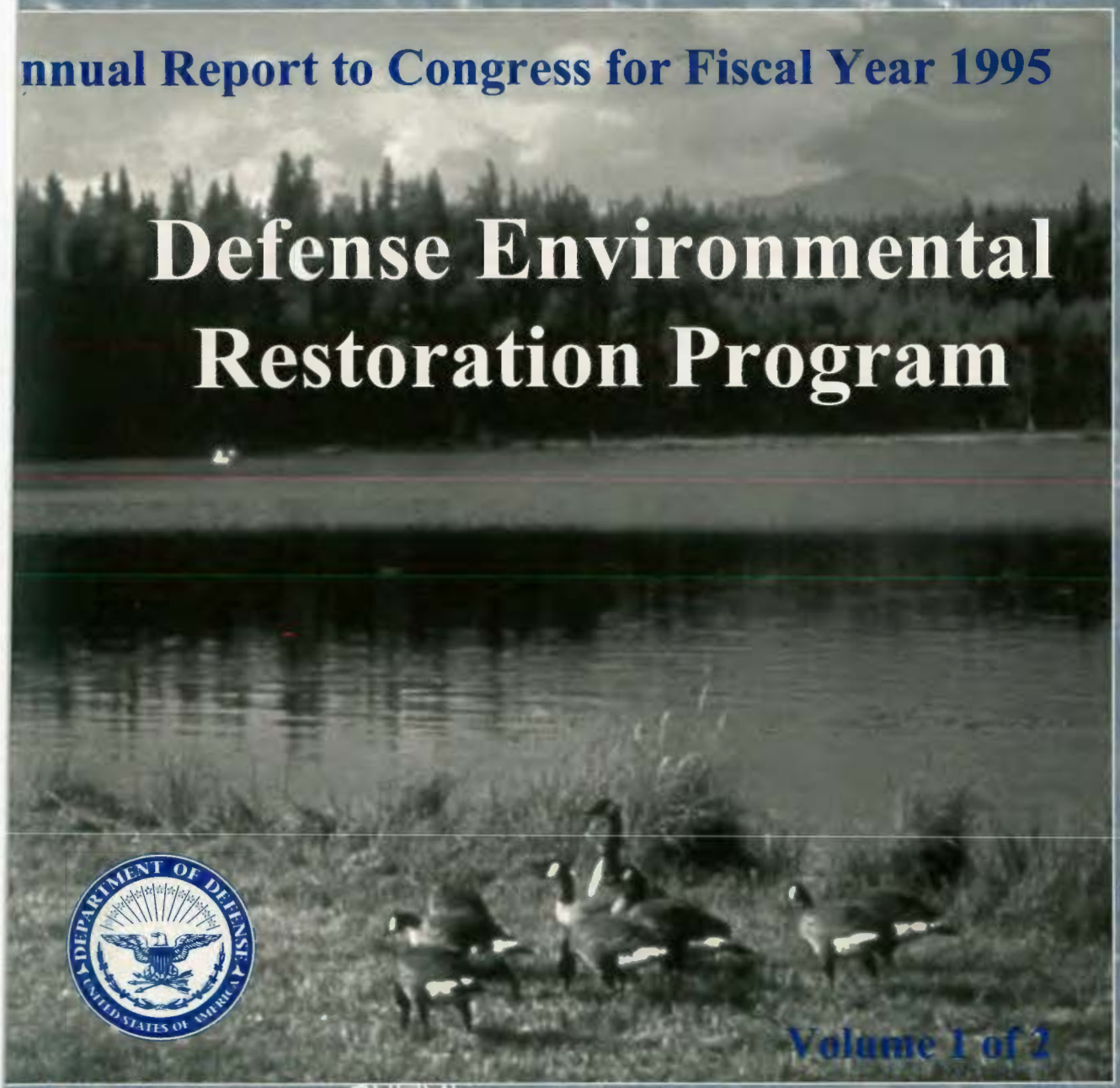
nnual Report to Congress for Fiscal Year 1995

Defense Environmental Restoration Program



Volume 1 of 2

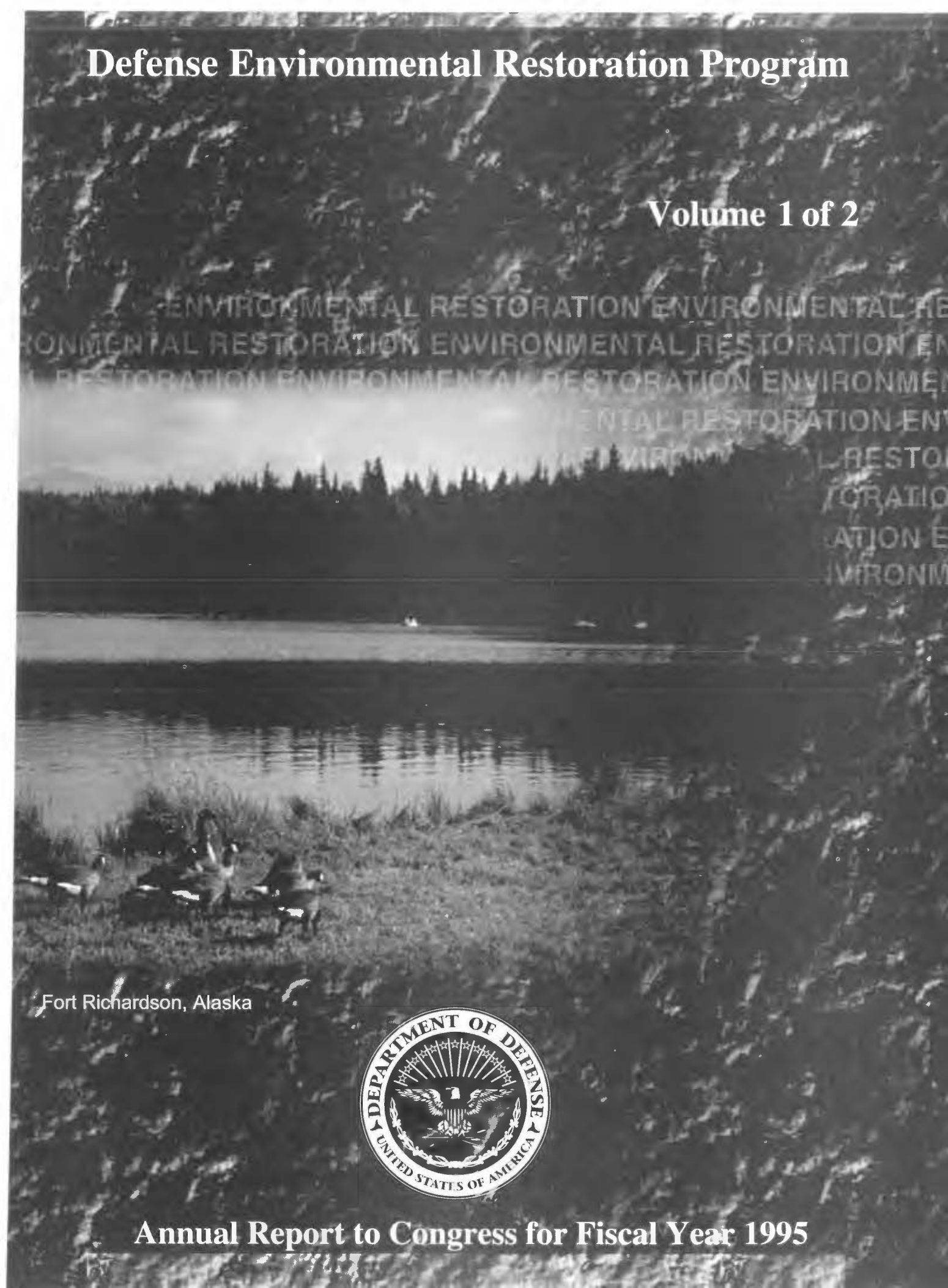
Fort Richardson, Alaska

ENTAL RESTORATION PROG

DEFENSE ENVIRONMENTAL RESTORATION PROGRAM

Defense Environmental Restoration Program

Volume 1 of 2



Fort Richardson, Alaska

DEPARTMENT OF DEFENSE
UNITED STATES OF AMERICA

Annual Report to Congress for Fiscal Year 1995

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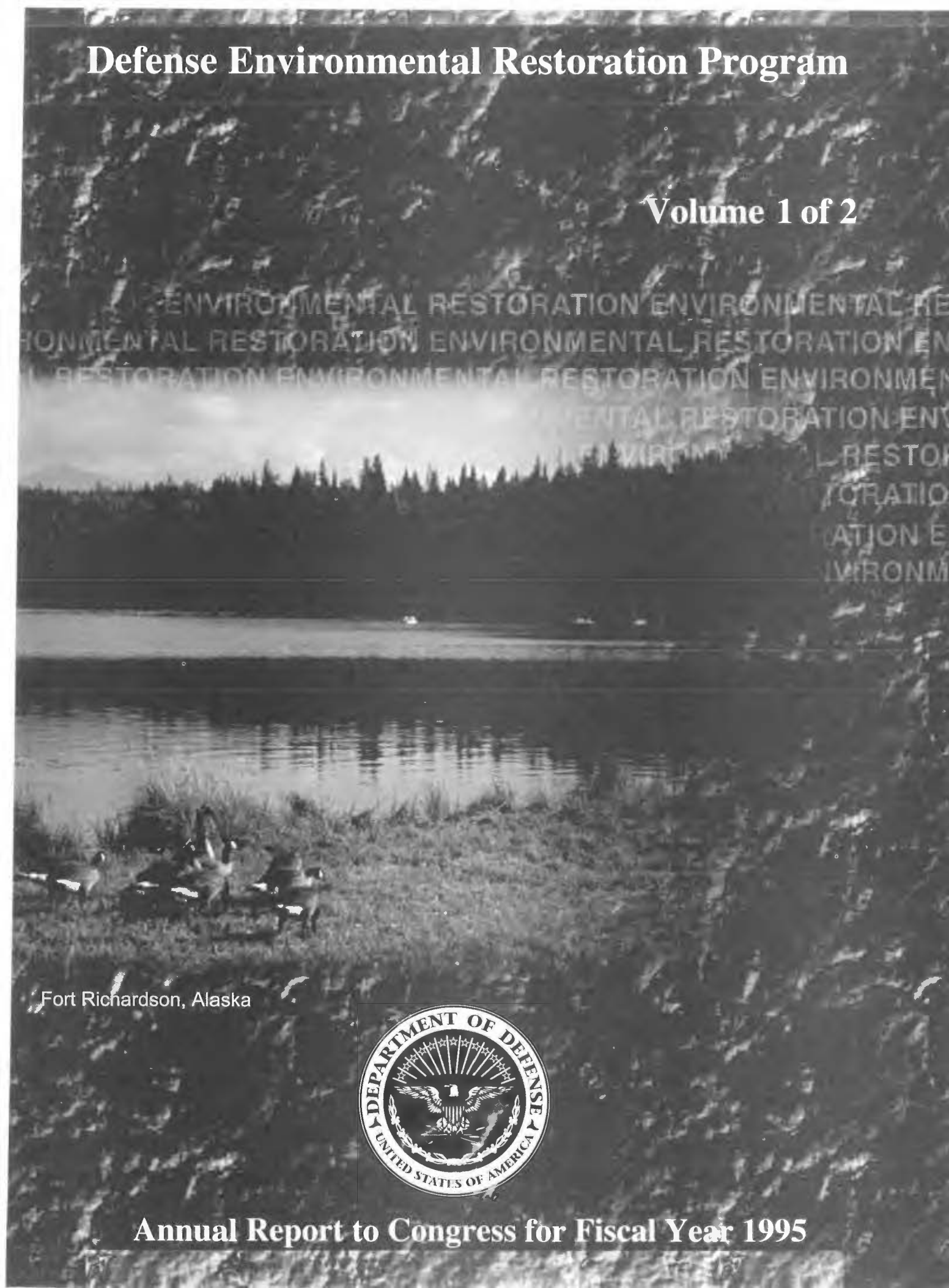
Defense Environmental Restoration Program

Volume 1 of 2



Fort Richardson, Alaska

Annual Report to Congress for Fiscal Year 1995

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Acknowledgments

The Office of the Deputy Under Secretary of Defense for Environmental Security (ODUSD(ES)) would like to thank the many individuals whose dedicated efforts made this report possible. The preparation of this report involved every Component of the Department of Defense. Many individuals across the nation offered their time, support, and expertise to make this report a success.

In particular, ODUSD(ES) would especially like to thank the members of four working groups: Volume 1 Public Affairs, Volume 2, Small Business, and Restoration Advisory Board (RAB). The Public Affairs Working Group members include: Mike Cast and Martha Rudd, Army; Ann Davlin, ODUSD(ES)/Outreach; Dr. Ramesh Desai, DLA; M.J. Jadick, AFBCA; Elaine McNeil, Navy; Marilyn Null and Gerda Parr, Air Force; Marianna Potacka, Marine Corps; Scott Saunders and Candice Walters, U.S. Army Corps of Engineers; and Lt. Col. Mike Wood, Office of the Assistant to the Secretary of Defense (Public Affairs). The Volume 2 Working Group members include: Julian Chu, FUDS; Jerry Cleaver, AFBCA; Dr. Ramesh Desai and Mike Sullivan, DLA; Harry Dutcher, Dominque Edwards, and Jim Jenkins, Army; Michael Toland, Air Force; and Cindy Turlington, Navy. The Small Business Working Group members include: Dale McNabb, Air Force; George Schultz, OSD Small and Disadvantaged Business Utilization Office; Diane Sisson, U.S. Army Corps of Engineers; and Linda Wright, Navy. The RAB Working Group members include: Phyllis Breland, OSD Base Closure Transition Office; Kelly Dreyer, Marine Corps; Sven-Erik Kaiser, U.S. EPA; Greg Mahall, Bob Schroeder, and Rob Snyder, Army; Karen Moran, DLA; Marilyn Null and Allen Waite, Air Force; Scott Palmer, and Cindy Turlington, Navy; and Robin Stein, National Guard Bureau.

ODUSD(ES) would also like to thank its contractor, PRC Environmental Management, Inc., for its support in the development of this document.

President William J. Clinton

"In our own lives, in our own ways, each of us has something to offer to the work of cleaning up America's environment. And each of us surely has something very personal to gain."

William J. Perry, Secretary of Defense

"Protecting and restoring the lands, skies, and waters that our Armed Forces use is an important part of the overall defense mission. It is not our duty merely to be good stewards of the environment; we owe our forces, families, and communities an environment that is free from hazards and degradation. That is what environmental security is all about."

Foreword

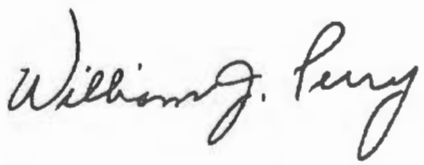
The Department of Defense (DoD) is pleased to provide Congress with this report on the progress and accomplishments of the Defense Environmental Restoration Program for fiscal year (FY) 1995.

The Defense Environmental Restoration Program is critical to America's overall defense mission. For starters, sites at more than 700 military installations in the United States and U.S. territories are contaminated with fuel oils, chemicals, and other industrial pollutants. Until they are cleaned up, these sites can impact the way we use the land on our installations. Further, property at installations that are slated for closure cannot be turned over to local communities for economic redevelopment until their sites have been restored. But more than needing to clean up these properties, we need to protect our troops, their families, and local communities from pollutants. Moreover, as the third largest federal landowner, DoD has a significant responsibility to protect the land, air, and water that the nation has entrusted to our care. Finally, DoD must comply with cleanup laws—we are not exempt from state or federal environmental statutes and regulations.

1995 will be remembered as a year of accomplishment for the Defense Environmental Restoration Program. In addition to making significant daily progress in restoring contaminated sites and finding better, more efficient ways to accomplish cleanups, we have celebrated some breakthroughs. For example, Fast-Track cleanup at the Sacramento Army Depot in California paved the way to a new life for that installation. On March 3, 1995—the day the installation closed—370 acres of the installation's property were leased to Packard Bell. As a result, 5,000 jobs were created, and by 1998, Packard Bell estimates that as many as 10,000 people will be employed at the facility.

1995 will also be remembered as a time of fiscal constraint on the restoration program. In light of severe budget reductions by Congress, the challenge has been to do more with less. We are working to prevent disruptions caused by unstable funding levels—a factor that only undermines the overall restoration effort. For example, installation commanders across the nation are reevaluating cleanup agreements and schedules that had been made in good faith between DoD and regulatory agencies. To prevent disruptions and slowdowns and to ensure progress and efficiency, the Defense Science Board Task Force on Environmental Security has recommended stable funding levels for the restoration program. Recent statements by members of Congress have echoed that recommendation.

This report demonstrates how DoD is meeting cleanup challenges and responsibilities and describes some of the innovative ways we are doing so more efficiently. In an effort to help Congress and the public better understand the complexities of the restoration program, we have divided the report into two volumes. Volume 1 includes programmatic information, while Volume 2 is comprised of the data and tables traditionally included in recent annual reports to Congress.



William J. Perry
Secretary of Defense

Table of Contents

Introduction

Introduction

DoD has an important obligation to assess and restore property affected by past mission operations.

As stewards of nearly 25 million acres of land in the United States, and with daily operations and activities that affect the quality of the nation's air, water, soil, and cultural treasures, the Department of Defense (DoD) takes seriously its responsibility to protect the environment and use natural resources wisely. DoD's extensive environmental efforts and initiatives reflect the Department-wide commitment to cleaning up sites contaminated by past operations.

Because DoD's ultimate mission is to protect the nation, protecting natural resources and preserving public health must be an intrinsic and vital part of every DoD effort. DoD's stewardship approach has evolved in recent years, and the goals of the environmental restoration program have been clarified to ensure the best use of precious resources and the greatest possible protection of human health and the environment. "*Protection of human health and the environment*"—the phrase is used repeatedly, but its basic premise is often obscured by the myriad of laws, regulations, policies, agreements, orders, and other "drivers" of the environmental restoration program. When all stakeholders focus their efforts on this basic premise of the governing statutes, the goals of the environmental restoration program can be accomplished cooperatively, with the team effort typically resulting in faster, less costly cleanup.

In this most recent era of downsizing in both the private sector and in other government agencies, DoD has also had to find a way to do more with less. In fiscal year 1995 (FY95) alone, the President's budget request for the Defense Environmental Restoration Account (DERA) was reduced by $700 million. These funding reductions have had a destabilizing effect on the program. Efficiency and

The Defense Environmental Restoration Program (DERP), funded by a central DoD account (DERA), provides for cleanup at operating installations and formerly used defense sites. The Base Realignment and Closure (BRAC) environmental restoration program, funded by the base closure accounts, covers cleanup at closing installations.

All stakeholders must focus their efforts to work together to protect human health and the environment.

cost-effectiveness have always been priorities for DoD; however, reduced funding in recent years has presented an even greater challenge to DoD.

This volume of the *DERP Annual Report to Congress for FY95* provides narrative examples of how DoD is getting the job done and institutionalizing the restoration program within the framework of the planning, programming, and budgeting system process. This volume also describes how DoD is insuring a good return on investment and maintaining the momentum that has been gained over the years with initiatives begun in previous years. A supplement to this report fulfills the Restoration Advisory Board reporting requirement in the National Defense Authorization Act for FY95.

Strengthening the Program

Whidbey Island Naval Air Station

Strengthening the Program

In FY95, DoD took a major step in its program by examining its ability to meet obligations in view of increasing constraints on funding and other resources. The Department conducted a self-assessment of the program, from management practices at the top levels to execution in the field, to provide a framework for improving efficiency and maximizing return on investment. The self-evaluation process assessed the management structure and processes that guide environmental restoration planning, programming, and budgeting efforts. The Under Secretary of Defense for Acquisition and Technology led a study of the feasibility and desirability of "devolving" DERA to the Military Departments. A steering committee was organized to perform the analysis and provide recommendations on devolvement and related program considerations. Based on careful review and analysis, on May 3, 1995, the Deputy Secretary of Defense decided to devolve the account.

Devolvement is the separation of the single Defense Environmental Restoration Account into accounts for each Military Department and a Defense-wide account.

In analyzing the alternatives for restructuring the restoration program, the Department considered many historical and current issues. During the analysis, DoD reemphasized its commitment to environmental restoration, its basic tenet of reducing risk to human health and the environment, the need to effectively measure the program's performance, and the lessons learned throughout the life of the program.

DoD's Commitment to Environmental Restoration—DoD considers environmental restoration an integral part of its daily mission activities. DoD and the nation must continue to invest in environmental security to ensure the most effective use of vital defense resources and to ensure the quality of life for military and civilian personnel and their families working and living on or near defense installations, as well as local communities.

DoD's Perspective on Legal Requirements—During the self-evaluation, DoD considered the role of legal requirements. To date, legal requirements have served as the basis for most poli-

cies and decisions that affect the priorities and funding of the program. DoD recognizes that the environmental standards dictated by legal drivers and the methods to achieve these standards are often left to interpretation by the various parties involved in the restoration process. Differences in opinion between the regulatory agencies and responsible parties on the most effective ways to meet environmental standards or goals inevitably affect schedules and accurate estimates of overall cleanup costs.

DoD acknowledges its obligation to comply with agreements and satisfy other legal requirements, but it also recognizes that agreements do not always ensure maximum protection of human health and the environment. In setting forth terms and conditions, procedures to follow, and schedules to meet, typical agreements do not specifically distinguish between or even address the relative risk of the sites governed by the agreement.

Because legal requirements are dynamic and difficult to quantify, a more stable and quantifiable basis is needed to justify requirements and prioritize funding. DoD's relative risk site evaluation approach, introduced in the FY94 Annual Report to Congress, provides this common sense framework for planning, programming, and budgeting requirements.

Program Goals and Performance Measures—Effective planning, budgeting, and oversight must be accompanied by clear, specific, and measurable goals. In the restoration program, indicators of performance and progress must be linked to these goals to form a foundation for developing the necessary management and oversight components of the program, which include planning for the future and budget justification. Two overriding goals of the program—protecting human health and the environment and making property available for transfer at BRAC installations—must be quantified in terms of costs and progress expectations. DoD has established new program goals based on these principles and the relative risk site evaluation framework.

The Importance of Lessons Learned—The strategies and initiatives that have been implemented in the past several years—accelerating cleanup, building

DoD has made a commitment to learning and applying lessons, finding the right tools, and working with its regulatory partners to develop a consistent, cohesive, and stable program.

Strengthening the Program

DoD's program review identified the need to augment legal drivers with the relative risk site evaluation approach; establish specific and measurable goals and performance measures; and apply lessons learned.

partnerships, involving the community and the public, and promoting technology—have been drawn from the experience of DoD's program and installation managers over the past decade. The relative risk site evaluation framework, the restructured goals of the program and new Measures of Merit, and the devolvement initiative are all the result of lessons learned, and all are intended to maintain the momentum that the program has gained over the past several years.

New Program Strategy

The results of the self-assessment clearly indicated the need for a new strategy and approach to meeting environmental cleanup obligations. The strategy, as well as the underlying rationale for each element of the strategy, are discussed below.

Devolving the Program—The decision to devolve the environmental restoration account from the Office of the Secretary of Defense (OSD) to the Military Departments resulted from (1) senior management's growing recognition of the program's size and complexity and (2) the evolving nature of DoD's relationship with the regulatory community. Since DERA was established in 1984, OSD has centrally budgeted for all environmental restoration activities. Based on proposed legislation, and as part of the devolvement process, beginning in FY97, the Army, Navy, and Air Force will each have individual environmental restoration accounts. The Formerly Used Defense Sites (FUDS) Program, the Defense Logistics Agency (DLA), the Defense Nuclear Agency (DNA), and the Office of the Deputy Under Secretary of Defense (Environmental Security) will continue to be included in the central OSD budgeting process and the department-wide environmental restoration account.

The devolvement of DERA into multiple accounts signifies an internal change in DoD's planning, programming, and budgeting processes. The allocation of cleanup funds within the Military Departments will be part of the standard budget process established for all military requirements.

With devolvement, the roles of the individual Military Departments and Defense Agencies (together comprising the DoD Components) and OSD in the actual execution of the program remain the same. The DoD Components are responsible for the execution of the restoration program at their respective installations, while OSD retains an oversight role, issuing policy and guidance and evaluating the performance of each Component's program.

The goals set reflect fiscal realities and are consistent with DoD's overall priorities.

The principal benefit to result from devolvement is increased efficiency, consistency, and accountability. Devolvement will require that environmental restoration requirements be considered with other mission requirements during the planning, programming, and budgeting cycle. This process will subject the program to the scrutiny of the Military Department's financial managers as part of their internal planning, programming, and budgeting process, and it will contrib-

ute to the overall consistency and accountability of the program.

Establishing New Program Goals—DoD established new planning guidance for FY97 through FY01 outlining goals for both DERA and Base Realignment and Closure (BRAC) restoration efforts. These goals are based on reducing relative risk at sites from one category—high, medium, or low relative risk—to a lower category, or having a remedial system in place.

The goals were developed by program and financial managers to ensure that they would reflect fiscal realities and be consistent with DoD's overall priorities. The goals have become a valuable tool for the program, and will be used to guide investment strategies.

Evaluating Relative Risk—The relative risk site evaluation framework is directly linked to the environmental restoration goals. Reduced funding levels require that DoD direct its limited resources to sites that pose the greatest threat to human health and the environment.

This relative risk methodology assigns each potentially contaminated site to a high, medium, or low relative risk category. The framework addresses the following characteristics at each site: (1) specific contaminants present; (2) the significance of the contamination; (3) contaminant migration pathways that determine how contaminants may be carried away from the site; and (4) human and ecological receptors located near the site.

This consistent risk-based approach to categorizing sites allows DoD to communicate and establish priorities for completing restoration work. By using the relative risk site evaluation framework, DoD can work with regulatory agencies and community stakeholders to reach consensus on work priorities.

While focusing on relative risk to prioritize its efforts, DoD must also continue to consider the statutory and regulatory status of a particular installation or site. A legal agreement should not be the sole indicator for allocating future funds, and neither should the site's classification as high, medium, or low relative risk. An appropriate balance between the timely and efficient reduction of risk and adherence to the letter of legal agreements is a major challenge to DoD as well as other stakeholders involved in the program.

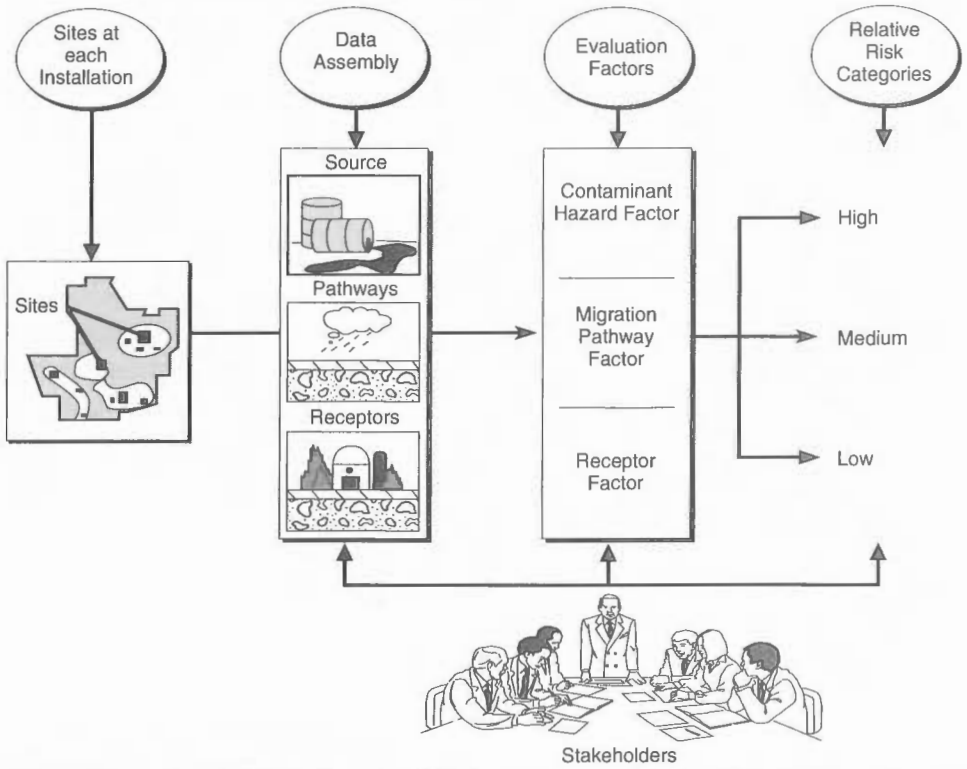
As part of its overall risk-based management approach, DoD also considers stakeholders' concerns, program execution strategies, and economic factors. Although challenges remain, DoD's risk-based strategy is proving to be vital to managing the restoration program in the most responsible, efficient, and effective manner.

Involving regulatory agencies and the public in DoD decisions throughout the cleanup process will ultimately be the key to the successful implementation of the relative risk site evaluation framework. For that reason, the framework has been presented to a wide audience of interested and affected parties, including members of the Federal

The relative risk site evaluation framework assigns sites to a high, medium, or low relative risk category.

