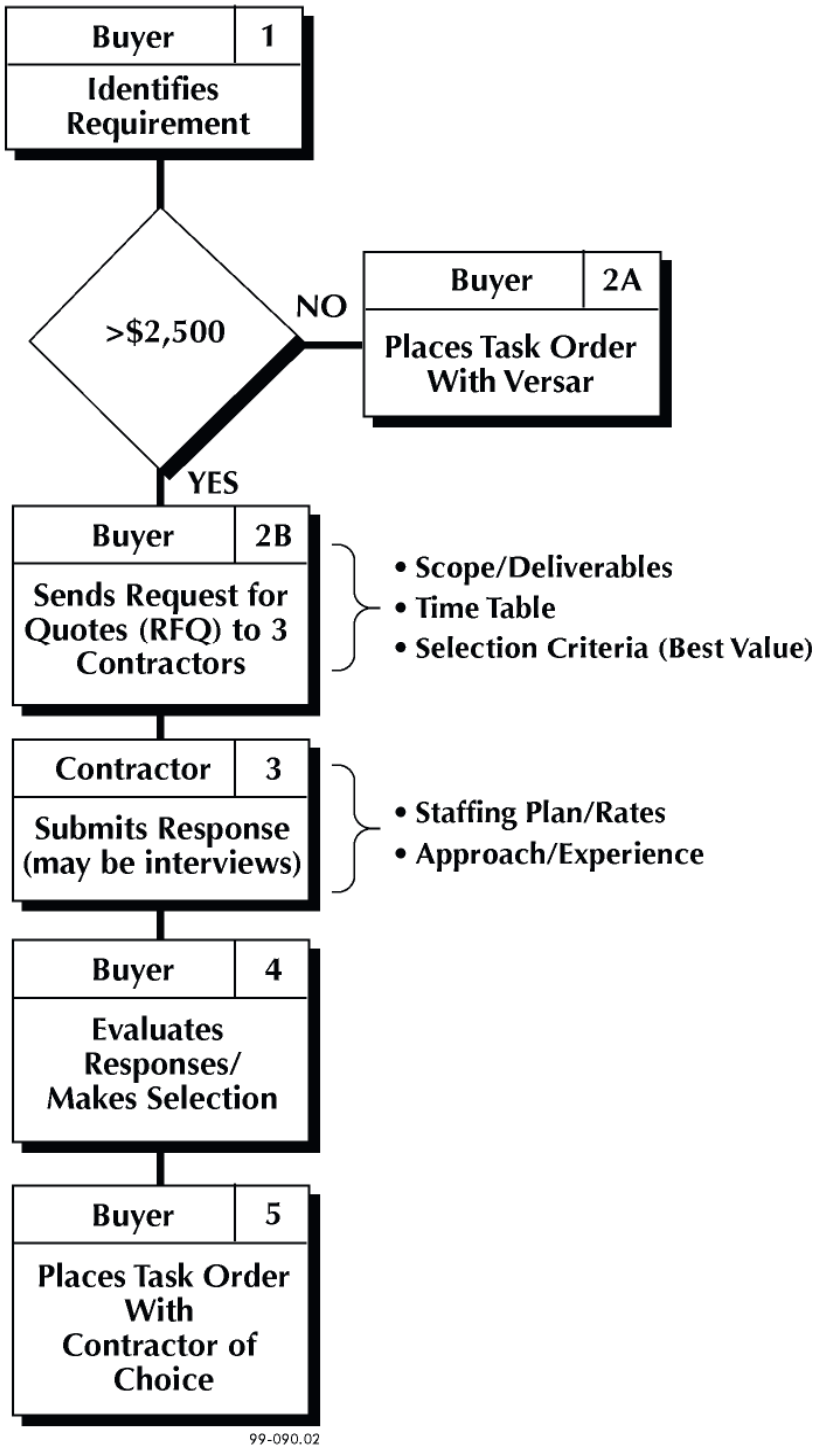
- **Step 3: Contractors Submits a Response.** At a minimum this will consist of a staffing plan, identifying the pertinent SINs and professional levels and disciplines of staff within those SINs, together with the appropriate labor rates and other direct costs. If requested by the buyer, the response may also include a technical approach and description of qualifications.

- **Step 4: Evaluate Responses/Select Contractor.** The Technical Buyer and Contracting Officer will collaborate on the evaluation of the responses received. Selection should be made on a Best Value basis.

- **Step 5: Place Task Order with Selected Contractor.** After selecting the Best Value contractor, the final step is to place the Task Order directly with that Contractor. The buyer does not have to transfer any funds to GSA, and the buyer manages the Task Order without participation by GSA.

GSA will assist you if needed, but does not get involved in your procurement process.

Figure 1
Using the Schedule



5.0 SCOPE OF WORK FOR MOBIS AND ENVIRONMENTAL ADVISORY SERVICES

5.1 Scope of Work for Management, Organizational, and Business Improvement Services (MOBIS)

5.1.1 Consulting Services

Versar shall provide expert advice, assistance, guidance or counseling in support of agencies' management, organizational, and business improvement efforts. This may also include studies, analyses and reports documenting any proposed developmental, consultative or implementation efforts. Examples of consultation include, but are not limited to, strategic, business, and action planning; high-performance work; process and productivity improvement; systems alignment; leadership systems; organizational assessments; cycle time; performance measures and indicators; program audits and evaluations.

Versar shall also provide off-the-shelf, or customized off-the-shelf training packages under this SIN to meet specific agency needs related to management, organizational, and business improvement services, such as, but not limited to the following: customer service and teambuilding, performance measurement, business process reengineering, strategic planning, ISO 9000 and ISO 14000, statistical process control, quality management, benchmarking, process improvement, performance-based problem-solving, and change management. Customization of off-the-shelf training may include but is not limited to workbooks, training manuals, computer-based training, videotapes, overhead transparencies, and advanced presentation media.

5.1.2 Facilitation Services

Versar shall provide facilitation and related decision support services to agencies engaging in collaboration efforts, working groups, or integrated product, process, or self-directed teams. Agencies bringing together diverse teams and/or groups with common and divergent interests may require a neutral party to assist them in the use of problem solving techniques; defining and refining the agenda; debriefing and overall meeting planning; resolving disputes, disagreements, and divergent views; logistical meeting/conference support when performing technical facilitation; convening and leading large and small group briefings and discussions; providing a draft for the permanent record; recording discussion content and focusing decision-making; and preparing draft and final reports for dissemination.

5.1.3 Survey Services

Versar shall provide expert consultation, assistance, and deliverables associated with all aspects of surveying within the context of MOBIS. Versar shall assist with, and/or perform all phases of the survey process to include, but not limited to planning survey design; sampling; survey development; pretest/pilot surveying; defining and refining the agenda; survey database administration; assessing reliability and validity of data; determining proper survey data collection methodology; administering surveys using various types of data collection methods;

analyses of quantitative and qualitative survey data; production of reports to include, but not limited to: description and summary of results with associated graphs, charts, and tables; description of data collection and survey administration methods; discussion of sample characteristics and the representative nature of data; analysis of non-response; and briefings of results to include discussion of recommendations and potential follow-up actions.

5.1.4 Program Integration and Project Management Services

Versar shall provide services in the management and integration of programs and projects. These services may include, but are not limited to program management, program oversight, project management, and program integration (team leader).

5.1.5 Professional Services

Versar shall provide professional services in the form of on-site support to agencies seeking professional staff augmentation for short or long-term engagements. Versar provides on-site staff augmentation for management, technical and scientific support services. Professional services support areas include, but are not limited to: sustainability programs; policy development; maintenance and facility engineering; environmental remediation; waste management and pollution prevention; natural resource management; statistical analysis; database management; geographic information systems (GIS); water quality assessment; ecological restoration; biological surveys, monitoring and testing; ecological and human health risk assessment; natural resource damage assessment (NRDA); cultural resource management; archaeological surveys; compliance management; information technology services; web design and hosting; systems engineering; and computer modeling and simulation.

5.2 Scope of Work of Environmental Advisory Services

5.2.1 Environmental Planning Services and Documentation

Sections 5.2.1.1 through 5.2.1.3 briefly describe the types of environmental planning and documentation services offered by Versar. A more detailed description of the scope of these services is contained in section 6.2.

5.2.1.1 *Environmental Impact Statements and Assessments under NEPA*

Versar shall perform activities such as data identification, data collection (including site visits and interviews), data development, and data interpretation; sampling and analysis; preparation of human and ecological health risk and environmental impact evaluations and reports; preparation of expert testimony; and preparation of material for and attendance at public meetings and public hearings (including scoping meetings). This may include National Surveys i.e., assisting Federal agencies in planning and conducting national assessments of wastewater and sludge.

5.2.1.2 *Endangered Species, Wetlands, Watersheds and Other Natural and Cultural Resource Management Plans, Studies and Consultations*

Versar shall review any existing reports and management plans; coordinate with U.S. Fish and Wildlife Service; contact appropriate State office for information; perform surveys; use the results of data collection to prepare reports/maps.

5.2.1.3 *Economic, Technical, and Risk Analyses in Support of Environmental Needs*

Versar shall conduct analyses of options under consideration for environmental actions. Versar shall perform activities such as data collection, data development, data modeling, analyses of comments, regulatory and economic analyses, feasibility analyses, hazard assessments, exposure assessments, and risk analyses.

5.2.2 Environmental Compliance Services

Sections 5.2.2.1 through 5.2.2.3 briefly describe the types of environmental compliance services offered by Versar. A more detailed description of the scope of these services is contained in section 6.3.

5.2.2.1 *Environmental Compliance Audits*

Versar shall determine all applicable public laws and statutes, agency and command regulations/directives, and other Federal, State, and local regulations and apply as required to conduct audits. Versar shall evaluate findings and prepare necessary documentation/reports and conduct a complete out-brief. Specifically, Versar shall be intimately familiar with the Resource Conservation and Recovery Act (RCRA), the Clean Water Act (CWA), the Clean Air Act (CAA), Superfund and its amendments (CERCLA/SARA), and the Emergency Planning and Community Right to Know Act (EPCRA), and in particular, with the implementing USEPA and state regulations resulting from these statutes.

5.2.2.2 *Compliance Management Planning*

Versar shall develop Management Plans that will cover policy; planning; implementation and operation; checking and corrective action; and management review. Federal agencies have learned that in particular they can benefit from development of an Environmental Management System (EMS) for each of their facilities. EMS is patterned after, and is compatible with the International Standard Organization (ISO) 14000 regulations which have proven to be an effective tool to plan, develop, manage, and improve environmental compliance.

5.2.2.3 *Pollution Prevention Surveys*

Versar shall conduct pollution prevention (P2) surveys and opportunity assessments; develop pollution prevention plans, establish inventories for hazardous materials; evaluate the economics and technical feasibility of process changes, product substitutions, and recycling alternatives; and create databases to track progress in achieving pollution prevention goals.

5.2.3 Waste Management Services

Versar shall conduct analyses of options under consideration for Waste Management Services. Versar shall perform activities such as data collection, data development, analyses of comments, regulatory and economic analyses, feasibility analyses, hazard assessments, exposure assessments, and risk analyses. Services include, but are not limited to development of waste characterization studies and recommendations for management strategy including identification of recycling options. Assessments might include studies relating to collection and transfer of waste, source reduction, and evaluation of energy/fuel options. Services could include data collection, data development, and analyses of comments, regulatory and economic analyses, feasibility analyses, hazard assessments, exposure assessments and risk analyses. To the extent that wastes are hazardous, Versar will provide services to properly manage those wastes also, in compliance with USEPA's complex Land Disposal Regulations requirements. Additional detail is provided in sections 6.4 and 6.5.

5.2.4 Hazardous Materials Management Advisory Services

Versar shall provide Hazardous materials management advisory services. These services may include, but are not limited to, the furnishing and interpretation of Material Safety Data Sheets (MSDSs), Reporting and compliance software, hazardous materials tracking software and other related software/services. Hazardous materials management deals with the proper care of purchased chemical supplies that have the capability of creating harm to human health or the environment if improperly used, managed, and applied. However, hazardous materials also include the universe of hazardous *wastes* that may be created after chemicals have completed their productive/economic lives, and must be disposed of or recycled. Versar must be expert in understanding the management and compliance for both hazardous virgin materials, as well as wastes. Additional detail is provided in section 6.4 and 6.5.

5.2.5 Remediation Services

In support of Remediation Services, Versar may be required to conduct investigations, remedial action, long-term monitoring, and long-term operation associated with environmental restoration activities under CERCLA, RCRA, or other environmental regulation. Remedial actions include, but are not limited to, containment, removal, treatment (on-site and off-site), transportation, and disposal. The entire spectrum of contaminants may be involved including hazardous, toxic, radioactive, petroleum-based, and explosive constituents, or any combination thereof. These contaminants may occur in various environments including soils, sediments, sludges, liquids, air, water, debris, structures, and various containers. A wide variety of potential remediation activities may include, but are not limited to, slurry walls, subsurface barriers, landfill closure, soil/sludge stabilization/solidification, water/groundwater treatment, soil vapor extraction, excavation, dredging, underground storage tank removal/closure, groundwater extraction, dewatering, bioremediation, thermal treatment, demolition, and debris removal. In addition, services may include performance of CERCLA removal actions, RCRA Interim Measures, RCRA closures, and Brownfields support. Furthermore, activities may include performance of operation and maintenance (O&M), including short- and long-term O&M of various types of hazardous waste facilities including, but not limited to: groundwater/surface water facilities, leachate facilities, soil vapor extraction, dual phase vapor extraction, low

temperature thermal desorption, soil stabilization, and radiological decontamination and treatment. O&M services may also include preparation of O&M manuals, training, and conduct of long term monitoring.

Versar shall provide the full range of methods and technologies supporting activities necessary for Remediation Services including dismantling, demolition, or removal of improvements to the extent allowed by the Service Contract Act under FAR 37.3 in accordance with host nation, Federal, State, and/or local statutes and regulations. Remediation shall conform to environmental permits, decision document requirements, or other legal requirements. A more detailed discussion of Versar's remediation services is described in section 6.6.

6.0 VERSAR'S APPROACH TO PROVIDING MOBIS AND ENVIRONMENTAL ADVISORY SERVICES

6.1 Management, Organizational, and Business Improvement Services (MOBIS)

6.1.1 Consulting

Versar's staff also develops and implements a wide range of training programs, from half a day to 3-4 days, as part of its support for a number of technical and management consulting programs. Versar provides training in partnering and communications, in informal team-based approaches to alternative dispute resolution, Myers-Briggs Personality Type Indicators (MBTI), and using partnering for streamlined decision making. Technical training includes courses in the implementation of exposure/risk assessment of environmental fate and transport, use of environmental fate and exposure models, multimedia sampling techniques, including PCB exposure assessment, pollution prevention opportunities, planning and management of ranges, and health and safety in the workplace environment.

Versar provides its clients with consulting services to reduce resource expenditures and enhance efficiency in management, policy, environmental science, and engineering, while improving communications and maintaining high levels of quality and public support. Versar's consultants provide support in strategic and business planning, provide management training, assess quality management systems to continuously improve business processes, troubleshoot problems, implement ISO standards (e.g., ISO 17025, 9000), and develop and document Standard Operating Procedures. Versar's consultants have led management assessments of cleanup programs, performed corporate vulnerability assessments, and developed preparedness plans for bioterrorism and chemical warfare.

Some specific examples of Versar's consulting services include the following:

- **Support for the Intergovernmental Data Quality Task Force (IDQTF)**. Versar supported development of a quality management system model based on the national standard for environmental data collection and use, known as ANSI/ASCQ E-4 (consistent with ISO 9000), and developed tools to assist with its implementation. Specifically, Versar conducted organizational assessments and evaluated the quality assurance practices of the EPA Regions and developed QA/QC measures for Superfund

as part of its process improvement. Process improvement techniques involved creating a common framework for writing quality assurance project plans (QAPPs) and a model QAPP and worksheets based on the Systematic Planning Process. The results of the IDQTF process changes are expected to result in a quality system for the management of environmental data collection and use throughout the Federal government. Implementation of this system will eliminate redundant reviews, reduce conflicts between agencies, and reduce duplicative effort associated with inadequate data quality.

- **Organizational Assessment of Ordnance and Explosives at Closed, Transferring, and Transferred Ranges**. Versar conducted an organizational assessment and evaluation on the management of ordnance and explosives at CTT ranges that was based on an open-ended survey of EPA Regions conducted by the Agency. Versar developed tools to enable EPA to clarify its practices, policies, and procedures for managing ordnance and explosives at CTT ranges as part of it its process improvement strategy. The tools include a management training program and a handbook for use by regulators and the public on issues relating to ordnance and explosives at CTT ranges.
- **Assessment of Institutional Controls as Remedies at Federal Facilities**. Versar also conducted an organizational assessment and evaluation of the use of institutional controls at Federal facilities based on evaluations of Records of Decision and five-year review reports. This assessment and evaluation will be used as a benchmark against which future practices will be evaluated and to develop performance measurements for use of institutional controls at Federal facilities.
- **Assessment to Develop Tools and Strengthen Project Teams**. Through personal interviews with participants in the West Virginia Ordnance Works and Beale cleanup efforts, Versar conducted an assessment of relationships and project status to determine the kinds of tools needed to strengthen each project team. Versar documented the results of the assessment and presented them to the Tier 2 management team.
- **Development of Training to Improve Management of OE on Military Ranges**. To assist with oversight of ordnance and explosives at CTT military ranges, Versar developed a training program designed to improve the management skills of EPA Regional Project Managers with regard to ordnance and explosives. Versar created a training agenda and developed most of the presentations in consultation with the technical experts, and identified and invited speakers. Versar continues to refine the training program and to support FFRRO in implementing the training in other EPA Regions.
- **Training in Partnering, Team Building, and Site Management**. Versar has conducted 2-3 day training sessions on partnering, team building, and streamlined site management for a number of different military installations. The trainings consisted of a mix of lectures and exercises. Versar provided participants with training notebooks and exercise tools and incorporated topics such as partnering, informal communication (e.g., MBTI), informal ADR processes, and streamlined site management in cleanup programs.
- **Training in Implementation of Exposure/Risk Assessment**. Versar provided a half-day training course on the implementation of the DoD Relative Risk Evaluation Framework for sites included in cleanup programs. It also provided exposure/risk assessment training involving 3- and 4-day workshops, including training in assessment of environmental fate and transport, use of environmental fate and exposure models, and multimedia sampling techniques. Versar also has provided 2-day training courses on PCB exposure assessment and one-half day to 2-day training on pollution prevention opportunities.

