

## 1.0 Introduction

ADVENT is a full-service, small environmental consulting firm with an experienced, multi-disciplined staff committed to excellence. ADVENT was incorporated in 1994 with the mission of providing individualized, technically competent, responsive, yet cost-effective, environmental management services to clients throughout the eastern United States.

ADVENT has a proven track record within the environmental consulting industry and has an established reputation for providing quality products and delivering projects within budget and on schedule. ADVENT was honored in 2003 and again in 2004 with the Nunn-Perry Award, which was established in 1995 to recognize outstanding program performance of Mentor-Protégé teams formed under the auspices of the Department of Defense Pilot Mentor-Protégé Program. Historically,

approximately 90 percent of ADVENT's business has been with repeat clients or obtained through recommendations. This high level of repeat business is testament to ADVENT's performance and focus on providing quality services which in turn generates customer satisfaction.

As a full-service firm, ADVENT has provided client services in the areas of site management and restoration through performance of site investigations and assessments; remedial investigations, feasibility studies; remedial design and corrective action implementation. In addition, ADVENT also is experienced in assisting clients with operational issues including regulatory compliance, development and implementation of environmental programs, planning, permitting, reporting, operation and maintenance, environmental recordkeeping and data management. These latter services are often provided as an extension of a client's staff working hand in hand with facility and corporate level personnel to insure ongoing facility compliance with local, state, federal and organizational requirements. ADVENT's traditional environmental A-E services are augmented by our capabilities and direct experience in providing explosive ordnance, UXO, and force protection services to government and commercial clients. ADVENT senior personnel possess an average of more than ten years of professional experience providing services to public and private clients. This level of experience has led to a proven track record on government and commercial contracts and projects.



## 2.0 Program Management

ADVENT is an environmental engineering and consulting firm providing environmental A-E and remediation services to government and private sector clients.

Subcontractor services, including laboratory analytical services, are procured competitively. While subcontractor resources are identified to provide specific capabilities when required during program execution, our management approach retains the traditional prime-subcontractor relationship and as such, ADVENT remains responsible for the overall performance of all subcontractors.

### 2.1 Management Approach

ADVENT has chosen a program management approach of centralized management with local execution that ensures program consistency throughout the contract. The program management strategy is to assign key personnel to a Program Management Office (PMO) team, reporting to the Program Manager. Each member is directly and fully responsible for all of the respective activities under the contract. Key program functions performed out of the PMO in Charleston, South Carolina include Program Management, Contract Administration, Cost/Schedule Control Management, Procurement Management, and Cost Estimating. The Charleston office serves as ADVENT's corporate headquarters. As such, the functions described previously are currently being performed on a corporate level at the PMO and the necessary systems are in place to perform these functions for this contract. The PMO is dedicated solely to the customer, and is the focal point for task order-specific execution teams. ADVENT, as the prime contractor, will have lead responsibility and will be the sole point of contact for program and task order performance.

### 2.2 Management Tools

ADVENT will use in-place, proven systems to maintain cost and schedule. From the company's inception, ADVENT has employed a fully automated corporate-wide financial management system. As a commitment to providing sound cost accounting and tracking service to the Government, ADVENT installed WIND2 as its accounting system beginning in 2003. WIND2 has been proven to effectively manage project costs and schedules. ADVENT's most recent DCAA audit was conducted in June, 2004. WIND2 provides ADVENT Task Order Managers with the tools to estimate, track, manage, and forecast cost and schedule by each work breakdown structure (WBS) element within a given task order. Through WIND2, accounting, payroll, purchasing, inventory management, and all other company financial functions are linked to the task order WBS. The project cost information is updated on a weekly basis for detailed tracking of cost to time-phase budgets. This system provides real-time cost tracking which enables

our Task Order Managers to analyze and respond to changes in design, differing site conditions, and unforeseen events. WIND2 is a critical component of our Task Order Manager's ability to consistently meet project schedules. Baseline schedules are developed in Microsoft Project Manager for each of the WBS components as the SOW approach and cost estimates are finalized. Real-time cost and schedule information generated by the combination of WIND2 and Microsoft Project Manager provide immediate schedule impacts as conditions change enabling our Task Order Managers to respond to unforeseen events to mitigate impacts to schedules.

## 2.3 Corporate Programs

ADVENT has established and proven corporate programs in place to ensure quality and safety is maintained at the highest level throughout the corporation.

ADVENT's quality assurance/quality control program provides policies and procedures to ensure maintenance of the highest level of technical quality on work performed by ADVENT and subcontractors. The program incorporates procedures and practices related to all aspects of work associated with addressing hazardous waste sites from investigation and design through closure implementation and O&M. Quality Control is critical for successful execution on an environmental remediation type contract. ADVENT employs the following checks and balances to ensure overall quality of design and other project related documents is achieved and maintained:

Designs, calculations, computer programs, or professional interpretations are formally prepared (calculation briefs) and checked (verified). Each calculation brief is 100 percent verified by an individual independent of the development of the brief. That individual is at least of equivalent competence to the preparer. The checker is responsible for verification of all backup, supporting information, objectives, modeling requirements, references, and conclusions.

Drawings, logs, tables, and other products that are transcriptions are verified at the 100 percent level. If a drawing contains planning or design information, it is verified by the same procedures for calculation briefs. Drawings are controlled by logs and "sign-offs" by drafting personnel, Task Order Manager, and the preparer.

Peer review may be performed on the project by independent reviewers as appropriate. The scope, schedule, reporting, and other activities are established under the cognizance of the Project Principal.

Formal design reviews are performed according to established procedures. Plans that require the seal of a professional engineer are prepared under the cognizance of a registered professional engineer with expertise relevant to the work being sealed.

Quality assurance and quality control issues are managed by a Program QA/QC Officer. The QA/QC Officer oversees the activities of the project-level QA/QC personnel. The QA/QC Officer has stop work authority and a direct line of reporting to ADVENT's President.