STRENGTHENING THE PROGRAM

Relative Risk Site Evaluation Concept Summary



Relative risk provides a basis for establishing meaningful, measurable goals.

Facilities Environmental Restoration Dialogue Committee, Congressional staff, Federal and state regulatory agency officials, environmental interest groups, public health officials, restoration contractors, and remedial project managers.

In addition to providing a tool for sequencing work, the relative risk methodology also provides a basis for establishing meaningful, measurable goals and performance measures. The status of a site in a particular phase of cleanup or the determination process (such as a "response complete" determination) is no longer the only measure of performance. Now progress is also indicated by a relative risk change from high to medium relative risk, or medium to low relative risk. As regulatory agency and stakeholder acceptance of this methodology becomes more widespread, DoD can truly focus its efforts and resources on sites that require the most attention—a transition that moves DoD one step closer to achieving its goal of protecting human health and the environment.

Measuring Performance

DoD has developed Measures of Merit to measure progress towards goals. Measuring performance is not limited to simply linking progress to total dollars spent and the number of sites cleaned up by the end of a given fiscal year. That type of statistic does not fully reflect progress made in the cleanup program, nor does it illustrate the true benefits that result when risk is reduced. Newly-developed measures provide the crucial feedback needed to develop and adjust program requirements and budget projections, as well as determine whether established goals reflect fiscal reality.

Three separate categories of Measures of Merit have been developed to assess site remediation progress from one discrete time period to the next, generally at the end of each fiscal year:

- *Relative Risk Reduction.* This measurement applies only to DERA and BRAC sites that are ranked using the relative risk site evaluation framework. DoD classifies sites as having a high, medium, or low relative risk; response complete; or no further action required.
- *Progress at sites.* Gauging the progress of restoration efforts is still a critical measure that requires status reports on particular phases of investigation, design, cleanup, or response complete determinations at specific sites. This Measure of Merit will be applied to sites funded by both the DERA and BRAC accounts, to provide an accurate overview of the progress at each site.
- *Milestones Accomplished.* This Measure of Merit tracks the number of sites where cleanup action has been taken and relative risk has been reduced in one or more media. This measure of merit will be applied to sites funded by both the DERA and BRAC accounts to provide another view of the progress in the restoration program.

As a measurement tool, these new Measures of Merit will allow DoD to more accurately measure and report progress toward cleanup goals as well as fundamental efforts to protect human health and the environment.

Measures of Merit represent a breakthrough initiative that will greatly enhance DoD's ability to monitor the performance and progress of the restoration program. DoD is currently applying Measures of Merit throughout its environmental programs, with high expectations that they will serve as a model to improve performance measurement and increase efficiency for other programs throughout the Federal government.

Measures of Merit represent a breakthrough initiative that will greatly enhance DoD's ability to monitor performance and progress in its restoration program.

DoD 's environmental restoration program is a technically and statutorily complex undertaking that has evolved during its history to the mature and effective program of today.

Strengthening the Program

DoD's environmental requirements are still rising, and will continue to do so through the 1990s. DoD is shifting from measurement and analysis to far more expensive cleanup efforts.

Excerpted from the *Report of the Defense Science Board Task Force on Environmental Security*, April 1995

Commitment to the Program

DoD believes that it can improve the restoration program's efficiency and stability through devolvement, its new goals, and its new progress and performance measures. With these initiatives in place, budget and program execution decisions can more fully focus on reducing risk and protecting human health and the environment. However, DoD's success in its devolvement efforts and in achieving the goals of the program require a stable funding mechanism. Funding stability from year to year will ensure an efficient and effective return on previous as well as future investments in DoD's environmental restoration program.

Maintaining the Momentum

DoD is proud of the progress that has been made in pursuit of its cleanup goals. Restoration has become increasingly efficient and cost-effective as the environmental restoration program and its strategic initiatives have developed and matured. The restoration program continues to meet its goals through initiatives that strengthen the working relationships among installations, regulatory agencies, and communities. These initiatives also create an environment of innovation built of good science and public trust. The program's ability to foster trust and good working relationships will become increasingly important as DoD's cleanup program is devolved and as regulatory drivers are augmented by risk-based decisions in an approach that will allow greater flexibility and innovation while protecting human health and the environment.

DoD's commitment to accelerating cleanup and restoring property for reuse is evident in the progress made to date as well as in the momentum gained throughout the environmental restoration program. The current stability and momentum of the program must be maintained so that past investments can provide return. DoD must continue to respond to regulatory commitments and to community concerns so that working relationships vital to the success of the environmental restoration program are maintained.

The stories in this report discuss cleanup achievements at various installations and clearly show how partnerships, community involvement, environmental technology, and cleanup initiatives are working in concert to accelerate schedules, reduce costs, and protect human health and the environment. The themes of the stories—gaining efficiency through such common sense practices as Fast-Track Cleanup, improving communication and partnering with regulatory agencies and the community, and meeting cleanup goals through sound application of technologies—all emerge as central to installation accomplishments and the continued success of DoD's restoration program.

The current stability and momentum of the program must be maintained to foster trust and good working relationships among installations, regulatory agencies, and communities.

Secretary of Defense Perry Presents First Environmental Cleanup Award

The Whidbey Island team is featured with William J. Perry, Secretary of Defense; Sherri W. Goodman, Deputy Under Secretary of Defense (Environmental Security); and John Dalton, Secretary of the Navy.

Whidbey Island Naval Air Station in Washington achieved a first within DoD. As a result of its efforts in accelerating cleanup, promoting partnerships, using innovative technologies, and involving the community, Whidbey Island was awarded the first Secretary of Defense Environmental Cleanup Installation Award.

Since 1962, DoD has presented the Natural Resources Conservation Award to individuals and installations who have successfully managed and protected living and natural resources on DoD lands. Over time, the award presentations have been expanded to include categories in environmental quality, pollution prevention, and recycling. The April 1995 awards ceremony included, for the first time ever, an award for environmental cleanup efforts.

Whidbey Island won the award for developing a model multidisciplinary approach for environmental restoration at the installation. Accomplishments at Whidbey Island include creating a wetland habitat out of a former National Priorities List (NPL) site, streamlining the Hazardous Waste Evaluation Study protocol, and using innovative methods to save time and money on meeting environmental reporting requirements.

Whidbey Island developed a *Reader's Guide to Remedial Investigation/Feasibility Study (RI/FS)* reports as well as ancillary documents. The guide presents an expanded executive summary that provides a technical synopsis of the RI/FS report in nontechnical terms, including figures and data tables. The guide was produced to help to explain technical reports to the community. The guide was also presented to the Restoration Advisory Board, where it was well received.

The efforts at Whidbey Island have accelerated cleanup; in September 1995, the Seaplane Base site became the Navy's first site to be removed from the NPL. Community involvement in this process reduced communication barriers and resulted in an immense savings in environmental restoration costs.

The continued success of community involvement and environmental cleanup at Whidbey Island makes it a model for environmental restoration at other installations.

Whidbey Island Naval Air Station received the first environmental cleanup award for its multidisciplinary approach, ability to streamline the site evaluation process, and use of innovative methods.

"I consider it a great honor to present the annual DoD environmental awards. It is no surprise to me how the Armed Forces have emerged as national leaders in protecting and preserving the lands, airways, and waters we use to train and operate. I am proud of the men, women, and installations recognized here today."

William J. Perry

Secretary of Defense

Opening remarks at the 1995 DoD Environmental Security Awards

Fast-Track Cleanup Moves Ahead

Loring Air Force Base

Tustin/El Toro Marine Corps Air Stations

Joliet Army Ammunition Plant

Bergstrom Air Force Base

Fast-Track Cleanup Moves Ahead

"Environmental experts from EPA, DoD, and the state will work together, and a professional cleanup team will be stationed at every site."

President Clinton
July 1993

The Fast-Track Cleanup Program continues to improve the way DoD is cleaning up its base realignment and closure (BRAC) installations. President Clinton introduced the program in July 1993 as part of his Community Reinvestment Program aimed at speeding the economic recovery of communities affected by BRAC actions. Fast-Track Cleanup outlines an approach for accelerating environmental cleanup and transferring property to communities at closing bases, while ensuring that human health and the environment are protected.

DoD published highlights of its continuous self-evaluation efforts in a report entitled *Fast-Track Cleanup, Successes and Challenges, 1993-1995.* Some of those accomplishments are excerpted here, followed by examples of how Fast-Track Cleanup is working in the field.

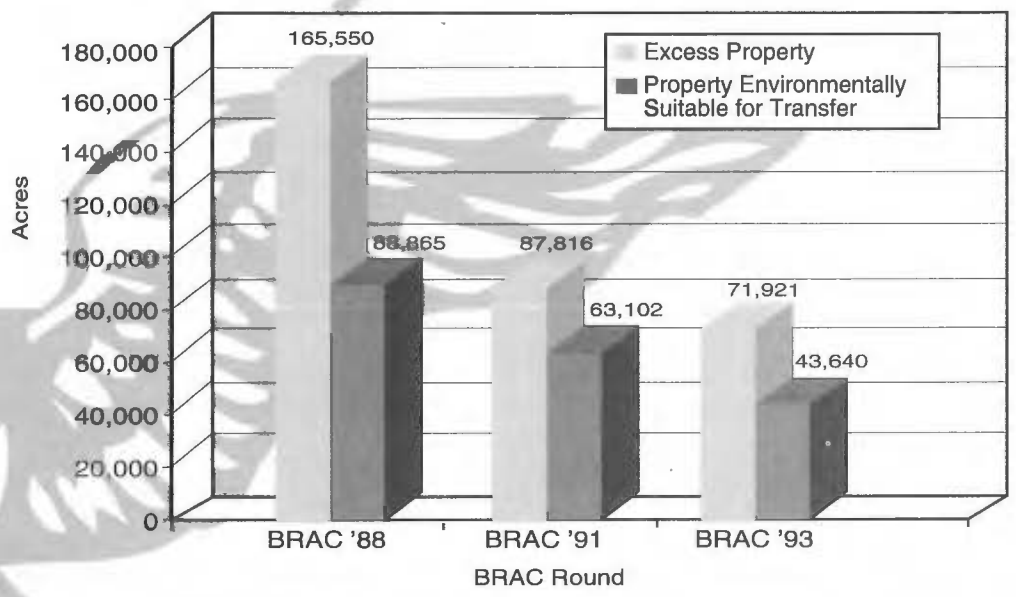
State and territory laws and regulations are identified early on in the cleanup process, and regulatory personnel are intimately involved in the early phases of the restoration.

Teamwork

DoD, with support from the U.S. Environmental Protection Agency (EPA) and state regulatory agencies, has established BRAC Cleanup Teams at installations included in the 1988, 1991, 1993, and 1995 rounds of BRAC. BRAC Cleanup Teams consisting of DoD, EPA, and state environmental agency representatives are challenged to find ways to expedite cleanup actions needed to prepare real property for transfer and reuse. BRAC Cleanup Teams take a common-sense approach to environmental cleanup by developing common goals, making decisions, and setting priorities based on the identified goals.

Partnership

The partnerships DoD has formed through Fast-Track Cleanup efforts are proving to be one of the most effective means of completing the many tasks involved in cleanup. Partnerships among representatives of DoD, EPA, state regulatory agencies, municipalities, redevelopment authorities, and installations help to determine common objectives and resolve differences.



Overriding Principles of Fast-Track Cleanup

- **Protect human health and the environment**
- **Make property available for reuse and transfer**
- **Provide for effective community involvement**

Reuse

In his Community Reinvestment Program, the President emphasized early community redevelopment of "excess property"—that is, property that is no longer needed by DoD. To achieve this goal, all elements of the program must work in concert to incorporate community priorities for sustainable redevelopment and job creation, while speeding assessment and cleanup of contaminated property to make it environmentally suitable for reuse and transfer.

As cleanup efforts continue at BRAC installations, DoD, EPA, state regulatory agencies, and redevelopment authorities are finding innovative and environmentally protective ways of pursuing economic revital-

Property must be made available to communities for reuse as quickly as possible.

Fast-Track Cleanup

"The environmental cleanup at Loring is more than half done, ahead of schedule and under budget. This is just the kind of cooperative effort we need to move quality economic development forward at Loring and across Maine."

Angus King
Governor of Maine (I)

Turning Liabilities into Assets, Loring Air Force Base, Maine

"Team Loring," the BRAC Cleanup Team at Loring Air Force Base (AFB) in Maine, discovered that liabilities can become assets when all parties of the BRAC project team work together. Team Loring's genuine partnership approach has resulted in the expeditious cleanup of numerous sites at significant cost savings.

By focusing on common goals to expedite reuse through effective cleanup, Team Loring representatives were able to devise and implement a waste soil consolidation and disposal method for use during restoration activities. This unique cleanup strategy enabled the team to change the installation's on-site landfills from liabilities to assets.

The 53 sites at Loring AFB represent a significant environmental restoration challenge. Since the decision was made to close the base in 1991, that challenge has been magnified by the need to achieve prompt and effective environmental restoration while addressing the economic concerns of the small rural community of Limestone, Maine.

As a result of ongoing studies, Team Loring demonstrated that bioventing would be an effective technology to remediate most of the numerous fuel-contaminated sites on base. Bioventing uses oxygen to stimulate natural *in situ* biodegradation of petroleum hydrocarbons in soil by existing soil microorganisms. At sites where bioventing would not be the most effective cleanup alternative, Team Loring was challenged with identifying alternate cleanup methods. Team Loring learned that the design for capping installation landfills specified the addition of 500,000 cubic yards of subgrade fill material to ensure proper drainage of the capping systems. As a result, the team evaluated the feasibility of using soils from the proposed bioventing sites as subgrade fill for the landfill capping systems.

After investigating the feasibility of using contaminated soils as subgrade fill according to stringent Resource Conservation and Recovery Act (RCRA) Land Disposal Restrictions, Team Loring determined that using the fuel-contaminated soils from the proposed bioventing sites complied with EPA regulations. Using the consolidated soils as subgrade fill in the landfill capping systems would satisfy not only the landfill design requirements, but would also protect human health, eliminate ecological risks, and protect groundwater from possible leaching contaminants.

The cost savings realized by this approach was dramatic. The team's original estimate for using bioventing and other soil cleanup methods at Loring AFB was $210 million. With the adoption of landfill subgrading as a soil cleanup option, current estimates have been reduced to less than $150 million. The use of the soil consolidation and disposal method has already expedited the cleanup at many of the 53 sites, many of which are becoming more readily available for redevelopment by the community.

ization. These innovations, made possible through teamwork and partnership, are also being applied at non-BRAC installations, particularly as the initiatives of the Fast-Track Cleanup Program prove successful and information on the lessons learned is transferred.

On the surface, the accomplishments of the Fast-Track Cleanup Program are measured and easily quantified by the amount of property made available to communities for transfer and reuse. As the program matures and sites are restored with increasing efficiency, the amount of property environmentally suitable for transfer increases relative to the amount of excess property.

The continued success of the Fast-Track Cleanup Program will depend on factors not easily quantified. Strong partnerships with regulatory agencies and the public are integral to future progress. In a short time, DoD has gained significant results by diligently

Bias for Cleanup versus Studies at Marine Corps/Navy BRAC Installations

The Marine Corps/Navy treats fuel-contaminated soil at Tustin Marine Corps Air Station using a portable thermal desorption unit.

The Marine Corps/Navy is emphasizing a bias for cleanup instead of studies in an effort to share vital information and implement lessons learned at two Marine Corps Air Stations (MCAS) in California. By combining analytical data from environmental studies with cleanup plans, the need to conduct additional environmental studies has been eliminated. The same cleanup technologies have also been implemented at both installations; an approach that reduces the regulatory approval and document review process. By using this approach, the restoration process is expedited, cost savings is achieved, and property can be transferred to the community more quickly.

At Tustin MCAS, the installation chose thermal desorption as the most cost-effective way to treat 80,000 tons of fuel-contaminated soils. To avoid additional high transportation costs and reduce environmental impacts, a portable thermal desorption unit was brought to the site to treat the contaminated soil.

As a result of the success at Tustin MCAS, the Marine Corps/Navy will use the same portable thermal desorption technology at El Toro MCAS to remediate similar soil contamination. In addition, the El Toro BRAC Cleanup Team (BCT) is using preliminary assessments to establish cleanup levels for 3,000 cubic yards of contaminated soil. Basing cleanup alternatives on preliminary findings saves costs, accelerates the restoration process and eliminates the need for conventional and time-consuming study phases.

Although the Marine Corps/Navy chose safe, cost-effective methods to treat soil at both installations, the remedies could not be implemented without regulatory agency approval. The partnership formed by the Marine Corps/Navy and the state and Federal regulatory agencies has been successful in efforts to accelerate cleanup. By focusing on cleanup and eliminating the need for additional studies, restoration costs at El Toro MCAS were reduced from $9 million to $4.5 million, and an estimated $15 million was saved at Tustin MCAS.

"Focusing on cleanup will make the process more efficient and cost-effective by minimizing the amount of investigative studies and technical reports. We are giving each site individual attention and making decisions based on data unique to each site, which allows us to clean up each site as rapidly and cost-effectively as possible."

Jason Ashman

Remedial Project Manager, El Toro MCAS

working to accelerate environmental actions, promote redevelopment of valuable assets, increase job opportunities, and spur economic growth.

The people implementing the principles of the program, including BRAC Cleanup Teams and other stakeholders, are the primary reason for the program's success. The partnerships

Fast-Track Cleanup

Non-BRAC Installations, Joliet Army Ammunition Plant, Illinois

Planned Midewin National Tallgrass Prairie

Joliet Army Ammunition Plant, a leading producer of munitions from the 1940s to the 1970s, is undergoing an amazing transformation into a cultural and natural resources area and economic development center. In 1993, the installation ceased operations. A group of diverse stakeholders quickly developed a plan to convert the 23,544-acre installation located 1 hour's drive from Chicago into a park and recreation center, among other uses. According to Brent Manning, director of the Illinois Department of Natural Resources, the installation will become a park "where buffalo and elk share space with hikers and hunters." The reuse plan for the installation clearly demonstrates how DoD can clean up and convert once contaminated installations into valuable property, while creating thousands of new jobs, generating high revenues, and revitalizing surrounding communities.

Developing the reuse plan was not without its challenges. Initially, the reuse plan was not well received by the regulatory agencies. Extensive discussions and disputes transpired between the stakeholders, with most disputes focusing on cleanup goals. However, the stakeholders eventually established a solid partnership, allowing parties to express their strong positions while maintaining a professional atmosphere conducive to problem solving.

The cornerstone of the installation's reuse plan is the 19,000-acre Midewin National Tallgrass Prairie to be managed by the U.S. Forest Service. Midewin is the Pottowatomi name for "healing," and the name serves as a symbol for the environmental restoration of the installation. The park will be the largest tallgrass prairie east of the Mississippi River and will provide a safe haven for 16 state-designated threatened and endangered species. In addition, a planned 982-acre national cemetery will become the largest national veterans cemetery, and the 455-acre county landfill will solve a local waste management problem and reduce the cost of cleanup at this Superfund site. The reuse plan also identifies 3,000 acres that will be developed as industrial parks.

The program's cleanup initiatives encourage teamwork and partnerships, and the effort to convert and reuse the installation embodies these goals. Solid working relationships among DoD, regulatory agencies, and other stakeholders have allowed for consensus to be reached on a reuse plan that all parties consider extraordinary. Working together, the parties agreed on cleanup levels and prepared a comprehensive reuse plan that will serve as an example for other Federal property reuse efforts.

"The Joliet Arsenal project is a rare opportunity for Illinois to utilize a large tract of land for open space and conservation, job creation, and a national veterans cemetery. [The project] has attracted a bipartisan coalition of groups—conservationists, labor, business, education, and elected officials throughout the state—and thousands of hours have gone into passage of the legislation to redevelop the Arsenal."

Jerry Weller

U.S. Representative from Illinois (R)

"Never again in our lifetime will we have land acquisition of this magnitude."

Bob Kustra

Lt. Governor of Illinois (R)

that have formed and the spirit of teamwork that has ensued is impressive. Property transfer is the ultimate goal of the Fast-Track Cleanup Program, but teamwork and partnerships are the true foundation of the program.

Building a Partnership, Bergstrom Air Force Base, Texas

A genuine partnership approach expedited the cleanup of numerous sites and produced significant cost savings.

After years of complaints from local residents about noise pollution from low flying aircraft, the City of Austin decided to construct a new airport. As city officials continued their search for a new site for the airport, Bergstrom Air Force Base (AFB), located inside Austin city limits, was placed on the 1991 Base Realignment and Closure (BRAC) list. The city quickly realized that Bergstrom AFB was the ideal location for Austin's new airport. Bergstrom AFB was placed on a very strict restoration schedule in order to open the airport within the time frame required by the city.

The strict schedule initially caused some conflicts. More than 1 year after base closure, the restoration process was bogged down in numerous disputes among the various stakeholders. These disputes resulted in legal arguments, policy contention, and delays in cleanup. Because the city developed an aggressive reuse schedule to open the new airport on time, any schedule delays caused by the restoration process were a major setback to the redevelopment process.

An Executive Team was established to represent the interest of all stakeholders and to resolve differences. The team included representatives from the City of Austin, the State of Texas, EPA, and the Air Force Base Conversion Agency (AFBCA). The new partnership allowed each stakeholder to express concerns and jointly work out solutions acceptable to everyone. As a result, the restoration process and the airport construction are both proceeding on schedule.

RESULTS OF EXECUTIVE TEAM

- Avoided $20,000 in sampling requirements for an underground storage tank
- Resolved dispute concerning cleanup of sewer line
- Avoided $4 million and several months of cleanup time by jointly selecting sampling locations
- Avoided hundreds of thousands of dollars in airport construction costs
- Used soil from airport construction to cap on-site landfills

AFBCA and the State of Texas worked together to expedite cleanup at critical sites through continuous communication and verbal approvals of reports before official submittal. The success demonstrated by the Executive Team partnership was built on teamwork, communication, and cooperation. The efforts at Bergstrom AFB serve as a model for community and regulatory involvement.

"... when a community comes together to develop an agreed upon reuse plan to close bases, they are in a much better position to quickly create new jobs and new revenues."

William J. Perry
Secretary of Defense

Defense Environmental Response Task Force

Defense Environmental Response Task Force

The DERTF has observed a dramatic improvement in environmental restoration during FY95.

The Defense Environmental Response Task Force (DERTF) was established under the National Defense Authorization Act for FY91 and was reconstituted in the Military Construction Appropriations Act for FY93. The two-fold purpose of the DERTF involves (1) examining environmental issues associated with the restoration and reuse of closing military installations and (2) identifying and recommending ways to expedite and improve environmental restoration at those installations.

The DERTF identified three areas as crucial to successful cleanup at closing installations.

The DERTF's membership includes representatives from DoD, EPA, the Department of Justice, the General Services Administration, the National Governors' Association, the National Association of Attorneys General, and various public interest groups.

The DERTF identified the following three areas as crucial for closing installations:

- Consideration of future land use in the remedy selection process
- Public participation in decision-making processes related to restoration and reuse
- Implementation of Fast-Track Cleanup

An essential element of the success of all three areas is the continuation of adequate funding for the BRAC environmental program.

The DERTF also identified another area that is crucial to the success of the Fast-Track Cleanup Program: empowerment. The empowerment of members of the BRAC Cleanup Team—which typically consists of representatives of EPA, the state environmental agency, and an installation BRAC environmental coordinator—is paramount to timely and appropriate cleanup.

Future Land Use Issues

Consideration of future land use is an essential factor in determining cleanup standards and selecting appropriate remedies. The DERTF formed the Future Land Use Working group to investigate the integration of require-

ments for future land use with the identification of cleanup standards and remedy selection.

The Future Land Use working group has identified several pertinent issues, including the following:

- Integration of reuse plans into the remedy selection process
- Resolution of conflicts among proposed reuse and cleanup plans
- Establishment of institutional controls to ensure the integrity of cleanups and adherence to land use restrictions
- Resolution of issues related to future liability when the initial remedial action ceases to be protective of human health and the environment after the property is transferred

The Future Land Use working group is also evaluating two additional issues. The first involves the differences between DoD's liability under leasing arrangements and its liability under transfers by deed; this issue is vital to ensuring expeditious redevelopment and securing economic benefits for communities affected by the closure of installations. The second involves applying the lessons learned from EPA's Brownfields Initiative to the reuse of property at closing installations.

Stakeholders participating in the reuse and cleanup process typically include members of the Restoration Advisory Board and local community, the BRAC Cleanup Team, the Local Redevelopment Authority, and the property disposal official of the Military Department.

One of the most complex issues involved in incorporating future land use scenarios into cleanup decisions is determining the responsibility for additional cleanup or response actions required under current law or requested by the transferee after cleanup is considered complete. Cleanup of hazardous substances at Federal facilities can proceed under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), RCRA, or an equivalent state law. However, future cleanup may be required if the land use changes, because the original remedy, although protective for the anticipated land use, may not be fully protective under the new land

EPA's Brownfields Initiative is an organized commitment to help communities revitalize abandoned, idled, or under utilized industrial and commercial facilities and potentially contaminated lands; thereby mitigating potential health risks and restoring economic vitality to those communities.

The DERTF formed a Future Land Use Working Group to investigate the integration of requirements for future land use with the identification of cleanup standards and remedy selection.

Defense Environmental Response Task Force

The DERTF endorses broad-based public participation in decision-making processes related to both cleanup and reuse.

use. The DERTF is studying issues associated with cleanup responsibility when a change in land use is proposed.

Public Participation

The DERTF endorses broad-based public participation in decision-making processes related to both cleanup and reuse. The DERTF recommends that DoD continue to support the activities and diversity of BRAC Cleanup Teams, Restoration Advisory Boards, and all other groups involved in the cleanup decision-making process. The *Restoration Advisory Board (RAB) Report to Congress*, which documents the status and accomplishments of the Restoration Advisory Board initiative, is included as a supplement to this report.

Fast-Track Cleanup Implementation

The implementation of Fast-Track Cleanup requires guidance, communication, contracting mechanisms for environmental restoration, retention of the BRAC environmental coordinator, and adequate funding for the BRAC environmental program. The Fast-Track Cleanup Program also provides funding support to states, EPA, Restoration Advisory Boards, and recipients of technical assistance grants.

The *Restoration Advisory Board Report to Congress* is included as a supplement to this report.

During FY95, the DERTF identified numerous initiatives aimed at expediting and improving cleanup and reuse at closing military installations. The following documents were prepared by various DERTF working groups in FY95 to aid stakeholders in the restoration process:

- *BRAC 1995 Quick Reference: Community and Environmental Activities.* This document provides a quick reference to environmental and community milestones for use in planning activities involved in restoration and reuse.
- *Fast Track to FOST: A Guide to Determining Whether Property is Environmentally Suitable for Transfer.* This document outlines six steps to accelerate the environmental review process required to reach a Finding of Suitability to Transfer (FOST).
- *Keys to Opening the Door to BCT Success.* This document emphasizes keys to success that BRAC Cleanup Teams can adopt, such as team building, empowerment, and communication.

DERTF Future Issues

Potential issues the DERTF may consider in FY96 include but are not limited to the following:

- Evaluation of the accomplishments of states and Federal agencies to improve and expedite BRAC cleanups
- Evaluation of (1) the use of institutional controls to protect the remedy and (2) the remedy selection process
- Conflict resolution related to cleanup strategies and redevelopment plans

The DERTF has provided an excellent forum for evaluating issues and making recommendations to expedite the cleanup and transfer of property. While the DERTF will continue to serve as an advisory body to DoD, many installations will also make important contributions to the overall success of the program. These installations will serve as models for the implementation of the DERTF's recommendations. As such, they will also support continued improvements in environmental restoration and cooperation among members of communities affected by closing installations.

"The DERTF believes that implementation of Fast-Track Cleanup, consideration of future land use in the remedy selection process, and public participation in cleanup and reuse decision-making processes are critical issues at closing installations."

Sherri W. Goodman

Deputy Under Secretary of Defense (Environmental Security)

Accelerating Cleanup

Department of the Air Force—
Rational National Standards Initiative

Department of the Navy—
Geostatistics

Riverbank Army Ammunition Plant

Former Raritan Arsenal

Defense Distribution Region
West Sharpe

Philadelphia Naval Shipyard

Accelerating Cleanup

Partnerships, community involvement, and environmental technology are integral to the pursuit of accelerated cleanup.

Accelerating cleanup will better protect human health and the environment and reduce cleanup costs.

A fundamental element of DoD's environmental restoration program is the consistent effort to accelerate the cleanup process. Over the years, DoD has developed many initiatives to compress project schedules and conduct cleanups more cost-effectively. Many of these initiatives were brought to the forefront of environmental restoration with the implementation of the Fast-Track Cleanup Program.

To accelerate the cleanup process, DoD continues to implement initiatives such as interim actions, innovative site management strategies, and flexible contracting mechanisms.