- **Training in Workplace Health and Safety**. Versar has provided 1-hour to 1-day courses for regional transit authority personnel to address workplace environment health and safety.
- **Training in the Myers-Briggs Personality Type Indicator (MBTI)**. MBTI™ is currently the most widely used personality instrument in the world. It does not measure intelligence, ability, or mental health. It is a measure of an individual's process for gathering information, making decisions, and communicating ideas. The intent of the MBTI is to help people assess their personality preferences and offer understanding of the differences that might occur between different personality types to support team building.
- **Advisory Board Interviews and Market Analysis to Identify Objectives for Superfund/Brownfields Site Reuse**. Versar conducted personal interviews prior to the convening of a Citizens Advisory Board (CAB) in Lowell, Massachusetts, to identify participants and issues of concern. The market analysis was to enable the CAB to identify and target market drivers that may affect reuse plans for the reuse area, such as occupancy rates for commercial buildings, State and local manufacturing sectors and resources, current and potential revenues to the city, and tax status of properties on Tanner Street.
- **Performance Benchmarks for Laboratories That Perform Work for DoD**. Versar implemented a major project to use statistical process control analysis to establish control limits for laboratory control samples (LCS). The project used LCS data collected from 17 different laboratories to establish a benchmark of performance for laboratories that do work for DoD. The purpose of the study was to educate DoD, EPA, and the laboratories on the limitations of the standard analytical methods currently being used and to identify processes in need of improvement. Versar conducted a pilot study of a single analytical method, analyzed the results, and revised the statistical methodology using input from the QAA/TAT and laboratory representatives. Versar then implemented a full-scale study for eight additional analytical methods and presented the results in the form of required control limits in an appendix to the Quality Systems Manual.
- **Assessment of Community Relations Needs, Development of Community Relations Plan Updates and Fact Sheets for Lackland and Goodfellow Air Force Bases**. As part of its support for the U.S. Air Force's Air Education and Training Command (AETC), Versar assessed the interests and concerns of the communities surrounding Lackland and Goodfellow Air Force Bases. Versar used this information to both support the bases' community relations programs and update their community relations plans. Specifically, using EPA and Air Force Community Relations guidance, Versar reviewed information about the technical and legal issues related to the Installation Restoration Program (IRP) activities on-base, community involvement in the IRP process, and new base missions and initiatives (including the realignment of Lackland AFB). Versar developed community contact lists and interview questions, interviewed community members and prepared interview summaries. Versar updated existing community mailing lists, developed and conducted Restoration Advisory Board (RAB) surveys, prepared fact sheets in both English and Spanish to assist community understanding of environmental issues and progress, developed news releases regarding Technical Review Committee (TRC) meetings, and provided support for these meetings. Using the information obtained in the interviews and in TRC meetings, Versar updated the community relations plans at both facilities to reflect the state of IRP cleanup activities

and current community concerns and interests. In addition to the RAB and CRP support provided at Lackland and Goodfellow Air Force Bases, Versar has provided RAB support to numerous other DoD components.

6.1.2 Facilitation

Versar's consultants provide leadership and assistance in the formation of partnerships and teams from diverse public and private organizations to achieve common goals. Versar demonstrated its methods by facilitating a pilot project to integrate Superfund and brownfields site reuse activities. Versar has helped management groups to perform analysis and develop strategic recommendations and has facilitated national task forces to develop consensus policies and procedures. In its work with focus groups, Versar has helped address specific planning and development problems. As coordinator and facilitator of expert peer-review workshops and panel meetings, Versar has helped to develop or review guidance documents, agency rules, issue papers, and studies. Versar has led successful, award-winning partnership efforts among EPA Regions and Offices, States, Department of Defense components, Department of Energy headquarters and field operations, and contractors. Versar also facilitates an interagency task force to develop uniform products and procedures that integrate international quality standards (ISO 9000, ANSI/ASQC E-4) in high-level policy and guidance. The following are examples of Versar's facilitation support:

- **Facilitation of Intergovernmental Data Quality Task Force and Subgroups to Develop Mission and Products, Implement Plans, and Disseminate Products**. Versar has been providing facilitation services to the IDQTF and its subgroups for over 3 years. Facilitation has included assisting the group in developing its mission and goals; assisting in the development of ground rules for the operation of this multiagency task force; working with the team leader to identify goals of the meeting and develop an agenda to meet those goals; facilitating the task force's and its subgroups' meetings to ensure achievement of goals; developing papers in advance of meetings to facilitate discussions at the meetings; and documenting results, including any consensus or remaining issues. In addition, Versar trained IDQTF members to use an informal alternative dispute resolution protocol developed by Versar to identify and resolve disagreements.
- **Facilitation of Monthly Meetings to Develop Effective Teams**. Versar facilitates monthly meetings of Tier 1 (project) groups and quarterly meetings of Tier 2 (management) groups to help them become a highly effective team using process improvements to streamline site management at WVOW and Beale AFB. Work includes facilitation of 2-day meetings for Tier 1 and Tier 2 teams, leadership of ongoing team-building and meeting activities, and ongoing training of team members. Versar provides training on alternative dispute resolution protocol to Tier 1 and Tier 2 teams. Training includes assessment of personal style for addressing disputes, as well as training on effective approaches to informal ADR.
- **Facilitation of Citizen Advisory Board to Develop Superfund/Brownfields Site Reuse Plans**. For the Lowell, Massachusetts, project, Versar facilitated the initial convening of the CAB. In addition, Versar conducted and reported the results of four focus groups composed of individuals from a wide range of community interests.
- **Facilitated Meetings to Create a DoD-wide Quality Systems Document**. Versar facilitated monthly and quarterly meetings of the QAA/TAT to create a DoD-wide

Quality Systems document based on ISO Guide 25 and National Environmental Laboratories Accreditation Conference (NELAC) Quality Systems Chapter 5. The resulting Quality Systems Manual identified areas where further clarification of DoD requirements was needed or where DoD standards were more stringent than those of ISO or NELAC. The objective was to pull together quality management and process improvement practices from all three branches of DoD into a consistent standard for environmental data quality oversight for laboratories that do work for DoD. Facilitation involved reconciling differences between representatives of the Navy, Air Force, and Army Corps of Engineers and focusing the team on maintaining consistency and objectivity while considering all parties involved.

- **Facilitated Discussions to Meet Laboratory Data Collection Benchmarks**. In conjunction with the LCS data collection and analysis, Versar facilitated several joint meetings between the QAA/TAT and members of the American Council of Independent Laboratories (ACIL). ACIL assisted in the collection of data for the LCS study and represented the viewpoint of the laboratories that would be required to meet the benchmark limits established by the study. Facilitation required focusing discussion on specific topics, ensuring all participants were heard, and verifying that all issues from both sides were articulated and understood.

6.1.3 Survey Services

Versar has designed and conducted surveys and provided statistical support for a variety of Federal, State, and local government projects. Versar's efforts include collecting information and performing statistical analysis of data for decision-making purposes; developing and testing survey instruments; analyzing survey findings; benchmarking current practices to suggest improvements; and pilot testing data collection instruments. Versar also designs, pilot tests, and analyzes data from formal surveys to assess Government agency management practices and conducts organizational assessments for the agencies.

- **Survey of Quality Management Practices to Benchmark Data Quality Practices for Superfund**. Versar conducted a survey of quality management practices for Superfund in order to benchmark existing EPA Regional environmental data quality practices. The survey was used in the development of the quality management system. Also for the IDQTF, Versar developed an information collection instrument to identify current requirements for the IDQTF, Versar conducted a survey of EPA programs and Regions on training programs and training needs for quality assurance and quality control, which contributed to the development of a training needs assessment for EPA. Versar also developed; pilot tested, and analyzed a survey of all EPA Regions on the role of future land use in selecting cleanup remedies at Federal facilities installations with regard to management practices at Federal facilities.
- **Development of Self-Assessment Instrument and Analysis**. Versar developed and administered a team self-assessment instrument for use by both the West Virginia Ordnance Works and Beale AFB teams. Versar then used the results of the survey analysis to assist team members in identifying strengths and weaknesses. Versar also developed a personnel evaluation instrument for use by managers in examining the performance of key personnel in a partnering context.
- **Development, Testing, and Use of Survey Instrument to Benchmark Accreditation**

Programs. Versar developed and pilot tested a survey instrument that the International Laboratory Accreditation Cooperative (ILAC) sent to its members. Versar revised the survey instrument based on feedback during the pilot test and created a database for maintaining the responses and querying the data. We then analyzed the results to benchmark the current status of ILAC member accreditation programs and identify areas where the organization can better support accreditation activities among its members. Produced a detailed report of the survey findings.

- **Development and Implementation of Survey to Analyze Data Collection Process**. Versar developed and implemented a survey in order to perform a statistical analysis of LCS data collected from multiple laboratories that do work for DoD. The survey was to be used to gather large amounts of quality control data (i.e., up to 20 fields associated with each of thousands of data points). Specific input requested from laboratory personnel was used to refine the data collection instrument and the accompanying instructions, enabling Versar to put the data received into a standard, usable format. The survey results were parsed and filtered to ensure effective implementation of the statistical process control and benchmarking.
- **Results Analysis, Training for Survey Team, and Survey Quality Control**. Versar analyzed an open-ended survey questionnaire of EPA Regional offices designed to document ordnance and explosives (OE) problems on closed, transferring, and transferred (CTT) military ranges, encoded data for a results database, developed interpretation guidance for a team reviewing the surveys, managed extensive QA/QC of the survey results, and wrote a draft report on the survey findings.

6.1.4 Program Integration and Management

Versar provides ongoing program support to its clients in a variety of ways. Versar helps to develop implementation strategies for guidance documents; prepares Uniform Federal Policy to establish frameworks on quality management (based on the national standard ANSI/ASQC E-4); and provides information and statistical expertise to analyze trends in the management of risk. Versar provides management support for Federal rulemaking and provides other help for the management of programs to develop policy, procedures, and technical guidance. Versar also coordinates and integrates the program efforts of divisions within agencies. Versar has developed environmental programs for companies and organizations and serves as program consultant for process modeling and process improvements, data collection and management, program integration, activity-based costing, and performance evaluation. Versar employs over 40 Certified Project Managers under the PMI certification program.

Under various work assignments since 1997, Versar has provided support to EPA's Federal Facilities Restoration and Reuse Office (FFRRO) to improve processes and decision-making in the management of Federal facilities. Much of the work has addressed quality systems in place for the management of environmental data used to make decisions in the cleanup of federally owned or managed lands. Versar also provides consulting support for EPA's management of ordnance and explosives at closed, transferred, and transferring (CTT) military ranges. In this capacity, we have developed and implemented a training program for the EPA Regions based on a technical manual developed by Versar. Versar also supports FFRRO in assessing, evaluating, and developing performance measurements for institutional controls at Federal facilities. Versar uses a full range of MOBIS services in support of this task.

- **Program Support for Intergovernmental Data Quality Task Force**. Versar supports the IDQTF by assisting in the development of an implementation strategy for IDQTF products, such as the Uniform Federal Policy on Environmental Data, which is a framework for documenting a quality management system (based on the national standard ANSI/ASQC E-4). Versar also provides meeting support, including meeting facilitation, agendas, fact sheets, briefings, issue papers, and meeting minutes.
- **Management of Ordnance and Explosives (OE) at Closed, Transferring, and Transferred (CTT) Ranges**. Versar prepared the draft and final guidance documents on managing the cleanup of OE on CTT ranges, analyzed a survey questionnaire of EPA Regional offices designed to document OE problems on CTT ranges, encoded data for database, developed interpretation guidance for a team reviewing the surveys, managed extensive QA/QC of the survey results, and wrote the draft report. Versar also designed and provides a training program for the management of OE at CTT ranges.
- **Management of the Environmental Awards Program for the Department of the Army**. Versar provides support that includes developing guidance for Major Commands (MACOMs), collecting award nominations, identifying judges and managing logistics for award selection, facilitating award panels, notifying award winners, and managing awards ceremony (including invitations, protocol, logistics for ceremony, and award winner stays).
- **Management of Large Engineering Conferences for DoD**. Versar managed activities such as selecting venue, notifying participants, providing preregistration and on-site registration, arranging audio-visual and other support for presenters, documenting meeting results, and creating a meeting CD. Conferences for U.S. Army Reserves and the U.S. Army were attended by 300-500 people.
- **Development of Museum Exhibit**. Versar managed a series of subcontractors (designers, historians, interactive exhibit designer, fabricators, and installers) to develop an exhibit on the Battle of the Atlantic for the Hampton Roads Naval Museum. Versar worked closely with museum staff install an exhibit that met their standards, oversaw development of content, script, design, and implementation, and ensured that all participants worked together to present a unified message.
- **Management Support for Rulemaking for PCB and Asbestos Disposal**. For 15 years Versar has provided management support for rulemaking by the EPA Office of Pollution Prevention and Toxics. Versar reviewed and summarized comments submitted in response to the 1994 Advance Notice of Proposed Rulemaking for PCB disposal. More than 5,000 comments were organized according to submitter and topic area.
- **Management of a Program to Develop Policy, Procedures, and Technical Guidance**. Under two consecutive contracts (9 years), Versar has helped the Waste Management Division of the EPA/Office of Solid Waste to coordinate and integrate its efforts with Office of Surface Water and the Office of Research and Development regarding the Land Disposal Restrictions under Subtitle C of RCRA. Versar provided extensive support in the development and analysis of surveys to industry. Versar developed three reports to Congress, including one on program development for waste minimization activities throughout the Agency.
- **Development of Transit Agency's Environmental Program**. For 15+ years Versar has served as the environmental support contractor for the Washington Metropolitan Area Transit Authority (WMATA). Under that ongoing contract, Versar has helped WMATA

develop its environmental program, which involves process modeling and process improvements and activity-based costing. The program is considered by many to be the best such program among U.S. transit organizations. Versar's role has been one of consultant for process improvements, data collection and management, program integration, and performance evaluation.

6.1.5 Professional Services

For more than a decade, Versar's Professional Services Group (PSG) has offered professional services to numerous government agencies. The foundation of our success has been the tailored individualized service we offer our customers. Versar customers can count on quality hires, unfailing support and continuity of service. Our customers are confident in our ability to deliver the best candidates for their needs, and our employees are not left on the job site feeling isolated and unsupported. While the employee is on-site with the customer, PSG ensures the employee is integrated into the greater Versar community. Our intranet allows our onsite employees to share information and exchange ideas, bolstering their knowledge base and enhancing their capabilities. Our program managers provide a single point of contact for on-site employees and customers, so communication and action are unrestricted and immediate. This value-added resource enables us to develop synergies among our employees and our customers to provide the highest caliber of support.

- **Low turnover rate.** Our track record of only 13 percent turnover is well below the industry average and the most tangible measure of our success in retaining quality staff that are fully committed to customer mission success. Versar keeps its employees for an average of 18 years, many of whom have been with the company for 25 years or more.

- **Job-related training.** Along with the management support customers have learned to expect, Versar provides its employees with the most current training and education opportunities, including Project Management Professional (PMP) certification, tuition assistance and customer-specified offerings.

- **Personal service**. As employees and customers will attest, personal attention is serious business for PSG. Customers and employees alike are guaranteed quick response from a single point of contact. Customers can also count on speedy replacement or backfill to ensure continuous program support.

- **Site visits**. The members of PSG are not stationed at their desks. Meeting face-to-face is the most important part of the job, so customers can count on site visits from PSG managers to ensure effective communication, client satisfaction and employee contentment.

- **Access to technical expertise**. PSG customers aren't just hiring an employee; they are hiring the whole firm. PSG team members are supported by four decades of environmental and engineering support. This aspect enables on-site staff to have access to specific technical talent that will assist in product peer review, data interpretation, product development, regulatory compliance and legislative interpretation, and a wide variety of other scientific advice and mentorship.

- **Certified Project Management Professionals.** Versar offers certified Project Management Professionals (PMP) as part of our management team. In 2006, Versar undertook an in-house program offered by the internationally recognized Project Management Institute (www.pmi.org), to train mid- and senior-level Program and Project Managers on the specifics of effective project management. This rigorous management training results in Project Management Professional (PMP) certification. This PMP certification has become increasingly important to the government as funding is reduced while sustainability of operations becomes essential. PSG's Group Manager and many of the core staff have successfully completed this thorough PMP training program.

6.2 Environmental Planning Services and Documentation

Versar's approach to Environmental Planning Services and Documentation is based on our more than 30 years of experience in the four subject areas of (1) Environmental Impact Statements (EISs) and Assessments (EAs) Under NEPA, (2) Endangered Species, Wetlands, Watersheds, and Other Natural Resource Management Plans, Studies, and Consultations, (3) Cultural Resources Studies, and (4) Economic, Technical, and Risk Analyses in Support of Environmental Needs. Although each area has specific legal requirements and policies within each agency, NEPA continues to be the overarching framework within which environmental planning is generally conducted.