Reports are reviewed for: presentation of data in their proper context; complete checking of all design computer programs, or other calculated or professional interpretations; accuracy of reported data; satisfied scope of work; and standard editorial requirements.

As with our QA/QC Program, ADVENT's Health and Safety (H&S) program is administered at the corporate level. Avoiding accidents avoids schedule disruptions and decreases the cost of projects. ADVENT's Experience Modification Rate for 2004, 03, 02 was .97, .95, and .95 respectively. Health and safety issues for this contract will be managed by a Program H&S Officer. The H&S Officer oversees the activities of the project-level H&S personnel and, as with QA/QC, the H&S Officer has stop work authority. The H&S Officer provides periodic training to project personnel and tracks the status of training and medical surveillance to ensure they are ready to mobilize in response to needs of the customer.

### **2.4 Project Execution**

ADVENT offers our clients a total business solution approach to execution of projects. We have used this approach effectively on both government and commercial contracts. The Program Manager and Task Order Managers are the key management personnel to successfully accomplish the project objectives. Their responsibilities and authorities are summarized in Exhibit 2-1.

<b>Exhibit 2-1 Key Management Responsibilities and Authorities</b>	
<b>Responsibilities</b>	<b>Authorities</b>
<b>Program Manager</b>	
Total contract management Primary point of contact Interacts with customer on contractual and technical matters Supervises Task Order Managers Responds to customer requests Compliance with work scopes, schedules, and budgets Problem resolution Program H&S and QC; coordinates weekly meetings Subcontract management and control	Authority to bind company Contract negotiations Accepts task order assignments Assigns ADVENT personnel Approves all key staff assignments Resource allocation Approves budgets and schedules Approves subcontract agreements Stops work if unsafe
<b>Task Order Managers</b>	
Management/technical direction of task order execution Interact with customer on project-specific basis Submit reports and other deliverables Oversee subcontractor daily performance Control task order costs and schedules Task order H&S and QC Manage task order change control	Review/approve deliverables Certify work within technical discipline Subcontractor selection/evaluation Approve task order budgets and expenditures Stop work if unsafe Approve invoices to customer Approve payables for materials, equipment, and subcontractors

**Staffing.** When an RFP and SOW are received, the Program Manager evaluates the project needs against the experience, qualifications, and location of personnel and select the Task Order Manager. The assigned Task Order Manager, with the Program Manager’s approval, selects the remainder of the project team. In selecting task order staff, the Program Manager and Task Order Manager consider an individual’s company-related experience as well as personal background and capability to meet a particular technical requirement.

**Cost Estimate/Schedule Development.** The Task Order Manager works with the assigned Cost/Schedule Engineer to develop a Work Breakdown Structure (WBS) that identifies the work scope to the lowest activity level to separate the task order activities into logical elements of work. The WBS serves as a basis for schedule and estimate development. The schedule is developed to satisfy the time constraints of the task

order. In this process, activity duration is assigned and interrelationships defined for each activity consistent with the estimate and the task order proposal. Procurement lead times as well as locality constraints (such as weather, local holidays, etc.) are considered during schedule development. As part of the cost estimate preparation for task orders, the Program Manager and assigned Task Order Manager evaluate the scope of work, designate those portions to be self-performed and those to be subcontracted, and identify subcontractor firms from whom to solicit cost estimates. Firms are selected based on their expertise to assure quality and location, as appropriate, to ensure cost-effectiveness. ADVENT's established cost estimating system is used to develop the final cost estimate for the task order taking into consideration any schedule constraints. Once agreed to by ADVENT and the customer, the schedule and budget is "frozen" and used as the baseline schedule. As the task order progresses, actual schedule and cost is measured and analyzed against the baseline. Any variances and responding corrective actions are explained in a monthly status report to the client. Changes to the established schedule and budget are only made through formal, approved change orders.

**Task Order Kickoff.** Upon completion of contract negotiations and award of a task order, the Task Order Manager holds a kickoff meeting with the project team to review the SOW and assign responsibilities. During this meeting, the Task Order Manager reviews the schedule and delineates expectations. Site-specific information is reviewed and evaluated with respect to safety.

**Execution/Monitoring.** For the execution phase of each task order, we manage the cost and schedule from the local office executing the task order because we have found through experience that it is important to have the system at the job site for maximum control and tracking of costs and schedule. The PMO Cost/Schedule Manager provides general oversight for consistency throughout the contract. During task order execution, progress and performance is monitored using the management tools described above. The Program Manager holds formal reviews monthly with the Task Order Manager to review cost/schedule performance versus the established baselines. Corrective actions are developed as required to address any cost or schedule problems. This review meeting also is used to address any safety or quality concerns. Status of the task order is formally submitted to customer in regularly scheduled reports as required by the contract.

**Problem Identification/Resolution.** Problems that are identified during task order execution are brought to the immediate attention of the Program Manager and our customer contact. Problems resulting from differing site conditions are discussed with the Contracting Officer so that an appropriate modification to the task order can be executed to address the changed condition. Work that is not in accordance with the scope of the task order will not be performed without proper authorization from the customer.

**Management, Coordination, and Administration of Subcontractors.** Preference in selection of subcontractors from whom to solicit bids is given to firms with proven experience and qualifications to providing the customer with quality services. Once subcontractor firms are selected, they work under the direct supervision of the ADVENT Task Order Manager. The Task Order Manager may also designate appropriate ADVENT technical staff to assist in the oversight of subcontractor activities. For example, drilling and well installation firms will work under the oversight of an ADVENT geologist or hydrogeologist and analytical laboratories will coordinate with an ADVENT chemist or quality control specialist with a background in chemistry. These are a few examples of the types of technical oversight that may be provided for subcontractors. ADVENT is responsible for all subcontractor performance.

**Control Scope, Schedule, Budget, and Quality.** Regular status meetings and QC oversight of the subcontractor's performance ensure that the work proceeds as projected, within budget and on schedule.