"Common sense approach" and "good business practice" are phrases increasingly used to describe the daily business of environmental restoration at installations throughout DoD. With the evolution of the program, DoD has enhanced its ability to develop strong partnerships, involve the community and respond to their concerns, and apply and adapt new and existing technologies. These central themes play a major role in every successful cleanup effort.

The following stories illustrate DoD's reliance on partnerships, community involvement, and environmental technology that together work to accelerate environmental restoration at installations.

Rational National Standards Initiative

The Air Force developed a risk management tool, the Rational National Standards Initiative (RNSI) as a means of establishing cleanup standards based on risk and future land use. This proactive approach to cleanup builds consensus among all stakeholders by identifying land reuse options and establishing risk-based cleanup standards for those options. The RNSI is based on the fact that human exposure to soil and groundwater contamination is typically greater in a residential setting than in a commercial, industrial, or open-space setting. Therefore, cleanup levels for contaminated sites whose future land uses are open-space, commercial, and industrial would be less restrictive than regulatory cleanup standards currently being applied at Air Force sites.

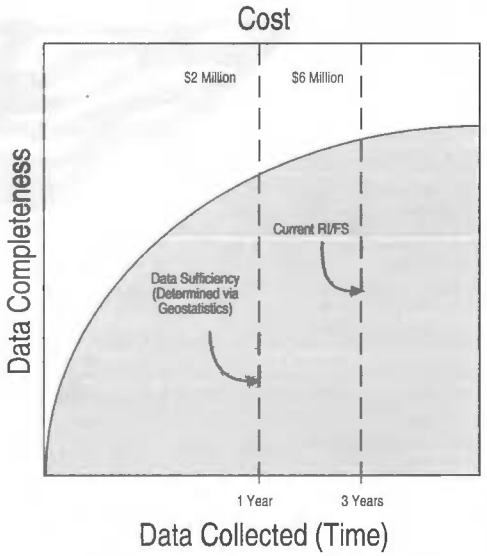
RNSI was prototyped at Shaw Air Force Base in South Carolina and Ellsworth Air Force Base in South Dakota. Results show that cleanup levels required to achieve the same level of protection vary with future land use. Significant cost and time savings also resulted as a benefit of this initiative.

Achieving Better Results, The Navy Refines Data Collection

Using new tools and methods, such as geostatistics, the Navy is placing more emphasis on effective planning in the study phases of the restoration process. The Naval Air Station in Jacksonville, Florida has used geostatistics to avoid approximately $4 million in additional environmental study costs.

Geostatistics is a tool that has been introduced recently to map contamination at a site more efficiently. Because the study phases of environmental restoration provide an opportunity to reduce expenses, EPA encouraged the use of geostatistics to provide a logical framework for the sampling and analysis of environmental data.

The use of geostatistics serves as a decision-aid and planning tool to significantly reduce short-term site assessment costs, and long-term sampling and monitoring needs. In addition, using geostatistics can lead to more accurate and realistic design criteria.



Increase in Data Completeness (Knowledge of the Site) vs. Increased Cost and Time

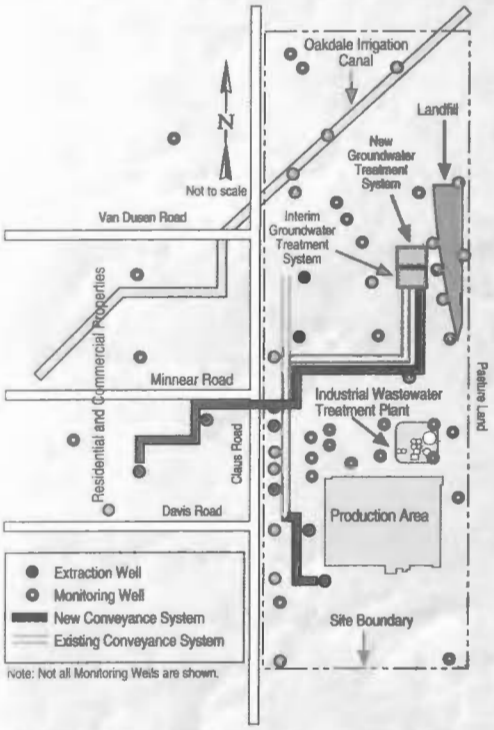
Environmental studies are often based on speculation regarding the location of contamination. However, contaminant concentrations across a site typically exhibit wide variations because of complex site characteristics. Uncertainties inherent in investigating subsurface contamination frequently lead to excessive sample collection efforts and the generation of redundant information. In some cases, sampling costs exceed the value of the collected data.

The Naval Air Station in Jacksonville, Florida, used geostatistics to evaluate existing data. Statistical analyses indicated that groundwater contamination at the installation had been adequately delineated. The analysis also confirmed the location of several "hot spots." The improved knowledge of the nature and extent of contamination has provided a focus for future sampling and has expedited cleanup.

EPA has taken the lead in promoting the use of geostatistics for environmental investigations. It also produced the first geostatistical public-domain software packages known as Geo-EAS (Geostatistical Environmental Assessment Software, EPA/600/4-88/033a, 1988) and GEOPAK (EPA/600/8-90/004, 1990).

Riverbank Army Ammunition Plant became the first DoD installation to accelerate cleanup and reduce costs by establishing a base-wide cleanup Record of Decision.

First Base-Wide ROD, Riverbank Army Ammunition Plant, California



The Riverbank News

Ammo Plant Cleared for Cleanup

WEDNESDAY, MARCH 30, 1994

Department of Defense spokesman Rick Newsome remarked, "This is a great day for the environment, it's a great day for the Army and I think it's a great day for Riverbank. The first installation in the Army for a site-wide Record of Decision is indeed a momentous occasion."

"I'd like to express my congratulations to the installation, to the community, to the state and EPA for working as a team to determine what needs to be done to protect human health and the environment here in Riverbank," he said. "We are very happy to see this day come and I want you to remember it as an accomplishment of what can be done when you work together as a team."

Riverbank Army Ammunition Plant (AAP) in California became the first DoD installation to establish a base-wide Record of Decision.

Typically, DoD installations implement multiple Records of Decision to address environmental restoration activities at various sites. While in the planning stages of the study process, the Army planned to issue a single Record of Decision for the installation, thereby avoiding multiple Record of Decision procedures.

This study approach enabled Riverbank AAP to use resources and review time more efficiently. For example, on the average, remedial investigation and feasibility study activities range from 40 to 45 percent of the total annual restoration cost. The installation successfully kept study costs down, with studies accounting for only 35 percent of total costs in FY94.

Once the base-wide Record of Decision was authorized, the funding and the cleanup method were approved more quickly, enabling the entire installation to move forward on a single cleanup schedule.

The groundwater extraction and treatment system as dictated by the base-wide Record of Decision was designed to augment an existing interim groundwater treatment system installed in 1990. This inclusive design, illustrated above, took advantage of past investments in groundwater remediation, thereby saving additional costs.

Ball Field Remediation Former Raritan Arsenal, New Jersey

Innovative project management and coordination were instrumental in compressing schedules and accelerating cleanup at the former Raritan Arsenal.

The U.S. Army Corps of Engineers excavates contaminated soil from the baseball field at the former Raritan Arsenal.

The Middlesex County College baseball team has its home field back thanks to the focused cleanup effort of the U.S. Army Corps of Engineers, college officials, and Federal and state regulatory agencies, who all worked together to successfully complete a 5-year project in only 20 months.

The baseball field was originally constructed where the former Raritan Arsenal conducted open pit burning operations. A 1991 preliminary remedial investigation uncovered high levels of lead in the soils under the baseball field. After the field was closed for 2 years, the New Jersey Sports Authority announced in August 1993 that Middlesex County College would qualify to receive a grant worth about $900,000 to replace the baseball field and improve adjacent athletic facilities if they could meet two criteria: (1) clean up the contaminated area before improvements are made and (2) expend the funds by the end of 1995.

Together representatives of the college, the New Jersey Department of Environmental Protection, EPA, the U.S. Army Corps of Engineers (New York District), and the U.S. Army Corps of Engineers (New England Division) developed a strategy for completing the remedial investigation and remedial actions in time for the college to use the grant funds.

The U.S. Army Corps of Engineers completed its remedial investigation, developed a remedial action work plan, and awarded the remedial action contract in 11 months. Cleanup activities began in September 1994. Approximately 17,500 cubic yards of contaminated soil and debris were excavated from the baseball field area in 8 months. The college was able to contract the construction of its new athletic facilities in June 1995.

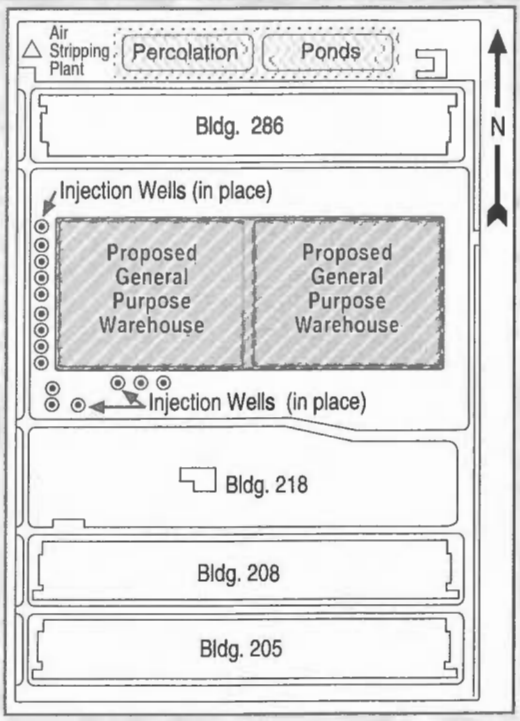
The project team, the college, state and Federal regulatory agencies and the U.S. Army Corps of Engineers met regularly throughout the course of the restoration process. The effective coordination among the involved parties enabled the U.S. Army Corps of Engineers to proceed concurrently on multiple project phases. For example, detailed design started before the remedial action plan had been finalized and formally approved. When potential barriers cropped up, reports were immediately provided to state and Federal regulatory agency personnel so that appropriate actions could be taken quickly and with concurrence from all parties. Open lines of communication and the full cooperation of all parties made it possible to accelerate this project's schedule and to complete it successfully.

DoD worked closely with regulatory agencies at DDRW Sharpe to resolve potential conflicts between mission and cleanup requirements.

Restoration and the Distribution Mission at DDRW Sharpe, California

Environmental staff at Defense Distribution Region West (DDRW) Sharpe continue to work with Defense Logistics Agency (DLA) planners and regulatory agencies to achieve the highest standards of environmental protection while maintaining the installation's storage and distribution mission. Efforts at DDRW Sharpe have allowed the sequence and progress of environmental restoration to coincide with the installation's growing demand for warehouse and open storage space.

DDRW Sharpe's environmental staff have worked diligently with DLA planners and regulatory agencies to ensure that selected cleanup actions do not conflict with mission requirements. For example, the locations of percolation ponds and injection wells needed to clean up groundwater, shown in the graphic, were determined after carefully considering the location of two general purpose warehouses planned for construction in FY96-97. In another example, a proposed hazardous material storage building will be constructed in FY97-98, following the demolition of a closed RCRA storage facility. Other actions at the installation such as soil cleanup will be prioritized to make those areas available for new construction.

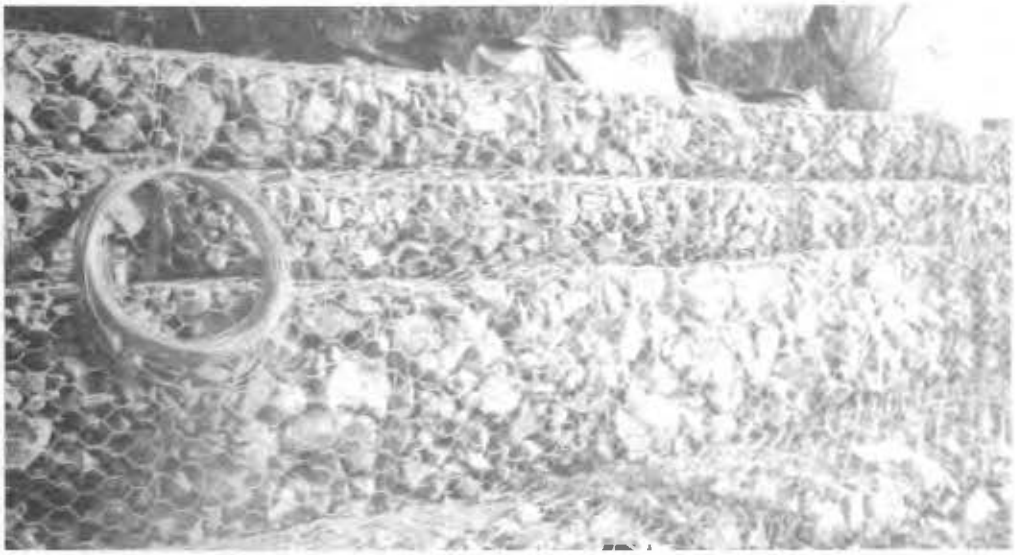


The DLA mission relies on a national network of distribution and maintenance installations. Mission-related activities, such as vehicle repair and underground tank storage of hazardous substances, have resulted in environmental contamination at sites across DDRW Sharpe. Soil and groundwater cleanup actions are currently under way at numerous underground storage tank locations and other contaminated sites.

The Base Realignment and Closure Commission recently decided to consolidate closed and realigned activities from other installations at DDRW Sharpe, which threatened to bring mission needs into conflict with restoration requirements. In response to the increased demand for space at DDRW Sharpe, activities such as construction and scheduling of restoration efforts have received much greater priority than in the past.

Through the cooperative efforts of DDRW Sharpe's environmental staff, DLA planners, and regulatory agencies, environmental restoration is being achieved without hindering any of the construction and renovation projects needed to support the installation's expanding storage and distribution mission.

Taking Action at the Philadelphia Naval Shipyard



Gabion baskets were installed by the Navy along the Schuykill River to stabilize the Girard Point Landfill at Philadelphia Naval Shipyard.

The project was completed in just five months, and the landfill and associated river bank are now stabilized and structurally sound.

At the Philadelphia Naval Shipyard, the Navy took immediate action to address an unstable landfill with hazardous contents exposed on the bank of the highly traveled Schuykill River in Philadelphia, Pennsylvania. If not for the actions taken by the Navy between November 1994 and April 1995, a dangerous release of contaminants could have occurred to the Schuykill River, which empties into the Delaware River.

From the early 1940s to 1970, the Girard Point Landfill at the Philadelphia Naval Shipyard was used as a disposal facility for municipal waste, industrial waste, and incinerator ash. The landfill lies along the Schuykill River near the confluence of the Schuykill and Delaware Rivers. Because of strong wave action, the landfill cover was eroding and exposing its contents.

A cross-section of the landfill showed that it contained ash, asbestos, construction debris, electrical cable, and pieces of metal. Stabilizing the river bank without disturbing the large pieces of construction debris would be difficult. Three alternatives were considered: sheet piling, seawall construction, and gabion basket placement with rock armor. The use of sheet piling was ruled out because it relied too heavily on the surrounding sediment for support. Constructing a seawall was not a feasible option, because the seawall would have to reach to bedrock deep below the surface, involving costly procedures. The alternative chosen involved a combination of gabion baskets and rock armor.

Gabion baskets are constructed of metal netting or links that form a basket; the basket is used to hold rocks together to prevent them from shifting or falling. The stabilization action was begun by first removing large debris from the landfill. The gabion baskets were installed along the tidal flat to provide a stable work area. Areas of the landfill were then smoothed out with aggregate fill, and geotextile material was then layered over the fill. Rock armor was then used to complete the stabilization.

The project was completed in just five months, and the landfill and associated river bank are now stabilized and structurally sound. The Navy estimates that the selected stabilization method was at least five times less expensive than other alternatives, and that it has resulted in a safe, long-term solution to stabilization of the river bank. In addition, the gabion basket design can be incorporated into the final remedial design for the landfill cap. Because it was effective, this stabilization technique will be used to stabilize other sections of the river bank during the final landfill remediation.

Environmental Technology

Environmental Security Technology Certification Program—Phytoremediation

Beaufort Marine Corps Air Station

Navy Supply Corps School

Aberdeen Proving Ground

Air Force Plant 44

Department of the Air Force—Bioventing

Environmental Technology

The successful development and application of environmental technology is a critical factor to the continued success of the environmental restoration program. DoD has fostered technological advancement by investing in the entire technology development life-cycle—from research, to demonstration, and eventually to commercialization.

"Just as powerful new technologies have helped to create many of the environmental problems, better, smarter, more well-designed technologies can be a critical part of a solution for these problems."

Vice President Al Gore

Wholesale investment in innovative technology is not DoD's primary focus; rather, DoD invests in technologies that address DoD-specific cleanup needs and that prove to be more efficient and effective than currently available technologies. To manage technology resources, DoD provides oversight and ensures accountability for all aspects of cleanup technology development and demonstration. As part of its oversight role, DoD focuses on identifying, understanding, and categorizing the needs of end users, such as project managers in the field, who need the most accurate and current technology information available to make effective environmental restoration decisions.

In addition, DoD seeks to consolidate technology demonstration and validation activities that occur across the Services and non-DoD organizations. To take advantage of the resources and experience of these organizations, DoD has partnered with Federal and state agencies, academic institutions, and the industrial and private sectors in various technology initiatives. These partnerships have allowed DoD to leverage resources and share lessons learned about the application of investigative, cleanup, and monitoring technologies. Cooperative ventures also enhance the market acceptance of technologies and improve relations with DoD's regulatory partners.

DoD's programmatic efforts focus on three major areas:

- Technology transfer
- Demonstration and verification of emerging technologies
- Development of new technology

Each of these areas is discussed below.

Technology Transfer

An important component of DoD's technology program is the collection and dissemination of data on technology availability and performance. Effectively disseminating information enables project managers to make more informed decisions and allows promising technologies to reach commercialization more quickly. DoD has assumed a lead role in the collection and dissemination of technology information by facilitating technology transfer among development and demonstration programs and technology users.

A major impediment to the acceptance of new technologies by program managers, regulatory agencies, and communities is the lack of cost and performance data. Such data is needed to validate the effectiveness of technologies before they can be implemented widely. As a part of its efforts to expedite the collection and reporting of technology cost and performance data, DoD is working with the Federal Remediation Technologies Roundtable, an interagency organization created to facilitate collaboration among Federal agencies, such as the Department of Energy (DOE) and EPA, which also have a stake in technology development. The Federal Remediation Technologies Roundtable recently released the *Interagency Guide to Documenting Cost and Performance Information for Site Remediation Projects*. This guide will facilitate the standard reporting of data, broaden the use and usefulness of the information collected, increase confidence in the future effectiveness of remedial technologies, and enhance the organization, storage, and retrieval of relevant information.

To date, DoD has completed more than 20 Technology Application Reports based on the interagency guidance. In total, DoD, DOE, and EPA have completed more than 40 Technology Application Reports.

The DoD Environmental Technology Transfer Committee also has worked with the Federal Remediation Technologies Roundtable to develop the *Remediation Technologies Screening Matrix and Reference Guide, Second Edition* (*Screening Matrix*). The *Screening Matrix* was designed to combine a number of Federal remediation technology

"Innovative technologies are critical to our country's national and environmental security. Through advanced technology, we can reduce the cost, risk, and time needed to meet the Department's environmental challenges. ... Many barriers prevent innovative environmental technologies from being implemented at our installations. To overcome these, the Department has initiated the Environmental Security Technology Certification Program (ESTCP). Using our military facilities, ESTCP will demonstrate and validate the effectiveness of the most promising environmental technologies."

William J. Perry
Secretary of Defense

The collection and sharing of data on technology helps project managers to make informed decisions in the field and allows promising technologies to reach commercialization quickly.

documents into a single, easy-to-use compendium. The document consolidates similar documents published by the Army, Air Force, Navy, DOE, and EPA. The reference guide is intended to provide project managers with current, comprehensive information on available remediation technologies and facilitate the decision making process.

To disseminate technology information, DoD is using the latest communication technologies including the World Wide Web, a subset of the Internet worldwide computer network. Rather than wait for technology reports to be published and distributed through traditional methods that are time-consuming and costly, project managers can now access current technology information when and where they need it. DoD has published 20 Technology Application Reports on the Web and plans to publish the *Screening Matrix* and additional Technology Application Reports on the Web as they become available.

Installations across the country are also using the Web to share information on technology application with local communities and the environmental technology industry.

A major barrier to the acceptance of new technologies is lack of cost and performance data.

Demonstration and Certification of Emerging Technologies

DoD's demonstration and validation programs provide project managers with a set of previously tested and certified technologies; these technologies can then be applied to sites with greater assurance of acceptable cost and performance.

DoD's flagship demonstration program is the Environmental Security Technology Certification Program (ESTCP). DoD established the ESTCP to demonstrate and certify that emerging technologies can address its most urgent environmental needs. Through this program, DoD identifies laboratory-proven technologies that can reduce restoration and compliance costs, risks, and implementation time. The program strategy involves transferring these technologies to the field for rigorous trials and documenting their cost, performance, and market potential.

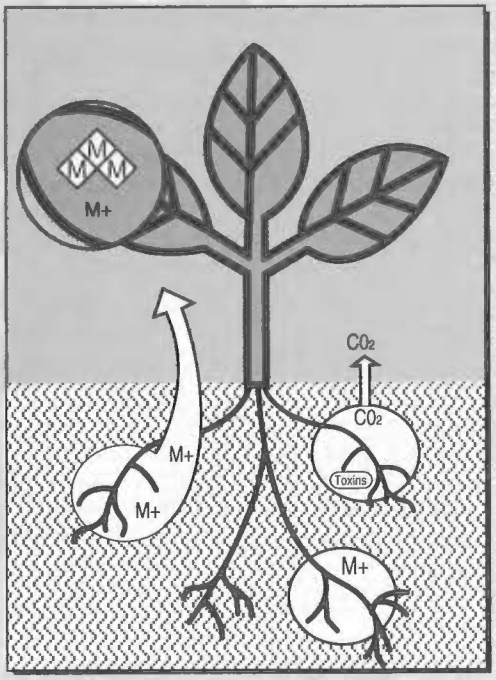
In FY95 the ESTCP reviewed more than 120 proposals and selected and initiated 27 demonstration projects, 15 of which were related to environmental cleanup. Proposals were selected based on their relevancy to DoD needs, their projected cost/benefit, and their promise for commercial applicability.

Following each demonstration, the ESTCP will certify or validate the operational cost and performance of the demonstrated technology based on the rigorous evaluation conducted during field tests. All remediation demonstrations are conducted in coordination with local and regional regulatory agencies. Upon successful completion, these technologies will be approved by the regulatory agencies for implementation. For example, the Army Environmental Center jointly with EPA is currently evaluating a more cost effective advanced oxidation technology at Cornhusker Army

Environmental Security Technology Certification Program—Phytoremediation

The U.S. Army Environmental Center (AEC) is currently partnering with EPA, the Tennessee Valley Authority, and the U.S. Army Corps of Engineers Waterways Experiment Station to develop technologies to remediate groundwater contaminated with ordnance explosive waste. This collaborative effort is being sponsored by the Environmental Security Technology Certification Program.

Explosives contamination of groundwater is fairly common at DoD installations across the country. However, the current technologies being implemented to treat the contamination, such as granulated carbon and advanced oxidation, are expensive and resource intensive. The AEC partnering team has demonstrated a potential treatment technology called "phytoremediation," which involves pumping contaminated groundwater to artificial wetlands where plants are used to degrade explosive waste. Unlike traditional technologies used to remediate explosive-contaminated groundwater, phytoremediation does not produce additional waste, is also self-sustaining, cost-effective, and it conserves resources.



Phase I of the phytoremediation demonstration began in July 1995. Phase II will be conducted at Milan Army Ammunition Plant in Tennessee, using constructed wetlands. AEC will use data collected from the demonstration to transfer design, implementation, and cost analysis information to both government and commercial users in the field.

Phytoremediation presents a wide variety of potential applications using wetland plants to remediate contaminated surface water and groundwater. Once this technology is proven effective in constructed wetlands, it could be implemented in natural wetlands, allowing users in the field to take advantage of naturally occurring conditions to solve the difficult problem of remediating explosives contamination in groundwater.

Under a project sponsored by the Environmental Security Technology Certification Program, EPA is currently evaluating a phytoremediation technology that the Army Environmental Center believes to be a promising solution for groundwater contaminated with explosive waste.

Ammunition Plant in Nebraska. At the same time that these tests are conducted to meet the requirements of the local site, data is gathered to satisfy the broader regulatory and user community to enable these technologies to be rapidly transferred across DoD. ESTCP and the Services are also jointly seeking broader certification for site characterization technologies developed by DoD. EPA is evaluating a fiber optic biosensor for detection of TNT and the California EPA is evaluating the Site Characterization and Analysis Penetrometer System (SCAPS).

DoD also coordinates technology demonstrations in programs operated outside of the Office of the Secretary of Defense. The Defense National Environmental Technology Demonstration Program established national test centers to compare demonstrations and evaluate cost-effective innovative technologies,

The BRAC Public Affairs Office at the Presidio of San Francisco provides vital information regarding restoration activities including cleanup technology information on the World Wide Web. The home page is intended for use by the public as well as other environmental technology users in the field (http://www.envcleanup.gov).

Using intrinsic bioremediation at two fuel storage areas at Beaufort MCAS will accelerate the cleanup and save at least $600,000.

Intrinsic Bioremediation at Beaufort MCAS, South Carolina

The Marine Corps/Navy is demonstrating intrinsic bioremediation as an acceptable cleanup strategy at Beaufort Marine Corps Air Station (MCAS) in South Carolina. The demonstration, which was made possible through a partnership among Beaufort MCAS, the U.S. Geological Survey, and the Southern Division Naval Facilities Engineering Command, is also serving as the pilot program for the South Carolina Department of Health and Environmental Control in its effort to develop state regulatory guidance for the application of passive bioremediation to clean up contaminated groundwater. By combining their bioremediation, hydrogeologic, and regulatory expertise, the demonstration partners worked together to develop a process and protocol for demonstrating the acceptability of intrinsic bioremediation. Using intrinsic bioremediation at two fuel storage areas at Beaufort MCAS will accelerate the cleanup decision process and save at least $600,000 when compared with conventional pump-and-treat methods.

Intrinsic bioremediation takes advantage of native bacteria to biodegrade organic contaminants in groundwater to acceptable levels. Intrinsic bioremediation is a viable cleanup alternative in areas where biodegradation rates are rapid relative to groundwater movement. The protocol for intrinsic bioremediation is based on rigorous scientific methodology that can determine whether natural attenuation is appropriate for site-specific conditions.

The demonstration of intrinsic bioremediation incorporates groundwater flow models with biodegradation rate measurements and site-specific parameters. In combination, the data can be used to predict the dispersion and migration of contaminant plumes over time. The accuracy of such predictions is being evaluated under actual field conditions through extensive sampling and monitoring.

Once state approval is granted for intrinsic bioremediation, Beaufort MCAS will continue to monitor groundwater under an approved plan and no additional activities should be required.

thereby enabling the technologies to be transferred from research to full-scale use. DoD has coordinated the involvement of the Army, Navy, Air Force, EPA, and local regulatory officials in the demonstration program at five test installations. The Index of Other DoD Successes, included at the end of this report, highlights technology demonstration activities at participating installations.

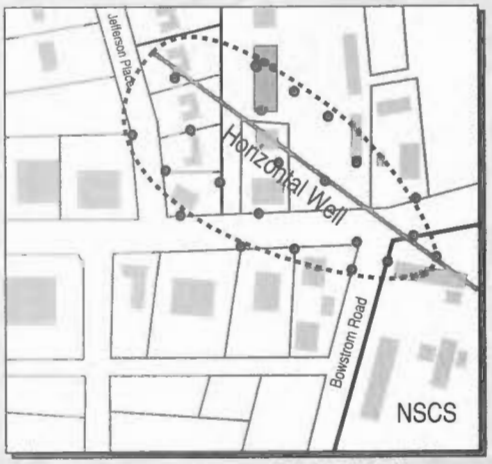
Each of the individual Services also maintains technology development and demonstration programs. The Air Force Center for Environmental Excellence, the Army Environmental Center, and the Naval Facilities Engineering Service Center are leaders in cleanup technology demonstration.

In addition, the Navy Environmental Leadership Program, or NELP, has made great strides in the demonstration of innovative technologies at North Island Naval Air Station, California. For example, the TerraKleen soil washing technology, which was demonstrated in FY94 in cooperation with the EPA Superfund Innovative Technology Evaluation (SITE) Program, was placed in full-scale operation under a non-time-critical removal action to remediate soil contaminated with polychlorinated biphenyls at North Island Naval Air Station sites 4, 6, and 10. Upon completion of this action, the Navy anticipates closing the three sites with no further action required. Technology demonstration and full-scale performance data were distributed Navy-wide to facilitate the

Navy Supply Corps School, Athens, Georgia . . . Community Involvement

Groundwater contamination from an underground gasoline storage tank had migrated about 1,000 feet downgradient of the Navy Supply Corps School (NSCS) in Athens, Georgia to the neighboring community. The large number of potentially affected property owners and the complex hydrogeology of the site indicated that significant resources, time, and cost would be required to completely remediate groundwater migrating from the NSCS property. In addition, conventional vertical groundwater recovery wells would have required access to numerous private properties.