6.2.1 Environmental Impact Statements and Assessments under NEPA

Versar's Ecological Sciences and Applications (ESA) unit in Columbia, Maryland, is our National Environmental Policy Act (NEPA) Service Center. ESA's staff of 38 experts has supported a wide variety of NEPA clients within the Departments of Interior, Commerce, Defense, and Transportation, as well as the Federal Energy Regulatory Commission (FERC), Environmental Protection Agency (EPA), and Council on Environmental Quality (CEQ). Versar has prepared hundreds of EISs and EAs for projects ranging from complex and controversial energy facilities developments to routine construction. Versar has received commendations for our NEPA work from CEQ, Army Corps of Engineers (USACE), Air Education and Training Command (AETC), and many individual installations.

VERSAR AND NEPA

- NEPA Center of Excellence in Columbia, Maryland Office;
- Produced over 125 NEPA documents for USACE, DOE, FERC, DOI, DoD clients;
- 30+ years of NEPA experience;
- Support to CEQ for NEPA policy and training; and
- Approach that integrates NEPA into client operations.

The National Environmental Policy Act of 1969 (NEPA) establishes protection of the environment as national policy. It also directs Federal agencies to consider the environmental implications of their decisions and to document that assessment in an Environmental Assessment (EA), Environmental Impact Statement (EIS), or Finding of No Significant Impact (FONSI). Subsequent Executive Orders and both guidance and regulations from the Council on Environmental Quality (CEQ) establish an interdisciplinary framework for NEPA

implementation. In addition, each Federal agency has promulgated mission-specific NEPA regulations. Further, more than 30 States (and numerous regional organizations and localities) have "little NEPAs" that require the preparation of environmental impact reports for public and certain private activities.

Today, NEPA is receiving greater attention than at any time since its early years. Federal agencies and affected communities are raising new issues and demanding more complex analyses. At the same time, new tools such as Geographic Information Systems and innovative risk assessment approaches have emerged with applicability for NEPA activities. The scope of NEPA is also evolving. Federal agencies and NEPA practitioners need to address new issues and learn from the lessons of the past.

Versar is thoroughly familiar with these issues through its continuing support to a wide range of Federal clients; and for about 10 years has had an advisory role to CEQ's development of guidance for considering biodiversity and cumulative effects in NEPA analyses. Versar's NEPA Center director, Dr. Mark Southerland, has worked directly for CEQ, developing guidance to reflect CEQ's perspectives on NEPA and serving as an instructor for CEQ training courses for NEPA practitioners from many Federal agencies. He most recently was the final author on the reinvention report, "The NEPA: A Study of its Effectiveness After Twenty-five Years."

NEPA TRENDS

- Increased use of mitigating FONSIs;
- Greater attention to biodiversity, cumulative impacts, pollution prevention, and environmental justice;
- New methods of public involvement;
- Monitoring and adaptive management as an efficiency issue;
- NEPA/ecosystem approach integration;
- New technologies for managing the NEPA process (NEPANet, virtual imaging, GIS, watershed analysis); and
- Integration of NEPA and other environmental reviews.

Versar tailors its methodology to each Federal client's circumstances within a framework of five basic steps: (1) scoping and study design, (2) sampling and data development, (3) impact evaluation, (4) report preparation, and (5) public involvement. Selected examples of our multitude of NEPA experience are:

- **Tiered NEPA documents**. Versar recently completed the highly visible programmatic EIS for restoration of oysters in the Chesapeake Bay from which all future oyster restoration projects will be tiered. That controversial EIS required an unprecedented level of agency coordination and scientific analyses and was well received by the Federal proponent (USACE), state proponents (Maryland and Virginia), and cooperating agencies (USFWS and NMFS). Previously, Versar prepared an EIS for future development and operations at Fort Meade that was commended by AEC. We subsequently prepared several EAs for construction and training activities tiered from that EIS. Similarly, Versar prepared construction and training EAs for Fort Lee that were tiered from its BRAC EIS. Versar also prepared a unique NEPA instrument for Camp Lejeune that provided environmental consideration protocols (ECP checklists) to tier site-specific, off-base training operations. This special programmatic EA for Camp Lejeune allowed critical, rapid-deployment training to proceed at previously undetermined locations.

- **Third-Party NEPA documents**. Versar has extensive experience with preparing EISs, EAs, and environmental review documents (ERDs) based on third-party information. For seven years, Versar prepared third-party NEPA documents for FERC as part of its role in licensing hydroelectric generating stations throughout the country. Versar has prepared EAs and EISs for dozens of projects in 10 states from Maine to Washington State. For 30 years, Versar has prepared dozens of environmental review documents (ERDs) for Maryland DNR's PPRP. ERDs are essentially state versions of the third-party NEPA process for power facilities. Three of the most recent ERDs that Versar prepared have been for windpower facilities. Versar currently is studying potential applications for wind facilities off the mid-Atlantic coast.

- **Third-Party NEPA Technical Support Services for FERC, Nationwide.** FERC is responsible for licensing hydroelectric generating stations throughout the country and therefore, for preparing an EA or EIS for each project it licenses. Applicants provide environmental studies and analyses that form the basis of the NEPA document. Versar prepared several third-party EAs and EISs for relicensing hydroelectric projects under FERC. Project activities included all aspects of NEPA compliance. Versar has prepared NEPA documents or inputs for such documents for dozens of projects in 10 states from Washington to Maine.

- **Installation-wide EIS and Tiered NEPA Support at Fort Lee, VA.** Versar has provided comprehensive NEPA analysis and documentation to Fort Lee, Virginia, since 2003. Versar has prepared seven EAs: (1) land acquisition and range expansion north of the existing Range Training Area to increase training capabilities (2) a perimeter security fence, (3) a fire management plan for the Range Training Area, (4) tactical water purification system (TWPS) training, (5) the 49th Group unit stationing, (6) Emerald Green campus, and (7) integrated natural resources and cultural resources management plans. Preparation of each EA involved coordinating with state and federal regulatory agencies, notifying the public of meetings, analyzing constraints, and preparing final NEPA documentation (i.e., the EA). Some of the EAs were tiered from the BRAC EIS, and all EAs complied with the NEPA, CEQ regulations, and DoD Instruction 4715.9 and addressed all applicable laws and regulations, including the Coastal Zone Management Act (CZMA). The CZMA, as amended, requires entities that use federal funds to provide a federal consistency determination certifying that proposed projects will be consistent with the coastal zone management plans of the subject state and neighboring states.

> "I would like to commend Versar on the outstanding job it has done on the Barnegat bay Ecosystem Restoration Project. …Versar conceived and implemented an innovative targeting approach, developed the GIS data to support it, conduced rigorous field sampling to validate it, designed conceptual restoration plans based on primary results and consultation with interested parties, and most recently completed environmental feasibility and environmental impact analyzes to support selection of the final plan. In particular I would like to thank Mark Southerland and Steve Harriott for their … critical thinking and thorough investigations needed to move this project forward."
>
> *July 18, 2003*
> *Minas Arabatzis, Chief*
> *Planning Division*
> *U.S. Army Corps of Engineers*

- **Environmental Assessment of the Recreational Partnership Initiative: Skinner Peninsula, Blue Marsh Lake.** For the US Army Corps of Engineers, Versar prepared an Environmental Assessment for the proposed construction of a golf course. Activities included investigations and appropriate preliminary design analysis to determine that the location was physically suited for an 18-hole golf course; laid out the course and associated facilities required for operation and maintenance; and evaluated the environmental and socioeconomic impacts of implementing the recommended plan.

- **Money Island Environmental Assessment.** Versar helped the US Army Corps of Engineers comply with NEPA requirements through the preparation of an EA for the proposed use of Money Island as an upland dredge material disposal site for a section of the Delaware River navigation maintenance project. Versar's methodology for performing the EA conformed to NEPA, CEQ implementing regulations, the Corps' Engineering Regulation (ER) 200-2-2, and "Environmental Quality Procedures for Implementing NEPA." Versar implemented the Corps' selected alternative, together with a mitigation project that included the creation of an intertidal wetland and an upland habitat. In addition to designing and installing the habitat, Versar also is monitoring the plant succession within the new wetland.

6.2.2 Endangered Species, Wetlands, Watersheds, and Other Natural Resource Management Plans, Studies, and Consultations

VERSAR AND NATURAL RESOURCES

- 100+ assessments for endangered species, wetlands, and other natural resource law compliance;
- Integration of natural resource and NEPA analyses;
- Excellent reputation and strong working relationship with the relevant natural resource agencies (e.g., U.S. Fish and Wildlife Service); and
- 30+ years of experience.

Versar also has a national reputation in fisheries, water quality, and watershed analysis that complements its NEPA expertise. The firm's more than 30 years of continuous support of the Maryland Department of Natural Resources' Power Plant Research Program has included assessment and permitting studies for endangered species (e.g., bald eagle, Delmarva fox squirrel, and shortnose sturgeon), wetlands (tidal and nontidal) compliance, as well as preparation of fisheries (e.g., striped bass).

Before and after the enactment of NEPA, numerous other Federal laws were passed that directly or indirectly relate to natural resources and the biological environment. Examples include the Fish and Wildlife Coordination Act of 1966, Coastal Zone Management Act of 1972, Coastal Zone Management and Improvement Act of 1990, and Surface Mining Control and Reclamation Act of 1977, the Endangered Species Act (ESA) Amendments of 1978 (P.L. 95-632) and wetlands provisions of Section 404 of the Clean Water Act (CWA) of 1972.

Versar's approach reflects our extensive experience in natural resource management for Federal, State, and local government agencies such as the U.S. Army Corps of Engineers, the National Park Service, the State of Maryland, and the U.S. Environmental Protection Agency, among others. Some significant examples of work are:

- **Long-Term Benthic and Estuarine Monitoring Program.** Since 1984, Versar staff have been conducting a long-term benthic monitoring program in the Chesapeake Bay and its major tributaries for the Maryland Department of Natural Resources. The goals are to (1) assess and characterize the status of and trends in the benthos, in water quality, and in habitat quality, and (2) assess the effectiveness of remediation and pollution abatement efforts. Versar staff spatially and temporally contrast benthic community parameters among regions of concern before and after the implementation of specific water quality management actions. Study results have helped natural resource managers understand trends in the Bay and target areas for remediation.

NATURAL RESOURCE TRENDS

- Integrated natural resource management plans;
- Watershed analyses;
- Wetlands delineation studies; and
- Sustainable use of resources.

- **Characteristics of Maryland Agriculture Relevant for Environmental Assessment.** For EPA Region 3, Versar prepared a report on environmentally relevant attributes of the Maryland agriculture production system. Versar used 1995 data from the Maryland Department of Agriculture to prepare profiles on crops in 24 watersheds. Highlighted are statistics on the acreage and production of crops such as soybeans, corn, wheat, and tobacco. Summary data are included on the application rates of agricultural chemicals. The report provides a foundation for further analyses of the relationship between agriculture and environmental conditions, particularly water quality impacts from soil erosion and runoff of excess nutrients, animal waste, and pesticides.

- **Southern California Bight Historical Pollutant Loading Estimates**. Under contract to the National Oceanic and Atmospheric Administration, Ocean Assessments Division and National Marine Fisheries Service, Versar estimated historical pollutant loadings to the Southern California Bight. The objective of this study was to develop historical time series of pollutant inflows of toxicants and surrogates for direct loadings for the period 1900 to 1980. This information will be used to analyze the historical role of pollutant loadings in controlling the abundance of fisheries stocks off Southern California and Mexico. Nonpoint and point source loadings of nutrients and toxicants (e.g., pesticides, metals, PCBs, organics) from agriculture runoff, sewage discharges, and industrial discharges were determined using non-standard statistical modeling and materials balance techniques. This data gathering and analysis project resulted in a complete history of loadings for seven southern California counties. These time series have been used to validate nearshore sediment core data for selected heavy metals.

- **Chemical Contaminants in the Tampa Bay Estuary: A Summary of Distributions and Inputs**. The Tampa Bay National Estuary Program (TBNEP) awarded a contract to Versar and its subcontractor to complete a report describing the distribution and inputs of chemical contaminants in the Tampa Bay Estuary. Versar provided background information describing general sources and behavior of contaminants of concern to the estuary program. Versar then used information from federal, regional, state, and local sources as input to various models to estimate contaminant inputs to the estuary from point sources and nonpoint sources. Specific nonpoint sources of contaminants

considered were: atmospheric deposition, urban runoff, agricultural runoff, and groundwater infiltration. These estimates were used to identify the relative magnitude of point and nonpoint contaminant inputs to the estuary and identify the relative importance of various types of nonpoint contaminant inputs. Contaminant input estimates were made for each of the 10 major basins in the Tampa Bay watershed. The information from this study is being used by the TBNEP to develop a toxics management strategy for the estuary that will become part of the Comprehensive Conservation and Management Plan (CCMP) for the estuary.

6.2.3 Cultural Resources Studies

In addition to environmental, planning and engineering service capabilities, Versar now offers the full spectrum of Cultural Resources (CR) services, including an archaeological laboratory. The Cultural Resources Division has been operating since 1977 and brings extensive experience in archaeology, architectural history, archival studies and artifact identification and interpretation. The Cultural Resources Division has conducted projects in compliance with Sections 106 and 110 of the National Historic Preservation Act (NHPA); the National Environmental Policy Act (NEPA); and other federal and state guidelines. Clients have included the Department of Defense (Navy, Army, Army Reserve, and Air Force), National Guard (Arkansas, Delaware, North Carolina, and Virginia), Departments of Transportation (District of Columbia, Delaware, Virginia), Department of the Interior (NPS), Department of Agricultural (Forest Service), local municipalities, and the private sector across 49 states, Puerto Rico, the US Virgin Islands, Argentina and Japan.

CULTURAL RESOURCE TRENDS

- Integrated cultural resource management plans;
- Archaeological Assessments;
- Cultural resources inventories; and
- Site protection and management plans.

Projects encompass one or more of the following: preparation of archaeological predictive models; the location and identification of archaeological sites; National Register evaluation and mitigation of adverse effects for archaeological sites; architectural survey and National Register evaluation of buildings and structures; Determination of Effects; Historic American Buildings Survey/Historic American Engineering Record (HABS/HAER) documentation; artifact and collections processing and analysis; the preparation of technical reports; Section 4(f) documents; environmental impact statements (EISs) and environmental assessments (EAs); Historic Preservation Plans (HPPs) and Cultural Resource Management Plans (CRMPs). In-house capabilities include Global Positioning System (GPS) surveying; CADD, GIS, and SURFER graphics applications; and statistical analyses. The field staff is OSHA, CPR and First Aid trained. In addition, the group operates a full-scale Archaeological Laboratory with trained staff.

- **Cultural Resource Review for the Proposed Introduction of Non-native Oyster Species within the Chesapeake Bay and its Tributaries**. For the Norfolk District, U.S. Army Corps of Engineers, Versar conducted a cultural resources review for a Environmental Impact Statement (EIS) that encompasses the entire historical range of the Eastern oyster within the Chesapeake Bay and its tributaries as well as surrounding estuaries to which a non-native oyster species might spread if a reproductively viable population becomes established in Chesapeake Bay. The procedures used to identify cultural resources potentially affected by the proposed project began with consultation

with the State Historic Preservation Officers (SHPOs) of the two states included in the study area: the Virginia Department of Historic Resources (VDHR) and the Maryland Historical Trust (MHT). These sources maintain archaeological and architectural site files, maps, state, NRHP and National Historic Landmark nomination forms, and cultural resource inventories and surveys. In addition, individuals with knowledge of the area, including archaeologists with the National Oceanographic and Atmospheric Administration (NOAA), and the Corps of Engineers, Baltimore and Norfolk Districts, were consulted about known or potential historic properties in the project area and about recent cultural resources studies within the Chesapeake Bay region.

- **Wissahickon Creek Feasibility Study Cultural Resources Review**. Under contract to Biohabitats, Inc., for the Philadelphia District, U.S. Army Corps of Engineers, Versar assessed the portion of the Wissahickon Creek and its tributaries in Philadelphia, Pennsylvania, for the presence of cultural resources that would be affected by proposed ecosystem restoration improvements, including known properties listed, or eligible for listing, on the National Register of Historic Places (NRHP) by consulting the cultural resource geographic information system (CRGIS) of the Bureau for Historic Preservation (BHP), Pennsylvania Historical and Museum Commission (PHMC). Historic maps, compliance reports, and published archaeological investigations were also thoroughly examined. In general, the review indicated that there is a potential for significant and intact prehistoric and historic resources within the proposed wetlands restoration areas, and that these resources may be buried under natural alluvium and/or historic fill episodes.

- **Preliminary Cultural Resource Investigation for the Delaware River Basin Flooding and Associated Ecosystem Restoration Study**. On behalf of the Philadelphia District, U. S. Army Corps of Engineers, Versar conducted a Phase IA preliminary cultural resources investigation in support of the Delaware River Basin Comprehensive Study project area. The purpose of this investigation was to present the results of a literature review of existing cultural resources and assess the cultural resources potential within the 100-year flood plain of the Delaware River in specified areas of Gloucester, Hunterdon, Mercer, and Warren counties, New Jersey. This research included: a review of the New Jersey Historic and Archaeological Sites Inventory files as well as technical reports and topographic index maps housed as the New Jersey Historic Preservation Office and New Jersey State Museum in Trenton; the assessment of archaeological potential within the project area based on the distribution of previously documented cultural resources; and, the analysis of recent aerial imagery and historical maps in order to determine the impact of historical and modern development on archaeological potential.