**Minimize, Prevent, and Solve Disputes and Problems.** In administering the Subcontract Plan, the Task Order Manager monitors tasks of the subcontractors to avoid conflicts and problems. ADVENT approaches the issues of disputes in a professional and proactive manner. We limit the potential areas of dispute in the subcontract by clearly defining the SOW and performance requirements. ADVENT reviews progress daily, allowing the implementation of corrective actions as necessary before experiencing any adverse impact to the schedule.

**Integrate ADVENT and Subcontractors into a Total Team.** ADVENT incorporates subcontractors into the overall project organization for task orders by establishing a partnering relationship that promotes continuous communication and ensures responsive, timely, and cost-effective subcontract completion.

**Track Performance and Establish a Contingency Plan.** ADVENT Task Order Managers review progress daily on all task orders, which allows corrective actions to be implemented early. These reviews facilitate corrective actions, including substitution of subcontractors or use of ADVENT's resources to ensure on-time performance.

All subcontractors used are required to comply with provisions of ADVENT's corporate and program-specific Health and Safety and Quality Control programs. Additionally, subcontractors are managed with particular focus on the following:

**Flow Down Clauses.** Prior to utilizing a subcontractor, ADVENT executes a formal subcontract agreement that will include flow down provisions of ADVENT's prime contract. ADVENT also incorporates all customer contract site-specific QC and H&S requirements pertaining to a subcontractor's SOW.

**Task Order Work Plan Development and Review.** Plans submitted by ADVENT to the subcontractor are written to detail the proposed SOW of the overall task order, along with a master schedule showing milestones and deliverables. ADVENT requires our subcontractors to submit estimates of their own labor hours and cost as well as a work plan and schedule that will support the overall effort. Upon review and approval by the Task Order Manager and Program Manager, these estimates are integrated into the task order proposal and tracked as part of ADVENT's cost control system.

**Work Authorization.** ADVENT controls performance by issuing individual work orders under the master subcontract that include the specific elements of the task order SOW. When ADVENT receives notice to proceed, ADVENT's contracting personnel authorize our subcontractors to proceed as appropriate.

**Work Performance.** During performance of the work, the Task Order Manager discusses work progress and financial aspects of the work with subcontractors on at least a weekly basis. Our subcontractors are required to submit, on a monthly basis, an updated schedule showing progress to date and current forecasts for completion of work items and financial information, including accrued costs. Corrective actions, if necessary, are immediately brought to the attention of our subcontractors by the Task Order Manager, formulated and implemented.

**Quality Control.** Subcontractor deliverables and other work products are reviewed and checked using the same QC procedures as if the deliverable had been created internally. For work products with significant potential cost or other liability impact, the Task Order Manager may elect to have the ADVENT QA/QC Officer perform a full QC audit of the work at the subcontractor location to ensure that objective evidence exists of subcontractor compliance.

**Laboratory Subcontractor Management Program.** Laboratories represent a special case among competitively procured services because they can execute such a large portion of these types of contracts. ADVENT's strategy to ensure cost effectiveness while maintaining the highest possible quality is to enter into Basic Ordering Agreements (BOAs) with pre-selected laboratories who can demonstrate their ability to provide high quality data. These annually recompeted BOAs ensure our ability to share peak loading; obtain the best price; develop task order proposals rapidly; mobilize to the site quickly; provide our Task Order Managers with leverage to take corrective action, if needed; maintain consistency and comparability of data; and help distribute business among SB/SDB/WOSB entities.

ADVENT is aware of the importance of data quality to the confidence level in critical project decisions. Accordingly, ADVENT has implemented an extensive Subcontractor Laboratory Management Program on previous projects. The elements of this program

include: pre-certification and auditing of laboratories to their use; continuous and early involvement of qualified ADVENT chemists throughout the analytical process; and real-time validation of environmental data for compliance with project and customer requirements.

Involvement of a qualified chemist is essential to the successful development and implementation of project analytical tasks. Subcontractor laboratories are provided with detailed work scopes prior to project award. These scopes eliminate problems such as incorrect reporting limits or analytes, use of improper methods/procedures, insufficient Quality Control, and unplanned overloads by informing the laboratory of the specific requirements before the samples arrive. ADVENT maintains a cooperative relationship with the laboratories we use and we provide them the ability to contribute to the analytical design during the initial scoping phases. This early involvement allows laboratories to communicate their understanding of the QAPP and to provide any specific variance requests prior to project initiation. During project execution, ADVENT and laboratory personnel maintain contact on a daily basis and use specific forms to communicate sample receipt, agreed upon analyses, and turnaround time commitments.

The key to ADVENT's successful management of subcontractor laboratories is the performance of real-time validation of laboratory data and QA/QC results. ADVENT personnel receive and review preliminary results from subcontractor laboratories as they become available. If Quality Control deficiencies are identified, the laboratory is contacted and instructed to correct the problem or verify any assumed matrix-related failures by reanalysis. By reviewing and validating data before the final report and the electronic data deliverable are available, ADVENT is able to avoid costly rejections and data deficiencies before they occur. ADVENT has extensive experience in electronic data management. All subcontractor laboratories will be fully capable of producing electronic data deliverables.

ADVENT is committed to the development and application of technology to improve the efficiency of our laboratory subcontractor management program. We work with subcontractor laboratories to implement technology changes like the use of CD-ROM data deliverables to reduce paperwork and Internet technology to facilitate data access for review and verification. Technology applications are evaluated to ensure that they increase efficiency and cost-effectiveness without compromising data integrity or defensibility. ADVENT strives constantly to improve its processes through the use of technology and provide the best value to our clients.

### 3.0 Services

To develop a statement of capabilities applicable to potential work for which ADVENT may be considered, the remainder of this document has been organized to reflect examples of services provided to both public and private sector clients.

#### 3.1 Environmental Compliance

ADVENT provides assistance in the development and management of environmental compliance programs for active facilities as well as performing comprehensive multimedia compliance audits. ADVENT personnel are skilled in the review of facility operations and identification of regulatory programs that apply to those operations. ADVENT personnel often serve as extensions of corporate or facility staffs by providing assistance in preparation of compliance plans and in the routine management of compliance programs.