A corrective action plan developed for the NSCS site provided an innovative solution for the unique conditions of the site. Keeping in mind the local community's concerns, the plan proposed that only one horizontal recovery well be drilled. Construction of the horizontal recovery well and installation of the ancillary treatment system was completed ahead of schedule, and actual recovery and treatment of contaminated groundwater began within 6 weeks of beginning construction. All phases of the cleanup are being conducted with no disruption of nearby property owners and residents. Treatment of the entire contaminant plume will be complete by FY98.



The Navy Supply Corps School remediated contaminated groundwater using an innovative technique which resulted in less disruption of the community, greater community acceptance, and time and cost savings.

use of the technology at other Navy installations.

The Navy Environmental Leadership Program has also enhanced its partnering base with non-DoD agencies. For example, under a partnership with Clean Sites, SITE, EPA's Technology Innovation Office, and a private contractor, the NELP has initiated a new demonstration effort to showcase an *in situ* air stripping technology that simultaneously removes volatile organic contaminants from soil and groundwater.

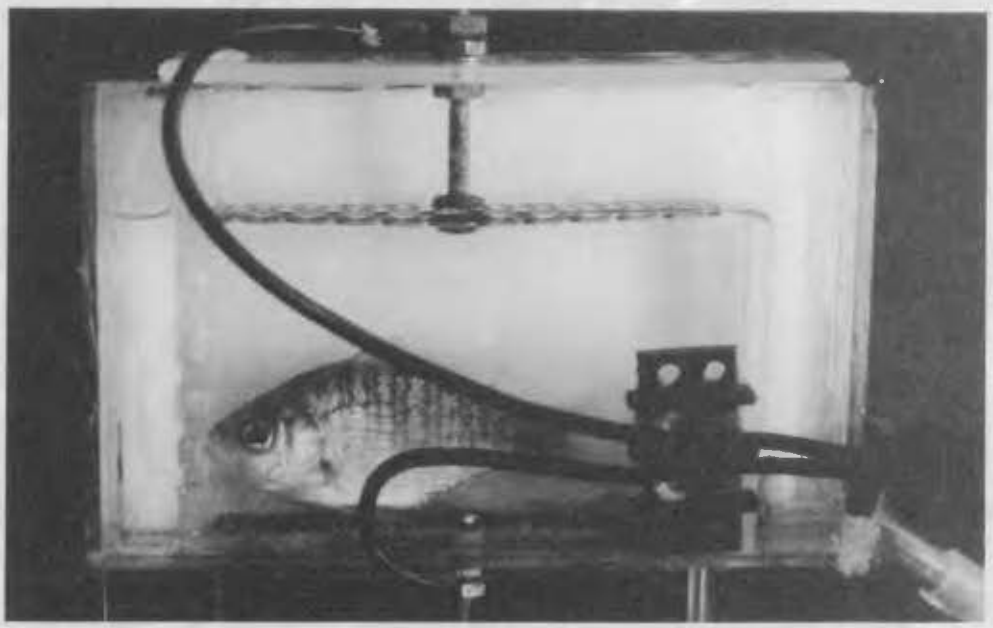
DoD has also worked with other Federal agencies, states, and key stakeholder groups through the Federal advisory Committee to Demonstrate On-Site Innovative Technologies. The Committee, which includes western governors and Federal secretaries, is developing new policies to improve stakeholder involvement in technology and cleanup decisions, streamline review and regulatory requirements for new technologies, and improve technology investment, procurement, and commercialization decision-making frameworks. The Committee will issue its recommendations in June 1996.

DoD will integrate successful approaches developed by the Committee into its policies and procedures. Western governors, who approved a codicil in June 1995 directing their state environmental regulatory agencies to work

The Navy Environmental Leadership Program has made great strides in demonstrating innovative technologies and partnering with other agencies.

Using Biomonitoring at Aberdeen Proving Ground, Maryland

A new application of an existing biomonitoring technique will facilitate cost-effective verification of groundwater cleanup activities.



Army scientists monitor the reactions of a bluegill fish in treated groundwater to determine its quality before the water is pumped into the Chesapeake Bay.

As a part of an interagency collaborative effort, the Environmental Health Research Detachment of the U.S. Army Institute of Environmental Medicine, located at Fort Detrick, Maryland, is working with Aberdeen Proving Ground in Maryland to use an innovative biomonitoring technology as the quality control element for implementing a complex groundwater treatment process.

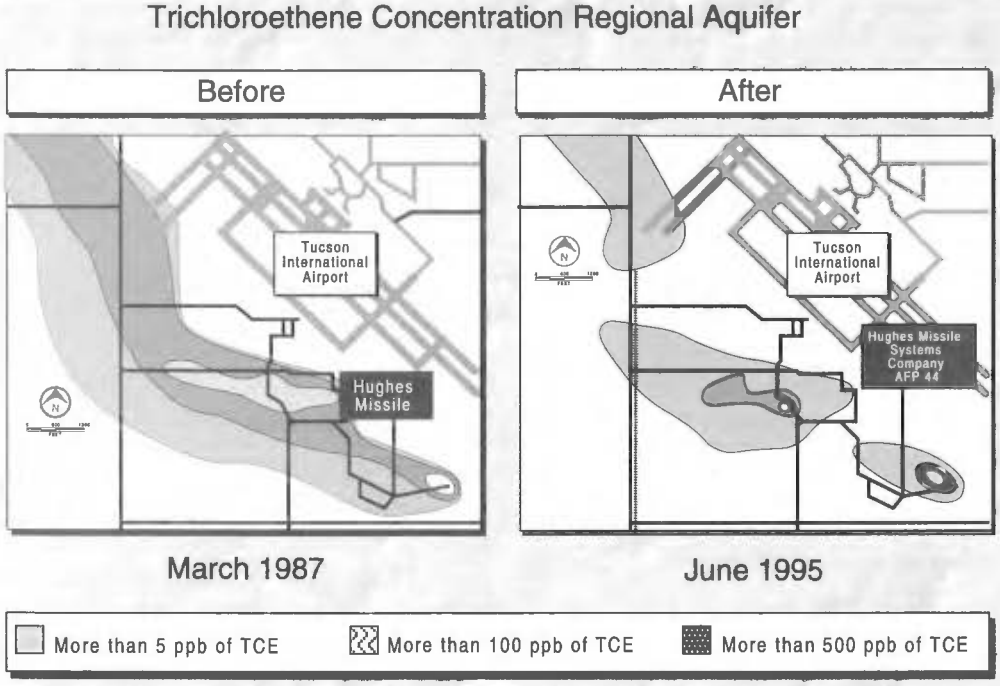
Aberdeen Proving Ground is currently treating groundwater contaminated with metals, solvents, chemical agents, and explosive waste. To ensure that treated groundwater is clean before it is discharged back into the environment, the Environmental Health Research Detachment and Aberdeen Proving Ground have developed a biomonitoring technique. Before treated groundwater is pumped from Aberdeen Proving Ground into the adjacent Chesapeake Bay, scientists are using a ubiquitous species of fish, the bluegill, to determine the quality of treated groundwater.

Effective research and development can also mean employing an existing technology to a currently unmet need rather than developing a new technology. The U.S. Army's efforts at Aberdeen Proving Ground illustrates an example of efficient dual-use technology in practice.

Using biological models to monitor the success of groundwater cleanup has resulted in significant cost savings. Initial results indicate a cost savings of between $4 and $5 million, which represents a 10 to 1 return on investment. Because of their obvious success, biomonitoring technologies will be used for future applications at similar sites. One opportunity for the expanded use of biological models is in the evaluation of contamination levels in wastewater effluent, an issue that DoD, EPA, and private industry must face on a regular basis. The specific species used to monitor the cleanup activities may change for each application, but the overall general process remains the same.

Public acceptance of the entire restoration program has been significantly enhanced by the development and use of biomonitoring technologies. The public is now assured that only "clean" water can be discharged to the Chesapeake Bay, one of the nation's richest ecological and recreational resources.

Exceptional Pump-and-Treat Results at Air Force Plant 44



Air Force Plant (AFP) 44 in Tucson, Arizona, is completing a substantial cleanup of a groundwater plume contaminated with the carcinogen, trichloroethene. In the early 1980s, when groundwater contamination was discovered and attributed to industrial activities at AFP 44, the Air Force and the contractor operating the plant took a proactive approach and constructed a state-of-the-art groundwater treatment plant. The treatment facility currently treats poor quality groundwater at a rate of 4.5 million gallons per day. Today, more than 8 years after construction and activation, the treatment facility has remediated about 11.5 billion gallons of groundwater to better than drinking water standards, and overall area of plume concentrations exceeding 100 parts per billion has been reduced by 80 percent.

In 1988, plume migration was successfully stopped, and since then it has been contained by operating the pump-and-treat system. At present, the 15-year completion time for remediating the plume is still on schedule, with a target date of 2002. In addition to treating trichloroethene-contaminated groundwater, the pump-and-treat system was also designed to reduce chromium concentrations to allowable levels. In 1994, ahead of schedule, the pump-and-treat system had successfully remediated chromium contamination in the groundwater.

By combining data from continuous monitoring of the plume with the results of hydrologic tracer studies, the installation is able to track the plume as it shrinks. The implementation of innovative procedures was made possible by the cooperative efforts of the Air Force, the University of Arizona, and regulatory agencies.

More than 8 years after construction and activation, the treatment facility has remediated about 11.5 billion gallons of groundwater to better than drinking water standards.

"Science and technology must be coupled with public understanding and trust."

Tadd McCall

U.S. Air Force Deputy Assistant Secretary for Environment, Safety, and Occupational Health

cooperatively to develop interstate mechanisms to speed acceptance of promising new technologies, will likely expand that effort nationally in the coming year.

DoD's efforts to improve stakeholder participation and acceptance will ultimately enhance private sector efforts at technology commercialization. To reach this goal

Environmental Technology

Proving the Process Works . . . the Air Force Bioventing Initiative

Achieving high performance, routine use, and widespread acceptance is a major accomplishment for any new technology. The Air Force bioventing initiative serves as a shining example of efficient and effective technology development, demonstration, and commercialization. Within only several years of beginning research and development on bioventing, the Air Force advanced the technology into numerous demonstration programs. Soon thereafter, EPA and many states approved the Air Force use of the bioventing technology. Since then, the Air Force has successfully transferred the technology to the commercial market, where it is now one of the most widely used methods of cleaning up soil contaminated with petroleum hydrocarbons. In addition, the Air Force has disseminated extensive cost and performance data to the environmental technology community.

DoD works with the Services to identify technology needs and prioritizes and communicates those requirements to the technology development community.

of enhanced commercialization, DoD is working with the Western Governors' Association subcommittee on stakeholder issues to improve public acceptance of new technologies.

Development of New Technology

Successful technology application begins with strong basic and applied research and development efforts. Establishing specific objectives based on clear user-generated requirements is crucial to the effective management and development of environmental technologies. This approach ensures that user specifications are met, resources are conserved, and duplication is avoided.

To coordinate and focus environmental technology development activities, DoD works with the Services to define technology needs. DoD then prioritizes and communicates Service-validated requirements to the technology development community. DoD supports new technology development through the Tri-Service Environmental Quality Laboratory Plan (sometimes called Green Book), which allows program funding to be matched to identified needs.

Under the Tri-Service Environmental Quality Laboratory Plan, DoD integrates the direct-funded Research and Development programs with the Strategic Environmental Research and Development Program, the Services' environmental research and development programs, and the U.S. Army Corps of Engineers Civil Works research and development programs. To coordinate and leverage resources, DoD has implemented a strategic reliance plan where the Services are designated as leads for various cleanup technology focus areas. For example, researchers at the Air Force's Armstrong Laboratory are developing a bioslurper system that improves the effectiveness of bioventing by removing free product before treatment.

The Strategic Environmental Research and Development Program is DoD's corporate environmental technology development mechanism. The pro-

gram funds government laboratories, academic, and private industry research and development of technologies needed by DoD, DOE and EPA. The program categorizes its research and development activities into technology focus areas. The cleanup focus area accounts for the largest percentage of program funds and includes 34 cleanup related technology projects.

The Mobile Underwater Debris Survey System (MUDSS) project is one of the Strategic Environmental Research and Development Program's promising new efforts. Through the MUDSS project, the program hopes to provide the Services with an effective technology for detecting unexploded ordnance on underwater ranges.

DoD is committed to the successful development and application of environmental technologies to ensure the continued success of its environmental restoration program. DoD has fostered the research, development, and transfer of new environmental technology and will continue that effort to provide better solutions for environmental problems—thereby protecting human health and the environment.

The Strategic Environmental Research and Development Program provides funds through DoD to support the development of technologies by DoD, DOE, and EPA.

Continued Opportunities for Small Business

Seattle District, U.S. Army Corps of Engineers

Willow Grove Air Reserve Station

Alameda Naval Air Station

Continued Opportunities for Small Business

President Clinton's Five-Point Plan for speeding cleanup and revitalizing communities effected by closure typifies the approach of thinking globally and acting locally. DoD's commitment to small businesses encourages them to get information about opportunities nationally and participate locally.

A key role in DoD's environmental restoration program is played by small businesses. Businesses that engage in environmental restoration work at DoD installations are usually located in the area and can provide unique insight into environmental restoration work in that locale. Such expertise is often responsible for providing innovative solutions to local problems.

Small firms have expertise that allows them to provide innovative solutions to local problems.

Employing almost 60 percent of American workers, small businesses account for half of all private sector growth. Small business participation in DoD programs has continued to rise since 1987, when Congress mandated that DoD set aside a percentage of its contracts to small and small disadvantaged businesses. During FY95, small businesses, small disadvantaged businesses, and women-owned businesses received $25.3 billion, or 23 percent, of all contracts awarded by DoD.

Working together, the Office of the Deputy Under Secretary of Defense for Environmental Security (ODUSD(ES)) and the Office of Small and Disadvantaged Business Utilization (SADBU) identified new opportunities for small businesses in the DoD environmental restoration program.

In FY95, the Environmental Cleanup/Small Business work group continued its effort to foster new initiatives for small businesses. Small business experts from the U.S. Army Corps of Engineers, the Navy, the Air Force, and representatives from ODUSD(ES) and SADBU meet monthly to exchange information and identify new ways to engage small businesses in environmental restoration.

To take advantage of the World Wide Web, the Environmental Cleanup/Small Business work group and the Defense Technical Information Center established the *Environmental Restoration Electronic Bulletin Board (http://www.dtic.dla.mil/envirodod/envirodod.html)*. This resource provides small businesses with a broad range of information about the DoD environmental restoration program.

DoD Helpnet Directory

Environmental Security	http://www.acq.osd.mil/ens/
Environmental Cleanup/ Small Business	http://www.dtic.dla.mil/ envirodod/envirodod.html
Small and Disadvantaged Business Utilization Office	http://www.acq.osd.mil/sadbu
U.S. Army Corps of Engineers	http://www.usace.army.mil
Navy Facilities Engineering Command	http://www.navy.mil/ homepages/navfac

The home page features:

- Long-range acquisition estimates from each of the Services
- The DERP FY94 Annual Report to Congress
- Various small business publications produced by SADBU
- Other information on the DoD environmental restoration program, including upcoming conferences and points of contact within each Component

The home page was devised to help small businesses save time and resources by consolidating contracting information for each of the Components. From April to December 1995, more than 93,000 inquiries were received by the home page from locations as far away as Europe, Asia, Australia, and South Africa.

In FY95, SADBU and the Environmental Cleanup/Small Business work group completed the *Guide to Department of Defense Environmental Procurements: Making the Most of Your Opportunities*. The guide provides procurement information small business owners need to know to work on DoD environmental restoration projects. The guide also

"Government can be as innovative as the best of our private sector businesses."

President Clinton

Addressing the White House Conference on Small Business

"In government, our task is to provide the tools to harness innovative talents for the benefit of the U.S. economy and America's Armed Forces."

Paul G. Kaminski

Under Secretary of Defense (Acquisition and Technology)

Small Business

Four small or small disadvantaged businesses were presented the first Annual Environmental Cleanup Small Business Awards during Earth Week 1995.

provides information on the goals of the DoD environmental restoration program, typical restoration tasks conducted by the Components, types of environmental contracts, Federal and state environmental laws, unique liabilities associated with environmental contracting, approaches for entering the DoD environmental market, and other valuable information. The guide can be accessed on the Environmental Restoration Electronic Bulletin Board.

The Environmental Cleanup/Small Business work group also helped develop training materials for its DoD small business representatives to raise their awareness of the many business opportunities available in the environmental restoration arena.

The Environmental Cleanup/Small Business work group created the Environmental Cleanup Small Business Awards to recognize small businesses that perform restoration work for DoD. The first annual awards were presented by Sherri W. Goodman, Deputy Under Secretary of Defense (Environmental Security) during Earth Week 1995. Four small and small disadvantaged businesses received the awards for outstanding performance records in DoD's environmental restoration program: Consultants of Alaska; Operational Technologies, Inc., of Texas; Cheyenne Building Contractors, Inc., of New Mexico; and the Environmental Chemical Corporation of California. These businesses were nominated by the DoD Components.

The following examples illustrate the value of small business participation in DoD's environmental restoration program and the innovative ways in which small businesses have assisted DoD in its mission to protect human health and the environment.

Award of Excellence for U.S. Army Corps of Engineers Seattle District, Washington

The U.S. Army Corps of Engineers Seattle District partnered with the Small Business Administration to increase the participation of small and small disadvantaged businesses in their environmental restoration program. Several medium-sized restoration projects were combined, and a basic ordering agreement was developed under the Small Business Administration's 8(a) program. The goals of the project included increasing small disadvantaged business participation in environmental contracting, selecting one team for the total life-cycle of restoration projects, and reducing the contracting effort required to accomplish cleanup at numerous relatively small sites.

The Small Business Administration presented an "Award of Excellence" to the Seattle District for its creativity in fostering opportunities in environmental restoration.

A team consisting of ten 8(a) firms and one large environmental firm was selected to provide restoration services at Fort Lewis, Washington, and other DoD locations in the Washington State area. The Seattle District had awarded 16 task orders to the team through the end of FY95.

The Small Business Administration presented an "Award of Excellence" to the Seattle District for its creativity in

A project engineer gives a representative of the Estonian Ministry of the Environment a tour of Willow Grove Air Reserve Station.

fostering opportunities in environmental restoration. In this positive effort, two Federal agencies and the private sector worked together to achieve mutual goals of protecting human health and the environment, while increasing economic opportunities for small businesses in the area.

Small Business Success at Willow Grove Air Reserve Station, Pennsylvania

The initial remedial action for a fuel oil-contaminated site at Willow Grove Air Reserve Station involved installing a traditional groundwater pump-and-treat system. In FY95, this method was changed to a vapor extraction and bioremediation system installed by a local small business. Benefits of the new system include substantially reduced costs and complete restoration in 3 to 5 years, instead of the 10 to 20 years typical of groundwater pump-and-treat systems.

The success of the vapor extraction and bioremediation method has even received international attention. Estonia, a small Baltic country formerly part of the Soviet Union, was at one time host to almost 500 Soviet Union military installations. As at DoD installations, contamination from leaking fuel tanks and pipelines present major environmental problems at these installations. The Director of the Environmental Impact Assessment and Normatives Division of the Ministry of the Environment of Estonia visited Willow Grove Air Reserve Station to gain a better understanding of bioremediation as a viable environmental restoration technology.

The Director of the Environmental Impact Assessment and Normatives Division of the Ministry of the Environment of Estonia, visited Willow Grove Air Reserve Station to observe the successful bioremediation techniques applied by a small business.

Small Business

As the contracting regulatory burden on small business decreases, Components will continue to form partnerships with small business.

BRAC Cleanup Support for Alameda Naval Air Station

Alameda Naval Air Station was placed on the BRAC list in July 1993. To assist the installation with its remediation efforts, the Navy hired a local small business to conduct removal actions. The firm selected provides technical support, advises the Navy on California's extensive regulatory requirements, assists with the risk assessment process, and gives presentations before the Alameda Restoration Advisory Board. The Navy rated this small business as an above-average contractor because of its versatility, rapid deployment, and excellent and timely support of the Navy's efforts.

As the Federal government continues to reduce the contracting regulatory burden on small businesses, the Components will continue to form partnerships with small businesses who can assist them with environmental restoration.

Building Partnerships

Langley Air Force Base

Pensacola Naval Air Station

Hanscom Air Force Base

Sierra Army Depot

Defense and State Memorandum of Agreement

The State of Alaska

The State of Texas

The State of California

Agency for Toxic Substances and Disease Registry

Norton Air Force Base

Fort Devens, South Post

New London Naval Submarine Base

Building Partnerships

"The DSMOA Program ensures cooperative arrangements between the states and the Armed Services, and fosters true partnership among the regulators and the regulated. ... experience with the DSMOA Program has demonstrated that state involvement on a cooperative, partnership basis can actually save Federal cleanup dollars and result in more efficient and timely cleanups."

Dan Morales

Attorney General for the State of Texas

continues to cultivate its relationships with regulatory agencies and other stakeholders. These strong partnerships based on mutual trust and cooperation, are vital to the success of the cleanup program. In many cases, close working relationships with regulatory agencies have expedited reviews of technical documents and enhanced DoD's ability to apply common sense approaches to site remediation. DoD also has found creative ways to share resources with its partners and is working on systematic methods to accelerate the regulatory oversight process. The multitude of partnering agreements is evidence of their importance in meeting environmental restoration requirements, given the increasingly limited resources and reduced manpower.

Partnerships DoD has formed with state governments and territories and with a Federal public health agency are discussed below. These formalized partnerships are providing vital support to DoD in mitigating potential conflicts and communicating health risks to the public.

Defense and State Memorandum of Agreement and Cooperative Agreement Program

The Defense and State Memorandum of Agreement (DSMOA) and Cooperative Agreement (CA) Program was developed to enhance state and territory involvement in the cleanup of DoD installations, specifically through the environmental restoration and BRAC programs. As a basic premise of the DSMOA Program, states and territories are reimbursed for services they provide in support of DoD restoration activities. In addition to fostering improved relations between the states or territories and DoD, this program supports the DoD-wide goals of achieving more efficient cleanup and developing new partnerships to address environmental restoration problems specific to or typical at DoD sites.

Through the U.S. Army Corps of Engineers, DoD negotiates DSMOAs

Variable Oversight at Langley Air Force Base

Increasing project expenses and delays in cleanups associated with regulatory agency oversight prompted the Air Force, EPA, state regulatory agencies, and various community groups to develop Variable Oversight (VO). VO is a concept of applying various levels of regulatory oversight and allowing different forms of project documentation based on site-specific factors. Partnership, facility-wide agreements, and up-front consensus agreements are integral to the VO initiative.

Regulatory oversight of restoration efforts involves detailed reviews of technical documents at all stages of investigation and remediation. This significant responsibility on the part of regulatory agencies is often hampered by increasing workloads and manpower and resource constraints, which can slow the restoration process. VO seeks to improve the efficiency of regulatory oversight and streamline communication by developing more focused reports, avoiding the submission of superfluous data to reviewers, and prioritizing oversight requirements. Facilities and sites are categorized according to their level of complexity and corresponding degree of oversight.

VO is designed to eliminate common barriers in communication and build consensus among stakeholders. The initiative is being demonstrated at Langley Air Force Base in Virginia where stakeholders, through regular meetings and consensus building, have ranked sites for their applicability to the VO process, reached consensus on basewide agreements, established alternative forms of communication, and developed alternative, focused documents.

Based on the demonstration, the Air Force anticipates that VO will accelerate environmental investigations by 30 percent, reduce Air Force costs by 10 percent, and reduce regulatory agency costs by 40 percent. The VO process, if proven effective, could greatly enhance the management of environmental restoration programs throughout the Federal government, saving time, manpower, and money.

"As the Federal government looks to streamline the cleanup process, the Variable Oversight method will be one of our tools."

James Woolford

Director, Federal Facilities, Restoration and Reuse Office, EPA

with states and territories, as well as manages and awards CAs. Two actions are required for a state or territory to enter the program. First, the state or territory must sign a DSMOA that establishes the terms and conditions for reimbursable technical support. Second, the state must submit a CA application for approval before reimbursement can be made available. Program costs are tracked according to guidelines and regulations used to manage Federal grants. Since DSMOA's authorization in 1986, nearly $140 million has been provided to states and territories assisting DoD. This investment has resulted in cost avoidance, expedited cleanups throughout the country, and improved community relations.

Under the DSMOA Program, DoD and the states and territories work together to assess cleanup plans for specific sites.

Building Partnerships

The Navy worked closely with EPA and the State of Florida to combine resources and accelerate the cleanup schedule.

Sharing Resources with EPA, Pensacola Naval Air Station

At Pensacola Naval Air Station (NAS), a partnership was developed among the Navy, EPA Region 4, and the State of Florida. Faced with funding cuts, the Navy made use of personnel and technical resources within EPA. By working together, the investigations were completed in one quarter of the scheduled time with 10 percent of the allotted budget.

While conducting environmental studies at Pensacola NAS, the Navy realized the need for further data to adequately characterize the source and extent of groundwater contamination. Initially, the Navy evaluated its internal resources to determine the most cost-effective options available to achieve project objectives. The results of this evaluation indicated that funding constraints could inhibit the Navy's ability to complete the study. Therefore, the most promising asset became the EPA Region 4 Engineering Services Division, who were conducting regulatory oversight at the installation. The Division agreed to collect data fulfilling EPA's regulatory oversight requirements and to provide that data to the Navy to determine the extent of groundwater contamination.

EPA Region 4 Engineering Services Division staff collect groundwater samples at Pensacola Naval Air Station.

After 35 temporary wells were installed, a mobile laboratory was used to analyze the samples overnight. Once the extent of groundwater contamination was determined, a strategic plan was developed, and permanent wells were installed to collect definitive data. Groundwater samples from the new and existing wells and 100 soil samples were analyzed by the EPA Region 4 analytical laboratory in Athens, Georgia. Division site reports will be submitted to the Navy for inclusion in the supplemental remedial investigation.

Because the Pensacola NAS team combined resources and worked together to determine the scope of field work, a study estimated to cost $200,000 was accomplished for less than $20,000. In addition, the project was completed 1-1/2 years ahead of schedule.

Before the DSMOA program, many states did not have adequate personnel to perform their role in a timely manner.

Through FY95, DoD had signed 48 DSMOAs with 43 states and five territories for reimbursable services related to environmental restoration. To understand the value of the DSMOA Program, it is helpful to examine how DoD conducted business with states and territories before the program took effect.

Before the DSMOA Program—Prior to the DSMOA Program, relations between the states and DoD were not based on a partnership approach. DoD followed Federal regulations that prescribed how to implement a cleanup and conclude operations. However, Federal regulations do not always meet state or territorial laws and requirements. Even though DoD and the states and territories share the same goal of protecting human health and the environment, their methodologies do not always agree.

Before the DSMOA Program, many states did not have adequate personnel to perform their regulatory role in a timely manner, particularly for the numerous Federal facilities within their jurisdiction. Those states that completed regulatory reviews did not

Successful Partnering Efforts at Hanscom Air Force Base

Hanscom Air Force Base (AFB) has demonstrated that solid partnerships with regulatory agencies and the community can help to achieve environmental restoration with greater efficiency, while maintaining protection of human health and the environment. Hanscom AFB and the Massachusetts Department of Environmental Protection worked cooperatively throughout the 1980s and early 1990s to achieve significant environmental restoration progress. However, when Hanscom AFB was placed on the National Priorities List (NPL) in May 1994, both the Air Force and the state became concerned that the momentum their restoration efforts had achieved might be lost. The NPL listing meant that EPA would become the lead regulatory agency, a position formerly held by the state. To avoid a potential confrontational situation, representatives from Hanscom AFB, the state, and EPA met to discuss their concerns and work together on a common-sense approach to environmental restoration at the installation.

A Project Team was established consisting of representatives from Hanscom AFB, the state, and EPA. The Project Team, which has developed an outstanding working relationship, uses consensus statements to document cleanup and oversight agreements. To date, six consensus statements have been issued by the Project Team. Its first consensus statement enabled restoration work to progress in advance of the Federal Facilities Agreement.

Hanscom AFB completed a removal action in half the average time using the Project Team's approach. The Air Force and EPA were able to jointly prepare an engineering evaluation/cost analysis for the removal action in-house; avoiding contracting costs and significantly reducing the time needed to review and comment on the document. In another instance, the Air Force and EPA leveraged available resources to jointly collect and analyze surface soil samples for metals without incurring the costs of outside contractors.

Partnering at Hanscom AFB also involves the community. The Restoration Advisory Board actively participates in and validates both the relative risk site evaluation and project priority-setting process at Hanscom AFB.