- **Cold War Era Administration Buildings Historic Context Document.** Versar was contracted through the Norfolk District, U.S. Army Corps of Engineers, for the U.S. Army Installation Management Agency, Northeast Region to prepare an historic context document to evaluate administrative buildings constructed by the Army in the mid-to-late twentieth century. This study examines the research materials available and provides a brief description of prominent historical themes to develop a historical context for military administration buildings of the Cold War era. The report was prepared for the United States Installation Management Agency, Northeast Regional Office (NERO) of

the United States Army. NERO currently provides environmental program support to 28 installations. The purpose of the document was to provide a starting point under which administration buildings may be evaluated for NRHP eligibility.

- **Evaluation of Five Military-Era Sites, Beale Air Force Base, California**. Versar conducted National Register of Historic Places (NRHP) evaluations for five military-era resources located at Beale Air Force Base (AFB), California. The resources consisted of archaeological sites related to the Camp Beale-era (WWII) at the base. Two sites were large (50+acres). Visible surface features were mapped with GPS and compared with historical aerial photos georeferenced to the installation GIS, allowing specific structures to be identified. Each of the archaeological sites was found to be disturbed, with insufficient associated archival information, surviving architectural features, intact artifact assemblages, or other archaeological deposits to provide research value. The sites were recommended not eligible for listing on the NRHP. Other project tasks involved identifying missing information in the base ICRMP and recommending appropriate updates to the management plan. In addition, GIS analysis was conducted to identify off-base sites within selected watersheds and add them to the installation GIS.

- **National Register Eligibility Evaluation of Archaeological Site 5EP1044, U.S. Air Force Academy, El Paso County, Colorado**. Versar conducted a National Register archaeological evaluation of archaeological Site 5EP1044 on the grounds of the U.S. Air Force Academy (USAFA), El Paso County, Colorado. The investigations were performed in accordance with the National Historic Preservation Act of 1966, as amended (NHPA), the Advisory Council on Historic Preservation (ACHP) Guidelines for the Protection of Historical and Cultural Properties (36 CFR 800), and Air Force Instruction 32-7065. As a result of the investigation described in this technical report, site 5EP1044 was recommended not eligible for inclusion in the National Register of Historic Places (NRHP). However, it was noted that Site 5EP1044 remains an archaeological site and its resources will remain protected under the provisions of the Archaeological Resource Protection Act (ARPA), which protect the site from unauthorized collection.

- **National Register Eligibility Evaluation of Archaeological Site 5EP2012, U.S. Air Force Academy, El Paso County, Colorado.** Versar conducted a National Register archaeological evaluation of Site 5EP2012 on the grounds of the U.S. Air Force Academy (USAF Academy), El Paso County, Colorado. The investigations were performed in accordance with the National Historic Preservation Act of 1966, as amended (NHPA), the Advisory Council's Guidelines for the Protection of Historical and Cultural Properties (36 CFR 800), and Air Force Instruction 32-7065. The site consisted of a scatter of quartzite flaking debris and a hearth feature was located at ground surface between the two domes. Evidence suggested that the site served as a lithic quarry and hunter's overlook. Given the simple site structure with apparently unmixed deposits, the chronological context provided by radiometric data, and potential associations with other sites from the same time period at USAF Academy and in the region, Site 5EP2012 retains information that may address questions related to local, area, and regional aspects of Colorado prehistory. Site 5EP2012 was recommended eligible for National Register nomination.

6.2.4 Economic, Technical, and Risk Analyses in Support of Environmental Needs

Federal agencies may have a variety of needs for economic, technical, or risk analysis services in connection with their protection of the environment and natural resources. For example, a sponsoring agency, such as the Corps of Engineers, may conduct economic and technical studies to decide whether to undertake a project (e.g., sand replenishment, shipping channel deepening). Most pollution prevention projects involve economic analysis at some level (see Section 6.3.3). Natural resource damage assessment, under Superfund or the Oil Pollution Act, is another example of a Federal agency need for economic, technical, and risk analyses.

Versar possesses in-depth capability and experience in supporting Federal agencies in conducting these types of analyses. Approximately 50 staff located in the Baltimore-Washington metropolitan region specializes in both human health and ecological risk assessment. They are proficient in conducting assessments of individual contaminants, contaminant mixtures, single or multiple species/populations, and a diverse array of geographic scales. In-depth knowledge of exposure, environmental fate and transport, and other models (e.g., QUAL-2, RIV1, CORMIX, and WQAM) are an integral part of Versar's capabilities. Examples of some of Versar's risk-related assessments and modeling activities are:

6.2.4.1 *Risk Assessment Projects:*

- **Pesticide assessments (agricultural and microbial).** Versar has provided more than 20 years of continuous technical support to EPA's Office of Pesticide Programs, Health Effects Division (OPP/HED), for the registration and re-registration of pesticides, herbicides, and other chemicals. Versar reviews registrant-submitted human exposure studies; develops technical documents to support regulatory actions; prepares guidance documents for conducting pesticide exposure and risk assessments; evaluates worker protection to support the revision of existing pesticide regulations; organizes and facilitates workshops, seminars, and training; and performs quick-response and Agency interface activities. Also, Versar develops Occupational and Residential Exposure (ORE) assessments that are incorporated into Reregistration Eligibility Decisions (REDs). Developing OREs involve evaluation of human exposure scenarios and calculation of exposures and risks using available toxicological information as well as exposure models. In support of EPA OPP Antimicrobials Division (AD), Versar also reviewed registrant-submitted studies on antimicrobial pesticide chemicals. Versar has also characterized the use, physical/chemical properties, toxicological effects, exposure profile, environmental fate and ecotoxicity of low-risk chemicals, storage, and the effects of the active ingredient during crop rotation cycles.

- **Whiskeytown National Recreation Area.** Versar conducted a human health risk assessment (HHRA) and an ecological risk assessment (ERA) to characterize actual or potential exposure to chemicals in soil and surface water associated with past activities at the McDermott Property located within the Whiskeytown National Recreation Area (NRA). The McDermott property contains a former residence and was used for processing gold-bearing ore and storage of materials and machinery associated with mining and ore processing. Chemicals that were determined to pose no unacceptable risk

were scientifically eliminated and chemicals of potential concern (COPCs) were retained for further evaluation. The HHRA was conducted in accordance with U.S. EPA Headquarters and Regional risk assessment guidance and support documents. Exposure scenarios evaluated included site visitors, trespassers, and outdoor workers. The ERA was prepared to evaluate the probability and magnitude of potential adverse effects on the environment associated with the McDermott property. The ERA identified complete or reasonably anticipated to be completed exposure pathways and representative ecological receptors.

- **Fort George G. Meade.** Versar developed site-specific, multimedia, risk-based cleanup goals for Fort Meade's industrial corridor. Specific tasks were: (1) development of a comprehensive list of potential chemicals of concern at the site; (2) selection of the media of concern; (3) development of a detailed site conceptual model that outlined the receptor populations and pathways of exposure, based on the site map and site visits; (4) selection of models and site-specific input data for calculating risk-based chemical concentrations for the various media of concern, and programming these models into computerized spreadsheets; and (5) preparation of a report describing the purpose, methods, results, and uncertainties associated with the analyses. This effort was innovative in its reversal of the risk assessment process in which media-specific concentrations were calculated by setting the target carcinogenic risk level and noncarcinogenic hazard level to values that are deemed to be "acceptable" (e.g., 10-6 for carcinogenic risks and 0.1 for noncarcinogenic hazards). The site-specific cleanup goals were compared to the analytical results of samples collected at the site (i.e., soil, sediment, groundwater, or surface water) to determine the nature and extent of remediation. The risk-based concentrations used in this comparison were the most conservative (i.e., carcinogenic or noncarcinogenic) of the values estimated for each medium of concern. Versar also conducted a human health risk assessment of human health risks associated with exposure to volatile organic compounds at Ft. Meade's Post Laundry Facility and conducted a human health risk assessment for Ft. Meade's Active Sanitary Landfill. Ecologically oriented tasks included planning for the dredging and ecological restoration of the Burba Lake recreational park and a base-wide draft and final environmental assessment of proposed installation construction and property disposal activities.

- **Thule Air Base.** Versar performed a baseline human health risk assessment for six landfills at Thule Air Base, Greenland, to estimate human health risks from dermal contact, ingestion, and inhalation of contaminated soil, as well as risks from ingestion of seal taken from contaminated surface waters. This assessment evaluated potential impacts from a variety of contaminated media and exposure scenarios, following USEPA Superfund guidance (RAGS), as well as Air Force risk assessment procedures. At Thule Air Base, soil, surface water, and subsurface water data were used to evaluate potential baseline risks to three types of human receptors from six landfills. The landfills were believed to contain municipal waste, solvents, metals, transformers, equipment, and other potentially hazardous substances. More than 75 chemicals were detected and screening for contaminants of concern called for deriving site-specific soil and water criteria, which were based on Michigan Department of Environmental Quality's (MDEQ) benchmarks and adjusted to fit Thule conditions. Site-specific exposure factors for exposure frequency and duration, as well as consumption rates, were used to estimate human

health risks from dermal contact, ingestion, and inhalation of contaminated soil, as well as risks from ingestion of seal taken from contaminated surface waters. A food chain bioaccumulation model was developed to predict human exposures to PCBs in seal tissue, based on surface water data. The model estimated the fate and transport of PCBs and other bioaccumulative chemicals moving from water, to fish, to seal tissue and ultimately to humans. Both carcinogenic and noncarcinogenic health risks were assessed, using toxicity data from IRIS, HEAST, and other sources. The results of the assessment were used by the Air Force to make decisions on future remediation of site contaminants.

- **Lackland Air Force Base.** Versar performed a human health risk assessment for two site landfills at Lackland Air Force Base, Texas, to evaluate the risk posed by site contaminants to commercial workers, recreational receptors and future residents. All stages of the risk assessment, including contaminant screening, exposure assessment, toxicity assessment and risk characterization, were conducted in accordance with Texas Natural Resource Conservation Commission's (TNRCC) guidance. For the exposure assessment, the inhalation dose for vapor contaminants was estimated using equations in USEPA's Soil Screening Guidance and the inhalation dose for fugitive dust was estimated using the default particulate emission factor provided in TNRCC guidance. For the toxicity assessment, dermal toxicity data were based on oral toxicity data that had been adjusted by chemical-specific absorption factors, as recommended in TNRCC guidance. Risk characterization included the estimation of carcinogenic and non-carcinogenic risk levels for each of the site receptors. Following risk characterization, media-specific concentrations (MSCs) were calculated for all individual contaminants in site media that had unacceptable risk levels, in accordance with TNRCC guidance. These MSCs were representative of the media concentrations at which adverse effects to site receptors were not anticipated. In addition to the human health risk assessment, Versar also conducted an ecological risk assessment for the two site landfills at Lackland Air Force Base in accordance with Texas Natural Resource Conservation Commission (TNRCC) guidance. The ecological risk assessment included site characterization, development of a site conceptual model, selection of assessment endpoints, and incorporation of a food web model to evaluate impacts to higher trophic-level indicator species.

- **Calabasas Landfill, Los Angeles County Sanitation Districts**. Versar conducted a human health and ecological risk assessment (ERA) to characterize actual or potential risks associated with the Calabasas Landfill in Los Angeles County, CA. The risk assessment of the site included data collection and evaluation, developing the conceptual site model (including identification of receptors and pathways), conducting the risk assessment, and preparing a summary report. Versar is examining landfill related chemicals in soil, groundwater, surface water and sediment. For the ecological risk assessment, chemicals from the Calabasas Landfill may accumulate in the terrestrial and the aquatic environments, the possible pathways by which higher trophic-level receptors could be exposed were identified and evaluated. Evaluation of indirect exposure pathways accounts includes those chemical that have the potential to bioaccumulate to high levels in the food chain even when the concentrations are not elevated in abiotic media. The natural environment at the Calabasas Landfill site and adjacent areas were

characterized, including terrestrial, aquatic, and avian species. The assessment considered major feeding guilds (e.g., omnivorous mammals, piscivorous birds) and their representative species which are supported by habitats at and in the vicinity of the Calabasas Landfill. The site was also characterized by identifying habitats and individual organisms, populations and/or communities in the vicinity of the Calabasas Landfill.

- **PCB Risk Assessments.** Versar has extensive experience working with Federal, State, regional, and local risk assessment guidelines and requirements as a result of its long-term support (> 10 years) to EPA's PCB Program. Versar has reviewed more than 50 PCB risk assessments. Selected examples of risk assessments include: an assessment of remediation activities at the former Charlestown Navy Yard; a human health and ecological risk assessment for an industrial facility; a human health risk assessment for a rail yard site; an alternative closure standard for an industrial facility; an application for risk-based disposal of PCB-containing dredged sediments; an analysis of a modeling approach used to predict inhalation exposure from combustion of PCB-containing wastes at a military facility; and a risk-based closure report for a formerly used defense site (FUDS). Risk assessment reviews are conducted according to relevant federal, state, regional, or local requirements and include a comprehensive review and evaluation of the sampling methods and analytical data (including statistical methods), exposure scenarios and assumptions, toxicological data, risk calculations, and uncertainties.

6.2.4.2 ***Exposure and Risk Assessment Modeling Projects:***

- **Exposure and Fate Assessment Screening Tool (EFAST).** This model is a "screening-level" computer tool that allows users to generate estimates of chemical concentrations in water to which aquatic life may be exposed and estimates of human inhalation, drinking water, and fish ingestion exposures resulting from chemical releases to air, water, and land. E-FAST can also be used to estimate potential inhalation and dermal exposures to consumer products. E-FAST has evolved into a tool used by both EPA and the public. E-FAST Version 1 was made available to the public on EPA's website in 2000. E-FAST Version 2.0 is currently available, with the latest version on the EPA web site (October, 2007). Revisions to E-FAST V2.0 included an update of data sources, enhanced programming capabilities, and improved user-friendliness.

- **Metal Finishing Facility Risk Screening Tool (MFFRST).** Versar developed the Metal Finishing Facility Risk Screening Tool (MFFRST) under the Common Sense Initiative joint program with the electroplating industry. This risk assessment expert system estimates human health risks from atmospheric emissions produced by electroplating operations. Versar produced the computer model and supporting documentation that enables users to perform a screening characterization of health risks to workers and neighbors of metal finishing facilities. Versar designed MFFRST with three major modules that: (1) characterize emissions from metal plating processes, (2) predict the movement of chemicals from the source to human receptors, and (3) estimate exposures and assess potential human health risks from exposures to chemicals of concern. Versar first developed calculations and innovative algorithms for estimating emissions from process tanks in each of 17 electroplating lines (e.g., hard chromium plating, cadmium plating, silver plating), with and without various air pollution control devices. Those

emissions estimates are used by the SCREEN3 air dispersion model to calculate downwind exposures to nearby residents. From those exposures, risks can be estimated for both carcinogenic and non-carcinogenic effects. Versar developed the computer code to produce a user-friendly, multi-screen model that contains default values for all process and air dispersion parameters, allowing users with varying degrees of sophistication to estimate emissions and risks. Experienced users can customize plating lines, incorporating the appropriate number and type of process tanks, operating parameters, and emission control technologies. Versar co-authored papers for presentation at three annual EPA/American Electroplaters and Surface Finishers (AESF) conferences; one of the papers received the "Best Paper" award for that conference.

- **ReachScan.** This model estimates, among other parameters, surface water chemical concentrations downstream from industrial (discharge) facilities and the number of days per year that an aquatic ecotoxicological concern concentration will be exceeded in a given stream, and determines the presence of endangered species or critical habitats in the county of the discharge facility. Versar is currently updating and revising ReachScan to include the latest practically available flow, discharge facility, drinking water utility, and endangered species data, including data already collected for the Environmental Indicators project.

- **SWIMODEL.** This model is a screening tool for conducting an exposure assessment of swimmers exposed to pool chemicals and breakdown products in indoor swimming pools and spas. The SWIMODEL uses well-accepted EPA screening exposure assessment equations to calculate swimmers' total exposure expressed as a mass-based intake value (mg/event) and average and lifetime average daily doses (mg/kg/day), ADDs and LADDs, respectively. The model includes a number of useful default values (e.g., body weights and surface area values for children and adults, and physico-chemical data for several common trihalomethane pool water contaminants, etc.). The user also has the option of inserting his/her own data values for other receptors or chemical compounds of interest. The user may generate exposure estimates for either of the three exposure routes in the "abridged" calculation (i.e., oral, inhalation and dermal) or for six exposure routes in the "full" calculation (i.e., oral, dermal, inhalation, buccal/sublingual, nasal/orbital, and aural routes). In addition, a user may calculate an exposure estimate based on any single or combination of exposure routes. In addition to developing the model, Versar has prepared user manuals and other documentation.

- **Pesticide Inert Risk Assessment Tool (PIRAT).** Versar is currently developing for EPA a computer software model that estimates the exposure and risk of pesticide product inert ingredients used in and around residences to enable assessors to take full advantage of the screening level tools data integration. PIRAT is based on a database of functional use categories of pesticide product inert ingredients, and the weight fraction of each of the inert ingredients in specific pesticide product formulations. Versar assembled this database, and also initiated development of a conceptual framework for the comprehensive computer model, and developed the final PIRAT tool. This effort was initiated to support the work of the OPP Health Effects Division in conducting their Tolerance Registration Eligibility Decisions for Inert Ingredients. PIRAT is programmed in the C++ computer language and allows users to conduct chemical exposure/risk

assessments for eight different pesticide product formulations, and their associated functional use categories, for various handler and post-application scenarios. Versar also developed user help screens for the model. These help screens include both "pop-up" on-line help screens that allow the users to get information and assistance on the PIRAT model as they use it, as well as documentation of all the assumptions and equations used in the tool. EPA/HED has indicated that they are very impressed with the PIRAT model and are pleased with the final product. In addition, EPA has presented the model to the Inerts Industry Work Group and reported that "the PIRAT demonstration for the Inerts Industry Work Group went well and the model was well received."