**United Distillers, Multiple Locations.** ADVENT developed a comprehensive compliance program for this company with six facilities located in four states. Compliance activities began with the development of a corporate environmental policy statement. Following multimedia compliance audits of the six facilities, ADVENT implemented a program to raise the level of environmental compliance at all facilities, including the development of a corporate hazardous waste policy, development and implementation of waste stream analyses plans, development of a RCRA hazardous waste training program including conducting on-site training, and development of document management and control plans. Air and water permits were reviewed and adjusted to reflect current conditions.

#### Air Pollution

**Southern States Phosphate & Fertilizer Company, Multiple Locations.** ADVENT provided assistance to acid and fertilizer production facilities. ADVENT was responsible for development and oversight of compliance programs and performance of compliance-related issues at the company's manufacturing operations in Savannah, Georgia and Wilmington, North Carolina. ADVENT personnel were responsible for overseeing the administration of the facilities' Title V permits, emissions monitoring, reporting and inspection. ADVENT also was responsible for performance of air emission inventories.

#### Solid Waste Handling and Disposal

**Outerloop Landfill, Louisville, KY.** ADVENT designed an optimization plan to prolong the use of an existing landfill through improved placement, containment, monitoring, and cover. The landfill is operated in a community with sensitivity to the facility and associated operational activities. This project involved the preparation and

implementation of an extensive hydrogeologic investigation work plan and monitoring plan including borings and sampling of the fill material and the installation of several monitoring wells. The results of these investigations indicated that potentially hazardous constituents were not released from the landfill and were not adversely impacting the local environment.

### **Hazardous Waste Handling and Disposal**

**Mozel, Inc., St. Louis, MO.** ADVENT was contracted to remediate a contaminated site and convert a portion of the remediated area to a concrete cap to be used as a parking lot. During project activities, a significant volume of contaminated soil was removed. Additionally, contamination had migrated to an area where old concrete had been landfilled on site and remnant tank foundations had to be removed from the subsurface. With pre-approval at disposal facilities throughout the county, and our ready network of transporters, ADVENT was able to demolish the concrete, remove debris and contaminated soil, and dispose of the waste materials promptly and cost-effectively. The concrete demolition debris was recycled and the contaminated soil was shipped off-site for hazardous waste disposal. This integrated effort facilitated project completion on schedule and within budget.

### **Emergency Planning & Community Right-to-Know**

**Indchem, Inc., Savannah, GA.** ADVENT was contracted to provide services related to compliance with SARA Title III and EPCRA. ADVENT was responsible for inventory tracking and establishing programs for identifying products subject to the reporting requirements. ADVENT also completed the Tier II and Toxic Chemical Release Inventory (Form R) reports.

### **Water Quality**

**Texfi Elastics, Burlington, NC.** A textile manufacturing facility was experiencing problems with meeting the discharge limits contained in its wastewater discharge permit issued by the local sewer authority. The combined facility discharge had been found to contain concentrations of total suspended solids and metals which exceeded the limits allowed in the facility's discharge permit. ADVENT was retained to evaluate the facility's permit and processes to help identify the potential sources of the elevated concentrations. Review of the materials used in this area revealed that one dyeing operation utilized a compound high in chromium, the metal that had been detected above the facility's discharge limits, and the used as finishing solutions would produce a waste stream which contained elevated levels of suspended solids. Due to the parameters involved in the exceedences and on the products used at the site, ADVENT's investigation focused on the finishing processes used at the facility. Suspected processes were evaluated for potential in producing wastewater which could result in the elevations detected in the plant's overall discharge. Composite samples were collected from the discharge of various operations and analyzed for the target

parameters. The volume of wastewater discharged by the processes were also estimated from operational records, standard operational settings and flow measurement/approximation methods. The mass of the parameters produced by the finishing operations could be calculated using concentrations found in the waste streams with the respective discharge volume. The results of the investigation confirmed that the finishing operations were a major source of the metal and TSS concentrations detected in the total plant discharge. ADVENT used the information gathered during the study to evaluate potential treatment alternatives and to develop a preliminary engineering design for treatment of the discharge from the finishing operations.

### **Establishing and Upgrading GIS Systems**

ADVENT has received training in GIS services and applications under the technology transfer component of our Air Force Mentor-Protégé contract with Shaw Environmental & Infrastructure. ADVENT personnel received training in the development and management of GIS systems as well as instruction on the use of ArcView for storing, accessing, and managing site information.

### **Database Management**

**The Torrington Company, Clinton, SC.** ADVENT was contracted to administer the facility's RCRA Part B permit. The permit required sampling of approximately 150 ground water monitoring wells on a quarterly basis. ADVENT developed and maintained a database for management of the data generated from the monitoring program. The database was used to display historical information, concentration trends and to conduct statistical analysis of the data to evaluate the effectiveness of the corrective action program at the site.

### **Lead-Based Paint Investigation/Abatement**

**Charleston Air Force Base, Charleston, SC.** ADVENT performed lead-based paint and asbestos surveys on four buildings at the Charleston Air Force Base in advance of building demolition. The assessment activities included use of XRF to conduct screening of surface coatings suspected to contain lead. Samples of suspected asbestos containing materials were submitted to a contract laboratory for analysis. The assessment reports included detailed descriptions of the assessment activities, presented the data generated from the assessment, maps of the building delineating the locations of the lead based paint and asbestos detected as well as estimates of volumes of material requiring removal and projected costs for abatement.

## Asbestos Surveys/Abatement

**Naval Facilities Engineering Command – South, Charleston, SC.** ADVENT was contracted to remove asbestos from 10 buildings at the Charleston Naval Complex in advance of building demolition. Materials removed included piping insulation, siding, ceiling tiles, floor tiles and mastic.