When Hanscom AFB was placed on the NPL; the Air Force, the State of Massachusetts, and EPA issued six consensus statements that allowed restoration work to proceed.

always have enough time to become well-informed about DoD cleanup activities, which led to numerous misunderstandings. States and territories that disagreed with DoD often turned to the courts to resolve their disputes and force DoD to comply with their laws.

Such protracted litigation is often costly and divisive, and it does not always produce results either party wants. Environmental cleanup, already a complicated process, is even more burdensome when subjected to litigation.

DSMOA Today—Under the DSMOA Program, DoD and the states and territories work together to assess cleanup plans for specific sites. State and territorial laws and regulations are identified early in the cleanup process, and regulatory personnel are intimately involved in the early phases of restoration. The result of this process is a plan that both parties agree to, with most cleanup standards based on individual state or territorial laws and regulations. As the cleanup progresses, better working relationships develop between DoD and the states.

Reducing Conflict Between DoD and the States—DSMOAs have provided a means for DoD to work out conflicts and resolve potential problems with regulatory agencies from states and territories. This type of forum did not exist before the DSMOA Program was established. Since 1990, no administrative or judicial litigation has been

State and territorial laws and regulations are identified early on in the cleanup process, and regulatory personnel are intimately involved in the early phases of the restoration.

Building Partnerships

A Working Partnership at Sierra Army Depot

The Sierra Army Depot received the first approval in the U.S. for the application of natural attenuation and degradation to remediate groundwater contaminated with explosives and the carcinogen trichloroethene. Through a partnership developed with the State of California, the Army successfully negotiated a cost-effective, risk-based cleanup alternative that was approved in a Record of Decision signed in FY95.

Natural attenuation is a safe, inexpensive, scientifically valid cleanup strategy that can save millions of dollars in cleanup costs compared to conventional groundwater treatment systems. Natural attenuation uses biological organic processes to degrade contaminants in groundwater, while contaminants remain isolated from critical environmental receptors until cleanup levels are reached.

The approved ROD was the direct result of a proactive partnership between the Army and the State of California. Through the DSMOA Program, the Army was able to work with regulatory agencies to obtain approval for the first application of this technology. The local community was confident in the selection of natural attenuation, and it demonstrated this confidence at numerous public meetings.

By teaming with regulatory agencies and gaining community support, the Army was able to gain approval for a process that once considered an insufficient cleanup technology, allowing the Army to demonstrate a successful and cost effective treatment application.

Since 1990, no administrative or judicial litigation has been initiated by the states against DoD.

initiated by the states or territories against DoD. The direct results of this lack of litigation include cost avoidance and accelerated cleanups.

Avoiding litigation is an obvious benefit of the DSMOA Program. However, as the program has matured, DoD has reaped other benefits. Most notably, substantial cost savings or cost avoidance have resulted from state participation in the program. In numerous cases, states have helped DoD save millions of dollars in cleanup costs by suggesting the use of innovative cleanup methods, reducing the amount of sampling and analysis required, and by openly exchanging information and transferring technologies. By using common sense and learning to work together,

Partnership Leads to Real Results in Alaska

Since 1990, the State of Alaska has participated in the DSMOA program. According to the Alaska Department of Environmental Conservation, participation in the program has resulted in the following benefits:

- The partnership has enabled both parties to avoid litigation, reduce complicated and time-consuming paper trails, and save money.
- The Alaska Department of Environmental Conservation and DoD work directly with communities to find cost-effective and timely solutions to accelerate cleanups. In addition, a number of cleanup and closure methods suited to Alaska's unique conditions have been developed.
- At the Nome Area Sites, the state is working closely with DoD to develop an alternative cleanup plan that would allow a 1 million-gallon underground storage tank to be reused as a garage, saving more than $250,000. Earlier phases of this project employed 110 local workers at the site.
- At Adak Naval Air Station, the state worked with the Navy to negotiate major design changes on two disposal areas, achieving a cost avoidance of $11 million.

Cost Avoidance and Time Savings at DoD Installations in Texas

According to the Texas Natural Resource Conservation Commission, the state's participation in the DSMOA Program since 1991 has resulted in the following cost avoidance and time savings measures as well as other benefits to DoD and the taxpayers:

- DoD avoided the need for an additional $88.5 million in environmental restoration costs because state DSMOA staff recommended less costly remedies pursuant to state and local public health and environmental requirements. Installations where significant cost savings were realized include: Fort Bliss ($6 million); Chase Field Naval Air Station (NAS) ($50 million); Longhorn Army Ammunition Plant (AAP) ($8 million); Dallas NAS ($2.5 million); Bergstrom AFB ($4 million); and Kelly AFB ($18 million).
- State review of DoD documents was shortened by 120 to 180 or more days, accelerating schedules and expediting cleanups or transfer of Federal land for private development. Expedited state review and response were particularly beneficial at the following installations: Fort Bliss, Bergstrom AFB, Chase Field NAS, Dallas NAS, Kelly AFB, and Brooks AFB.
- State participation in Restoration Advisory Boards resulted in better and more representative community involvement. Installations where the state has had an active role in Restoration Advisory Boards include: Kelly AFB, Reese AFB, Bergstrom AFB, Brooks AFB, and Dallas NAS.
- State guidance provided through the DSMOA Program has precluded fines at many DoD installations.

"The DSMOA Program provides resources to states to help speed cleanups and expedite community reuse plans."

George W. Bush, Jr.
Governor of Texas (R)

Consensus Building Leads to Success in California

Since 1990, California has utilized DSMOA funding to assist DoD in avoiding an estimated $430 million in cleanup related costs. These savings have been accomplished through consensus decision making, Fast-Track Cleanup strategies, and the use of innovative technologies. In addition, the DSMOA Program has enabled Federal and state resources to be focused on cleanup rather than lengthy negotiations and cost recovery settlements. The following examples illustrate the benefits of the DSMOA Program:

- At Fort Ord in Monterey County the regulatory agencies assisted the Army in negotiating a lease agreement with the county to allow for the expansion of an existing racetrack. Without the expedited land transfer, an estimated $20 million would have been lost annually to local businesses and county agencies.
- At George Air Force Base (AFB), in San Bernardino County, regulatory agencies agreed to allow DoD to conduct a five-year study on an innovative technology (natural attenuation) to treat contaminated groundwater. This study avoided an estimated $30 million in conventional pump-and-treat system costs.
- At the Hamilton General Services Agency sale parcel, Hamilton Army Airfield, Marin County, the Army entered into a sales agreement for the purchase of a portion of the sale parcel. The state and the Army worked together to develop an expedited schedule, which generated 2,000 jobs and enabled DoD to avoid paying $10 million of reimbursed redevelopment costs.
- At McClellan AFB in Sacramento County, the state has been an integral member of the cleanup team, which serves as a national model for DoD partnership. The team, which includes the Air Force, EPA, and the state, has worked diligently to develop cost and timesaving initiatives for remedial actions. These efforts have resulted in cost savings of about $320 million.
- At Sacramento Army Depot in Sacramento County, the state adopted emergency regulations to designate a specified area for soil consolidation and stabilization, an effort that will reduce DoD's cleanup costs by $7 million and allow unrestricted use of a 10-acre site. In addition, 318 acres have been transferred to the City of Sacramento, which in turn, leased the property to Packard Bell. The lease has generated 5,000 new jobs in the area.

California identified impacts of DSMOA funding cuts that include the dissolution of the established partnership, initiation of enforcement measures, reduction of parcels transfered, and limitation of community involvement.

Building Partnerships

ATSDR's public health activities at DoD NPL sites are a valuable tool to both the local community and to DoD.

DoD and the states and territories have achieved benefits that have exceeded all expectations.

Agency for Toxic Substances and Disease Registry

The Agency for Toxic Substances and Disease Registry (ATSDR) is a Federal public health agency that reports directly to the Surgeon General. Under CERCLA, ATSDR was given the authority to provide a variety of health services to protect human health at the most toxic hazardous waste sites in the country.

In 1986, Superfund was reauthorized and expanded to include Federal facilities. Subsequently, DoD installations were placed on the National Priorities List (NPL). ATSDR's programs are required for sites listed on or proposed for listing on the NPL, as well as sites that are the subject of a petition from the public. ATSDR also develops toxicological profiles on unregulated hazardous substances commonly found at DoD NPL sites. Currently, 25 profiles are being developed for DoD NPL sites. Each profile examines the level of significant human exposure to a contaminant and the associated health effects, and specifies levels of exposure that present a significant risk to human health.

ATSDR assists DoD with expediting cleanup decisions and transferring property by providing health consultations on relevant public health issues on request.

ATSDR's public health activities at DoD NPL sites are a valuable tool to both DoD and the local community. ATSDR often assists DoD in resolving community health concerns about the release of hazardous substances from DoD activities. When needed, ATSDR provides its services on an emergency response basis. To allay community concerns, ATSDR must provide a credible, independent assessment of the situation at hand. It performs this assessment through a variety of methods, including consultations and health studies that involve public comment periods and community assistance panels; health education to the community; and education for DoD and private health care providers.

ATSDR also plays a role at BRAC installations, where the public's concerns are more often economic than health related. ATSDR assists DoD with expediting cleanup decisions and transferring property by providing health consultations on request. DoD provides funding to ATSDR through a Memorandum of Understanding that was signed in 1990 and is effective through September 2000.

ATSDR activities at DoD installations include site visits to the installation and surrounding communities. ATSDR ranks sites based on potential public health hazards, before beginning public health assessments at the sites presenting the greatest risks.

During FY95, ATSDR conducted the following public health activities at DoD installations on the NPL:

- Produced site summary reports for public health assessments at 12 DoD installations
- Completed health consultations at 28 installations to expedite cleanup activities and address community health concerns

The Value of the Partnership Between DoD and ATSDR

The citizens near **Norton Air Force Base, California,** expressed concern about radiation in groundwater and requested an evaluation from ATSDR. ATSDR provided the citizens with case studies and toxicological profiles on radiation, attended the Restoration Advisory Board meeting, and reviewed radiation studies conducted by Norton Air Force Base. ATSDR concluded that the radiation in the groundwater was due to natural background levels and assured the citizens that the levels in the drinking water are safe.

The Massachusetts Department of Environmental Protection (MADEP) sought ATSDR expertise to review remedial investigation reports for explosives in groundwater. ATSDR concluded that groundwater at **Fort Devens, South Post, Massachusetts,** poses no threat to human health because no one uses it as drinking water. Furthermore, the data does not suggest that significant site contamination has migrated from the source. MADEP also asked ATSDR to determine if metal levels in Mirror Lake were a health concern. ATSDR concluded that the levels of metals detected in the fish tissue are safe for people who eat fish caught in Mirror Lake.

In the public health assessment prepared for **New London Naval Submarine Base, Connecticut**, ATSDR recommended that the Navy sample air inside the Nautilus Museum to determine if it is being affected by landfill gases. After the Navy completed sampling, ATSDR reviewed the data and determined that there is no health risk to museum visitors and employees.

- Completed the final Public Health Assessment for Weldon Springs Ordnance Works in Missouri and submitted health assessments for public comment at four installations: Camp Lejeune, North Carolina; Rocky Mountain Arsenal, Colorado; Tinker Air Force Base, Oklahoma; and Defense Distribution Depot Memphis, Tennessee
- Submitted draft final health studies to an independent peer review panel for Cornhusker Army Ammunition Plant, Nebraska; McClellan Air Force Base, California; and Otis Air National Guard Base/Camp Edwards, Massachusetts
- Continued its community and physical health education in communities around Ellsworth Air Force Base, South Dakota; McClellan Air Force Base; and Cornhusker Army Ammunition Plant
- Completed eight and solicited public comment on 11 DoD toxicological profiles

ATSDR also reviewed two remedial action alternatives for groundwater discharge at the Fridley Naval Industrial Reserve Ordnance Plant in Minnesota. ATSDR concluded that both alternatives, discharging treated water to the City of Fridley's drinking water system or to the Mississippi River, are safe.

The mutual goal of protecting human health is the basis for a strong partnership between DoD and ATSDR. The information gained and the lessons learned as a result of this partnership have greatly enhanced the environmental restoration program and will continue to do so.

DoD provides funding to ATSDR through a Memorandum of Understanding that was signed in 1990 and is effective through September 2000.

ATSDR also provides 24 hour emergency response assistance, which can be contacted at (404) 639-0675.

Return On Investment

Jacksonville Naval Air Station (NAS JAX)

Robins Air Force Base (Robins AFB)

Fort Lewis

Defense Distribution Depot Ogden (DDOU)

Sacramento Army Depot (Sacramento)

Homestead Air Force Base (Homestead AFB)

Alameda Naval Air Station (Alameda NAS)

West Virginia Ordnance Works (WVOW)

Return on Investment

The Department of Defense and the nation have made a significant investment in environmental restoration of defense installations and formerly used defense sites. The current momentum of the program must be maintained to ensure that past and future investments, both in terms of dollars and lessons learned, can continue to provide maximum return. It is important to look at where the program has been and the lessons and perspective that the history of the program can teach us. We are all much wiser today because of these lessons learned.

Looking back at where the program has been and how it has matured, particularly regarding past barriers to success and some of the lessons learned, the installation experience stories that follow this section provide additional insight into DoD's environmental restoration program and reinforce the importance of maintaining the momentum that the program has achieved over the past several years. The timeline on page 70 depicts the evolution of DoD's environmental restoration program.

The Beginnings of the Nation's and DoD's Environmental Restoration Program

Although the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also known as "Superfund," was not directly applicable to Federal facilities when enacted in 1980, it provided the impetus for DoD's environmental restoration program. When DoD installations began addressing contaminated sites in the mid- to late-1970s, efforts were generally limited to identifying hazardous waste disposal sites and mitigating or controlling known contamination.

In these early years, DoD found itself facing two distinct challenges: (1) understanding the regulatory and technical uncertainties and complexities of environmental assessment, and (2) anticipating congressional intent

and legislative action to formally establish a Defense Environmental Restoration Program. It was not until the FY84 Defense Appropriations Act was passed that Congress provided funding for the program. Line-item appropriations continued in FY85 and FY86. During this period, DoD continued to focus on identifying sites, mitigating imminent threats, and gathering information for CERCLA-required health-based risk assessments.

The Defense Environmental Restoration Program is Formally Established

In October 1986, Congress passed the Superfund Amendments and Reauthorization Act (SARA), which authorized the Secretary of Defense to carry out the Defense Environmental Restoration Program under the Department's jurisdiction and formally established the Defense Environmental Restoration Account (DERA). Significant impacts of SARA included the following:

- CERCLA and SARA became statutory requirements for DoD.
- Terminology and procedures for the program were modified to match those provided in the National Oil and Hazardous Substances Contingency Plan (NCP).
- EPA and the states were given broad power to review, comment, and, in some instances, approve documents and decisions.
- Specific reporting requirements, schedules for Federal facilities to complete certain actions, and program and project timetables were established.
- Federal facilities became subject to listing on the National Priorities List (NPL).
- Interagency Agreements (IAG) between EPA and Federal facilities on the NPL were mandated, with state participation strongly encouraged.

While SARA granted authority and recognized funding to DoD's environmental restoration program, it also brought additional changes and uncertainty, especially regard-

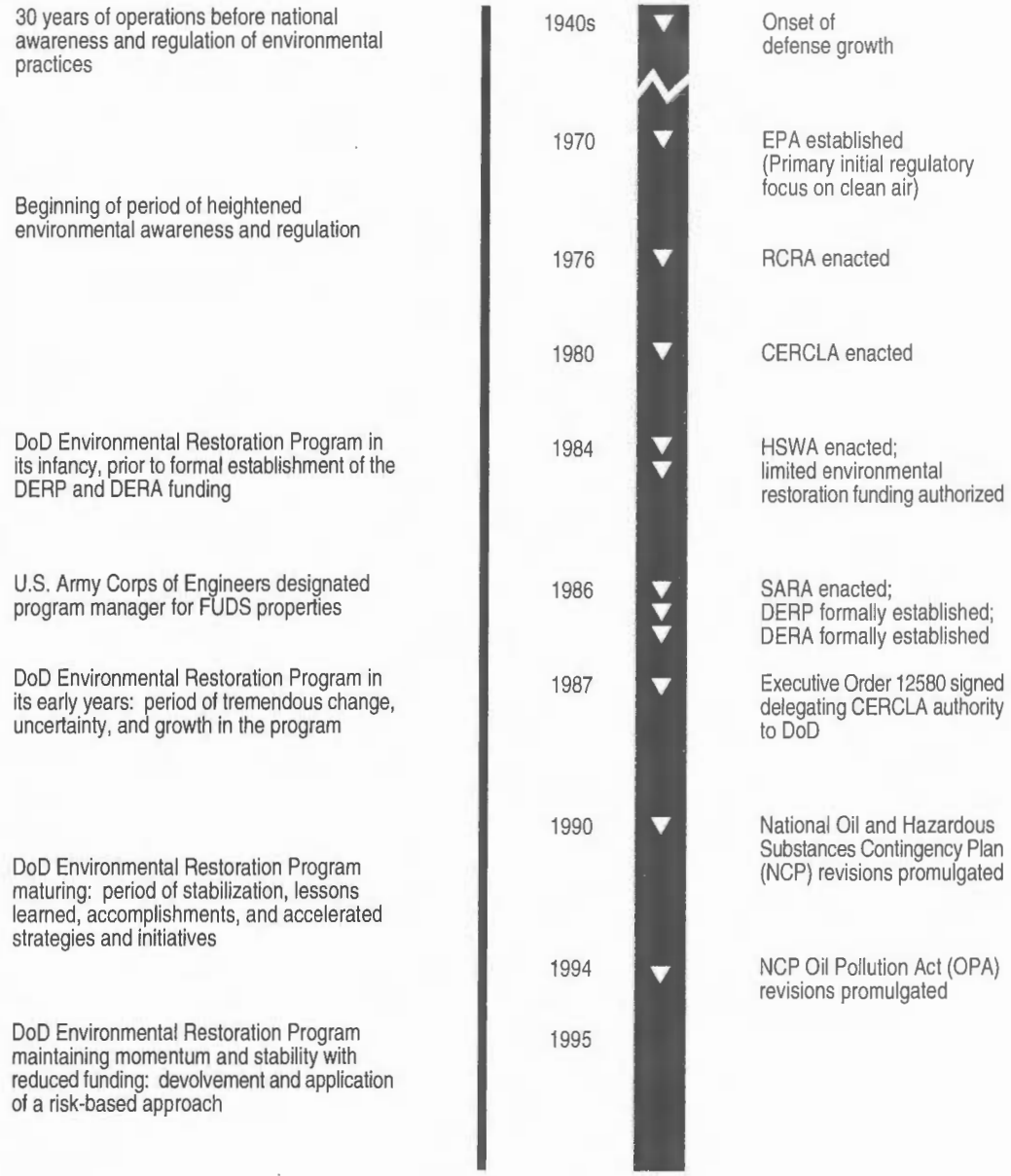
Return on Investment

The Evolution of the Restoration Program

"At DoD, we are turning the corner and getting the job of environmental cleanup done. The reason why, I believe, is that we have one of the best managed cleanup programs both in and out of the Federal government."

Patricia A. Rivers, P.E.

Assistant Deputy Under Secretary of Defense (Environmental Cleanup)



ing NPL listing, IAGs, and the relationship among DoD, EPA, and the states.

The Environmental Restoration Program on the Learning Curve

In the early- to mid-1980s, DoD's environmental restoration program was in its infancy, as was the nation's Superfund program. Little guidance was available, and few, if any, real lessons learned could be shared with DoD or others in the regulated community. As EPA began to promulgate rules and regulations to implement CERCLA, and as program activities began, the many uncertainties associated with environmental restoration began to emerge. These uncertainties include issues related to site investigation and characterization, risk assessment, risk communication, cleanup standards, cleanup remedies, available technology, and cost. As these issues and factors were scrutinized and debated, they became barriers to effective and efficient site investigation and cleanup.

For NPL sites, SARA requires that DoD enter into an IAG with EPA within 180 days of completing the remedial investigation and feasibility study. DoD established a policy to enter into agreements as soon as possible after a site was placed on the NPL. While there were positive aspects to this approach, many agreements and enforceable schedules were established without a complete understanding of the cost or technical implications of the agreement. In fact, little was known about most of the sites at this early stage of the restoration process.

Then, as now, the goals of the environmental restoration effort were clear: to protect human health and the environment. This protection generally took the form of acting as quickly as possible to mitigate the spread or impact of contamination once it was identified. To complete these actions quickly, DoD and the regulatory community were sometimes forced to enter into agreements rapidly.

DoD and the regulatory community came to realize that the extent of contamination problems and the effectiveness of available environmental technologies had been greatly misunderstood. Both regulatory agencies and the regulated parties alike characterized the first 10 years after passage of CERCLA as "the learning curve" years. While there were real accomplishments and successes, and contaminated DoD sites were remediated during this period, environmental restoration did not proceed systematically from "dirty" to "clean."

Making the Investment in a Mature Program

In recent years, several improvements have been made to the environmental restoration program. The results of recent efforts—creating partnerships, developing flexible contracting mechanisms,

accelerating cleanup, involving communities, improving decision-making, communicating risk, and developing more effective environmental technologies—are featured in this report.

Another necessary program improvement has only recently been developed—risk-based prioritization on a national scale. This recent initiative to improve the process, developed by both DoD and portions of the regulatory community, is based on both accepted methodologies and the lessons DoD has learned in the past decade about investigating and characterizing the nature and extent of environmental contamination at sites across the nation. By using a consistent risk-based approach to categorize sites, DoD is better able to protect those people who are potentially most affected by the legacy of past practices, both inside and outside military installations.

DoD recognizes that risk-based prioritization alone cannot achieve the kind of response that Congress and the public expect. Nevertheless, it is an integral, perhaps critical, part of DoD's overall strategy. DoD must continue to reach out to communities affected by its past activities, communicate risk and uncertainties to the public, partner with its fellow governmental agencies to solve problems collectively, and invest in better and less costly environmental technologies. These outreach efforts and initiatives will ensure that the past 15 years of investment in protecting the nation's citizens and natural resources continues to yields a return that can be enjoyed now and in the future.

Looking back at where the program has been and how it has matured, particularly regarding past barriers to success and some of the lessons learned, the following installation experience stories provide a better overall understanding of DoD's program and emphasize the importance of maintaining the momentum that the program has achieved over the past several years. Other stories in this report reinforce these themes and provide other real-life examples of lessons learned and successes of the program.

Jacksonville Naval Air Station, Florida

Contracting and Partnering

Jacksonville Naval Air Station's experience illustrates the commitment DoD has made to learning and applying lessons, finding the right tools, and working with its regulatory partners to develop a consistent, cohesive, stable program of environmental restoration.

Restoration processes have been in place at Jacksonville Naval Air Station since 1980, when environmental assessments were initiated.

Serving The Country and the Mission of Defense

The Jacksonville Naval Air Station (NAS JAX) has been a part of the City of Jacksonville since its commission in 1940. The varied activities involved in operating and maintaining an air station have been vital to supporting the defense mission during both wartime and peacetime.

One of the major consequences of the installation's industrial and municipal type operations has been contamination of the environment. The story of NAS JAX typifies the actions DoD has taken to address potential contamination from past practices as well as the many lessons that have been learned and applied to DoD's environmental restoration program.

NAS JAX contains many types of sites common to DoD installations, including fuel storage areas, landfills, and fire fighting training areas.

NAS JAX is located along a 2-mile stretch of the St. Johns River south of the City of Jacksonville

Impacts to the Environment

In response to growing environmental concerns and the promulgation of CERCLA and DoD policy initiatives, the Department of the Navy began conducting environmental assessments at its installations in 1980. A Preliminary Assessment at NAS JAX was completed in early 1983; it identified 38 sites and recommended 10 for further investigation. The emphasis of the assessment at NAS JAX, like all other DoD installations, was on identifying Superfund-type sites, such as landfills and disposal pits, as well as areas where major spills or releases of hazardous substances had occurred or where hazardous wastes had been disposed. Unlike the Superfund program, however, DoD's program also considered major spills or releases of fuel and other petroleum products.

Unlike Superfund, DoD includes major fuel spills in its restoration program.

As would be expected, the 38 sites identified were representative of the types of operations that had been conducted at NAS JAX over the years combined with common waste management and disposal practices of the time. A number of sites showed signs of contamination from spills or releases of hazardous substances that could be directly associated with an operation that required the storage and use of such substances, such as the battery shop, the old engine test cell building, and the torpedo rework facility. Other sites at NAS JAX are very common to large DoD installations, such as the base landfill and firefighting training areas. A number of sites where fuel storage, typically in underground storage tanks, and fuel transfer operations took place were also identified for suspected contamination, such as the fuel farm and the base service station.

Since the Preliminary Assessment in 1983, the Navy learned what other DoD environmental managers were also learning about their program; their experience, and the lessons they learned, became the foundation of a mature environmental cleanup program.

The Right Contract Tools

The Navy experienced a steep learning curve while developing its environmental restoration program. After the passage of SARA in 1986, a new remedial project manager (RPM) was assigned to manage NAS JAX's program. Like most RPMs and others involved in environmental restoration at the time, the RPM was brand new to the program and was faced with a significant workload. The infancy of the program was reflected in personnel and funding resource issues, DoD contractors, who were also relatively inexperienced, and in the types and capacity of contracts available at the time.

One of the first lessons learned by the Navy was the need for the right contracting tools.

At that time, all RPMs devoted much effort to becoming familiar with the program, learning the regulations, and generally "coming up to speed." A great deal of time and effort was spent developing and processing scopes of work to "fit" fixed price contracts with short terms and limited capacities. Scopes of work for these contracts proved to be very cumbersome because of the difficulty in fully specifying and quantifying environmental restoration work.

Jacksonville Naval Air Station, Florida

The Navy quickly recognized that their RPMs did not have the right contracting tools to get the job done. In 1988, the Navy developed an acquisition plan for long-term, large-capacity, cost-reimbursement contracts, to be known as the Comprehensive Long-Term Environmental Action Navy (CLEAN) contracts. One of the first major lessons learned by the Navy was the need for cost reimbursement contracts and a full complement of contract types and capabilities.

Partnering and the DSMOA Program

In 1989 NAS JAX was listed on the NPL and a Federal Facility Agreement (FFA) was negotiated and signed. The FFA provided the initial framework for finding common ground and understanding. First, it was a three party agreement—signed by the Navy, EPA, and the State of Florida. Second, it establishes CERCLA as the regulatory basis under which the environmental restoration program will be carried out. With the exception of petroleum-contaminated sites, all sites previously identified in the Preliminary Assessment were included as sites to be subject to the FFA. While the FFA contains time tables for the review and response to comments on documents the Navy developed, no schedules for the submittal of these documents were formalized in the FFA. Instead, the FFA calls for the annual negotiation and submission of a Site Management Plan for establishing enforceable schedules.

The Navy, EPA, and the State of Florida pursued a partnering initiative. Perhaps the most important lesson learned by all stakeholders was the need for effective communication and partnership.

NAS JAX's primary mission is to support aircraft flight and training operations

While the Site Management Plan was designed to provide year-to-year flexibility in enforceable schedules, a dispute over schedules and the content of CERCLA documents prepared by the Navy under the FFA resulted in the Navy, EPA, and the State of Florida entering into a formal partnering process in early 1993. Although EPA and the Navy were hesitant to set aside their respective rights and authorities, the lack of progress made during a year spent in dispute resolution inspired both parties, with urging from the state, to pursue a partnering initiative.

During this same time period, DoD implemented the Defense and State Memorandum of Agreement (DSMOA) and Cooperative Agreement (CA) program. The DSMOA program helped the State of Florida provide the personnel needed to make the partnering initiative a success. In addition, the State of Florida added staff to support the installation and to be more responsive to participating in the Navy's overall program.

EPA Region 4 / Navy / Florida
ENVIRONMENTAL RESTORATION PARTNERSHIP

PARTNERING CHARTER - APRIL 1, 1993

Goal: To characterize and respond as appropriate to additional risk posed by release of hazardous substances to public health and welfare and the environment at Navy and Marine Corps installations.

Mission: To structure an effective program for prompt environmental restoration that will be a model for similar efforts elsewhere.

Partnership: Teams are empowered and operate cohesively to achieve our environmental restoration goal.

We, the partners, commit to teamwork to achieve these objectives:

- ☐ Develop ways to determine acceptable program risk in fostering progress
- ☐ Eliminate barriers to a faster more cost-effective program
- ☐ Clarify roles and responsibilities of each party
- ☐ Make our processes more efficient
- ☐ Create organizational cultures able to accommodate change
- ☐ Provide for a greater exchange or lessons learned
- ☐ Obtain consensus on short and long-term budget and implementation plans
- ☐ Promote success and cooperation
- ☐ Develop innovative ways to acquire and administer contracts
- ☐ Demonstrate and use innovative technologies
- ☐ Foster community participation
- ☐ Resolve conflicts through a coordinated work effort to avoid adversarial relationships
- ☐ Maintain professionalism and enthusiasm and encourage communication to make the partnering educational and enjoyable
- ☐ Reinforce the partnership with honest feedback and continual improvement

Furthermore, NAS JAX, in step with the Navy's full commitment to the environmental restoration program, created an Installation Restoration Program Manager position to oversee actual cleanup operations and serve as the co-chair on the Restoration Advisory Board among other duties. The base also assigned an Installation Restoration Public Affairs Officer to manage the community relations program.