- **Formaldehyde Indoor Air Model.** Versar developed the Formaldehyde Indoor Air Model (FIAM) to support EPA's exposure and risk estimates from indoor formaldehyde concentrations due to installation of pressed wood products. The model calculates the initial indoor concentration(s) under an assumed steady-state condition, to approximate concentrations during a leveling-off period that typically occurs within 30 days after installation of formaldehyde-bearing materials, and then decays the concentration(s) over time in accordance with an emissions half life. Versar's efforts to develop this model, for EPA's Office of Pollution Prevention and Toxics, spanned more than 10 years. Versar's model includes: (1) estimation of steady-state formaldehyde concentrations for the case of a two-zone indoor environment; and (2) incorporation of reversible (re-emitting) indoor sinks. The model was recently completed and has been subjected to peer review. The model has been used to estimate exposures and risks for a variety of housing types, materials, and indoor air exposure scenarios.

6.2.5 Peer Review and Expert Panel Support

Versar has coordinated peer reviews of over 300 scientific documents and planned over 100 expert panel meetings, for more than 20 years. With a long history of organizing expert and scientifically-objective peer reviews, Versar has built up a database of more than 2,000 highly-respected scientists - experts in the fields of environmental science, engineering, toxicology, risk assessment, ecology, epidemiology, and modeling approaches. Select peer review projects are described below.

- **Peer Reviews of IRIS Toxicological Reviews** - In support of EPA's Integrated Risk Information System (IRIS) program, Versar organized peer reviews of toxicological assessments for more than 30 chemicals. For each of these peer reviews, Versar identified and selected experts to meet specific criteria related to the chemical, based on the hazard/toxic endpoint for each chemical. Experts in toxicology, epidemiology, risk assessment, and related fields were identified and selected for each peer review, particularly those scientists who had published on the chemical of interest. The evaluations generally focused on EPA's interpretation of the data to support the hazard identification of both noncancer and cancer endpoints. Reviewers also evaluated available dose-response relationship data for the chemicals. For most of the IRIS peer reviews, Versar organized peer review meetings to facilitate the experts' evaluation of the toxicological reviews.

- **Peer Involvement Workshop on the Preliminary Draft Framework for Metals Risk Assessment** - Versar conducted a peer involvement workshop on EPA's preliminary draft document "Framework for Metals Risk Assessment." Versar's responsibilities included convening a panel of 29 experts in: environmental chemistry, terrestrial and aquatic ecological effects, and human health effects. These experts were selected from academia and industry, as well as from Canadian and state governments. The two-day meeting was a peer consultation, as distinguished from a peer review, and the participants were challenged to make recommendations and provide input directly into the draft Framework in the form of suggested text amendments, deletions, and additions. To facilitate the work, the scientists were distributed into five breakout groups – (1) overall Framework readability and organization, (2) environmental chemistry, (3) terrestrial exposure and effects, (4) aquatic exposure and effects, and (5) human health exposure and effects. Premeeting activities included identifying a meeting facility in the DC area, preregistering approximately 40 observers, developing an agenda, and managing the premeeting review. Versar also documented the discussion and produced the peer review meeting report which summarized the major recommendations and suggestions from the reviewers.

- **External Peer Panel Review of NCEA Report, "Exposure and Human Health Evaluation of Airborne Pollution From The World Trade Center Disaster"** - Versar conducted an external scientific peer review meeting of this EPA draft document relating to potential exposures and risk associated with the World Trade Center disaster. Versar's responsibilities included identifying and selecting the panel of seven experts, providing logistical support for the two-day meeting, and producing the peer review meeting report. The panel was selected from more than 50 candidates identified, having expertise in disciplines and topics addressed in the assessment: air monitoring, environmental chemistry, air transport modeling, public and occupational health, exposure and risk assessment, toxicology, risk characterization, and risk communication. Premeeting activities included identifying a meeting facility in New York, preregistering approximately 50 observers, developing an agenda, and managing the premeeting review. Versar also documented the discussion and produced the peer review meeting report which summarized the major recommendations and suggestions from the reviewers. Versar's role also included documenting discussion and preparation of a meeting summary report, *Summary Report of the U.S. EPA Internal Workshop on the Use of Mechanistic Data in Risk Assessment*.

- **Peer Review Workshops on the Framework for Cumulative Risk** - Versar organized two workshops on the draft Framework for Cumulative Risk Assessment for the Risk Assessment Forum. The first was a peer consultation and second was a peer review. Versar's responsibilities for both of these workshops consisted of selecting experts, providing on-site support, and documenting the proceedings of the workshops. For each meeting, Versar identified approximately 30 candidate reviewers with expertise in cumulative risk assessment, particularly in areas such as aggregate exposure assessment, risk assessment for chemical mixtures, community-based risk assessment and public health issues, uncertainty analysis for risk assessment, epidemiology, and ecological risk assessment. For the peer consultation, Versar selected 12 experts, including a

chairperson, to participate in the workshop to discuss EPA's draft *Framework for Cumulative Risk Assessment* document. For the subsequent peer review, Versar assembled a separate panel of 13 experts to review a revised version of the framework document. Technical and logistical activities were similar for both meetings. Versar certified the reviewers' scientific expertise and availability and ensured that individuals were free of conflicts of interest. We also provided premeeting logistics support, including selecting meeting facilities, arranging for premeeting registration for observers, handling travel arrangements for the expert reviewers, and making equipment arrangements. The Versar staff summarized the technical content of the workshops' discussion in final meeting reports, *Summary Report of the Peer Consultation Workshop on the Draft Framework for Cumulative Risk Assessment* (EPA/630/R-01/005) and *Summary Report of the Technical Peer Review Workshop on the EPA Risk Assessment Forum Draft Framework for Cumulative Risk Assessment* (EPA/630/R-03/002).

6.3 Environmental Compliance Services

Executive Order 12088 ("Federal Compliance with Pollution Control Standards"), Executive Order 12856 ("Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements"), and OMB Circular A-11 establish the planning process through which Federal executive agencies establish their environmental priorities and identify needed resources. Each executive agency is responsible for ensuring that its facilities, activities, and programs comply with applicable Federal, State, and local environmental requirements. Agencies also must develop a pollution prevention strategy, through source reduction where practicable, as the primary approach to compliance. Further, each agency must request sufficient funds in its agency budget to accomplish compliance and pollution prevention objectives. The Federal Facilities Compliance Act, as well as other laws and regulations, create additional compliance requirements. Generally, three significant tools are available to both civilian and defense agencies to meet their compliance obligations: (1) environmental compliance audits, (2) compliance management planning, and (3) pollution prevention surveys.

6.3.1 Environmental Compliance Audits

Many Federal agencies require compliance audits and have Environmental Management System (EMS) policies, internal regulations, directives, or guidance specifying how to conduct them. Audits foster continuous improvements in environmental management and compliance and provide data needed for environmental program and budget documents. For facilities that have received Notices of Violation (NOVs) or Notices of noncompliance and/or are operating under consent orders

VERSAR COMPLIANCE AUDIT APPROACH

- ***Preparatory Activity*** – includes defining the audit's objectives and scope, selecting the audit team, coordinating with the auditee, obtaining and reviewing background information relevant to auditee (e.g., layout, processes, organization, operating plans, permits, procedures), and developing an audit plan.
- ***On-site Activity*** – includes the basic steps of identifying and understanding environmental management systems, assessing the management systems, gathering audit evidence, and evaluating and reporting audit findings.
- ***Post-site Activity*** – includes preparation of the draft and final reports, and development and implementation of a corrective action plan to address problems. Versar prepares the audit report and may also help the auditee prepare and implement the corrective action plan.

or consent agreements, auditing is an essential tool for ascertaining progress in accomplishing required corrective actions. Other potential benefits of compliance audits include identifying potential liabilities at closing/transferring facilities, ascertaining personnel training needs, preventing future problems, identifying more cost-effective compliance approaches (e.g., through pollution prevention), and strengthening stakeholder relations.

Successful environmental compliance auditing programs, in Versar's experience, share several key characteristics. Top managers must be committed both to the audit process and follow-up corrective activities and must communicate this commitment to personnel at all levels. In addition, the auditing function should be independent of the audited installation or operation. (However, facilities using EMSs or similar management tools will also conduct routine self-audits to track compliance and continuous improvement.) The auditing program's objectives and scope must be clearly specified, and sufficient resources must be available. Examples of Versar's auditing experience include:

- **ECAMP Audits.** The Air Force has developed and implemented an Environmental Compliance Assessment and Management Program (ECAMP) to evaluate and foster compliance with environmental regulations at its installations, including contractor-operated aerospace facilities that manufacture and assemble weapons. Key steps in our audit methodology are: preparation of site-specific program audit checklists and protocols; incorporation of EMS activities (which closely resemble ISO 14000 requirements); week-long, on-site evaluation of each plant's environmental management system and performance (e.g., performing interviews, document reviews, visual observations, briefings of plant management); database development and maintenance; and preparation of an audit report.

- **Air Quality Compliance Audits.** For the US Air Force Center for Environmental Excellence (AFCEE), Versar conducted air compliance audits to identify needed actions and associated costs for bringing 12 Air Force bases across the country into compliance with the provisions of the Clean Air Act Amendments of 1990. Examples of tasks included updating emission sources, determining current compliance status and developing future permitting strategy, ascertaining air pollution control equipment requirements and associated costs of implementation, developing cost estimates and multi-year budget for compliance.

6.3.2 Compliance Management Planning

VERSARS SEVEN-POINT APPROACH TO COMPLIANCE

- Develop an Environmental Management System (EMS)
- Clearly define the objectives;
- Target the source of pollution;
- Identify compliance alternatives;
- Consider impacts on clients' operations;
- Implement plan methodology; and
- Keep long term compliance in mind.

Federal agencies must comply with all substantive and administrative requirements of applicable Federal, State, and local laws, including standards, permitting, monitoring, notification, record- keeping, and reporting. Compliance is essential to a Federal agency's implementation of its mission by preventing delays or operational shutdowns and improving community and public relations. The consequences of noncompliance include both criminal and civil penalties.

Both comprehensive and media or program-specific compliance management plans are important to achieving and sustaining compliance in an orderly way and preventing reactive, crisis management. Compliance management plans typically address: pollutant sources, environmental obligations (statutory, regulatory, policy, guidance, directives), permits and registrations, outstanding enforcement actions (e.g., Notices of Violation, Notices of Noncompliance, Consent Agreements, Consent Orders, Interagency Agreements), record keeping, and reporting requirements. Such plans provide for continuity during staff turnover and help Federal agencies meet four broad compliance objectives in a systematic, coordinated manner: sustain compliance/prevent noncompliance, correct noncompliance situations, forecast/prepare for new requirements, and enhance the cost-effectiveness of compliance through P2. Examples of Versar's work are:

- **Environmental Management Systems (EMS) Support for Major Clients.** For Ft. Stewart/Hunter Army Airfield, GA, Versar recently assisted with the organization and planning of their EMS program (which they have named Sustainability Management System [SMS] to reflect a high level of environmental stewardship). Versar provided EMS compliance services to include training to their staff, and facilitating an internal SMS audit. Versar also currently provides similar EMS services for the Maryland Transit Administration's (MTA) bus and rail operation facilities in the Baltimore, MD area; and has provided similar EMS training and compliance services for the Washington Metropolitan Area Transit Authority (WMATA) in the Washington, DC area.

- **Environmental Program Support for U.S. Army Environmental Center.** Versar staff research, analyze, and provide recommendations on compliance projects, including: P2 compliance solutions, determine impacts of pending regulations, prepare environmental compliance management planning and reporting documents, identify compliance trends, compare Army compliance guidance and trends to existing Federal requirements, ascertain compliance costs, and review compliance audit findings.

- **Professional Services and Office Support for Army Environmental Center Central Region Environmental Office, Kansas City, Missouri.** Versar tracks, analyzes, and reports compliance trends; researches and tracks Federal, State and local legislative activities and regulations in order to identify their implications for Army installations; researches, develops, and distributes issue papers; maintains environmental recordkeeping; and provides outreach support.

- **Media Specific Compliance.** Many Versar assignments address single media compliance at single or multiple installations. Versar helped Ft. Lee, Virginia, prepare its Stormwater Pollution Prevention (P2) Plan for Industrial Activities. Versar inspected each industrial facility at the Fort; determined processes and materials used, potential sources of pollutants, and an inventory of potential pollutants; identified non-stormwater discharges; evaluated current spill prevention plans and rainfall runoff patterns; identified Best Management Practices; and developed implementation plan and ongoing monitoring and compliance evaluation program. Similarly, for Ft. Lee Versar prepared two P2 Plan updates (one of which received an award from the Virginia Department of Environmental Quality) and a Solid Waste Management Plan update. Further, for Ft.Stewart/Hunter

Army Airfield, Georgia, Versar has prepared, annually, their Tier II submittals under Community Right-to-Know (EPCRA) regulations, as well as their EPCRA Toxic Release Inventory (TRI) submittals. Versar also provided Clean Air Act (CAA) of 1990 Compliance Support for Ft. Dix, New Jersey, which included an analysis of Federal and State regulations, identification of requirements applicable to the installation, identification of appropriate pollution control technologies and their costs, and development of permit application packages. Similar techniques were used to support air compliance at 43 facilities of the New Jersey Army National Guard, as well as the Defense Supply Center, Richmond, Virginia and the Pentagon Reservation.

- **Water Quality Monitoring.** For the Philadelphia District, US Army Corps of Engineers, Versar conducts monitoring of four flood control reservoirs in the upper Delaware River watershed. The program includes monthly water quality compliance monitoring, weekly bacteriological monitoring at a swimming beach, testing of reservoir sediment contaminant concentrations, and special studies.

- **Comprehensive Transportation-Related Compliance Services**. Versar provided, for eight years, comprehensive environmental compliance services for the Washington Metropolitan Area Transit Authority's (WMATA) rail and bus operations. Activities include pollution prevention, stormwater control, air and wastewater permitting, screening level risk assessments, cost-benefit analyses (e.g., new refrigerants, deicing fluids, Halon recovery, parking lot cleaners), and development of environmental data management systems. Similarly, Versar continues to serve the Maryland Transit Administration (MTA), for over six years, providing the same environmental compliance services to this Baltimore-area bus and rail provider.

- **Fuel Storage Tank Management Handbook.** Under subcontract, Versar contributed to the development of a comprehensive Fuel Storage Tank Management Handbook for the National Park Service to guide its employees and concessionaires on complying with all regulations for underground and aboveground storage tanks. In addition, Versar prepared generic tank specifications for tank systems to be used throughout the Park Service.

6.3.3 Pollution Prevention Surveys

Versar has been performing pollution prevention (P2) studies at Government and industrial facilities since 1985. Typically, our effort begins with the development of a comprehensive process waste assessment (PWA). The PWA synthesizes data for all hazardous and other waste-generating processes at a facility, using information from hazardous waste manifests, biennial reports, environmental audits, emissions inventories, Stormwater Pollution Prevention Plans (SWPPPs), Spill Prevention Control and Countermeasure (SPCC) Plans, waste assays, and permits. We then develop mass balances for important waste-generating operations by determining process input, pollution control operations, and

VERSAR'S P2 SURVEY APPROACH

- Plan and coordinate visit; collect historical data;
- Perform onsite process waste assessment;
- Synthesize waste data, prioritize streams for evaluation;
- Perform mass balance and economic impact analysis for high priority wastes; and
- Develop P2 survey, identifying potential P2 opportunities.

wastes from processing unit operations. Collecting waste stream data and constructing mass balances are useful in identifying opportunities for P2 and allow measurement of the performance of implemented P2 options. The result of a PWA is a catalog of waste streams that provides a characterization of each waste, including quantities, frequency of discharge, composition, cost of management (i.e., treatment and disposal), and other important information. At many Federal facilities, Versar reviewed existing P2 programs to determine the potential for additional P2 initiatives that may be implemented and to update the facility's Pollution Prevention (P2) Plans. In updating P2 Plans, Versar conducts a comprehensive audit and inspection of the facility. With the findings of the audit, we review the most recent policies with regard to waste management and P2. Versar looks for opportunities to eliminate wastes through material substitution, source reduction approaches, or sustainable design efforts if new operations are planned. This information is then incorporated into a complete revision of the P2 Plan. Examples of Versar's P2 experience are:

- **Ft. Lee, VA - Pollution Prevention Management Plan Update and Opportunity Assessment**. For Ft. Lee Versar prepared two P2 Plan updates, one of which received an award from the Virginia Department of Environmental Quality (VDEQ); and a Solid Waste Management Plan update. Versar reviewed Ft. Lee's progress toward meeting its pollution prevention management plan. Versar rewrote the Plans to reflect current operations and state-of-the-art waste management practices. The opportunity assessments identified specific source reduction actions and material substitution activities that would eliminate or reduce the largest waste streams being generated, typically petroleum products. For the projects with the greatest potential, Versar conducted preliminary economic analyses to support the feasibility of the projects.