### 3.2 Environmental Restoration

ADVENT has completed many environmental projects that have included both site assessment and remediation. A key focus on site assessment work is to plan effectively when collecting data so that only the information corresponding to an identified data gap is collected and that this information is interpreted in real time for proper quality. ADVENT believes that our clients are not well served unless the minimum data necessary to resolve a particular question is collected. Superfluous data collection has a significant cost impact on projects. Our experience has shown us that close communication between our program manager, field crews, and the client increases the efficiency of site assessments and results in significantly lower costs.

ADVENT has extensive experience with innovative rapid assessment technologies such as direct push technology, temporary groundwater quality monitoring wells, soil vapor analysis, and on-site chemical analysis as well as many others. Our advanced experience with site assessments also has taught us that the interface between the remediation design team and the site assessment team is critical to the overall success of the remediation effort. When these groups interface well, the design team has immediate access to the correct information that minimizes repeat site assessment tasks.

ADVENT has participated in the planning design and implementation of a wide variety of site remediation technologies, to include monitored natural attenuation, in situ chemical oxidation, bioremediation, soil vapor extraction, groundwater removal and treatment, flow control barriers, solidification/fixation, and many others. ADVENT is experienced with risk-based corrective action and embraces these concepts on our projects. Because we have experience in many advanced technologies and no ties to any particular vendor or technology, ADVENT is continuously seeking the most cost- and performance-effective solution for a given site problem.

## Development of Site-Specific Plans

### **Department of Homeland Security - US Border Patrol Academy, Charleston, SC.**

ADVENT was awarded a contract for remediation of the existing earth backstop on Firing Range 3 located at the US Border Patrol Academy's training facility on the Charleston Naval Weapons Station in Goose Creek, SC. As part of ADVENT's standard operating procedures prior to initiation of field activities, ADVENT personnel developed a site specific work plan for performance of the remediation activities, management of the acquired information and presentation of findings. Field activities were performed in accordance with the procedures specified in the Quality Assurance Project Plan prepared for the site. ADVENT also developed a site specific Health and Safety Plan and Environmental Protection Plan for the site. Each plan was reviewed and approved by US Border Patrol Academy and Charleston Naval Weapons Station personnel for completeness.

## Sampling and Testing of Contaminated Media

ADVENT's projects routinely require either groundwater or soil sampling. Our experienced professionals have performed these operations thousands of times, and our field crews are well trained in these procedures. ADVENT has written work and test procedures that are required reading for project personnel. Each project requires the development of a project-specific sampling plan. Our procedures are also contained in our approved Comprehensive Quality Assurance Plan (COMPQAP) and include using the latest versions of SW-846, U.S. EPA Region IV's Environmental Standard Operating Procedures and Quality Assurance Manual (ESOPQAM), and other standard references.

ADVENT has installed thousands of groundwater monitoring wells of all types and materials. These have ranged from the simplicity of direct push temporary wells to multi-level sampling devices in complex aquifer systems. We are expert in designing the correct well screen and completion for a given problem. ADVENT has experience working with wells constructed of PVC, HDPE, Teflon (PTFE), and stainless steel in a variety of hydrogeologic regimes. Well completions have been installed on a variety of project sites ranging from operational transportation terminals to open fields and we have standard designs approved in our COMPQAP.

When a well has served its useful purpose, it is frequently abandoned. Well abandonment procedures include overcoring and pulling shallow wells as well as grouting deeper constructions in place. ADVENT personnel routinely interface with regulators to have these abandonment procedures approved in advance of construction.

**Prillaman Chemical Corporation, Suffolk, VA.** ADVENT served as the environmental consultant for the chemical distribution facility located in coastal Virginia.

Contamination at the site was discovered when ground water contaminated with elevated levels of VOCs was discovered entering a sewer line excavation adjacent to the site. ADVENT conducted screening activities involving soil gas surveys to identify the potential sources of the contamination. Soil sampling using hand augurs and direct push technology was conducted to define the extent of contamination in soil. Ground water samples were collected using conventional wells and temporary points installed using the DPT. Assessment activities also included surface water bodies (ditches, streams and ponds) located on the site and neighboring property. The contaminated ground water was found to be entering the surface water bodies, impacting both the surface water quality and the sediments. The corrective action program involved methods to both control the contaminant plume and segregate the plume from the surface water bodies. Extensive geotechnical testing was performed to ensure the proposed corrective measures would not damage the existing storage tank foundations.

### **Conducting Waste Site Investigations**

**M&M Chemical, Attalla, AL.** ADVENT was retained to investigate an Area of Concern at the permitted RCRA facility as part of the overall facility's RCRA Facility Investigation (RFI). ADVENT utilized a combination of soil gas screening and MTP technology for preliminary evaluation of the area and for identification of locations for collection of soil and ground water samples.

### **Human Health/Ecological Risk Assessments**

Risk assessment characterizes the adverse human health and environmental effects, which may potentially result from exposure to hazardous substances. ADVENT can provide any or all phases of a risk assessment depending on specific project requirements. The scope of a risk assessment is tailored to be responsive to site-specific requirements. ADVENT's risk assessment services include site characterization, hazard identification, exposure assessment, toxicity assessment, and risk characterization.

ADVENT is comprised of senior engineers and geologists with many years of experience in regulatory policy and strategic regulatory action. The project manager takes information developed by a risk assessor then weighs the health risk at a particular site in light of other social, political, and economic factors. The risk manager then decides what actions are necessary or appropriate at the site. The actions may range from continuing a "do nothing" alternative, to restrictions on land use, to complete treatment or removal. Risk management is the process of weighing policy alternatives and selecting the most appropriate regulatory action by integrating the results of risk assessment with engineering data in the context of social, economic, and political concerns to select an appropriate alternative. ADVENT senior personnel have experience with many regulatory options available under environmental laws such as RCRA, CERCLA, SARA, and TSCA. These experiences guide ADVENT risk

management personnel in making the best decision for our clients based on all the factors involved at the site.