With many important lessons learned and the tools in place to take advantage of those lessons, NAS JAX was praised for success. Substantial progress has been achieved over the past years as a direct result of these lessons learned and related initiatives. Although funding cuts in FY95 have threatened the partnering process and slowed progress, the Navy is working hard to promote stability of the environmental restoration program at the installation level in order to maintain the momentum and ensure continued success.

Robins Air Force Base, Georgia

NPL and Partnering

The environmental restoration program at Robins Air Force Base (AFB) is typical of the history and lessons learned at other DoD installations. The story that follows discusses the advantages and disadvantages associated with placement on the NPL. It also emphasizes the importance of top-down commitment to environmental restoration and the value of aggressive outreach efforts to regulatory agencies and the public.

DoD restoration program sites reflect the types of contamination caused by industrial operations conducted over the last six decades in support of the defense mission, and the effects of common waste management and disposal practices of the time.

Since March 1, 1942, when the installation was officially activated, Robins AFB has provided an ever increasing and vital role in support of our nation's defense. The installation currently is home to the Warner Robins Air Logistics Center, Headquarters Air Force Reserve, an air refueling wing of the Air Combat Command, and Air Force Communications Command's 5th Combat Communications Group.

Occupying about 85 percent of the installation, the Air Logistics Center manages the Air Force's F-15 fighter aircraft, C-141 and C-130 transport aircraft, 11 types of cargo and utility aircraft, 4 series of helicopters, 3 types of remotely piloted vehicles, and 8 missile systems. Robins AFB is also the exclusive technology repair center for Air Force airborne electronics, gyroscopes, and life support systems. These activities at the Warner Robins Air Logistics Center make Robins AFB the largest industrial complex in Georgia.

Many historical waste management and disposal practices, although common and accepted in their day, have contaminated groundwater, surface water, and soil at Robins AFB. The installation's environmental restoration program has implemented measures to address environmental contamination resulting from historical practices and has developed new operational procedures to protect the environment from the effects of current and future activities.

Impacting the Environment

Contamination at Robins AFB is typical of the type found at many military installations, particularly those with heavily industrialized manufacturing and support functions. The history of environmental cleanup is also fairly typical, particularly in the manner contaminated sites are being addressed under both CERCLA and RCRA. Investigations have revealed that areas of the installation are contaminated with petroleum products, lubricants, pesticides, and other hazardous substances. The installation also has several landfills, fuel storage areas, fire fighting training areas, and maintenance areas that are included in the environmental restoration program.

Assessing Consequences to the Environment

As with any large industrial operation, especially those dating back several decades, unintended consequences to the environment have occurred at Robins AFB. Some examples of the types of hazardous materials used and wastes generated over the years at the installation are:

- Solvents and petroleum products used to operate and maintain aircraft and other vehicles and equipment
- Plating shop, machine shop, and metal bonding shop materials used in the maintenance and repair of aircraft, equipment, and parts
- Sludges from the wastewater treatment plant
- Pesticides and herbicides used to eliminate rodents and weeds
- Paints and paint solvents used to maintain aircraft, installation facilities, and vehicles
- General household solid waste from day-to-day activities at the installation

In 1987, two sites at the installation were placed on the National Priorities List. This required the Air Force to enter into an Interagency Agreement with EPA. Negotiated as a Federal Facility Agreement, before the remedial investigation and feasibility study phase was completed, the agreement among the Air Force, EPA Region 4, and the State of Georgia was finalized on June 14, 1989.

The remaining 31 sites at the installation are being addressed in accordance with RCRA regulations, with specific requirements outlined in the installation's Hazardous Waste Facility Permit issued by the State of Georgia Department of Natural Resources, Environmental Protection Division (EPD).

In general, Robins AFB has found that because of certain requirements and agreement deadlines set forth in the Federal Facility Agreement, and the greater administrative burden imposed by CERCLA regulations, the two NPL sites require much more time, effort, and resources to meet deadlines, prepare documents, and manage ongoing activities than the 31 RCRA sites require.

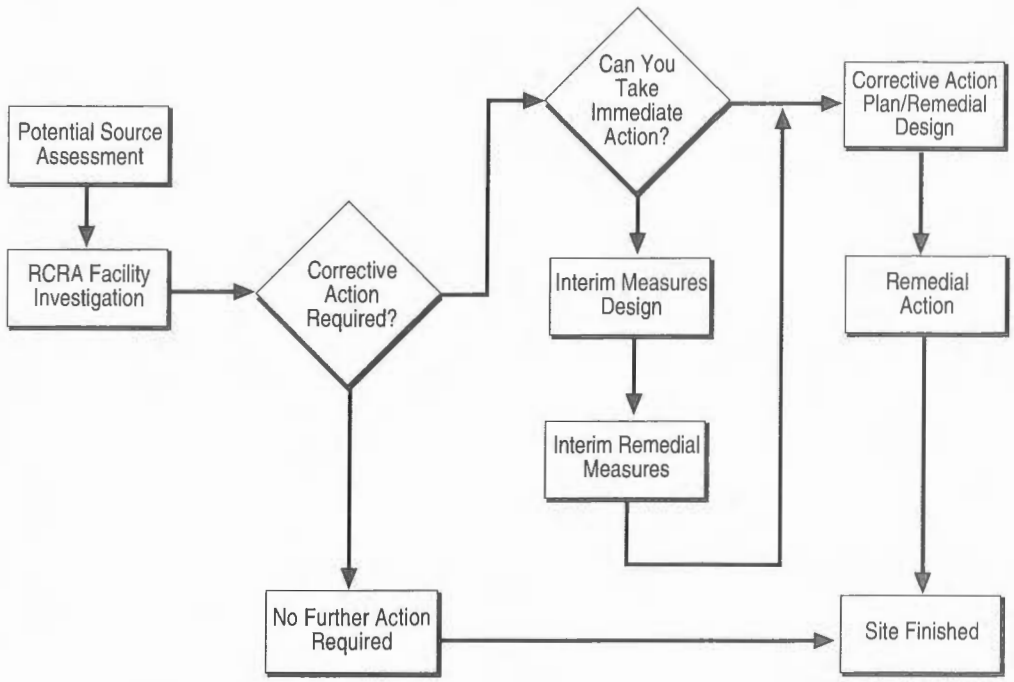
Closing Out Sites

Many of the RCRA corrective action sites have been determined to require no further action, as outlined in the State of Georgia RCRA Corrective Action process. These sites are considered "NFA," meaning no further action is required to comply with permit requirements. Although state concurrence or nonconcurrence had not been officially acknowledged as of September 30, 1995, the Air Force considers these NFA sites to represent completed response actions for purposes of assigning proper status and measuring real progress at the installation. It is noted that the Georgia EPD has not signed a cooperative agreement under the DSMOA program. A lack of resources has been cited as a reason for not reviewing and commenting on NFA determinations.

Robins Air Force Base, Georgia

The process of assigning final closeout status to sites is a challenge for installations throughout the nation. As efforts at Robins AFB show, decisions and formal concurrence will be achieved more easily and more quickly through DoD's efforts to improve communication with regulatory agencies and get them more involved in up-front planning and decision making.

The RCRA Process



Robins AFB's motto is "Lean, Mean, and Green."

Making the Commitment to Communicate and Accelerate Cleanup

Robins AFB personnel exhibit a spirit of commitment to the program and a cooperative approach with regulatory agencies and the public. The installation's Commanding General has taken a personal interest in environmental progress at the installation and often stresses his motto for the cleanup program: "Lean, Mean and Green." Robins AFB has also initiated "Green Carpet Tours," which have been attended by the Administrator of EPA Region 4, key personnel from Georgia EPD, top environmental officials of the Air Force, local councilmen, and involved community members. This program gives interested and concerned individuals the opportunity to witness the progress of the environmental restoration program and observe various other environmental quality initiatives at the installation.

Robins AFB has taken an aggressive and proactive approach to public involvement. The Restoration Advisory Board includes representatives from the installation, the state, EPA Region 4, the U.S. Fish and Wildlife Service, Houston County, the City of Warner Robins, the City of Perry, and other community members. The meetings have been effective in maintaining lines of communication with the community and in exchanging ideas and concerns. In addition to these cleanup successes, Robins AFB was awarded the Defense Environmental Quality Award in FY94 for its overall environmental program.

Robins AFB received the DoD Environmental Quality Award for its overall environmental program.

The partnering approach to the environmental restoration program and the involvement of the Restoration Advisory Board have helped Robins AFB become more effective in achieving actual cleanup as opposed to merely investigating sites and addressing disputes and other procedural obstacles. Various initiatives have enabled the installation to set schedules, make decisions, avoid penalties, and address disputes in a more timely manner, ultimately focusing on the real issue at hand, ensuring protection of human health and the environment.

Fort Lewis, Washington

Accelerating Cleanup

The following story describes Fort Lewis' experience follows the environmental restoration process from placement of two of the installation's sites on the National Priorities List (NPL) to the delisting of one of the sites—the first site at any Federal facility to be deleted from the NPL. Fort Lewis' experience also highlights the need to adjust program goals and priority-setting tools to focus on risk reduction and protection of human health and the environment, instead of the NPL status of an installation or program phase of a particular site.

The 86,176-acre Fort Lewis installation is located in Washington State near the southern tip of Puget Sound. The installation is the headquarters of the Army I Corps. Its mission includes planning and executing Pacific, NATO, and other contingency missions; providing troop training; operating an airfield and medical center; and providing logistical support.

Environmental impacts resulting from past waste management practices include soil and groundwater contamination. In August 1987, Landfill No. 5 was placed on the NPL, and in December 1989, the Logistics Center was placed on the NPL. The sites were listed based on initial indications that they may be a threat to local water supplies. A Federal Facility Agreement among EPA, the Washington Department of Ecology, and the Army was signed in January 1990.

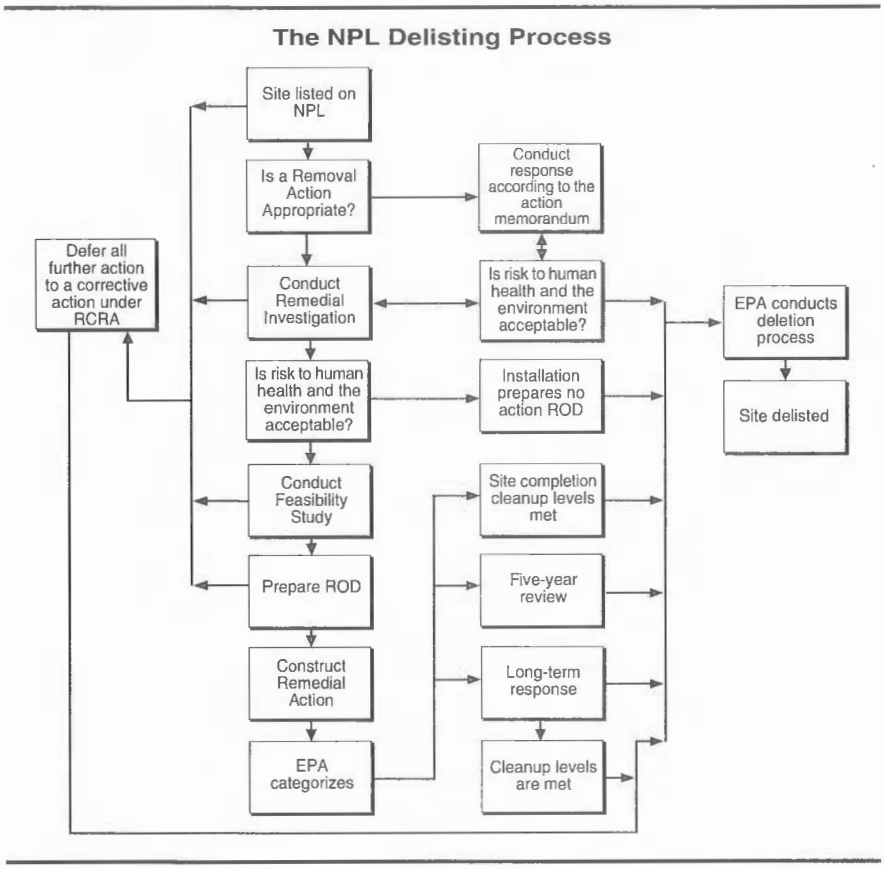
Fort Lewis' environmental restoration progress illustrates the benefits of listing individual sites on the NPL instead of entire installations from "fence-to-fence."

Two NPL Sites Versus "Fence-to-Fence" Listing

Landfill No. 5 operated from 1967 until July 1990 and accepted mixed municipal solid waste (including industrial, commercial, and residential wastes) and demolition waste (concrete, asphalt, wood, steel, and other building debris) from both Fort Lewis and two nearby DoD facilities. Dewatered sludge from the Fort Lewis sewage treatment plant was also disposed of in the landfill.

The Logistics Center was built in the early 1940s and was used for storage and vehicle maintenance. A common industrial and commercial solvent and degreaser, trichloroethene (TCE), was used at the Logistics Center until the mid-1970s. Waste TCE generated from maintenance activities was disposed of, often in a mixture with waste oil, at several areas within the center.

In addition to the two sites placed on the NPL, nearly 50 sites were identified as needing further investigation. All of the investigations at these sites are either completed or are under way. Only about 20 percent of the sites required cleanup, and all environmental restoration activities have been completed at more than half of those sites.



In May 1995, Landfill No. 5 was officially deleted from the NPL. It was the first site at any Federal facility to be deleted from the NPL.

From Placement on the NPL to Delisting

After the 60-acre landfill was placed on the NPL, the Army conducted investigations and performed monitoring at the site from 1988 to 1991. Activities completed during this period included contaminant assessments; air quality, surface water, and groundwater investigations; geological studies; ecological investigations; and land use and population assessments. Data generated and analyzed during these assessments and investigations were used to prepare remedial investigation and risk assessment reports.

In accordance with state standards, in 1990 the Army constructed a low-permeability cap, passive gas ventilation system, and surface water management system to prevent releases from Landfill No. 5. The cap was designed to control rainwater runoff, thereby minimizing the amount of leachate produced by the landfill.

These efforts significantly reduced leachate production and the subsequent migration of contaminants into groundwater below Landfill No. 5, thereby eliminating the threat to local water supplies. In 1992, after additional monitoring and confirmation studies confirmed that local water supplies were no longer threatened, EPA, the Army, and the

Fort Lewis, Washington

Washington Department of Ecology agreed that no further action was necessary at the site. Once the regulatory agencies approved the decision for no further action, the Army and EPA began the process of deleting Landfill No. 5 from the NPL. In May 1995, the site was officially deleted from the NPL.

Long-term groundwater monitoring is currently under way. The NPL delisting reflects the overall progress of the environmental program at Fort Lewis and its overriding focus on accelerating cleanups and streamlining the restoration process.

Elements of Success

The restoration program is widely recognized as an essential element of mission readiness.

The success of the Fort Lewis program is clearly the result of years of hard work by Army environmental personnel and their regulatory agency counterparts. The environmental restoration program has evolved significantly over the years. After initially being perceived as an obstacle to meeting mission requirements, DoD now recognizes that the restoration program is an essential element of mission readiness. This change has come about largely due to the command's frequent, positive interaction with local community members and military personnel. This interaction has made it clear that the restoration program has high-level backing and support, which minimizes obstacles and ultimately makes it easier for environmental personnel efforts to succeed.

As Fort Lewis demonstrated its commitment to accomplishing program goals, regulatory agency representatives supported the installation's efforts by participating as team members in problem solving and executing restoration activities. Other successful elements of the program include a streamlined approach to environmental restoration, innovative and highly focused program execution, and innovative and generic cleanup technologies.

Future Considerations to Success

It is now DoD's primary objective to reduce levels of risk.

Fort Lewis is a model of success by any standard of measurement. Delisting of sites from the NPL is an important goal of DoD and an important achievement for any installation. Nevertheless, while delisting of a site or an entire installation from the NPL certainly represents progress and demonstrates that DoD is accomplishing its goals, pursuing delisting for its own sake does not necessarily mean that the restoration program has fulfilled its larger goals of reducing risk and ensuring the greatest protection of human health and the environment at all DoD sites.

DoD's primary objective is to reduce levels of risk at all sites in the program. This common sense approach to progress and success represents a significant shift in emphasis, and it is an important step toward ensuring that scarce resources are appropriately invested and that progress is accurately measured.

Defense Distribution Depot Ogden, Utah

Partnering

Defense Distribution Depot Ogden's accomplishments can be credited to long-established teamwork and partnership among the Depot, the community, and the regulatory agencies. The Depot's partnering efforts have resulted in the development of mutual goals and objectives for cleanup and reuse.

The need to conduct environmental restoration and closure in a manner that supports community efforts to pursue redevelopment of installation property is essential.

Defense Distribution Depot Ogden Utah (DDOU) is one of the 1995 BRAC installations that is enhancing progress made in an already successful environmental restoration program by favoring a bias for action and by finding ways to reach consensus and make decisions with regulatory partners in the face of reasonable uncertainty and risk. In light of redevelopment opportunities for the community, base closure brings a focus on the present condition and potential use of DDOU property and facilities. Conducting environmental restoration and closure activities in a manner that supports community efforts is essential to pursuing redevelopment of installation property. Because of DDOU's location within the city of Ogden, potential reuse value is high, and DDOU anticipates a high level of interest in leasing the industrial sectors of the installation.

DDOU's support mission involved the use, storage, and disposal of hazardous substances and petroleum products that eventually affected the local environment. DDOU initiated a remedial investigation and feasibility study in the early 1980s, well before the installation was listed on the NPL in 1987. Between 1990 and 1992, Records of Decision involving DDOU, the State of Utah, and EPA were issued for remedial actions at the installation's four operable units.

Partnering among the stakeholders has reduced the time required for restoration activities.

Decision Making

DDOU, EPA, and the State of Utah's ability to work together and reach consensus has significantly reduced the time required to complete investigative work, produce Records of Decision, and conduct environmental restoration activities. Regulatory agency confidence in the remedial investigation and feasibility study report and the strong working relationships already established allowed decision makers to assess and establish remedial measures and cleanup levels within a relatively short time frame. The partnering approach, and the resulting trust and understanding developed among the stakeholders, has allowed for innovation in decision making and the establishment of common environmental restoration priorities and goals. The remedies selected for all four operable units will eliminate the principle threats to human health and the environment at DDOU by preventing further movement and transport of contaminants to groundwater.

Community Involvement

DDOU has been successful in communicating risk and involving the public in the decision-making process. The Technical Review Committee, formed in 1987, has been a major contributor to DDOU's aggressive approach to community relations. DDOU developed and implemented a community relations plan in 1990 and revised it in 1992. Opportunities for public involvement and comment on environmental investigations and cleanup have also been made available through public meetings, and an environmental hotline and newsletter are available to the public to increase awareness and involvement. In January 1996, in accordance with Base Realignment and Closure (BRAC) Fast-Track Cleanup Program initiatives, the Technical Review Committee will be converted to a Restoration Advisory Board. The board will provide a better understanding of and greater opportunity for participation in the issues associated with ongoing environmental restoration and closure activities at the installation.

Experience and Innovation

Partnering efforts with EPA and the State of Utah Department of Environmental Quality continue to be a key element in the success of DDOU's environmental restoration program. The working relationships that were established early in the restoration process have allowed for quick consensus and will enable DDOU to achieve BRAC goals and objectives for cleanup and reuse more rapidly. Each member of DDOU's highly professional environmental restoration team has an average of more than 10 years of experience. This combined experience in various areas has facilitated the selection of remedial technologies for DDOU's environmental restoration program. The experience of DDOU's environmental team, in partnership with the regulatory agencies, has resulted in a balanced application of available remedial methods and technologies that both adhere to cost constraints and protect human health and the environment.

Stakeholder partnering and its resulting trust has allowed innovation and the establishment of restoration priorities and goals.

Activities are already underway to complete site remediation at DDOU according to the remedial design specifications contained in the Record of Decision. Long-term monitoring and cleanup verification are expected to continue through 2007.

Sacramento Army Depot, California

Fast-Track and Reuse

The Fast-Track Cleanup Program at Sacramento Army Depot demonstrates the program's common-sense approach in action as well as DoD's commitment to the President's five-part plan to revitalize communities affected by base closure.

Motivated, empowered teams and community groups have the ability to break down barriers, be innovative, and get the job done.

The Sacramento Army Depot has always been an important part of the Sacramento community. Since its establishment in 1941, the Depot has supported the nation by performing vital defense-related services and operations. It has also supported the community by providing more than 3,000 jobs in the Sacramento area.

The Depot operated as a repair center for high-tech military hardware, such as night vision goggles, electronic circuit boards, and radium-dial instrumentation. These essential services required the use of hazardous materials, such as solvents, degreasers, acids, and even radioactive paints, in daily operations.

After an assessment of suspected contamination at the Depot, the entire installation was placed on the National Priorities List in 1987. Remedial investigation and feasibility study activities that began in 1989 continued when the Depot was placed on the 1991 Base Realignment and Closure (BRAC) list.

Fast-Track Cleanup—A Common Sense Approach

With the reality of base closure and the impending loss of jobs, installation personnel, local elected representatives, and the community took quick and aggressive action to expedite environmental restoration and search for new, economically viable uses of installation property.

Three groups were formed under the Fast-Track Cleanup Program: the BRAC Cleanup Team, the Restoration Advisory Board, and the Sacramento Army Depot Economic Adjustment Reuse Commission. While the BRAC Cleanup Team and the Restoration Advisory Board primarily focused on environmental restoration, the Commission diligently searched for a way to keep installation personnel employed following closure.

During regular meetings, the BRAC Cleanup Team and the Restoration Advisory Board worked with state and Federal regulatory agencies to prioritize operable units for cleanup. The groups worked together to develop and finalize documents in days, rather than months. The expedited process was made possible by enhancing communication among all parties throughout document preparation and development. State and Federal agency personnel also completed reviews of draft documents before final submittal and established strict timelines for review of all documents. The early

involvement of state and Federal regulatory agencies allowed the BRAC Cleanup Team to move forward quickly with the investigation and analysis phase of restoration and focus on the cleanup phase. As a result, formal documents for cleanup of the contamination were developed more expeditiously, and in January 1995, a Record of Decision for the entire Depot was signed by the Army and state and Federal regulatory agencies. The Record of Decision specified the cleanup remedies that would be put in place to restore the Depot and make property suitable for transfer or lease to the City of Sacramento.

Innovative Cleanup Methods

In addition to the great success in finding a new use for the Depot and new jobs for the community, restoration activities are proceeding ahead of schedule. Innovative cleanup methods being employed at the facility include two state-of-the-art horizontal wells to remediate contaminated groundwater. The horizontal wells are some of the first to be installed at a DoD site in the country. An advanced air sparging system is also being used to remove solvents from groundwater. The horizontal groundwater wells and the air sparging techniques have the potential to accelerate groundwater cleanup by as much as 2 years, leading to faster redevelopment of the remaining acreage at the site. The groundwater cleanup is expected to take 8 to 10 years to complete.

Contaminated soils at the facility are expected to be completely remediated by the end of 1996. Two different approaches are being taken for the soil remediation. Soils contaminated with radium will be mixed with cement, formed into large concrete slabs, and buried about 12 feet underground. The remaining soils contaminated with heavy metals will be remediated using soil washing.

As 1996 begins, the Depot and the City of Sacramento have new challenges ahead as both parties attempt to accomplish another important cleanup milestone—removal from the NPL by the end of the year. Given the proven success of the innovative groundwater remediation project, when soil remediation is completed, every effort will be made to pursue delisting. Achieving this important milestone will be possible only when all the necessary steps have been taken to respond to potential contamination, and the installation no longer poses a threat to human health or the environment. Upon delisting and the successful restoration of the property, the remaining acreage at the Depot will be turned over to the City of Sacramento for reuse.

The Fast-Track Cleanup Program is based on a common sense approach.

"If you think about it, this base is fully converted even before it's turned over by the military. I don't think there are any other bases that have moved as quickly to provide civilian jobs even before it's turned over."

Michael Picker

Chief of Staff for Sacramento Mayor Joe Serna, Jr.

On March 3, 1995, the Depot officially closed; on the same day, the City of Sacramento leased approximately 370 acres of the total 485-acre depot to Packard Bell for its world headquarters, an important first step in the revitalization of the Sacramento community.

While the BRAC Cleanup Team and the Restoration Advisory Board were working to clean up the Depot and keep the community informed of ongoing restoration activities, the Sacramento Army Depot Economic Adjustment Reuse Commission diligently continued its efforts to secure reuse opportunities and maintain the jobs of the people

Sacramento Army Depot, California

employed at the Depot. Tentative plans had been made to turn the Depot into a state orphan prison, a large warehouse facility, or numerous, small industrial complexes.

When Packard Bell relocated, 1000 jobs were created. By 1998, the company estimates that an additional 10,000 people will be employed at the facility.

The City of Sacramento, eager to attract the high-tech manufacturing industry to its city, used its resources to convince Packard Bell, the third largest producer of personal computers in America, to relocate to Sacramento. The Sacramento Army Depot Economic Adjustment Reuse Commission and city officials worked with the California Legislature to secure tax incentives for companies hiring disadvantaged workers. The Commission and the City also worked with local officials to secure special loans for relocation expenses and depot improvements, and worked to convince the community that the Packard Bell relocation would be a financial windfall for the city.

The hard work and the unprecedented level of cooperation among various government entities brought about a mutually beneficial situation for the Depot, the people of Sacramento, and Packard Bell. Renovations and improvements to the buildings are occurring daily and about 5,000 Sacramento-area citizens are producing personal computers at the former Depot site. By 1998, the new Packard Bell facility may employ as many as 10,000 Sacramento-area citizens, greatly surpassing the number of civilians employed during the Depot's years of operation.

Sacramento Army Depot is proof that the Fast-Track Cleanup Program is working and that quick base conversion can be a reality.

A Model of Closure and Reuse Success

The closing of the Depot and its conversion to Packard Bell's world headquarters is one of the true Fast-Track Cleanup success stories. By working together, installation personnel, the community, the City of Sacramento's elected officials, state and Federal regulatory agencies, and Packard Bell officials are showing the nation that the Fast-Track Cleanup Program is working and that a successful and quick base conversion is a vision that can be attained.

Homestead Air Force Base, Florida

Fast-Track Cleanup

Homestead Air Force Base's experiences reflect the immense challenge faced by closing installations, in this case, made even more daunting by the effects of Hurricane Andrew. This story illustrates the increase in the scope of environmental restoration planning and investigation efforts at BRAC installations, given the requirements and unique concerns associated with base closure and property transfer.

Fast-Track Cleanup, a new strategy for the cleanup of BRAC installations, grew out of President Clinton's strategy to speed the economic recovery of communities affected by base closures.

Homestead Air Force Base (AFB), the southernmost Air Force base in the continental United States, is located 25 miles south of Miami, Florida, and has a long history of national security service. Because of its location, it has been both a deterrent to possible aggression in the region and a staging area for combat and contingency operations in the hemisphere.

Originally a commercial airfield, the property was deeded to the Federal government after the United States entered World War II. Homestead AFB operated as a military airfield, training pilots until 1945, when it was deactivated and transferred to the local county to be used once again as a commercial airfield.

Emerging national security interests in the Caribbean and Central America prompted the reactivation of Homestead AFB in 1955. The installation operated until 1992, when Hurricane Andrew rendered inoperable 97 percent of installation facilities. In 1993, Homestead AFB was designated for base closure, primarily because the cost to close the base was low when measured against the high cost of reconstruction. In its aftermath, the hurricane left new environmental concerns and areas of potential contamination that must be addressed before the installation property can be transferred to the community.

Before the hurricane, the scope of the environmental restoration program at Homestead AFB consisted of 29 potentially contaminated sites, all linked to past operations. The installation was placed on the National Priorities List (NPL) in 1990, due in large part to the installation's sensitive ecological setting near Biscayne Bay and the Everglades National Park.

Environmental Impacts

Site investigation activities conducted after Hurricane Andrew and the environmental baseline survey, required under DoD Base Realignment and Closure (BRAC) policy, identified more than 500 new sites or areas of concern. Many of the sites were contaminated with paints, solvents, oils, and other industrial hazardous materials blown from storage areas and scattered throughout the installation by the high winds of the hurricane. Other areas of concern included floor drains, oil water separators, and asbestos materials inside storm-damaged buildings.

Hurricane Andrew destroyed this hangar at Homestead AFB and rendered 97 percent of installation facilities inoperable.

During base closure, each of these areas would have been reviewed and possibly considered for further investigation and cleanup in the course of normal assessment activities. However, the destruction caused by Hurricane Andrew not only increased the magnitude of potential problems at each of these sites, it also created new areas of concern.

Ninety-seven percent of Homestead AFB's facilities were rendered inoperable by the force of Hurricane Andrew in 1992, just months prior to the BRAC Commission's recommendation to realign the base.