- **Air Force - Halon Replacement Studies.** Versar led an Integrated Products Team (IPT) to find suitable replacements for Halon 1301, an ozone depleting substance (ODS), in Hush House applications. Hush Houses are facilities at military bases in which aircraft and aircraft engines are tested at partial and full power. Eight alternative chemicals were evaluated for three different hush house designs. Versar produced an Operational Requirements Document, technical specifications and design, a Programmatic Environmental Safety and Health Evaluation, life cycle cost analyses for each alternative, and recommendations for replacement chemicals for each type of hush house.

- **Naval Facilities Engineering Service Center (NFESC), Port Hueneme, CA - Pollution Prevention Equipment Evaluations.** For the U.S. Navy, Versar evaluated the technical and economic suitability of pollution prevention and control technologies that were specified in site-specific PPMPs. Several of the naval facilities were along the Pacific Rim. For two Navy bases, Versar developed specifications, procured the equipment, oversaw installation, and led training of site personnel in the proper operation and maintenance of the equipment. The technologies evaluated were: abrasive blasting booths capable of recycling abrasive media; the use of silver recovery techniques in photographic operations, plus the substitution of digital x-ray production for conventional silver-based photographic methods; the use of a baghouse (i.e., fabric filter) to capture woodworking dust for use as a soil supplement; and the use of distillation technology to recover and recycle volatile organic solvents.

- **Naval Facilities Engineering Command, Atlantic Division, Norfolk, VA – Evaluate P2 Equipment Effectiveness.** In conjunction with DoD's Pollution Prevention Equipment Program (PPEP) Versar was tasked to evaluate over 400 pieces of P2 equipment that was purchased for use at seven naval facilities in the Norfolk, Virginia area. For each piece of equipment, Versar was required to determine: if the equipment was being used as intended, operational or maintenance problems/issues, cost of operations, and cost savings (if any) in relation to the more conventional means of accomplishing the same work. The focus was on four types of equipment: aqueous washers, abrasive blast booths, antifreeze recyclers, and improved painting techniques. Versar determined that most of the equipment was not even being used. Some had never even been tried.

- **Parris Island Marine Corps Recruit Depot (MCRD), SC – Solid Waste Management and P2 Plan Update.** Versar was asked to prepare a combination Solid Waste Management and P2 Plan for the subject Marine base. Versar spent a week at the facility, and identified over a dozen opportunities for cost savings and/or pollution prevention for both non-hazardous and hazardous wastes. Opportunities included: antifreeze recycle, solvent recycle, a reduction in engine oil use through implementation of a unique oil filtration system, paint spraying improvements, the use of water-based paints, cardboard recycling, use of more environmentally friendly chemicals at the domestic wastewater treatment facility, a unique application for reuse of treated domestic wastewater, reduction of silver/mercury waste from the dental facility, fluorescent lamp recycling, making mulch from vegetative prunings, the use of non-chemical biocides/descaling compounds in cooling towers, reduction of steam losses through steam trap maintenance and blowdown recycling, the use of water-based cutting fluids, shop rag recycling. One of the reasons that Versar was chosen for this task is because of a similar Solid Waste Management Action Plan that was developed by Versar in 1996 for Wright-Patterson Air Force Base.

- **NFESC, Port Hueneme, CA – Welding Fume Suppression Study.** Versar was chosen to evaluate the atmospheric emissions from DoD welding operations performed both with and without the use of Pulsed Power welding technology. Pulsed Power welding is a wire-welding technology reputed to produce less atmospheric emissions of both particulate matter and gases (e.g., ozone, carbon monoxide, nitrogen oxides). Versar mobilized stack testing and industrial hygiene testing equipment at four military maintenance locations, each for a two-week period. Testing was performed for all particulate metal emissions, especially for hexavalent chromium (for which very stringent industrial hygiene inhalation standards have been proposed by OSHA). Particulates in the stack emissions were partitioned into nine size fractions using Cascade Impactor technology in combination with EPA-method stack sampling techniques. In addition, Versar performed real-time continuous emissions monitoring for ozone, nitrogen oxides, and carbon monoxide emissions as well as ultraviolet light (UV) emissions. Using complex spreadsheets, Versar compiled and evaluated all the analytical data for subsequent incorporation and presentation in an Environmental Security Technology Certification Program (ESTCP) Cost and Performance Report.

- **NFESC, Port Hueneme, CA – Fume Suppressant Study for Hard Chromium Electroplating.** Versar was asked to develop and implement a pollution prevention evaluation test plan for determining if the use of fume suppressant chemicals in hard chromium electroplating baths had a significant effect on the atmospheric emissions both external to the electroplating facility as well as for occupational exposure purposes (i.e., to employees at the electroplating operation). Versar performed dozens of EPA-method stack tests and industrial hygiene sampling at two DoD hard chromium electroplating locations, both with and without the use of fume suppressants. Versar was also tasked to determine whether the use of fume suppressants was cost-effective. It was determined that fume suppressants reduced atmospheric emissions by 20- to 70-fold, and were cost effective even if air pollution control devices were still required. Further, the study showed that the quality of the electroplated parts was not detrimentally affected by the use of fume suppressants. The study is the subject of two papers written by Versar, and published by the Environmental Security Technology Certification Program (ESTCP). Additionally, the study has been accepted for the presentation of papers by Versar at both the annual joint EPA/American Electroplaters and Surface Finishers (AESF) Conference, and the annual Air and Waste Management Association (AWMA) Conference.

- **Air Force – Oxygen Line/Equipment Cleaning.** The Air Force and Versar jointly developed and pilot-/full-scale tested an environmentally friendly system capable of cleaning aircraft oxygen lines onboard the aircraft, thereby cleaning the entire plumbing system at once, without time-consuming costly disassembly. The system is known as the Oxygen Line Cleaning System, or OLCS. The project was cosponsored by the Environmental Security Technology Certification Program (ESTCP) and the Joint Group on Pollution Prevention (JG-PP). The project developed a trailer-mounted, touch-screen controlled process that could reduce or eliminate the need for using CFC-113, which is heavily utilized in the cleaning of dismantled aircraft oxygen tubing and components. The OLCS process uses a more environmentally friendly solvent (HFE-7100 TM – a hydrofluoroether) that is continuously reused/recycled by a distillation process, rather than vented to the atmosphere. It is estimated that in conventional oxygen line cleaning, about 15 gallons of CFC-113 is used and wasted per aircraft. It was further estimated that the OLCS could save the Air Force over $1 million annually.

- **Thule Air Force Base, Greenland - Pollution Prevention Opportunity Assessment (PPOA).** Versar conducted a 1-week investigation of the opportunities to recycle scrap metals and other commodities from Thule AFB. The site is unique for its remoteness from the continental U.S., and for its harsh climate. (It is only several hundred miles from the North Pole.) The investigation included routinely generated commodities, such as aluminum cans, glass bottles, office paper, and tires. It also included an investigation of the several thousands of tons of steel, copper wire, and cast aluminum that will result from the demolition of about 30 fuel oil tanks and the Ballistic Missile Early Warning System (BMEWS) facilities. While the final report concluded that it is not economical to recycle the routinely generated commodities or the steel resulting from the demolition activities, the potential recycle value of the copper and aluminum would more than support the recycling of all other items. The *net* value of the scrap metals was expected to exceed $8 million.

- **Columbus AFB, MS - Hazardous Waste Management Plan Update.** Versar updated a HWMP for Columbus AFB as part of the military directive to update such plans on an annual basis. The Plan provided an inventory (including codes and quantity) of hazardous wastes generated onsite and identified all hazardous waste handling facilities. The updated Plan also clarified site responsibilities for hazardous waste management, and addressed analysis, storage, and handling of hazardous waste materials onsite.

- **Washington Metropolitan Area Transit Authority (WMATA), Washington, DC – "Greener" Parking Lot Cleaners.** This major operator of a municipal bus and rail transportation system was incurring stormwater contamination excursions during bus parking lot cleaning activities. Runoff contained oils/greases that were cleaned from the parking lot surfaces, as well as the detergents used to clean the surfaces. Additionally, many of the cleaners were highly alkaline or acidic, causing further environmental insult. Versar pilot-scale tested 6 environmentally friendly cleaning compounds, most of which contained microorganisms or enzymes that would actually destroy the oils in addition to removing them from the parking lot surfaces. The pH values of these compounds were generally in the neutral range, and there was a minimum of detergents in each compound. Based on the testing recommendations were made for the appropriate compound to be used, based on visual observations, and tests for oils and detergents in the runoff.

- **WMATA, Washington, DC – Cooling Tower Descaling and Biocide Technology without Chemicals.** Each of WMATA's underground rail stations is air conditioned. Each air conditioning chiller system requires the use of a variety of chemicals to prevent scaling, corrosion, and biological fouling of the cooling towers and other heat exchange surfaces. These chemicals are continuously discharged into the local sanitary sewer systems through routine system blowdown. WMATA wished to pilot test technologies that are said to accomplish the prevention of scaling, corrosion, and biological fouling without the use of chemicals, thus eliminating chemical discharges. Versar contacted vendors of such systems, and arranged for installation of such systems at three of WMATA's underground rail stations. One system used a magnetic field to control scale and corrosion, and silver/copper electrodes to control biological fouling. A second system used a cartridge of sacrificial zinc/copper "wool". The third system used ultraviolet light for biological fouling control, and did not have a scale/corrosion control component. Each of the systems was pilot-scale tested during operation during the course of one cooling season. Versar monitored the performance of each system, and wrote a summary report that concluded that the magnetic/electrode-based system appeared to control biological fouling and microbial emissions (Legionella bacteria) better than the other two systems, and that the magnetic-based system controlled scale at least as well as the chemicals that had been used formally. An added bonus was that the wastewater blowdown requirements with each of the systems appeared to be much lower in volume than with conventional chemical treatment, thus reducing total flow to the sewerage systems.

6.4 Waste Management Services

All government facilities generate solid and/or hazardous wastes, and must allocate resources for their proper management and disposal. Executive Orders 12856, 12738, and most recently 13514 (October 2009) established goals for government facilities to reduce the generation of waste (solid and hazardous, respectively) and to better manage future wastes. In addition, individual government agencies (e.g., DoD) have set additional intra-departmental goals for waste reduction. With decreasing government budgets, reducing waste generation has a high payoff due to the corresponding reductions in: raw material purchases; waste collection; storage, and disposal costs; and waste tracking. Given these incentives, many Agencies are committed to improving their waste management practices, with particular emphasis on eliminating hazardous waste generation.

Versar maintains a staff of senior and mid-level engineers and scientists with extensive experience in helping government agencies better manage wastes. Much of this experience is derived from helping EPA for 7 years characterize hazardous wastes and their management as part of the Best Demonstrated and Available Treatment Technology (BDAT) program under Resource Conservation and Recovery Act (RCRA) Subtitle C. Under that contract, Versar developed the approaches that have become the standards for:

- **Characterizing wastes** that established the criteria for representative sampling and the parameters for analysis;
- **Data collection** for waste sampling and analysis plans that established minimum requirements for the location, number, frequency, and timing for sampling during compliance testing; and
- **Data acceptability** that addressed representativeness, completeness, and quality control criteria.

While supporting Subtitle C regulations development, Versar, also conducted the following types of activities: (1) reviewed and catalogued public comments, summarized the key issues, and developed draft responses in conjunction with EPA management for all comments as required by Counsel; (2) performed regulatory analyses of existing State requirements and standards; (3) assessed various waste management strategies to determine their effectiveness in reducing the potential for contaminants to enter the environment and the ability of both government and industry facilities to adopt each strategy; and (4) performed economic analyses of implementing proposed Subtitle C regulations for specific hazardous wastes to determine the probable response by industry following promulgation. In particular, Versar was asked identify additional pollution prevention (P2) activity resulting from RCRA regulations for specific industry sectors.

Effective solid waste management implies the consideration and use of P2 opportunities to the greatest extent possible. Therefore, waste management and P2 cannot be easily separated. Detailed information on some of the types of P2 waste management work that Versar has done can be found in section 6.3.3. Other examples of Versar's waste management experience are:

- **Nellis AFB, UT - Recovery and Recycling of Metals.** Versar managed potentially explosive wastes in a unique manner at Nellis AFB. Versar collected the targets and bomb casements and recycled the metals rather than disposing of the wastes. Versar carefully examined all recovered metal parts to ensure there was no risk of explosion or fire during the recycling process. Examined metals were sold to scrap recyclers. Versar reduced the cost of waste management for the Air Force while minimizing future solid waste handling and storage.

- **Wright-Patterson AFB, OH - Solid Waste Management Action Plan (SWMP).** For this facility Versar collected waste volumes data and characterized waste collection methods to generate a Solid Waste Management Action Plan that addressed E.O. 12738. Versar's analysis evaluated the organizational and cost impediments to efficient waste management, suggesting changes to waste responsibility assignments, waste collection contract structures, and cost accounting that would lead to improved waste management. A significant portion of the final report also identified in detail, including economic analysis, viable P2 projects.

- **PCB Exposure/Risk Assessment Guidance and Training.** Versar supported the USEPA in implementing regulations for the disposal of PCBs. Activities included the technical review of PCB risk assessments submitted by the regulated community, preparation of guidance on the conduct and review of PCB risk assessments, and training on risk assessment techniques.

6.5 Hazardous Materials Management Advisory Services

The majority of solid material and solid waste management, as discussed in sections 6.3 and 6.4, encompass management of non-hazardous materials (e.g., office products, food waste, petroleum products). However, there are many solid materials that may be hazardous and/or toxic to human health and the environment during their intended use, or when they are disposed of as wastes. These materials must be managed differently than the non-hazardous streams. SARA Title III, Section 313 as well as Executive Orders and other regulations and policies have prompted Federal agencies to reduce their use of toxic materials and to improve the tracking of hazardous and toxic materials that exist onsite. Government agencies must have accurate, timely, easy-to-use information to support decision making. Large government complexes can only effectively track hazardous materials with useful databases and proven software. Some software has already been developed for tracking hazardous materials (e.g., Hazardous Substance Management System [HSMS] at military facilities with centralized materials control) but more is needed.

Versar tailors its hazardous materials management advisory services to each client's particular needs. Examples of Versar's experience in providing its clients with technical and information management services to improve their management of hazardous materials are:

- **Material Safety Data Sheet (MSDS) Support for Washington Metropolitan Area Transit Authority.** Versar reviewed the MSDS control system for WMATA. We found the system to be incomplete, not user-friendly, and costly to maintain. Recognizing that WMATA personnel lack the time and resources to keep a current MSDS system in place

at each facility, Versar recommended WMATA adopt a commercial MSDS service that provides quarterly updates through CD-ROM packages; much like the government's Hazardous Materials Information System (HMIS) that can be accessed by Government personnel through the GSA Contract Management Division. The MSDS service placed data into WMATA's centralized materials tracking and inventory system, providing current MSDS information that is accessed by individual facilities through contacting central facility.

- **Comprehensive Occupational and Environmental Health Assessments.** For the Air Force's Armstrong Laboratory, Versar supported the Air Force and other Federal installations world wide in public health assessments, risk assessment, and industrial hygiene. Under this contract, Versar conducted industrial hygiene surveys designed to identify exposures to hazardous substances and other hazards; evaluations of hazardous materials/hazardous waste management practices; cross connection surveys; nationwide assessments of the occurrence, concentration, and potential health hazards of radon; and other evaluations of exposure to hazardous substances.

- **Hazardous Waste Management and Pollution Prevention Support. Ft. Bragg, North Carolina, Environmental Resources Branch.** Versar provided comprehensive hazardous waste/hazardous materials and pollution prevention management to Fort Bragg. Specific technical activities, tools, and methodologies included: development of the installation's hazardous materials management plan (HMMP); staffing and operation of the Hazardous Materials Control Center (HMCC) consistent with DoD guidelines; tracking, operation, and documentation of the Hazardous Substance Management System (HSMS); tracking/organizing Material Safety Data Sheets (MSDSs) and other documents; assurance that labeling and packaging are in accordance with EPA and Department of Transportation (DOT) regulations; notification of spills; weekly inspection of hazardous waste storage area; control of inventory; and statistical and technical analyses of waste data to identify compliance trends.

- **Hazardous Waste Data Management System.** Versar developed a PC-based, hazardous waste data management system for the space launch site operations at Vandenberg AFB. The system handled environmental information to provide a working tool and a management review of environmental compliance status. This custom-designed system was developed in parallel with a set of overall environmental management policies and procedures to provide a complete environmental management program. Data analysis consists of statistical evaluations and tabular output, as well as graphical review (i.e., line graphs, bar charts, area plots, percent pie graphs). The system includes a user's manual and documentation that describes the system's goals and capabilities, functional design, and operations.

6.6 Remediation Services

Versar has managed over $100 million worth of environmental remediation-related work in the last five years under direct (prime) indefinite delivery/indefinite quantity (ID/IQ) contracts. Versar's indefinite delivery contracts have ranged in value up to $50 million dollars

and as many as 200 individual delivery orders. Versar has in place procedures for remediation program and project management. Versar's management systems are in place, including delivery order estimating, proposal development, and negotiation, and project management systems. Versar's Cost Accounting Standards (CAS)-compliant, DCAA-approved DELTEK Costpoint financial and project management system is fully capable of managing a virtually unlimited number of simultaneous projects. Versar's subcontracting program is in full compliance with GSA and Administrative Contracting Officer (ACO) requirements. Our purchasing program operates in accordance with the FAR and DFAR, as well as agency-specific clauses.