### Site Remediation

**MozeI, Inc., St. Louis, Missouri.** ADVENT provided Title I planning and design services for a comprehensive remediation program at the facility. The corrective action program required design and permitting of a groundwater recovery and treatment system for removal of groundwater from both the surficial and secondary aquifers. The system required the ability for removal and segregation of DNAPL as well as treatment of the collected groundwater prior to discharge. SVE was also necessary for treatment of soil contamination. A cap was designed for construction over the contaminated soil to prevent exposure to site workers as well as to promote more efficient operation of the SVE system.

### Remediation of Contaminated Soils

**Apperson Chemical, Pompano Beach, Florida.** ADVENT designed the overall remediation system for the site. On-site system components included a groundwater recovery and treatment system for remediation of a VOC contaminant plume, an infiltration gallery for reinjection of treated groundwater, and an SVE system for treatment of VOC contaminated soils. Migration of the contaminants off site required design of three groundwater recovery wells, manifold piping, groundwater treatment system and a drainage field for discharge of treated groundwater. The on-site system achieved cleanup standards in soil in just over two years of operation. The on-site groundwater was successful in attaining clean up levels in approximately five years of operation.

### Demolition/Removal of Man-made Structures

**North Auxiliary Air Field, North, SC.** ADVENT was contracted by the Charleston Air Force Base to modify the existing wastewater recycling system at the North Auxiliary Air Field. The initial portion of the project required ADVENT to dismantle the system and demolish the existing building. The system consisted of a series of pressure vessels, tanks, pumps, interconnected piping and electrical control components. ADVENT dismantled the system in a manner allowing specific components to be recycled. The structure was demolished and removed from the site.

**UST Removal, Federal Express, Hollywood, Florida.** ADVENT was awarded a contract to remove and dispose of two 12,000-gallon USTs located adjacent to an airport runway. The tanks were previously closed and subsequently filled with concrete and left in place. The project involved the cutting and removal of the concrete cap, excavation, opening and removal of the concrete filler, and disposal of all related materials. Because of the adjacent runway, the replacement concrete and the

compaction density had to meet FAA Specification P-501, which required a 14-inch thick replacement slab that could meet or exceed a 700 psi flexural strength. The backfill material had to meet a minimum compaction density of 105. A total of 235 cubic yards were placed with stress cuts placed throughout the new slab. Hurricane conditions were encountered during project execution, requiring that all construction materials and equipment be staged to minimize the potential for missile hazards in preparation for a full-scale evacuation. The project was completed within schedule despite the deteriorating weather conditions.

### **Remediation of Contaminated Groundwater**

**Mid State Chemicals, Altoona, PA.** The facility experienced failure of a 6,000-gallon tank of ammonium hydroxide due to over pressurization of the tank. The resulting spill contaminated the ground water in the immediate area of the tank farm and threatened a creek immediately down gradient. ADVENT performed an expedited assessment of the spill and determined that ground water remediation would be required but the hydrogeological properties in the area were not conducive to traditional pump and treat methods. ADVENT designed and implemented an insitu aeration system immediately upgradient from the creek to serve as a treatment zone for the ground water. The enriched oxygen in the zone enhanced the degradation of ammonia as the plume moved through the area. The innovative solution was approved by PDEP officials and was successful in achieving the remediation objectives.

### **Topographic and Geophysical Surveys**

**The Torrington Company, Honea Path, SC.** As part of the comprehensive environmental assessment of the 425-acre facility, ADVENT conducted a topographic survey of the facility. The survey was needed for creation of an accurate base map of the site and in the planning / design of remediation programs for the site. The site is located in the Piedmont of South Carolina with significant vertical relief immediately adjacent to streams within and along the borders of the site. The topographic survey was also useful in helping to identify potential areas of ground water discharge to the streams. During the ground water assessment phase of the project, ADVENT conducted geophysical logging of the bedrock to identify fracture patterns which would serve to produce areas of preferential flow within the fractured rock. The data was used to strategically select the location of the ground water recovery wells.

## Hydrogeological Testing and Data Analysis

ADVENT works to improve and remedy hydrogeological conditions through our up-to-date knowledge of industry development as well as our understanding of the fate and transport of contaminants in soil and groundwater. ADVENT performs regional and site-specific research, as well as groundwater monitoring, well design and installation, and application of borehole geophysical surveys. To characterize the subsurface, ADVENT professionals utilize numerous methods including soil borings and testing, piezometer installation, and seismic ground penetration and radar investigations. We possess expertise in groundwater computer modeling and constituent mapping to predict contaminant transport. Additionally, groundwater flow models can be utilized to develop efficient groundwater recovery systems. ADVENT scientists are skilled in determining the movement, transformation, and ultimate disposition of chemical constituents in all environmental media.

### **Hydrogeologic and Contaminant Characterization at a Wood Preserving Facility.**

The fractured limestone bedrock aquifer at the facility had been shown to contain recoverable product and associated constituents in the vicinity of former hazardous waste lagoons. ADVENT was instrumental in the development of a corrective action program to identify and recover these constituents, and to assess the environmental impact of material that was released to the environment. The work plan included detailed sampling and analysis procedures, quality assurance/quality control, and data management for soil, sediment, surface water, and groundwater within a seven-mile radius of the facility. Additionally, the flow rates and connectivity within the aquifer have been confirmed through multiple dye and radio-tracer studies.

## Fate and Transport Modeling

Often it is important to be able to use scientific and engineering judgment to aid in interpretation of subsurface data. This is particularly true when it comes to evaluating the horizontal extent of contamination and how this may affect a particular potential receptor or environmental pathway. A second efficient use of numerical and analytical solutions to fate and transport model solutions is in predicting the future performance of remediation systems.

ADVENT has experience in using the state-of-the-art fate and transport model solutions. We are familiar with programs such as 1-, 2-, and 3-dimensional flow and transport models for groundwater problems, application of these same systems for soil vapor extraction simulations, biologic decay models, parameter estimation calibration models and many others. ADVENT professionals participate in continuing education programs offered by a variety of academic sources to stay current in this area.