Fast-Track Cleanup Strategy

In July 1993, President Clinton announced his base closure community reinvestment program to help speed the economic recovery of communities affected by DoD's BRAC program. Previously, DoD closed military bases to save money, sometimes without carefully considering the economic effects of base closure on the surrounding community. In a sharp departure from the past, the administration's initiative gave top priority to early reuse of valuable assets of closing bases by host communities.

The realignment of Homestead AFB is particularly sensitive to the surrounding community because of the severe economic effects of Hurricane Andrew. In light of its mission to realign the installation on time and transfer the property to the local community as quickly as possible, the Air Force truly embraced the three principles of the Fast-Track Cleanup Program. These principles are discussed below.

Homestead Air Force Base, Florida

Protect Human Health and the Environment

At the more than 500 potential sites identified in site investigations, the following progress has been made:

- Of 240 underground storage tanks, 234 have been removed, and 5 have been appropriately closed in place.
- Of 139 above ground storage tanks, 133 have been removed, and 2 have been appropriately closed in place.
- Of 17 sites consisting mostly of suspected or documented fuel spills, 14 sites have been closed out, and the remaining 3 are undergoing cleanup. All remaining cleanup actions are expected to be completed by 1999.

The key to Homestead's Fast-Track Cleanup approach has been the vigorous cooperation of all parties interested in the continued vitality of a realigned Homestead and its surrounding communities.

Reuse and Transfer

The Local Redevelopment Authority has proposed that Homestead AFB be converted to a civilian aviation facility with continued government and military use. In 1994, one-third of the installation was transferred to the Air Force Reserve to form the new Homestead Air Force Reserve Base.

Redevelopment of installation property under the proposed reuse plan is expected to revitalize this devastated area of southern Florida and create approximately 20,000 jobs in the next 20 years.

Effective Community Involvement

Homestead AFB credits much of its success to the partnerships it developed with EPA Region 4, the State of Florida, and the Dade County regulatory agency. The installation has also benefitted by involving the community. Because of its location in an ecologically unique area, numerous community groups and environmentally concerned citizens have shown interest in the cleanup and reuse plans. Homestead AFB publishes regular newsletters and holds public meetings of its Restoration Advisory Board.

A Fast Track Success

By implementing the three principles of the Fast-Track Cleanup Program, Homestead AFB has expedited cleanups, strengthened partnerships with regulatory agencies and the public, and most importantly, positioned itself for timely property transfer and reuse by the local community. Without question, the successful transfer of Homestead AFB will revitalize the local community by promoting the redevelopment of vital assets, increasing job opportunities, and spurring economic growth.

Alameda Naval Air Station, California

Fast-Track and Future Land Use

This story illustrates the critical challenges faced by Alameda Naval Air Station (NAS) and other closing installations, especially those challenges being addressed by the Defense Environmental Response Task Force (DERTF). Alameda NAS has moved from advocacy to action, balancing the dual goals of environmental restoration at closing installations—protecting human health and the environment and reducing risk—with making property available for transfer to support community reuse plans. In addition, future land use was considered in the cleanup remedy selection process, an effort that was made possible by public involvement and effective risk communication to determine the appropriate protective cleanup standards required.

Cleanup levels are determined through a process that evaluates and compares two components: (1) Federal, state, and local laws, which together are considered applicable or relevant and appropriate requirements; and (2) risk values derived from a risk assessment. Risk values represent the maximum concentration of chemicals that can exist in soil, water, or air and still be protective of human health and the environment for a given land use.

Alameda NAS is one of 10 closing military installations in California's San Francisco Bay Area. Alameda is an island community of 80,000, with the Naval Air Station employing 17,000 people. Because of the numerous installations closing in the area, Alameda NAS and the surrounding communities are especially interested in achieving timely cleanup and reuse of property.

The community is aware of funding limitations that may affect property transfer and the subsequent economic recovery of the area. In an effort to protect human health and the environment while achieving its fast-track goals, Alameda NAS examined the cleanup process and developed a strategy to invest limited resources in activities that are likely to produce the greatest return on investment for the community.

Cleanup Levels Based on Future Land Use

The environmental restoration process at Alameda NAS began in the early 1980s. After placement on the Base Realignment and Closure (BRAC) list in 1993, the installation was forced to reexamine its environmental cleanup priorities. In general, BRAC installations are faced with more competing priorities, and resources for the BRAC program are just as scarce, if not more so, than those for environmental restoration at operational bases.

Because of its new status as a closing installation, economic cost-benefit considerations prompted Alameda NAS personnel to develop a strategy to prioritize the installation's limited funds. The strategy is based on determining the most practical and meaningful use of funds to: (1) protect human health and the environment, and (2) support the community's reuse plan. All decisions made had to consider both objectives.

The one issue that could significantly affect the achievement of both goals was the determination of target cleanup levels for the Local Redevelopment Authority's planned reuse of property.

How Future Land Use Plans Affect Cleanup

The proposed land use influences the cleanup levels eventually chosen for a site, because the risk assessment is based on land use scenarios (such as residential, industrial, recreational, or a combination) or, in the case of groundwater, whether groundwater will be used as a drinking water supply. A residential land use scenario assumes that (1) a person would live at a site for 30 years, drink water from beneath the site, and breathe site dust, and (2) children would ingest soil. Because the residential land use scenario assumes the maximum exposure to contaminants, resulting risk values are greater, and the most stringent cleanup levels must be achieved. Such stringent cleanup levels increase the cost and time required to clean up the site.

An industrial land use scenario typically results in less potential exposure, which requires less stringent cleanup levels. These levels are still protective of human health and the environment, but they are scaled for the intended land use. The goal is to develop cleanup standards that protect human health and the environment *and* facilitate timely reuse of installation property. Achieving these dual goals requires incorporating planned land use into the decision-making process, rather than arbitrarily applying the strictest possible standards as the most protective cleanup levels. Installations that incorporate planned land use into the decision-making process at closing can result in millions of dollars in savings and more timely economic recovery for communities affected by base closure.

Future land use is an important consideration in the cleanup remedy selection process.

The issue of acceptable cleanup levels for environmental restoration of groundwater at Alameda NAS was an important concern for all parties involved in the cleanup and transfer of the installation. Cleanup levels are based on the intended land use or, in the case of groundwater, whether the groundwater will be used as a drinking water source. At Alameda NAS, the majority of water beneath the installation is too salty to ever be used for drinking water. If the regulatory agencies agree with the Navy's analysis that groundwater at Alameda NAS will always be too salty for drinking water, it can shave 10 to 20 years off the cleanup time and save an estimated $20 to $30 million. Alameda NAS has presented its risk assessment approach to the regulatory agencies who are currently reviewing the approach.

Active Public Involvement Yields a High Return on Investment

Alameda NAS also has maximized its return on investment of limited dollars by using an integrated approach to community relations based on active public outreach and involvement. Alameda NAS has made two-way communication with all stakeholders a constant, integral part of the restoration process by using trained community relations staff dedicated to the task.

Alameda Naval Air Station, California

Reuse Entities

The goal is to develop cleanup standards that protect human health and the environment *and* facilitate timely reuse of installation property.

The reuse plan being developed considers the environmental realities at the installation, and Alameda NAS is coordinating restoration activities with reuse priorities. For example, reuse entities have identified potential property to lease in the eastern, industrial section of the installation. Accordingly, Alameda NAS has conducted or scheduled eight removal actions in this area to facilitate timely reuse.

Reuse entities also are adapting their intended plans for another part of the installation, based on the realities of environmental restoration work needed there. In this case, the Seaplane Lagoon has potential reuse value as a marina with its skyline view of San Francisco. Realizing that the Seaplane Lagoon will not be available for many years because of contaminated sediment, reuse entities are planning a phased reuse approach that will generate revenue and jobs immediately.

The Navy also has fostered community dialogue regarding reuse potential through activities such as cosponsoring a seminar on the California least tern, an endangered bird species with a thriving nesting colony on Alameda NAS. Recognizing the requirements of the Endangered Species Act and the strong community interest, the Navy completed a biological study to identify structures that could be developed without disturbing the least tern colony or its habitat.

Restoration Advisory Board

Through its Restoration Advisory Board, Alameda NAS learned of the community's support for innovative technologies rather than traditional cleanup methods, such as transporting excavated soil to landfills. In response, Alameda NAS established a contract with a local university to study innovative technologies for the installation. The flexibility of current contracting vehicles allowed Alameda NAS to set up the contract easily, quickly, and early on in the restoration process. The study is expected to save time by identifying effective innovative cleanup technologies through treatability studies before a Record of Decision is issued.

Communicating Risk and an Investment Strategy

Public involvement and risk communication are important factors in determining appropriate protective cleanup standards that facilitate timely reuse of property.

Alameda NAS also has taken a proactive approach to communicating risk information to stakeholders. In a series of workshops, Alameda NAS and the California Department of Toxic Substances Control provided Restoration Advisory Board members with a meaningful understanding of cleanup concepts, so that Restoration Advisory Board members would better understand the significance of decisions they are being asked to comment on.

The Restoration Advisory Board also understands the impact potential budget cuts could have on cleanup progress and subsequent economic recovery. Given the dual goals of environmental restoration at BRAC installations, funding priorities at closing installations have been based, in part, on the status of a reuse plan. With Alameda's

reuse plan yet to be finalized, Restoration Advisory Board members, the BRAC Cleanup Team, and other stakeholders have worked together to establish priorities for sites and achieve the most meaningful investment of funds.

Supporting a commitment to active public involvement requires time, effort, and money, but at Alameda NAS, the barriers that can potentially be avoided by making the investment have proven to far outweigh the cost.

Making the Investment

Alameda NAS is working to speed up the restoration process through early actions. The early action strategy involves conducting removal actions at sites that are easily cleaned up and beginning treatability studies at more complex sites. At many Alameda NAS sites, contaminants exist in localized or isolated areas of surface soil. These sites are relatively easy to remediate with locally available resources.

Remediation of other Alameda NAS sites will involve complex and time-intensive efforts over many years. Although many of these more complex sites are still being characterized, enough information exists to begin evaluating cleanup methods. Alameda NAS also has conducted various phases of the cleanup simultaneously to reduce the length of time it takes to proceed from a Record of Decision to the final cleanup action.

History of FUDS

The Formerly Used Defense Sites (FUDS) program is a significant and integral part of DoD's environmental restoration program. As with operational and closing installations, DoD must address potential contamination at properties that were formerly owned, leased, or otherwise operated by DoD or any of its Components.

The FUDS program focuses DoD efforts on its obligation to restore such properties across the United States and its territories. Under the FUDS program, eligible properties now owned by private citizens, states, local governments, or private organizations are remediated and returned to productive use. Through the FUDS program, DoD meets its environmental obligations at a wide variety of sites and facilities, ensuring the protection of human health and the environment and assisting communities and private developers to create jobs and provide greater economic opportunities.

The initial concept for the FUDS program originated with a study DoD directed in 1974. The study was conducted to determine the potential environmental impact of abandoned military debris on Federal lands in Alaska. As a result of the study, Congress became increasingly concerned about abandoned military buildings and other debris on Federal lands across the nation. These growing concerns as well as concerns about releases of hazardous substances from former and active installations laid the foundation for what has evolved into the current DoD environmental restoration program.

The FUDS program was officially established in December 1983, when the FY84 Defense Appropriations Act required that DoD establish a program to manage environmental cleanup at properties formerly controlled by DoD. In 1985, the Army became the executive agent in charge of executing the FUDS program, with the U.S. Army Corps of Engineers assuming the primary management role. The Army's responsibility includes addressing environmental restoration at any previously controlled DoD site, regardless of which DoD Component originally controlled the property or was responsible for the suspected contamination.

Under the FUDS program, investigation and cleanup procedures are similar to those at currently owned and operational installations. Although the FUDS restoration process parallels the efforts undertaken at other DoD installations, the FUDS program includes an additional inventory phase that evaluates information on the origin of the contamination, the history of land transfer, and past and current ownership. The U.S. Army Corps of Engineers reviews this information to determine if a site is eligible—that is, whether it was formerly owned or controlled by DoD and whether DoD caused or potentially caused the suspected contamination.

Managing the FUDS program is a major undertaking. Contaminated sites range from those used for military training exercises, including proving grounds and fire fighting training areas, to those used for major industrial operations and production facilities. As in other areas of DoD's environmental restoration program, cleanup progress ultimately depends on communication, partnerships, and community involvement. Such efforts are especially challenging to the FUDS program because DoD does not have a resident representative at the site. At an operational facility, an installation commander or environmental organization normally manages environmental restoration efforts and associated duties; at FUDS properties, these duties are the responsibility of the U.S. Army Corps of Engineers division or district. As such, the division or district is charged with carrying out the initiatives of the DoD environmental restoration program, including responding to the concerns of the community, regulatory agencies, and other stakeholders.

The FUDS program has benefited from the same lessons learned and the initiatives undertaken for the environmental restoration program at operational installations. The relative risk site evaluation framework has become a critical tool for FUDS properties, and FUDS properties must comply with the same environmental restoration goals and planning, programming, and budgeting criteria that apply to operational installations. As part of devolvement, the FUDS program will continue to be funded through the central Office of the

FUDS are real properties that were formerly owned by, leased by, possessed by, or otherwise under the operational control of the Secretary of Defense or the military Components that predate DoD.

The FUDS Program

Chronology

1974	U.S. Army Corps of Engineers conducts environmental study of abandoned military debris on Federal lands in Alaska
1975	DoD launches pilot environmental restoration program to respond to contamination at Army installations
1976	Army environmental restoration program begins
1980	CERCLA is passed
1984-86	Defense Appropriations Acts provide 1-year funding for cleanup, initiating environmental restoration of FUDS properties
1986	SARA is passed and the Secretary of Defense is authorized to carry out the Defense Environmental Restoration Program; the Defense Environmental Restoration Account is established; the Secretary of the Army, as Executive Agent for DoD, designated the U.S. Army Corps of Engineers as the program manager for environmental restoration at FUDS properties

Secretary of Defense budgeting process and the DoD-wide environmental restoration account. The FUDS program must continue to receive appropriate emphasis and funding to provide a high return on investment and function as an integral part of a consistent, cohesive, and stable defense environmental restoration program.

The FUDS story that follows presents a typical history of a formerly used defense site and highlights that communication, partnering, and public involvement are crucial elements of an environmental restoration effort.

West Virginia Ordnance Works, West Virginia

Partnering and DSMOA

Environmental efforts at the West Virginia Ordnance Works present a typical profile of a Formerly Used Defense Site (FUDS) property. This story describes DoD's responsibilities for the environmental restoration of FUDS properties and illustrates how effective partnering and the Defense State Memorandum of Agreement (DSMOA) Program facilitate the process.

FUDS properties often change hands many times.

From 1942 to 1945, the 8,300-acre West Virginia Ordnance Works (WVOW) manufactured explosives for use in munitions and explosives for the war effort. Although owned by DoD, WVOW was operated by a private company to produce TNT. When it closed in 1945, WVOW was declared surplus, and the structures were salvaged or disposed.

Areas of the facility were reportedly decontaminated using methods common at the time; however, no records existed regarding the extent of the decontamination. The industrial portion of the facility, covering about one-third of the property, was deeded to the State of West Virginia and later became the McClintic Wildlife Station, managed by the West Virginia Division of Natural Resources. The remaining two-thirds are now owned privately or by Mason County. As with many FUDS, a number of parcels of the property have changed hands over the last 50 years, and various companies have conducted industrial activities. Some of the industries that have operated since the closing of WVOW include maintenance and motor pool facilities operated by the West Virginia National Guard, a furniture manufacturer, a municipal landfill, a plastic parts manufacturer, a construction company, and the Mason County Airport.

Contamination from Past Activities

Manufacturing activities at WVOW during World War II resulted in soil, surface water, and groundwater contamination. Residual contamination from WW II-era manufacturing did not become apparent until 1979, when personnel managing the wildlife station observed red water seeps near the site of a former retention pond. Studies beginning in 1979 confirmed the extent of contamination with TNT-related residues, and in 1984, WVOW was placed on the NPL.

Public Involvement and Partnering

Since 1993, the U.S. Army Corps of Engineers (Huntington District) has successfully coordinated the restoration efforts with various Federal, state, and local agencies.

Until 1994, only three public meetings had been held to distribute information to the local community about restoration activities at WVOW. In late 1994, a newly formed Restoration Advisory Board began holding public meetings every other month. For the first time since restoration work began at WVOW, a foundation was laid for an exchange

West Virginia Ordnance Works

Because the facility was formerly owned or operated by the U.S. government, the responsibility for cleanup at WVOW currently lies with the FUDS Program. To qualify for inclusion in FUDS environmental activities, releases of hazardous substances present at a FUDS must be the result of past DoD activities.

The Defense Appropriations Act for fiscal year 1984 established the FUDS Program, and subsequent activities at WVOW were managed under the FUDS Program. The purpose of the FUDS Program is to provide funding, technical resources, and oversight for the cleanup of sites such as WVOW. Day-to-day management of such sites rests with the District Offices of the U.S. Army Corps of Engineers. The FUDS Program provides funds for the District's programs and project management activities.

of information with the public, community leaders, and regulatory agencies involved in the decision-making process.

At about the same time, partnering agreements were initiated with EPA and the appropriate state agencies to accelerate cleanup. One result of the agreements was a Defense and State Memorandum of Agreement (DSMOA) between West Virginia and DoD. The participation of the West Virginia Department of Environmental Protection in the DSMOA program has enabled the state to accelerate the review and approval process for cleanup work at WVOW. For example, with the additional state staff and more frequent communication between the state and WVOW, the Huntington District has been able to submit draft data packages instead of draft reports, reducing the time required to finalize reports by as much as two months.

West Virginia's participation in the DSMOA program has accelerated the review and approval process for cleanup work at WVOW.

Results of Partnering

The Huntington District coordinates restoration efforts with various Federal, state, county, and community agencies. By working together in the partnering sessions, three major stakeholder concerns were identified:

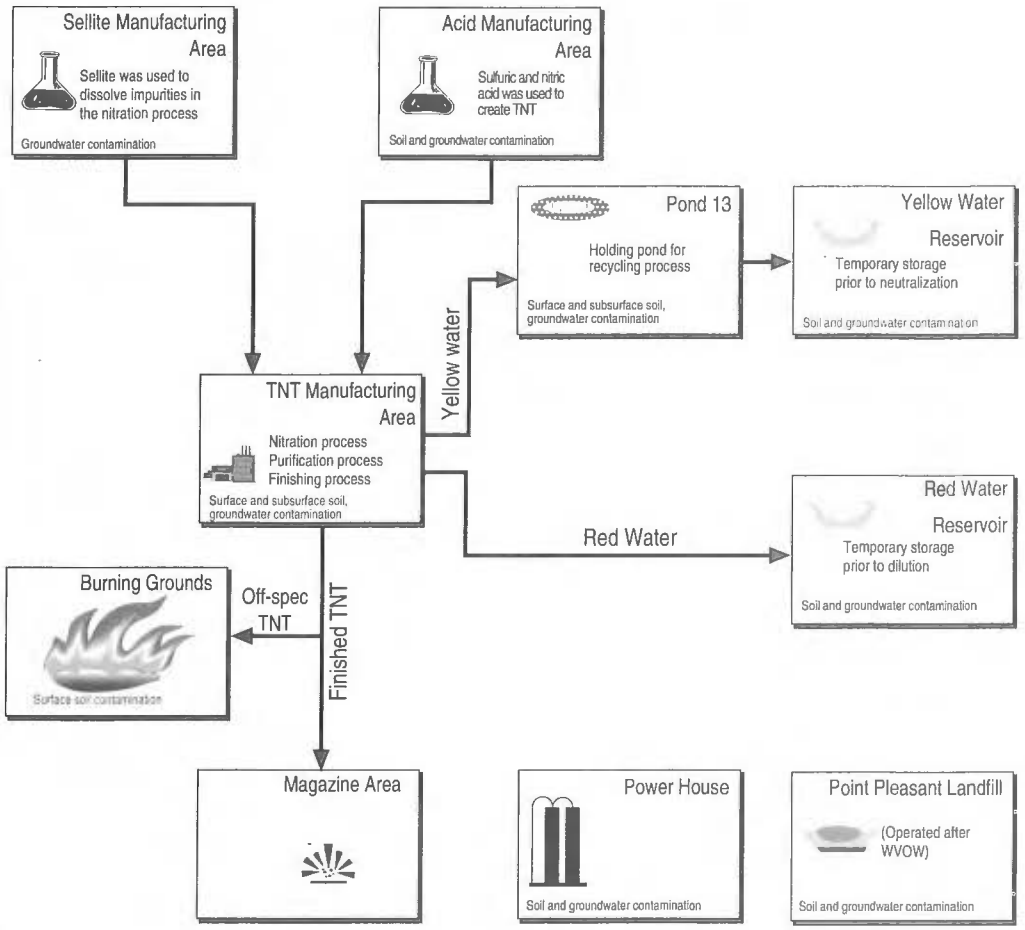
- **Reduction of the boundaries of the WVOW NPL site:** Local landowners were concerned that the value of real estate near WVOW had decreased and that they were not able to purchase additional private property included as part of the NPL site. As a result of subsequent partnering sessions over the next six months and the combined efforts of the stakeholders, the boundaries were changed to redefine two operable units as 12 contaminant-area operable units. This approach resulted in a 67.5 percent overall reduction in the size of the NPL site from 8,323 acres to 2,704 acres, and it boosted public support for the WVOW environmental restoration program.

- **EPA takes lead on trichloroethene cleanup:** The Huntington District conducted a site inspection of the area near the Point Pleasant Municipal Water Supply and

West Virginia Ordnance Works, West Virginia

confirmed the source of contamination to be a former Pantasote Plant that operated at the site after WVOW was closed. Following the site inspection findings, EPA took the lead in remediating trichloroethene contamination. After completing the cleanup, EPA will pursue all potentially responsible parties to recover cleanup costs; as a result, no DoD funds will be used for remediation or cost recovery work at this site.

Major Contamination Sources at West Virginia Ordnance Works



- **Demolition of powerhouses, open pits, and manholes:** Abandoned structures at the site posed a potential threat to human health due to asbestos contamination and physical safety problems. The Huntington District accelerated field work to demolish the powerhouse and fill manholes and open pits, completing the work in eight months.

During FY95, the partnering approach and enhanced public involvement allowed restoration efforts at WVOW to progress significantly. While the program has experienced funding reductions, the Restoration Advisory Board will assist in prioritizing work based on relative risk to human health and the environment and other factors.

Restoration Advisory Board (RAB) Report to Congress for Fiscal Year 1995

Supplement to the
Defense Environmental Restoration Program
Annual Report to Congress for Fiscal Year 1995

Introduction

The Department of Defense (DoD) is pleased to provide the Congress with a report on the status and accomplishments of DoD's restoration advisory board (RAB) initiative for fiscal year (FY) 1995. The information in this report is provided in response to the *National Defense Authorization Act for FY95*, which requires that DoD submit, by May 1996, a report on the status of the RAB initiative. For FY94, the progress of DoD's RAB initiative was summarized in the community involvement chapter of the *Defense Environmental Restoration Program Annual Report to Congress for FY94.* With the FY95 report, DoD has expanded the discussion of its RAB initiative to satisfy the additional reporting requirements.

During FY95, DoD implemented several activities to support the RAB initiative. Key activities included:

- Developing the *Directory of Restoration Advisory Boards (RAB)*
- Beginning the collection of material for a RAB resource book
- Publishing in the *Federal Register* a notice of request for comments about various funding options for technical assistance for public participation and beginning the development of a proposed rule based on the comments received

These activities, coupled with strong working relationships with the states, the public, and other Federal agencies, are advancing DoD's goal of involving communities early and often in decisions about environmental restoration.

DoD remains committed to involving communities neighboring its installations in environmental restoration decisions that may affect human health and the environment. RABs, which have become a significant component of DoD's community involvement activities, provide a forum through which members of affected communities can provide input to an installation's ongoing environmental restoration activities.

DoD believes that working in partnership with local communities and addressing the concerns of those communities early in the cleanup process will enhance its efforts under, and increase the credibility of, the environmental restoration program.

Through the RAB initiative, DoD will continue to seek new ways to involve the public in its ongoing effort to improve and accelerate its environmental restoration program.

"I am proud of the teamwork and partnerships that RABs have helped build among the Department, EPA, citizens, and the states. Promoting citizen involvement is not always easy, but the positive impact on the program is well worth the effort. Not only are we listening to citizens, we are using their input to improve the environmental restoration program."

— Sherri W. Goodman
Deputy Under Secretary of Defense (Environmental Security)

"Government's responsibility today is to create opportunities, to provide flexibility, so that the best answers can emerge. There is no doubt in my mind that informed, involved industries, communities, citizens, will always do a better job than some distant bureaucracy."

— Carol Browner
Administrator, U.S. Environmental Protection Agency

UNDERSTANDING THE RAB INITIATIVE

RABs embody the philosophy that teamwork is the key to success.

It is DoD policy to involve local communities as early as possible in decisions about environmental restoration activities at installations. RABs, which have become a significant component of DoD's community involvement activities, embody the philosophy that teamwork is the key to success.

LEGISLATIVE, POLICY, AND OTHER DRIVERS

The Superfund Amendments and Reauthorization Act of 1986 (SARA) requires DoD to establish technical review committees (TRC) at installations with environmental restoration programs. TRCs review technical documents and discuss progress in implementing and completing environmental restoration activities. By the end of FY94, TRCs had been formed at most installations with environmental restoration programs, and at nearly all installations listed on the U.S. Environmental Protection Agency's (EPA) National Priorities List (NPL)—a list of priority sites for hazardous waste cleanup under Superfund. The development of TRCs was an important step in the evolution of community involvement in DoD's environmental restoration program.

For the past several years, DoD has participated on the Federal Facilities Environmental Restoration Dialogue Committee (FFERDC). After examining how priorities should be set for restoration at Federal facilities and who should set them, the FFERDC recommended that the community role be expanded. This expanded role would ensure that decisions about environmental restoration reflect the concerns of all parties who are stakeholders to such decisions. DoD carefully considered the recommendations of the FFERDC and, in response, strengthened its community involvement efforts by including the RAB initiative under its environmental restoration program.

In 1993, President Clinton announced his Five-Part Plan to speed the economic recovery of communities in which bases are scheduled to close. Part of the Fast-

RAB members provide individual advice on an installation's cleanup plan.

DoD POLICY

DoD policy requires that RABs be established at installations where there is "sufficient, sustained community interest" in the environmental restoration program. One of the following criteria must be met to determine that community interest is sufficient and sustained:

- Closure of the installation involves transfer of property to the community
- At least 50 citizens petition for an advisory board
- The Federal, state, or local government requests formation of an advisory board
- The installation determines the need for an advisory board

Track Cleanup Program, which sprang from the President's plan, emphasized early community involvement in the environmental restoration process as an important element of the program.

On September 9, 1993, the Deputy Secretary of Defense issued a memorandum that outlined the policies for implementation of the Fast-Track Cleanup Program. One of the policies mandated the establishment of RABs at closing installations where excess property was available for transfer to communities for reuse. The RAB initiative, subsequently applied to operating installations, gives an opportunity for citizens living near military installations to obtain information about, and provide input to, the environmental restoration program.

While RABs represent DoD's implementation of the FFERDC concept of site-specific advisory boards (SSAB), it should be noted that RABs differ significantly from SSABs. SSABs are independent citizen boards that develop consensus recommendations for government decision makers. In contrast, RABs promote cooperation between the government and the community by sharing chairmanship of the board between the installation and the community; and seeking advice from each member, rather than forcing a consensus. It is DoD's intent that this partnership approach will be more effective than other approaches in enhancing and accelerating DoD's environmental restoration program.

HOW THE RAB INITIATIVE HAS MATURED

Prior to 1995

Under DoD's early efforts to increase the involvement of communities, installations informed nearby communities of plans for, and the status of, environmental restoration projects. In 1994, DoD recognized the need to refine its basic community involvement policy. In its management guidance for the Defense Environmental Restoration Program, DoD set forth policy on enhancing community involvement. DoD also recognized the need to quickly communicate the new policy and procedures to the people charged with its implementation at the installation level.

To facilitate those efforts and to foster coordination among the DoD Components, an interservice and interagency working group was formed to oversee implementation of the RAB initiative. In September 1994, DoD and EPA jointly issued guidelines for implementing the policy and identifying the role each stakeholder would play in a RAB. These joint guidelines serve as a model of interagency cooperation.

Once policy had been issued and training conducted, many installations reviewed their community involvement programs to determine whether there was interest in the community in forming a RAB. To determine the level of interest within the community, installation officials interviewed community members and placed notices in newspapers.

"I used to say, 'It's us against the U.S. Army, and we're holding our own,' but now I talk of working with the installation officials and the Army, to ensure the proper cleanup of the Arsenal. There was much mutual mistrust to overcome, but we've made a lot of progress. Isn't that how peace begins?"

— Susan Falkoff
RAB Member
Watertown Arsenal

At many installations, TRCs are being converted to RABs to include more local citizens.