Our technical experience includes:

- Full coverage of remedial action and specialized services under the SIN 899-9 Remediation Services Scope of Work requirements in-house, with a firm size and program structure that guarantees top-level attention to projects.
- Proven ability to manage multiple projects, using seasoned Project Managers, established procedures, in multiple locations on a concurrent basis, acting as an integrator.
- Innovative Technology Applications for remediation projects, such as passive-reactive barriers, phytoremediation systems, multi-phase extraction systems, enzyme enhanced bioremediation techniques, demonstrating that we look for value-based cost and schedule savings. On-line project management systems streamline our communications.
- On the cutting edge in new business areas, as demonstrated in our design of a safe process and cost estimating methodology for the recycling of ordnance and cleanup of five ranges at Nellis AFB.
- Demonstrated record of providing an integrated team approach to complex, multiple site projects on an international basis.
- Demonstrated responsiveness and ability to mobilize at any location served by GSA.
- Our proven performance with integrating remediation technology, schedules, budgets, and project planning.
- Commitment to Small Disadvantaged Businesses (SDBs), and other socioeconomic categories, as evidenced by the results of SBA and DoD audits.
- Successful completion of performance-based remediation contracts, using innovation, insurance products and proven approaches from the private sector.
- Solid relationships with regulators at the Federal, state and international level.
- Convincing approach to community involvement, through attendance and participation at Restoration Advisory Board (RAB) meetings, public information meetings, and meeting with the public.

The major technologies and skills that Versar has applied to environmental remediation include:

- Excavation and removal of contamination,
- In-situ treatment systems, including bioremediation,
- On-site systems design and installation, including on-site incineration and thermal desorption,

- Transportation and removal of materials,
- Containment of hazardous wastes, including slurry walls, subsurface barriers and hydraulic containment,
- Groundwater treatment systems,
- Ordnance Investigations and removal actions,
- Demolition and removal of structures and debris,
- Radiation/radiological analysis,
- Health and Safety Oversight for remediation,
- Long term monitoring and operations of systems, and
- Community Relations during remediation

Supporting our technical capabilities is our direct knowledge of the regulatory requirements associated with remediation, EPA regulatory requirements, and the local regulatory agencies. We have worked with and understand a wide spectrum of federal customers, and contracting and technical requirements and guidance documents, and understand how those requirements fit into the state and local regulatory environment.

Versar has comprehensive engineering, design and construction resources for implementing the cleanup technologies noted above, including bench- and pilot-scale treatment design; and environmental, civil, and geotechnical design required for the full range of remedial actions. We have directed or supported numerous RCRA and CERCLA cleanup projects at DoD and industrial sites involving manufacturing operations, recycling facilities, power plants, and landfills. Versar has managed turnkey projects from problem identification through final site restoration. Our engineers have access to over 200 standard specifications that can be cost-effectively tailored to a wide range of environmental A/E and remediation design applications.

Some examples of the most recent and innovative remediation projects that Versar has done are listed below:

- **Avtex Superfund Site, Front Royal, VA.** Versar was on site continuously for 8 years serving as the US Corp of Engineers' (USACE) technical support representative for remediation and demolition activities at the former rayon fibers manufacturing plant. USACE has responsibility for remedial action at this 640 acre site under the DoD Formerly Used Defense Site (FUDS) authority. Versar was responsible for identifying and inventorying of asbestos-containing materials (ACMs), developing abatement cost estimates, demolition estimates, plans and specifications for asbestos abatement and plant demolition, asbestos abatement oversight, demolition oversight, perimeter air monitoring, and demolition debris laboratory analysis and characterization. During the course of the project, Versar identified and oversaw the abatement of over 450 tons of ACM and provided Title II Services for the demolition of over 2 million square feet of the former plant under-roof area.

- **Washington Metropolitan Area Transit Authority (WMATA) Environmental Remediation and Restoration Support.** Versar supported WMATA for 15 years on the operation and maintenance of groundwater remediation systems. The installed systems operated optimally better 95 percent of the time and non-compliance issues were virtually non-existent. The O&M activities included, but were not limited to, new installation,

maintenance, repair, cleaning or modification of piping, pumps, compressors, valves, and other fittings, strainers, oil/water separator, and control systems including level sensors, float switches, flow meters, and programming of the control alarms, logic, and data collection systems. Versar gained extensive knowledge of the specific operating conditions and aquifer parameters associated with each site where active product recovery and groundwater treatment are conducted. These factors were used to optimize the performance of each system. Versar used this intimate knowledge to recommend and implement upgrades for several existing operational systems by further evaluating the site hydrogeology (e.g., historical water levels and flow direction trends) and system operating parameters (e.g., well flow rates, iron fouling indicators, air flow rates, and effluent pH). These upgrades were based on performing a cost benefit analysis with respect to the site cleanup goals and time allotted to achieving those goals. Systems were upgraded with more aggressive pumps that created larger cones of depression which enhanced product recovery in the aquifer system. These changes made a significant difference in both the quantity of free product recovered and the amount of contaminated groundwater recovered and treated. A supplemental benefit of pulling more water into the systems is that uncontaminated cleaner water is drawn into the aquifer system, enhancing the natural biodegradation processes acting on the plume. Dilute hydrogen peroxide injection treatments were initiated to progressively destroy residual petroleum hydrocarbons in the aquifer matrix. The hydrogen peroxide also introduces a concentrated source of dissolved oxygen into aquifer matrix to enhancing aerobic biodegradation. This in conjunction with the injection of BioSolve, a biosurfactant, has produced desirable effects on reducing the contaminant concentrations of the residual fuel hydrocarbons beneath the site. At another site, the design was modified to include 37 additional recovery locations, using a well point recovery system to supplement the effectiveness of the existing well network. It also incorporated a liquid/vapor phase separator that allows the liquid ring pump to operate with less wear, a larger volume oil/water separator tank to allow a longer time period for oil droplet formation, and clay-anthracite activated carbon that is more efficient at removing heavier weight petroleum hydrocarbons as a final treatment prior to treated water being discharged, because small oil droplets are produced as an emulsification from the liquid ring pump. The presence of raw sewage in the extracted fluid presented a severe biofouling problem for the treatment system. After discussions with the regulatory authorities, the anthracite/clay and carbon portion of the treatment system was removed. The system ran successfully for six years. Another successful aspect of the groundwater remediation support for WMATA is that Versar provided support for the closure of most of the groundwater remediation treatment systems. The treatment systems achieved their ultimate cleanup goals and criteria and were no longer necessary. Versar decommissioned and dismantled the systems and completed site restoration.

- **Vandenberg AFB, CA.** This Performance Based Remediation Project was a cleanup of numerous contaminated sites to meet Vandenberg AFB and State of California regulatory requirements. The project demonstrates Versar's ability to apply technical knowledge of environmental remediation processes, including risk-based cleanup goals to achieve site

Versar "participated with the Air Force in conducting negotiations with the state regulators to increase the site-specific TPH cleanup goals. VAFB was issued higher concentrations for residential unrestricted use for the project, which is a feat for the area."

closure. The project demonstrates Versar's ability to successfully negotiate cost-saving Total Petroleum Hydrocarbon (TPH) cleanup goals, saving an estimated 2M dollars. Versar was also able to save approximately 35 percent of the disposal cost of waste by recategorizing the waste stream to allow lower cost for disposal, demonstrating business-like concern for the interest of the customer. One of the sites was a former fire training area with TPH, PCB, volatile organic compounds (VOCs), dioxin, and metal contamination in soil. Another site was a former missile launch facility with PCB, dioxin and metals contamination in the soil and arsenic contamination in the groundwater. Versar prepared Interim Remedial Action Work Plans, negotiated cleanup goals and conducted public reviews. Versar established permitting requirements; mobilized a soil excavation subcontractor to prepare, excavate, transport, and dispose more than 45,000 tons of soil at a sanitary landfill. Versar was able to classify the waste stream as non hazardous and transport it to a closer, less expensive landfill, saving approximately 35 percent per ton. Versar directed worksite activities, including excavators, front loaders, water trucks, and laborers, followed by demobilization. Versar prepared, submitted and received agency approval of closure reports that included a post removal human health ecological risk assessment. Versar is currently finalizing Records of Decision the sites. The originally proposed California regulatory goal was 100 mg per kg for TPH. Negotiations resulted in a more relaxed goal of 200 mg per kg. The Air Force recognized this as a huge success and gave Versar a BLUE rating.

- **Beale AFB, CA.** Versar provided environmental construction services for sites at Beale AFB. The project performance-based objectives for one site were abandonment of approximately three antiquated base water supply wells that were no longer in service, as well as approximately 45 monitoring wells. For another site, the scope consisted of completing several Interim Remedial Actions-Construction Objectives including: excavating 1,500 yd^3 of dioxin-contaminated soil, performing bench-scale testing of biological treatment, preparing institutional control documents. There was a lot of uncertainty associated with the quantity of dioxin contaminated soil exceeding the original estimates and the opportunity existed for the budget to exceed the original estimate. Versar uniquely performed a number of the task orders concurrently and also controlled all field schedules. As a result of our efforts, the task order stayed ahead of the budget and schedule baselines.

- **Pueblo Chemical Depot, CO.** Versar was directly responsible for implementing the technical scope, including remedial technologies at four Solid Waste Management Units (SWMUs) at Pueblo Chemical Depot to comply with technical and regulatory requirements. Versar supplied the labor, equipment, and materials necessary to accomplish the work. Other project duties included performing management and planning functions, such as performance measurement and fund status reporting, and conducting project close-out tasks. Versar completed the following tasks:

    - Constructing a Soil Vapor Extraction (SVE) system at one SWMU,
    - Operating, maintaining, and optimizing the SVE system for 21 months,
    - Performing interim corrective measures e.g., in-situ groundwater treatment,
    - Revising and combining the RCRA Facility Investigations (RFIs) to support installation compliance requirements,

- Conducting a Corrective Measures Study (CMS) for several SWMUs,
- Performing in-situ groundwater treatment at select locations, and Investigating and demolishing 30 floor sumps at one site, remediating the surrounding contaminated material, plus excavation and disposal of hazardous and non-hazardous material.

These tasks required preparing the necessary plans and reports, extensive coordination with stakeholders including State and Federal regulatory personnel, and employing strict QA/QC and health and safety practices.

- **Integrated Remediation Support for a Paulsboro, NJ Petroleum Storage Terminal.** As part of a broad environmental support contract for this facility, Versar designed a comprehensive environmental remediation program for this facility to address widespread soil and LNAPL contamination that resulted from a previous owners operations dating back to the 1950s. The terminal's location on the banks of the Delaware River complicated groundwater capture issues, eventually resulting in the selection of a partial slurry wall to control the gradient and limit pumping necessary to control the plume, coupled with air sparging and soil vacuum extraction (SVE) to treat the source areas below six former ASTs that were used to store pure product MTBE for the adjacent Valero refinery. To date, the initial SVE system has been installed, pilot tested, and the design was approved by NJDEP in 2009. Full installation and start-up of the system is on hold pending the outcome of a lawsuit with the former owners. Versar has also been retained as expert witness for that case.

- **Shoppes at Centre Pointe, Rockville, MD.** Versar recently completed a successful groundwater remediation program for this shopping center that was impacted by the chlorinated solvent tetrachloroethene (PCE) and its related breakdown products. Versar designed and implemented a chemical oxidation program using sodium permanganate to remediate PCE and its associated breakdown products in the fractured saprolite and bedrock aquifer mix. An additional area of PCE contamination was later identified. To address this new area, Versar designed and implemented a supplemental remedial action plan, involving reductive de-chlorinization via the use of naturally occurring microbes to degrade the remaining contaminants. For three years, Versar treated the area by regularly injecting a simple and cost-effective, dextrose solution into the aquifer to promote the growth of the microbe *Hafnia Alvei*, the naturally occurring microbe identified as responsible for the contaminant reduction. The project was successfully completed in 2007 when the Maryland Department of the Environment's Voluntary Cleanup Program deemed the remedial action complete and granted site closure.

- **Unexploded Ordinance (UXO) Experience.** Versar also has considerable experience in handling UXO/OEW/CWM through its work at Lowry AFB for AFCEE; Nellis AFB for removal and recycling of explosives and dangerous munitions; USAEC at Ft. DeMoines, Blossom Point; Newport Army Ammunition Depot, and others. We team with a number of small and large UXO support firms to assist our in-house UXO personnel in detection, identification, and removal of UXO. Examples include:

  - UXO removal at Lowry AFB,

- UXO removal and recycling at Nellis AFB,
- UXO/CWM planning, sampling, and analysis at Defense Depot Ogden,
- CWM screening analyses at Tooele, UT; Johnson Island; Anniston Army Depot and seven other sites, and
- UXO chemical warfare removal at remote site in a harsh climate in northern Japan CWM and CWM degradation products analytical standards

APPENDIX A

LABOR CATEGORY RATES AND DESCRIPTIONS

This appendix provides the authorized Federal Supply Schedule Price Lists. This is the ninth year of the contract. Rates are provided for the ninth through the thirteenth years of the contract. Price List 1 represents the rates for the Environmental SIN (CF 899). Price List 2 represents the rates for the MOBIS SIN (CR 499)

PRICE LIST 1 – ENVIRONMENTAL

	Single Schedule SIN(s) Awarded	Awarded Labor Category	Option Period 2 Rates				
			Year 1 Dt. Option Exercise- 7/31/2010	Year 2 8/1/10- 7/31/11	Year 3 8/1/11- 7/31/12	Year 4 8/1/12- 7/31/13	Year 5 8/1/13- 7/31/14
1	899-1,2,4 & 8	Program Manager	$186.58	$192.18	$197.94	$203.88	$210.00
2	899-1,2,4 & 8	Project Manager	$156.23	$160.92	$165.74	$170.72	$175.84
3	899-1,2,4 & 8	Expert	$164.65	$169.59	$174.68	$179.92	$185.32
4	899-1,2,4 & 8	QA/QC Officer	$140.86	$145.08	$149.43	$153.92	$158.54
5	899-1,2,4 & 8	Health & Safety Manager/CIH	$122.31	$125.98	$129.76	$133.65	$137.66
6	899-1,2,4 & 8	Sr. Engineer	$126.33	$130.12	$134.02	$138.04	$142.18
7	899-1,2,4 & 8	Mid-Level Engineer	$97.64	$100.57	$103.59	$106.70	$109.90
8	899-1,2,4 & 8	Jr. Engineer	$73.46	$75.66	$77.93	$80.27	$82.68
9	899-1,2,4 & 8	Sr. Geologist	$127.77	$131.60	$135.55	$139.62	$143.81
10	899-1,2,4 & 8	Mid-Level Geologist	$98.64	$101.60	$104.65	$107.79	$111.02
11	899-1,2,4 & 8	Sr. Hydrogeologist	$125.68	$129.45	$133.33	$137.33	$141.45
12	899-1,2,4 & 8	Mid-Level Hydrogeologist	$100.75	$103.78	$106.89	$110.10	$113.40
13	899-1,2,4 & 8	Jr. Hydrogeologist	$58.13	$59.88	$61.67	$63.52	$65.43
14	899-1,2,4 & 8	Sr. Chemist	$104.86	$108.01	$111.25	$114.59	$118.03
15	899-1,2,4 & 8	Mid-Level Chemist	$86.64	$89.24	$91.92	$94.68	$97.52
16	899-1,2,4 & 8	Jr. Chemist	$60.92	$62.75	$64.63	$66.57	$68.57
17	899-1,2,4 & 8	Sr. Environmental Scientist/Biologist	$122.66	$126.34	$130.13	$134.04	$138.06
18	899-1,2,4 & 8	Mid-Level Environmental Scientist/Biologist	$84.92	$87.47	$90.10	$92.80	$95.58
19	899-1,2,4 & 8	Jr. Environmental Scientist/Biologist	$65.82	$67.79	$69.83	$71.92	$74.08
20	899-1,2,4 & 8	Site Supervisor	$114.34	$117.77	$121.30	$124.94	$128.69
21	899-1,2,4 & 8	Radon/Low Level Radiation Specialist	$125.23	$128.98	$132.85	$136.84	$140.94
22	899-1,2,4 & 8	Asbestos/Lead Specialist	$106.40	$109.59	$112.88	$116.26	$119.75
23	899-1,2,4 & 8	Hazardous Material/Waste Specialist	$90.67	$93.39	$96.19	$99.08	$102.05
24	899-1,2,4 & 8	Estimating Specialist	$119.58	$123.16	$126.86	$130.66	$134.58
25	899-1,2,4 & 8	UXO Specialist	$111.27	$114.61	$118.05	$121.59	$125.24
26	899-1,2,4 & 8	Scheduling Specialist	$101.16	$104.19	$107.32	$110.54	$113.85
27	899-1,2,4 & 8	Modeling Specialist	$107.26	$110.48	$113.80	$117.21	$120.73
28	899-1,2,4 & 8	Sr. Computer Specialist	$111.27	$114.61	$118.05	$121.59	$125.24
29	899-1,2,4 & 8	Data Manager	$93.26	$96.06	$98.94	$101.91	$104.96
30	899-1,2,4 & 8	Field Technician II	$66.35	$68.34	$70.39	$72.50	$74.67
31	899-1,2,4 & 8	Field Technician I	$55.12	$56.77	$58.47	$60.23	$62.03
32	899-1,2,4 & 8	Designer/Sr. CADD Operator	$74.84	$77.09	$79.40	$81.78	$84.23
33	899-1,2,4 & 8	Jr. CADD Operator	$58.66	$60.42	$62.23	$64.10	$66.02
34	899-1,2,4 & 8	Administrative Assistant II	$75.80	$78.07	$80.41	$82.83	$85.31
35	899-1,2,4 & 8	Administrative Assistant I	$48.19	$49.64	$51.13	$52.66	$54.24
36	899-1,2,4 & 8	Procurement Specialist	$99.17	$102.15	$105.21	$108.37	$111.62
37	899-1,2,4 & 8	Technical Writer/Editor	$57.76	$59.50	$61.28	$63.12	$65.01
38	899-1,2,4 & 8	Word Processor	$57.48	$59.21	$60.98	$62.81	$64.70
39	899-1,2,4 & 8	Clerical	$39.94	$41.14	$42.38	$43.65	$44.96

Note: A discount of 25% off the labor shall be applied for any order of full-time labor that extends for a period of at least six months for which work is performed at a customer's facility ("off-site").