Examples of some of the models and numerical simulations our personnel are trained to and routinely use on projects include:

Visual MODFLOW (3D Flow)  
MT3D99 (3D Transport)  
MODMOC (Method of Characteristics 3D Transport Model)  
HELP (Landfill Leachate Simulation)  
MoNA Tool Kit (Monitored Natural Attenuation Model)  
RBCA Tier I and II (Risk Based Corrective Action Simulations)  
Plume 1D, 2D, AND 3D (Simple Flow and Transport Simulations)  
Konikov-Breeehoft 2D Transport  
Aqtesolve (Aquifer Parameter Estimation)  
WIN PEST (Parameter Estimation and Calibration Tool)  
Visual Groundwater (Visual Plume Display using Decay and Flow)  
WHI UnSat Suite Plus (Unsaturated Zone Transport Model)

**George Mann, Inc., Providence, RI.** ADVENT conducted a comprehensive environmental site assessment of the chemical distribution facility. As part of the investigation ADVENT used MODFLO to develop a ground water flow model for the site. The model was instrumental in demonstrating to the regulatory agencies that the ground water at the site was stagnant due the presence of a sea wall and other below grade anomalies. The model was also used to demonstrate the effects of ground water recovery on the site and the draw down expected beneath site structures. The drawdown predicted by the model would have resulted in significant damage to tank and building foundations. Use of the model helped prevent damage to the site structures.

### **Waste Sampling/Treatment/Disposal**

**Southern States Phosphate & Fertilizer, Savannah, GA.** Over the years, 18 surplus transformers were placed in a storage location at the facility. ADVENT assisted plant personnel in accessing and sampling each transformer for the presences of PCBs. ADVENT personnel used standard sampling and documentation protocols for collection of the oil samples from each transformer. The transformers were removed from the facility for disposal based on the results of the sampling.

### **Containment Construction**

**Prillaman Chemical Corporation, Fayetteville, North Carolina.** ADVENT personnel were responsible for observation and documentation of installation of a comprehensive remediation system. The system included excavation and disposal of a hazardous waste stockpile (SWMU 7) and construction of a RCRA cap on the area. ADVENT was responsible for documenting the excavation, loading, transporting and manifesting of the waste materials, documentation of soil stabilization activities, verification of compaction test results, final grades of the fill material, installation and testing of components of the multi-layered cap, installation of drainage system to proper grades and documentation of the construction of the surface pavement. Other Title II services

included observation and documentation of the installation of the remaining components of the overall remediation system including a sheet pile wall and groundwater recovery wells for providing hydraulic control of the contaminated groundwater and installation of a groundwater treatment system and discharge piping.

### **Operations and Maintenance**

ADVENT understands that no matter how well the remediation system is designed and installed, long- term success of the overall corrective action program cannot be attained without the proper operation and maintenance of the remediation system components. ADVENT is experienced and highly qualified in providing LTO/LTM services for corrective action programs.

**Charleston AFB, Charleston, South Carolina.** ADVENT provided LTO/LTM services to the Charleston AFB through Shaw Environmental & Infrastructures AFCEE Worldwide RAC. ADVENT provided LTO/LTM services on SVE and groundwater recovery systems at the base as a subcontractor to Shaw.

**Ellis & Everard, Nationwide.** ADVENT provided LTO services at the following facilities as part of the overall corporate contract: Suffolk, Virginia; Fayetteville, North Carolina; Lyman, South Carolina; Pompano Beach, Florida; Altoona, Pennsylvania; Ludlow, Kentucky; and St. Louis, Missouri. ADVENT provided operation and maintenance services required for groundwater recovery and treatment systems at each of the sites. ADVENT was responsible for both scheduled and emergency maintenance as well as system reviews and system optimization. ADVENT conducted LTM services at all of the above sites and also facilities in Cincinnati, Ohio and Providence, Rhode Island. These services included the periodic collection of groundwater, surface water, and wastewater samples, data review and evaluation, and preparation of technical reports.

**The Torrington Company.** ADVENT provides LTM services for facilities located in Clinton and Honea Path, South Carolina, including collection and evaluation of monitoring data, groundwater modeling, evaluation of system performance, and reporting. ADVENT is also responsible for overall operation performance and is called on for identification and testing of methods and modifications for system enhancements and optimization. ADVENT recently identified a decrease in the effectiveness of the recovery system at the Honea Path facility. Investigation of system components identified a buildup of iron precipitant in the pipeline. Following on-site pilot testing, ADVENT recommended a means of acid washing the pipeline to restore the capture zone needed to contain the contaminant plume and prevent migration off site.

### **Laboratory Services**

Laboratories represent a special case among competitively procured services because they can execute such a large portion of these types of contracts. ADVENT's strategy

to ensure cost effectiveness while maintaining the highest possible quality is to enter into Basic Ordering Agreements (BOAs) with pre-selected laboratories who can demonstrate their ability to provide high quality data. These annually re-competed BOAs will ensure our ability to share peak loading; obtain the best price; develop task order proposals rapidly; mobilize to the site quickly; provide our Task Order Managers with leverage to take corrective action, if needed and maintain consistency and comparability of data.

### Report Preparation

**Link Belt, Inc., Lexington, KY.** ADVENT conducted remediation activities at the crane manufacturing facility in Lexington, KY. Remediation activities included insitu ground water treatment using chemical injection and construction capping of a landfill. ADVENT prepared the required Corrective Action Plan. Following completion of the remediation activities, ADVENT prepared a Closure Report detailing the activities performed.

### Range and Ordnance Explosives Services

The ADVENT Team provides professional explosive and reactive materials solutions for the U.S. Government, foreign governments, and commercial and private sector clients. Our UXO staff consists of UXO technicians from all branches of the service. These personnel are graduates of the Naval Explosive Ordnance Disposal School in Indian Head, MD. Our technicians have specialized training which enables them to safely detect, locate, identify, evaluate, excavate, and dispose of all weapons systems, both foreign and domestic. ADVENT's EOD personnel have performed numerous projects in the capacity of UXO supervisor and project manager roles. ADVENT maintains a geophysical staff to support its UXO activities. This staff has participated the ADVENT / Shaw E&I Air Force Mentor Protégé contract for Geophysics and Unexploded Ordnance Technology Transfer.