PRICE LIST 2 – MOBIS

	Single Schedule SIN(s) Awarded	Awarded Labor Category	Option Period 2 Rates				
			Year 1 Dt. Option Exercise- 7/31/2010	Year 2 8/1/10- 7/31/11	Year 3 8/1/11- 7/31/12	Year 4 8/1/12- 7/31/13	Year 5 8/1/13- 7/31/14
40	874-1,2,3,6 & 7	Vice President	$212.24	$218.61	$225.17	$231.92	$238.88
41	874-1,2,3,6 & 7	Sr. Management Consultant	$151.13	$155.67	$160.34	$165.15	$170.10
42	874-1,2,3,6 & 7	Management Consultant III	$117.27	$120.79	$124.41	$128.14	$131.99
43	874-1,2,3,6 & 7	Management Consultant II	$74.56	$76.80	$79.10	$81.47	$83.92
44	874-1,2,3,6 & 7	Management Consultant I	$55.06	$56.71	$58.42	$60.17	$61.97
45	874-1,2,3,6 & 7	Sr. Facilitator	$181.69	$187.14	$192.76	$198.54	$204.50
46	874-1,2,3,6 & 7	Facilitator II	$104.48	$107.62	$110.85	$114.17	$117.60
47	874-1,2,3,6 & 7	Facilitator	$77.05	$79.37	$81.75	$84.20	$86.73
48	874-1,2,3,6 & 7	Sr. Programmer	$109.67	$112.96	$116.35	$119.84	$123.44
49	874-1,2,3,6 & 7	Programmer	$73.57	$75.78	$78.05	$80.40	$82.81
50	874-1,2,3,6 & 7	Sr. Technical Support	$116.79	$120.30	$123.90	$127.62	$131.45
51	874-1,2,3,6 & 7	Technical Support	$57.94	$59.68	$61.47	$63.31	$65.21
52	874-1,2,3,6 & 7	Administrative Support	$92.74	$95.52	$98.38	$101.33	$104.37
53	874-1,2,3,6 & 7	Editor	$65.89	$67.87	$69.90	$72.00	$74.16
54	874-1,2,3,6 & 7	Graphic Artist	$66.52	$68.51	$70.57	$72.69	$74.87
55	874-1,2,3,6 & 7	Word Processor	$52.09	$53.65	$55.26	$56.92	$58.63

Note: A discount of 25% off the labor shall be applied for any order of full-time labor that extends for a period of at least six months for which work is performed at a customer's facility ("off-site").

SCA Eligible Contract Labor Category	SCA Equivalent Code - Title	WD Number
Administrative Assistant II	01020 - Administrative Assistant	05-2103, 05-2059
Administrative Assistant I	01020 - Administrative Assistant	05-2103, 05-2059
Word Processor	01613 - Word Processor III	05-2103, 05-2059
Clerical	01313 - Secretary III	05-2103, 05-2059
Administrative Support	01020 - Administrative Assistant	05-2103, 05-2059
Graphic Artist	15080 - Graphic Artist	05-2103, 05-2059

The SCA is applicable to this contract and it includes SCA applicable labor categories. The prices for the indicated SCA labor categories are based on the U.S. Department of Labor Wage Determination Numbers(s) identified in the matrix. The prices offered are based on the preponderance of where work is performed and should the contractor perform in an area with lower SCA rates, resulting in lower wages being paid, the task order prices will be discounted accordingly.

Versar's Other Direct Costs Information:

1. Versar charges 7 cents per page for Xeroxing.
2. PC Lan (computer charges) of $1.50 per labor hour is included in the labor rate.
3. Versar does not have direct charges for telephone/fax costs as ODCs. They are part of indirect charges in our overhead.
4. Versar applies its DCAA-approved G&A rate to ODC and travel charges. Versar applies its DCAA-approved

Material Handling fee to materials and Subcontractors charges.

ENVIRONMENTAL SERVICES LABOR CATEGORY DESCRIPTIONS (CF899)
VERSAR GSA CONTRACT GS-00F-0007L

Program Manager

Education: A Master's degree (and/or equivalent education/experience) from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 15+ years technical experience; 5+ years of project management experience

Duties: Responsible for the overall management of the contract including cost, schedule, technical direction and quality; oversees the development and implementation of record keeping, administrative and quality control programs; is the primary point-of-contact for overall contractual issues.

Project Manager

Education: A Master's degree (and/or equivalent education/experience) from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 10+ years technical experience; 5+ years of task order management experience

Duties: Responsible for the management of cost, schedule, and quality of task orders; serves as the single point of contact for the project, and maintains close communication and coordination with the CO for the duration of the project, including monthly progress and detailed cost reporting.

Expert

Education: A Master's degree (and/or equivalent education/experience) from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 20+ years technical experience

Duties: Provides recognized expertise in a specific field/area of study.

QA/QC Officer

Education: A Master's degree (and/or equivalent education/experience) from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 10+ years technical experience in area of technical review
Duties: Responsible to insure compliance with the requirements identified in the statement of work; oversees activities, periodically reviews of the processes being implemented, evaluation of any recommendations made by the project team over the course of the program regarding use of

these processes, and continuous improvement evaluations of the quality program; provides support to the project team in ensuring that the quality of products and services provided to the client is in accordance with the specifications described in the contract, project plans, drawings, specifications, scopes of work, contract, subcontracts, and other project directives.

Health & Safety Manager/CIH

Education: A Master's degree (and/or equivalent education/experience) from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 10+ years technical experience in health & safety

Duties: Responsible for the overall health and safety programs; develops, maintains, and ensures the implementation of the health and safety systems; oversees, reviews, reports, trains, and controls employee health and safety processes; reviews and approves all health and safety related plans for specific task orders.

Sr. Engineer

Education: A Master's degree (and/or equivalent education/experience) from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 10 years+ of technical experience in engineering

Duties: Responsible for performing complex and non-routine technical engineering tasks or for supervision and oversight of a small group working on technical issues or specific elements of a project.

Mid-Level Engineer

Education: A Bachelor's degree from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 3-10 years of technical experience in engineering

Duties: Performs technical engineering tasks such as calculations, layouts, evaluation of data, and preparation of portions of a report under the direction of a senior engineer.

Jr. Engineer

Education: A Bachelor's degree from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 0-2 years of technical experience in engineering

Duties: Performs routine engineering tasks such as preparing graphical or tabular presentations of data, simple data interpretation, preparation of supporting material, etc. under the direction of a senior engineer.

Sr. Geologist

Education: A Master's degree (and/or equivalent education/experience) from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 10+ years of technical experience in geology

Duties: Responsible for performing complex and non-routine technical geological tasks or for supervision and oversight of a small group working on technical issues or specific elements of a project.

Mid-Level Geologist

Education: A Bachelor's degree from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 3-10 years of technical experience in geology

Duties: Performs technical geological tasks such as calculations, layouts, evaluation of data, and preparation of portions of a report under the direction of a senior geologist.

Sr. Hydrogeologist

Education: A Master's degree (and/or equivalent education/experience) from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 10+ years of technical experience in hydrogeology

Duties: Responsible for performing complex and non-routine technical hydrogeological tasks or for supervision and oversight of a small group working on technical issues or specific elements of a project.

Mid-Level Hydrogeologist

Education: A Bachelor's degree from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 3-10 years of technical experience in hydrogeology

Duties: Performs technical hydrogeological tasks such as calculations, layouts, evaluation of data, and preparation of portions of a report under the direction of a senior hydrogeologist.

Jr. Hydrogeologist

Education: A Bachelor's degree from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 0-2 years of technical experience in hydrogeology

Duties: Performs routine hydrogeological tasks such as preparing graphical or tabular presentations of data, simple data interpretation, preparation of supporting material, etc. under the direction of a senior hydrogeologist.

Sr. Chemist

Education: A Master's degree (and/or equivalent education/experience) from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 10+ years of technical experience in chemistry

Duties: Responsible for performing complex and non-routine technical chemical tasks or for supervision and oversight of a small group working on technical issues or specific elements of a project.

Mid-Level Chemist

Education: A Bachelor's degree from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 3-10 years of technical experience in chemistry

Duties: Performs technical chemical tasks such as calculations, layouts, evaluation of data, and preparation of portions of a report under the direction of a senior chemist.

Jr. Chemist

Education: A Bachelor's degree from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 0-2 years of technical experience in chemistry

Duties: Performs routine chemical tasks such as preparing graphical or tabular presentations of data, simple data interpretation, preparation of supporting material, etc. under the direction of a senior chemist.

Sr. Environmental Scientist/Biologist

Education: A Master's degree (and/or equivalent education/experience) from an accredited

school in a technically related field consistent with the required duties of the position.

Basic experience: 10+ years of technical experience in environmental science/biology

Duties: Responsible for performing complex and non-routine environmental science/biology tasks or for supervision and oversight of a small group working on technical issues or specific elements of a project; provides environmental planning, policy, technical, regulatory, and information management support for the development, execution, and evaluation of environmental programs, projects, and systems.

Mid-Level Environmental Scientist/Biologist

Education: A Bachelor's degree from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 3-10 years technical experience in environmental science/biology

Duties: Performs technical environmental science/biological tasks such as calculations, layouts, evaluation of data, and preparation of portions of a report under the direction of a senior environmental scientist/biologist; provides environmental planning, policy, technical, regulatory, and information management support for the development, execution, and evaluation of environmental programs, projects, and systems.

Jr. Environmental Scientist/Biologist

Education: A Bachelor's degree from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 0-2 years technical experience in environmental science/biology

Duties: Performs routine environmental science/biological tasks such as preparing graphical or tabular presentations of data, simple data interpretation, preparation of supporting material, etc. under the direction of a senior environmental scientist/biologist.

Site Supervisor

Education: A Bachelor's degree from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 10+ years experience serving in site supervisory role

Duties: Provides applications systems analysis and programming activities for a Government site, facility or multiple locations; prepares long and short-range plans for application selection, systems development, systems maintenance, and production activities and for necessary support resources.

Radon/Low Level Radiation Specialist

Education: A Bachelor's degree from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 7+ years technical experience in radon/low level radiation

Duties: Provides radon/low level radiation technical support that encompasses all project activities.

Asbestos/Lead Specialist

Education: A Bachelor's degree from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 7+ years technical experience in asbestos/lead

Duties: Provides asbestos/lead technical support that encompasses all project activities.

Hazardous Material/Waste Specialist

Education: A Bachelor's degree from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 7+ years technical experience in hazardous material/waste

Duties: Provides hazardous material/waste technical support that encompasses all project activities.

Estimating Specialist

Education: A Bachelor's degree from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 7+ years technical experience in estimating

Duties: Plans, tracks, forecasts and reports on project's progress.

UXO Specialist

Education: A Bachelor's degree from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 7+ years technical experience in UXO

Duties: Provides UXO technical support that encompasses all project activities.

Scheduling Specialist

Education: A Bachelor's degree from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 7+ years technical experience in scheduling

Duties: Provides scheduling support that encompasses all project activities.

Modeling Specialist

Education: A Bachelor's degree from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 7+ years technical experience in modeling

Duties: Provides modeling and simulation functions or operations such as, exercises, plans, coordination, demonstrations, and instruction in the fields; supports live, constructive, or virtual training.

Sr. Computer Specialist

Education: A Master's degree (and/or equivalent education/experience) from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 10+ years technical experience in information technology

Duties: Devises or modifies procedures to solve complex problems considering computer equipment capacity and limitations, operating time, and form of desired results; designs, codes, tests, debugs, and documents; formulates/defines system scope and objectives; devises or modifies procedures to solve complex problems considering computer equipment capacity and limitations, operating time, and form of desired results; prepares detailed specifications from which programs will be written and designs, codes, tests, debugs, and documents those programs.

Data Manager

Education: A Master's degree (and/or equivalent education/experience) from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 7+ years technical experience in database design/management

Duties: Projects long-range requirements for client/server database administration in conjunction with other managers in the information systems function as well as business function managers; prepares activity and progress reports regarding the client/server database

management section.

Field Technician II

Education: High school graduate

Basic experience: 3+ years in field work

Duties: Performs and reports on routine field technician tasks such as sampling; quality assurance oversight; and installing, testing and troubleshooting operating equipment or systems, etc. under the direction of a project manager.

Field Technician I

Education: High school graduate

Basic experience: 0-2 years in field work

Duties: Performs routine field technician tasks such as sampling; quality assurance oversight; and installing, testing and troubleshooting operating equipment or systems, etc. under the direction of a project manager or Field Technician II.

Designer/Sr. CADD Operator

Education: A Master's degree (and/or equivalent education/experience) from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 7+ years of technical experience in designing/CADD operations

Duties: Provides designing/CADD support that encompasses all project activities.

Jr. CADD Operator

Education: A Bachelor's degree from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 0-2 years of technical experience in designing/CADD operations

Duties: Provides CADD support that encompasses all project activities under the direction of a Senior CADD operator.

Administrative Assistant II

Education: High school graduate

Basic experience: 3+ years in office support work

Duties: Provides administrative and clerical support to relieve managers/staff of administrative details and requires little to no supervision.

Administrative Assistant I

Education: High school graduate

Basic experience: 0-2 years in office support work

Duties: Provides administrative and clerical support to relieve managers/staff of administrative details and requires little supervision.

Procurement Specialist

Education: A Bachelor's degree from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 7+ years technical experience in procurement

Duties: Responsible for producing and overseeing procurement documents; assist in planning for procurement activities; ensures all applicable procedures, policies, and regulations are followed during procurement activities.

Technical Writer/Editor

Education: A Bachelor's degree from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 3+ years technical experience in writing/editing

Duties: Prepares, reviews and edits content of technical documentation; ensures that documents follow the style laid out in the company's style guide; writes a variety of technical articles, reports, brochures, and/or manuals for documentation for a wide range of uses; coordinates the display of graphics and the production of the document.

Word Processor

Education: High school graduate

Basic experience: 3+ years in word processing

Duties: Performs routine word processing support under the direction of a project manager, scientist or specialist.

Clerical

Education: High school graduate

Basic experience: 0-2 years in word processing

Duties: Performs routine clerical support (including word processing, filing, graphics, database maintenance and quality assurance) under the direction of a project manager, scientist or specialist.

Vice President

Education: A Master's degree (and/or equivalent education/experience) from an accredited school in a related field consistent with the required duties of the position.

Basic experience: 20+ years management consulting experience and title of Vice President

Duties: Responsible for the overall management of the contract including cost, schedule, technical direction and quality; is the primary point-of-contact for overall contractual issues.

Sr. Management Consultant

Education: A Master's degree (and/or equivalent education/experience) from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 20+ years management consulting experience

Duties: Provides recognized expertise in a specific field/area of study.

Management Consultant III

Education: A Master's degree (and/or equivalent education/experience) from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 10 years+ of management consulting experience

Duties: Provides recognized expertise in a specific field/area of study.

Management Consultant II

Education: A Bachelor's degree from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 3-10 years of management consulting experience

Duties: Provides management consulting support that encompasses all project activities under the direction of a Management Consultant III or higher.

Management Consultant I

Education: A Bachelor's degree from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 0-2 years of management consulting experience

Duties: Provides management consulting support that encompasses all project activities under the direction of a Management Consultant II or higher.

Sr. Facilitator

Education: A Master's degree (and/or equivalent education/experience) from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 10 years+ experience in meeting facilitation

Duties: Provides recognized expertise in meeting facilitation.

Facilitator II

Education: A Bachelor's degree from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 3-10 years of experience in meeting facilitation

Duties: Provides meeting facilitation support that encompasses all project activities under the direction of a Sr. Facilitator.

Facilitator

Education: A Bachelor's degree from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 0-2 years of experience in meeting facilitation

Duties: Provides meeting facilitation support that encompasses all project activities under the direction of a Facilitator II or higher.

Sr. Programmer

Education: A Master's degree (and/or equivalent education/experience) from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 5+ years of experience in computer programming
Duties: Provides direction and computer programming support for a project.

Programmer

Education: A Bachelor's degree from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 0-2 years of experience in computer programming

Duties: Performs computer programming support under the direction of a project manager, scientist or specialist.

Sr. Technical Support

Education: A Master's degree (and/or equivalent education/experience) from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 10 years+ experience in technical support

Duties: Provides recognized expertise in a specific field/study.

Technical Support

Education: A Bachelor's degree from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 0-2 years of experience in technical support

Duties: Provides technical support that encompasses all project activities under the direction of a Sr. Technical Support.

Administrative Support

Education: High school graduate

Basic experience: 5+ years of experience in administrative support

Duties: Provides administrative and clerical support to relieve managers/staff of administrative details and requires little to no supervision.

Editor

Education: A Bachelor's degree from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 0-2 years of experience in editing

Duties: Reviews and edits content of technical documentation; ensures that documents follow

the style laid out in the company's style guide.

Graphic Artist

Education: A Bachelor's degree from an accredited school in a technically related field consistent with the required duties of the position.

Basic experience: 0-2 years of experience as a graphic artist

Duties: Performs graphic art support under the direction of a project manager, scientist or specialist.

Word Processor

Education: High school graduate

Basic experience: 0-2 years of experience in word processing

Duties: Performs routine word processing support under the direction of a project manager, scientist or specialist.

VERSAR GSA CONTRACT
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