**Naval Weapons Station Charleston, Goose Creek, SC.** ADVENT has completed two separate geophysical surveys to aid in the assessment and remediation of four SWMUs containing or suspected to contain UXO at the Charleston Naval Weapons Station. These surveys included the use of EM-61 and 858 to determine the location of UXO and underground utilities. Activities also included UXO avoidance and removal during remediation of one of the SWMUs previously used for Open Burn / Open Detonation (OB/OD). Soil excavated by the prime contractor, EEG, was screened using a mechanical sifter. Material collected by the mechanical screen was examined by UXO Technicians prior to disposal. A significant amount of UXO including 4lb incendiary bombs and phosphorous flares were recovered during the remediation activities.

**US Border Patrol Academy, Charleston, SC.** ADVENT rehabilitated two small arms firing ranges operated by The US Border Patrol Academy (Ranges 3 &4). The ranges were constructed with earth berms for bullet containment and have been in use since

the Border Patrol initiated training activities at the facility in 1998. Over the five year period, these ranges received more than 5,000,000 rounds of ammunition each. As a result, the earth berms had become saturated with lead dust, bullets and bullet fragments. The repetitive impacts of bullets into the earth backstop had also created significant erosion resulting in slope failure. Soil and sediment from the berm were constantly collecting near the target actuators requiring increased maintenance issues.

The rehabilitation included development of a comprehensive Work Plan, site specific Health and Safety Plan, Environmental Protection Plan, and Quality Assurance Project Plan. These documents were reviewed and approved by both US Border Patrol Academy and Weapons Station environmental and safety personnel. ADVENT excavated the areas of high lead concentrations immediately behind each target in each firing lane. The soil was segregated into a separate pile, loaded into dump trailers and shipped to a lead recycling facility.

### 3.3 Pollution Prevention

#### Pollution Prevention Programs

**Southern States Phosphate & Fertilizer Company, Savannah, Georgia.** ADVENT prepared a HM Storage Vessel Management Plan for the facility. As a receiving terminal for sulfuric acid, the plan is required by the US Coast Guard for management of the systems used to off-load the material from ships docked in the Port of Savannah. ADVENT expanded the plan to also include inspections of storage tanks and interconnected piping and operation of the facility's spill detection and response programs. ADVENT is responsible for monthly inspection and calibration of the facility's spill detection system as specified in the plan. The integration of compliance and P2 program has been reviewed and accepted by both the US Coast Guard and the Georgia EPD.

#### Spill Prevention Control Programs

**Square D, Columbia, South Carolina.** ADVENT prepared a Spill Prevention Control and Countermeasures Plan for the facility in accordance with 40 CFR § 112. The plan included descriptions of both petroleum and hazardous material storage vessels and containers, identified the potential for releases from the units, provided procedures for responses to releases and provided for training of facility personnel in proper operating procedures to prevent releases.

#### Underground Storage Tank Programs

**UST Management, Federal Express, Southeast** ADVENT maintained a Master Services Agreement with Federal Express to evaluate the UST systems at city stations for compliance with federal, state and local regulations regarding spill / overflow prevention, secondary containment and leak detection. ADVENT performed these

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services at facilities in Alabama, Arkansas, Florida, Georgia, Oklahoma, North Carolina, Tennessee, and Virginia. ADVENT performed inspections of the installations, recommended modifications to bring the systems into compliance and implemented the recommended activities. ADVENT was responsible for all permitting and reporting associated with the management program for those installations.

### **Stormwater and Erosion Control Programs**

**The Torrington Company, Rutherfordton, North Carolina.** ADVENT prepared a Storm Water Pollution Prevention Plan (SWP3) for the facility in accordance with conditions of the North Carolina general permit for wastewater discharges associated with industrial activity. During preparation of the plan, ADVENT provided assistance to site personnel in evaluating the applicability of the no exposure exemption for the site.

**Federal Express Corporation, Georgia and North Carolina.** ADVENT developed Storm Water Pollution Prevention Plans (SWP3) and Best Management Practices for Federal Express in compliance with the Federal Clean Water Act. ADVENT prepared storm water management plans for two Federal Express sites located on airport property. The SWP3s included BMPs for facility operations such as material storage, spill prevention and response procedures, sediment and erosion control, vehicle fueling, vehicle maintenance, and vehicle washing.

### **Environmental Management Systems**

**National Association of Chemical Distributors, Washington, DC.** As a condition of membership in the National Association of Chemical Distributors (NACD) each member company was required to develop and implement an environmental management system referred to as the Responsible Distribution Program. ADVENT was retained by NACD to conduct Site Class Verifications (SCVs) of member companies to insure the management system was in place and operating in accordance with the RDP principals. During the course of the contract, ADVENT completed over 80 SCVs at active chemical distribution facilities nationwide.

## Waste Minimization

ADVENT is skilled at providing assistance to clients in the area of pollution prevention and waste minimization. Our experience in the implementation of compliance and pollution prevention programs was gained through experience with industrial clients. Industries traditionally focus on integrating activities so that the facilities benefit by providing emphasis on pollution prevention through the compliance programs enacted at each facility. ADVENT is also experienced in providing similar services to government clients. ADVENT is experienced in integrating compliance and P2 programs for a broad range of clients.

### 3.4 Environmental Conservation Services

**AirGate PCS, Multiple US locations.** Phase I, National Environmental Policy Act (NEPA); This multi-location project included limited ASTM Standard E 1527-00 and certification of NEPA compliance for new locations and co-locations of cellular antennae locations throughout the Southeastern US. Multiple site investigators were used at the same time to identify recognized environmental conditions. Extensive review of regulatory databases, aerial photographs, city directories and federal lists were made for each site.