At many of the installations at which TRC's had become a trusted sounding board, the TRC was converted to a RAB by expanding the number of members representing the community, selecting a community co-chair, and integrating procedures to seek, and respond to, input from the community early in the decision-making process. At the installations at which TRCs were not converted, TRCs continue to provide forums for the transfer of information.

During Fiscal Year 1995

During FY95, focus has shifted from establishing RABs to operating them.

During FY95, the focus of the RAB initiative shifted from establishing RABs to operating RABs. Installation efforts now address how to balance an ideal concept of public participation with the reality of incorporating participation into environmental restoration programs.

Installations Participating in a RAB

DoD Component	
ARMY	28
NAVY	101
MARINE CORPS	3
AIR FORCE	107
DLA	5
NGB	1
FUDS	6
TOTAL	**251**

More RABs are being established at FUDS locations. Nine are in the planning stages for FY96.

At closing bases, installation officials began addressing the role of the RAB in relation to the reuse process. In addition, installation officials and Federal and state regulatory agencies continued to address how to quickly educate RAB members to promote the rapid formation of a fully functioning RAB.

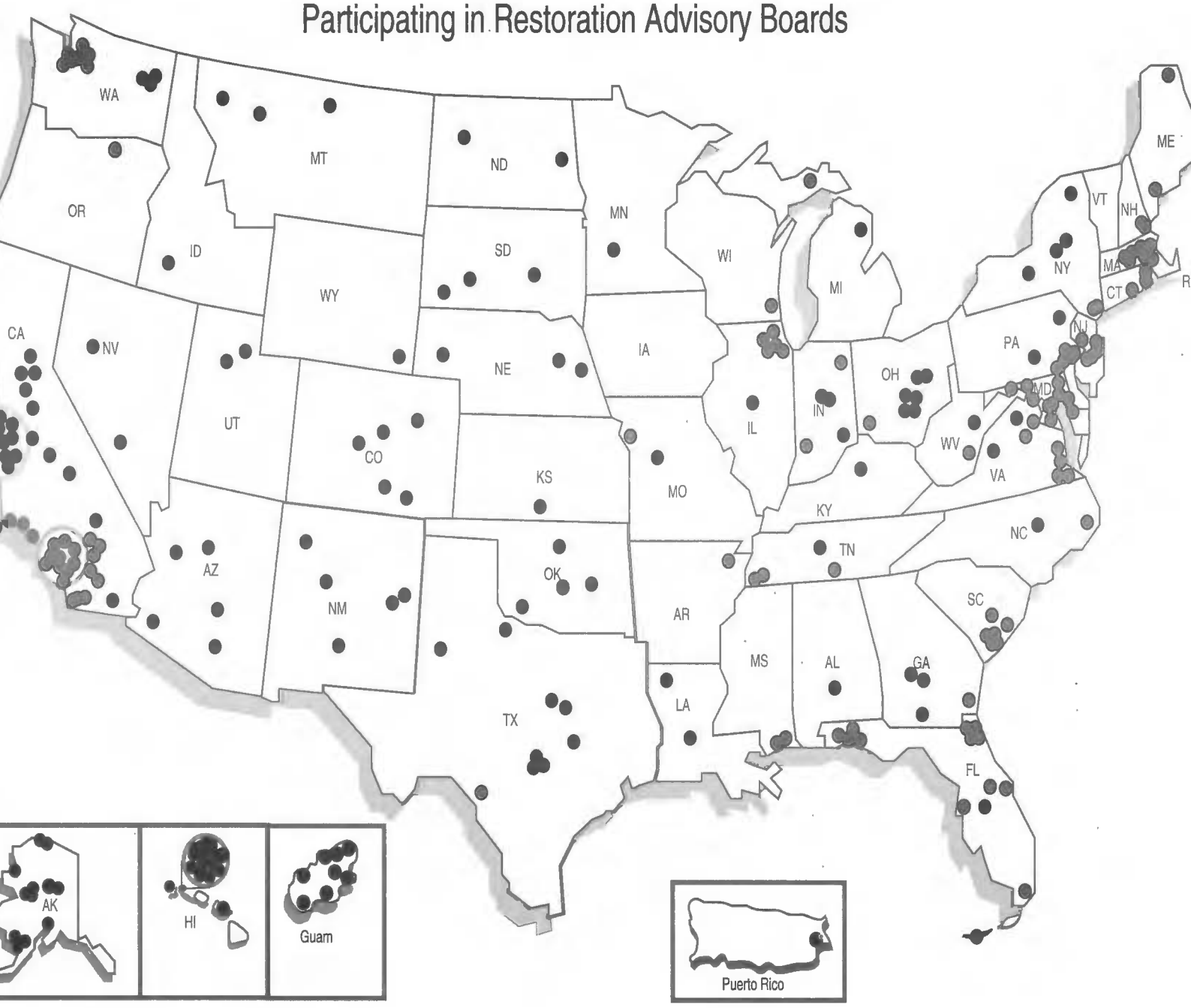
At many RABs, installation officials began working in concert with the local community and the Federal and state regulatory agencies to develop procedures to manage the operation of the RAB. DoD policy on RABs (and subsequent guidelines) was developed to maximize flexibility for RAB members and military installations. Many RABs are establishing basic procedures that address such issues as reviewing and responding to public comment, keeping the community informed, and determining methods for resolution of disputes.

At the end of FY95, RABs had been formed at more than 250 operational and closing installations located in 47 states, the District of Columbia, Puerto Rico, and Guam—representing the Army, the Navy, the Marine Corps, the Air Force, the Defense Logistics Agency (DLA), the National Guard Bureau (NGB), and formerly used defense sites (FUDS).

New RABs continued to be formed. Among the numerous RABs established at Army, Navy, and Air Force installations, the RAB formed at the Los Alamitos Armed Forces Reserve Center, California marked the first Army National Guard facility to establish a RAB. It is hoped that this RAB will serve as a model for RABs at other national guard installations.

DoD recognizes that increased public involvement may require some adjustment in how stakeholders view their respective

Location of Installations
Participating in Restoration Advisory Boards



The RAB initiative is helping to build trust among community members, installation officials, and Federal and state regulatory personnel.

roles in the environmental restoration program. Historically, installation officials were concerned that the intricacies of technical issues related to contamination and the risk posed would hamper the public's ability to participate effectively in the environmental restoration process. Regulatory officials had similar concerns. In some communities, residents hesitated to trust an installation that the community perceived to be less than candid about its environmental restoration program. Old biases must be discarded and a new partnership formed to embrace all stakeholders on an equal footing.

The RAB initiative has helped to bridge this gap of mistrust among community members, installation officials, and Federal and state regulatory personnel. At many operational DoD installations, and at most closing installations, RABs now provide the primary forum in which the public participates in their environmental restoration program. It is important to note that the RAB is not a replacement for other types of community outreach and participation activities required by law, regulation, or policy.

The guidelines issued in September 1994 require that each RAB reflect the diversity of the communities in which RABs operate. In addition, the guidelines state that every effort should be made to ensure that a broad spectrum of individuals or groups (including those groups traditionally underrepresented in the decision-making process) be included. By bringing together people who reflect the many diverse interests within the community, a RAB helps identify issues of concern and reduce potential communication problems that could result in needless delays. It is DoD's intent that this partnering approach will be effective in incorporating the diverse needs and concerns of the communities affected by environmental restoration activities.

"DoD recognizes that public involvement focuses on providing communities access to information on, and participation in, matters related to human health and the environment. To that end, DoD will continue to promote RABs and TRCs as forums for discussion about environmental cleanup activities at DoD installations."

DoD Strategy on Environmental Justice, March 1995

LESSONS LEARNED

The examples discussed below illustrate several lessons that have been learned through the experiences of RABs that were formed during the first two years of the initiative.

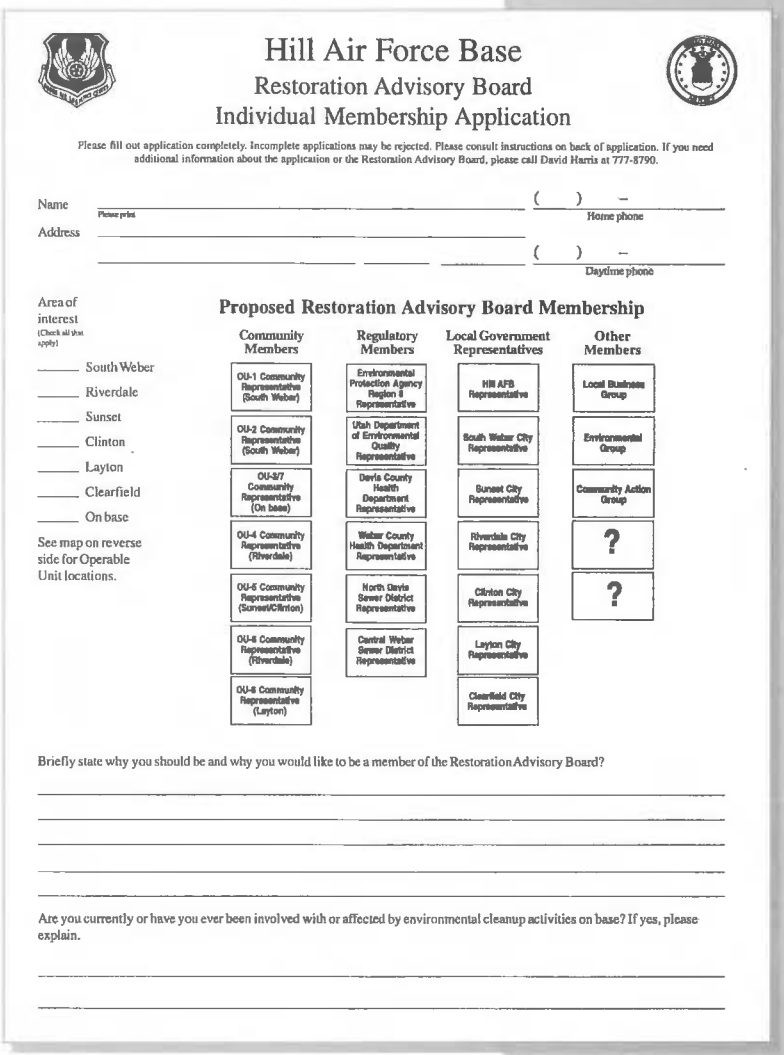
Selection of members is crucial to the success of the RAB

The selection of RAB members is perhaps one of the most sensitive issues facing an installation that establishes a RAB. When members of the community feel that the process for selecting members of the RAB is conducted in a fair and unbiased manner, they are more likely to accept the RAB as a credible forum for the discussion of issues or concerns. Conversely, if the selection of members, particularly of community members, is not handled carefully, loss of trust can occur, with a subsequent failure to achieve dialogue.

The RAB at **Hill Air Force Base** (AFB), Utah, demonstrates true initiative and innovation in reaching as many members of the community as possible. Six small communities, ranging in size from 2,000 to 30,000 residents, lie in the vicinity of Hill AFB. After conducting a wide-ranging outreach project to inform the communities about the RAB, installation officials received 155 applications for membership.

To ensure adequate representation of all the communities, the installation asked each of the town and city councils to help select RAB members from the pool of applicants. Special emphasis was placed on selecting individuals who would represent the interests of the communities rather than the interests of local governments. In addition, each council was asked to appoint a RAB member who would represent the interests of that local government. Open and honest communication between the installation and the local communities resulted in the establishment of a RAB whose 27 members participate actively in meetings and provide advice from the various communities.

The active participation of the RAB in the review of relative risk evaluations for 80 sites at Hill AFB resulted in revisions to the installation's plan for sequencing projects for cleanup.



Hill Air Force Base
Restoration Advisory Board
Individual Membership Application

Please fill out application completely. Incomplete applications may be rejected. Please consult instructions on back of application. If you need additional information about the application or the Restoration Advisory Board, please call David Harris at 777-8790.

Name _____ ( ) – _____
Please print. Home phone

Address _____

_____ ( ) – _____
Daytime phone

Area of interest (Check all that apply)

_____ South Weber
_____ Riverdale
_____ Sunset
_____ Clinton
_____ Layton
_____ Clearfield
_____ On base

See map on reverse side for Operable Unit locations.

Proposed Restoration Advisory Board Membership

Community Members	Regulatory Members	Local Government Representatives	Other Members
OU-1 Community Representative (South Weber)	Environmental Protection Agency Region II Representative	Hill AFB Representative	Local Business Group
OU-2 Community Representative (South Weber)	Utah Department of Environmental Quality Representative	South Weber City Representative	Environmental Group
OU-3/7 Community Representative (On base)	Davis County Health Department Representative	Sunset City Representative	Community Action Group
OU-4 Community Representative (Riverdale)	Weber County Health Department Representative	Riverdale City Representative	?
OU-5 Community Representative (Sunset/Clinton)	North Davis Sewer District Representative	Clinton City Representative	?
OU-8 Community Representative (Riverdale)	Central Weber Sewer District Representative	Layton City Representative	
OU-9 Community Representative (Layton)		Clearfield City Representative	

Briefly state why you should be and why you would like to be a member of the Restoration Advisory Board?

_____
_____
_____
_____
_____

Are you currently or have you ever been involved with or affected by environmental cleanup activities on base? If yes, please explain.

_____
_____

Training for community members of the RAB benefits all

Training members of the RAB about an installation's environmental restoration program increases their understanding of the process and objectives of the RAB and the installation's environmental restoration program. Training for RABs has ranged from a simple introduction to the installation to detailed instruction in technical issues, including workshops on relative risk site evaluations, briefings on regulatory requirements, site tours, and comparisons of environmental technologies.

Through an extensive educational process that is ongoing, the RAB at **Fort Carson**, Colorado, has gained a better understanding of the "what and why" of the installation's environmental restoration program. When the RAB was formed in April 1995, installation officials decided that a strong training program was needed to assist the RAB members in providing informed input to decisions about environmental restoration activities on sites located throughout the more than 350,000 acre facility.

One of the key training activities was the development of a RAB Education Book that includes descriptions of each of the installation's 167 sites, and a brief history of the installation and its operations. In addition, the book features a description of the environmental restoration process, which summarizes the key elements of the study, interim action, design, and cleanup phases of the program.

The education book supplemented presentations by various guest speakers who provided additional details about the environmental restoration program. Guest speakers included the cleanup contractor and personnel from the installation's legal and natural resources staffs.

Installation officials credit the ongoing training of RAB members as an invaluable tool to getting and keeping the community involved early in the environmental restoration process. They point to efforts by all stakeholders that emphasize communication, coordination, and cooperation—efforts which have enhanced relations with the community.

Although DoD policy states that RABs are not in the business of determining reuse options, the RAB should address reuse as it relates to environmental restoration priorities and levels of cleanup.

Agreement about the mission and scope of activities of the RAB is crucial in developing and reaching common goals

When members of the RAB agree early on about their mission, there is a framework for discussions. Without that framework, discussions may become bogged down with issues that are not relevant to the installation's environmental restoration program.

This framework is particularly important when addressing reuse issues affecting a closing installation. Although DoD policy states that RABs are not in the business of determining reuse options, the RAB should address reuse as it relates to environmental restoration priorities and levels of cleanup.

A partnership between the RAB and the local redevelopment authority (LRA)—a community organization created to address reuse of a closing base—is essential. Methods and timetables established for cleanup should be coordinated with the type of reuse planned for the installation and priorities set by an LRA regarding time frames for reuse. Clarifying the role of the RAB in relation to reuse can help avoid delays in the approval of environmental restoration plans and intended reuse of an installation.

Community representatives of the RAB at **McClellan AFB**, California, have agreed on the importance of maintaining an active role in reuse decisions at that installation. To that end, the RAB has formed a Base Reuse Subcommittee to monitor the activities of the LRA. In addition, members of the RAB believe that their efforts will help ensure that environmental issues are considered when making decisions about potential reuse options, as well as to ensure that costly delays are avoided.

One community member of the RAB noted that, "the primary goal of the RAB Reuse Subcommittee is to not allow commercial interests to overwhelm the interest and responsibility of McClellan AFB to proceed with environmental restoration."

Remaining flexible embodies the true spirit of partnership—an essential element in achieving dialogue

DoD recognized early on that each RAB established would be a unique organization dealing with installation-specific issues. Thus, each installation has been encouraged to customize implementation of its RAB to reflect the unique circumstances at that installation and within that community.

At communities in the **Oxnard Plain** in central California and those near the extensive **Pearl Harbor Naval Base Complex** in Hawaii, each of which is home to a number of installations, RAB activities are conducted by a single consolidated RAB that serves as a focal point for dialogue among the extended community, the installations, and regulatory agencies. These "joint" RABs, established for 45 installations DoD-wide, demonstrate how installations can work together to share resources, encourage the participation of members of communities, and speak with one voice about DoD's environmental restoration activities in a specific region.

During 1995, installation efforts to implement proactive public outreach programs resulted in the formation of interservice RABs. In Long Beach, California, the Navy and DLA have joined to form a RAB to serve the communities surrounding the Navy's **Long Beach Naval Complex** and DLA's **Defense Fuel Support Point, San Pedro**. By working together, each installation is looking to conduct environmental restoration activities in a timely and cost-effective manner.

By working together, each installation is looking to conduct environmental restoration activities in a timely and cost-effective manner.

Gaining Momentum and Achieving Results

"It's been gratifying to watch RABs evolve into an essential part of our program. Public participation has helped us improve the cleanup process, proving that good ideas are always welcome."

— Patricia A. Rivers, P.E.

Assistant Deputy Under Secretary of Defense (Environmental Cleanup)

Initiatives Undertaken in Fiscal Year 1995

During the past year, DoD implemented several activities to support the RAB initiative. Key activities included:

- Developing the *Directory of Restoration Advisory Boards (RAB)*, which lists for each RAB information about installation and community co-chairs
- Beginning to compile information for a RAB resource book that will provide practical, "hands on" tools for establishing and operating RABs
- Publishing in the *Federal Register* a notice of request for comments about various funding options for technical assistance for public participation and beginning the development of a proposed rule based on comments received

During FY95, DoD began efforts to design its Technical Assistance for Public Participation (TAPP) program. A senior level working group composed of representatives of the Office of the Secretary of Defense, the DoD Components, and EPA, developed and proposed for public comment in the *Federal Register* three options for providing technical assistance to the community.

Most commentors favored the option that called for technical assistance to be provided through the use of local purchase orders. With this input, the working group began drafting a proposed rule defining how this will be accomplished within DoD, as well as identifying criteria for the receipt of funds, appropriate use of funds, dollar limitations, and reporting requirements.

The proposed rule will be published in the *Federal Register* for public comment and comments will be incorporated before the program is initiated. DoD believes that public involvement in the development of the program is especially appropriate given that the TAPP program is specifically intended to assist communities.

Results and Successes

When RABs were first implemented in September 1993, DoD policy outlined specific responsibilities of the RAB. In September 1994, the RAB Guidelines, issued jointly by EPA and DoD, further clarified the roles and responsibilities of each of the members of the RAB.

The following stories illustrate how RABs are fulfilling their key responsibilities.

Providing advice to the installation and Federal and state regulatory agencies

One key benefit of a RAB is the opportunity it offers an installation to build or strengthen its relationships with its regulatory partners. By acting as a forum for the discussion and exchange of information among the community; the installation; and Federal, state, and local government agencies, RABs have provided advice that has resulted in significant avoidance in cost and time.

The RAB at **Naval Air Station (NAS) Whidbey Island**, Washington, has been meeting since February 1994 to review documents and provide advice to installation personnel. Among the most significant contributions the RAB has made to the decision-making process is the

Members of the Whidbey Island RAB tour an air purification facility at a former landfill.

RAB's advice on alternatives for cleanup, which was a crucial factor in the selection of a cleanup alternative that resulted in a cost avoidance of $4.5 million.

Under the environmental restoration program at NAS Whidbey Island, more than 40 sites have been listed as potentially contaminated. In one area, the former runway fire school, concentrations of petroleum and other chemicals in soil and groundwater exceeded regulatory levels. The former fire school lies in a restricted area with limited access and the groundwater is not a source of drinking water.

The Navy originally selected a cleanup alternative—excavation and removal of soil—designed to meet all regulatory requirements. The area was considered eligible for residential use after an evaluation of potential risk to human health was performed. The cost of the selected alternative was estimated to be $5.4 million.

The RAB questioned the stringency of the "residential" cleanup standard, stating that the human health and ecological risk did not appear to warrant such a costly cleanup. Subsequently, the Navy selected a new preferred alternative: oil skimming and bioventing, along with restrictions on future residential development of the area and requirements for monitoring of the groundwater. The cost of that alternative is estimated at $0.9 million—resulting in a cost avoidance of more than $4.5 million.

Recommending priorities among sites or projects

At many installations, RABs participate in the evaluation of relative risk, the backbone of DoD's common-sense approach to the environmental restoration program. At several installations at

One key benefit of a RAB is the opportunity it offers an installation to build or strengthen its relationships with its regulatory partners.

"The entire remediation from identification to cleanup has been handled swiftly and professionally. It is obvious that the Navy takes environmental restoration seriously and that the Navy cares about public involvement in the cleanup process."

— Ms. Dottie Marron
RAB Community Co-chair
NAS North Island, CA

At closing installations, RABs provide a link between cleanup and the transfer of property to the community.

which RABs have become integral parts of the review process, the participation of the RAB has brought about revisions to priorities (both major and minor) that are producing solid savings in both time and expenditures.

At many installations at which the priorities selected by the RAB matched those developed by the installation, the RABs applauded the use of relative risk evaluations to set priorities for environmental restoration at military bases.

The participation of the RAB at **Kirtland AFB**, New Mexico, in the installation's relative risk process enabled the installation to save time and money because site investigation projects were accelerated. In addition, Kirtland AFB became one of the first installations to complete relative risk evaluations of all its contaminated sites with the full involvement of stakeholders.

In early 1995, RAB members representing the community, the installation, and the New Mexico Environment Department evaluated the relative risk of 43 sites and recommended priorities for cleanup. The RAB members attended a training session on the site ranking system that included a tour of the sites.

Because of the success of efforts during early 1995 to involve the public, EPA Region 6 determined that the installation's efforts to obtain the RAB's participation in the conduct of relative risk site evaluations met the requirements for involving the public which usually are satisfied by a public hearing.

The effectiveness of the working relationship the Air Force has established with the RAB at Kirtland AFB provides regulator personnel and the public with confidence in DoD's environmental restoration activities at the installation.

Addressing important issues related to environmental restoration

The RAB's focus is on providing advice about environmental restoration activities at military installations throughout the decision process. Among the responsibilities of the RAB, the task of addressing issues important to environmental restoration such as the scope of studies, reviewing and evaluating documents, cleanup levels, waste management, and remedial action alternatives is central to improving the community's understanding of the activities being undertaken to clean up the installation.

At closing installations, RABs provide a link between cleaning up property and preparing the property for transfer to the community. RABs address issues related to reuse in two ways:

- By providing input to the Base Realignment and Closure (BRAC) Cleanup Team (BCT) on those issues that affect cleanup priorities and decisions
- By providing comments to the LRA on possible reuse options, based on the environmental condition of the property.

The RAB established at **NAS North Island**, California, has been working with installation personnel since June 1994 to address issues related to the installation's environmental restoration program. Re-

cently, the RAB gave the Navy high praise for its quick response to the RAB's concerns about the cleanup of a shoreline site. NAS North Island had discovered that slag and sediments at the shoreline site were contaminated with heavy metals and radiation. The RAB was immediately notified of the discoveries. When news of the contamination was broadcast, the community was not surprised—the Navy already had been working on the problem with the RAB. The relationship of trust and openness fostered by the RAB has paid dividends for both the Navy and the community.

The shoreline site has been subsequently cleaned up. One million pounds of contaminated slag and sediment were excavated, placed in containers, and shipped off-site for stabilization and final disposal. The RAB assisted in this process, providing their endorsement of the cleanup approach.

By taking this proactive approach, installation officials believe that significant delays of as much as five to ten months were prevented thanks to the facilitation of the RAB in the shoreline cleanup process. In turn, the RAB felt that it had been kept well informed about the site due to the prompt response by the Navy. Having the RAB in place served as a mechanism for communication to the community about the contamination and helped to respond to community concerns.

SHORT STORIES

The following short stories more fully illustrate the integral role the RAB can play in enhancing the public's trust in DoD's environmental restoration program.

Naval Air Station Cecil Field, Florida

Benefitting from an aggressive training program, the RAB established at NAS Cecil Field, Florida has proven to be a valued partner in the installation's environmental restoration program.

When the RAB first was formed in 1994, the community members of the RAB requested that the Navy clean up its sites to residential standards, regardless of the intended reuse or level of potential risk to human health or the environment. In response, installation officials developed and implemented a plan to educate the RAB about the environmental restoration process, including DoD's relative risk site evaluation framework and the level of risk posed by each site and what those levels mean. The training program featured a discussion of costs and funding which focused on balancing the need to clean a single site to a high standard with the need to spend available funds in a way that will produce the greatest overall reduction in risk.

The first test of the effectiveness of the training program occurred when installation officials proposed a plan that called for simple monitoring of two landfills located adjacent to a wetlands area surrounded by a thicket of pines. The sites were considered low risk because of the lack of "receptors," such as human or animal populations living nearby, wetland areas, drinking water supplies, and so forth.

Initially, the RAB and the community sought stringent cleanup actions that would have required the construction of a large landfill cap, supplemented with extensive groundwater remediation. However, through its newfound understanding of the low level of risk present at the landfills, the community and the members of the RAB agreed that the Navy proposal would address their concerns. The Navy estimates that the cost avoidance associated with the compromise was from $15 to $20 million.

The RAB at NAS Cecil Field continues to provide advice on the selection of cleanup technology, focusing on cost-effectiveness with considerations of relative risk and future land use.

The Navy estimates that the cost avoidance associated with the compromise was from $15 to $20 million.

Fort Detrick, Maryland

In 1993, Fort Detrick, located near Frederick, Maryland, established one of the first RABs in the nation. RAB members include local citizens, Army personnel, government officials, and state and Federal regulatory personnel—reflecting the diversity within the Frederick community. The successful formation and implementation of the RAB illustrates how active participation of members of the community can build trust between local residents and DoD and gain support for DoD's environmental restoration program.

The RAB initiative at Fort Detrick has proven instrumental in addressing the public's fears and correcting misconceptions about environmental restoration activities at Fort Detrick. The public had legitimate concerns about cleanup activities but, before the RAB was established, had no means of obtaining accurate information and voicing opinions.

One of the first actions the RAB took was to address fears in the community about the possibility that biological agents were buried at or near Fort Detrick. A public meeting was held at the Frederick City Hall, a neutral location. A large audience attended the meeting, broadcast live on local cable television. During the meeting, members of the community telephoned to ask specific questions about contamination at the installation. By holding the meeting, the installation gained greater credibility for its environmental restoration program. The installation also built stronger relationships of trust with RAB members and the community.

The Fort Detrick RAB plays an essential role in communicating information to the local community. For example, when the results of tests of contaminated wells were released, many misconceptions about the extent of contamination arose because of the technical language used in the reports. The RAB clarified technical issues and helped the community understand that the contamination did not pose a significant threat to human health.

In addition to forming a RAB, Army personnel have worked hard to gain the trust of the community. They use educational materials to keep the community informed about environmental restoration activities being conducted at the installation. The installation's Public Affairs Office regularly mails a newsletter to nearly 1,800 residents of the community. The newsletter describes details of the environmental restoration process at the installation and identifies contacts for information about specific investigation efforts.

Fort Detrick's work in the field of biomedical research continues today, with the support and understanding of the community. As a result of the activities of the RAB, the community and the installation no longer view each other as adversaries. Instead, the community has expressed an appreciation for the Army's foresight and the Army has shifted its way of thinking to a more proactive approach.

"Through its foresightedness, Fort Detrick has involved the Frederick community in its environmental cleanup activities from the initial discovery of the contamination to the current investigation and remediation planning activity...The community involvement on the RAB benefits us all by providing us with a measure of reassurance, direct input, and a forum ...assurance to the community that the whole truth is being presented."

— Gerald Toomey

RAB Community Co-chair
Fort Detrick

"I could not imagine us today undertaking such a sweeping environmental program without the involvement of the community."

— Colonel Hank Tuell

U.S. Army Garrison Commander
Fort Detrick

Former Black Hills Army Depot, South Dakota

The Omaha District, U.S. Army Corps of Engineers (USACE) is finding out that success can be achieved through the establishment of RABs in communities affected by investigations and cleanup projects at formerly used defense sites. As manager of a highly visible project at the former Black Hills Army Depot, USACE understands the critical nature of public involvement and teamwork in its environmental restoration efforts at sites without an active military presence.

The former Black Hills Army Depot is located ten miles southwest of Edgemont, South Dakota. Nicknamed "Igloo" for the 830 large concrete, earth-covered ammunition storage igloos peppered throughout the 21,095-acre former munitions depot, Black Hills was used for long-term storage of ammunition, propellants, and chemical agents. The depot was closed in 1967 and its property subsequently purchased by several individuals and organizations.

Environmental restoration activities at the former Black Hills Army Depot is facing increasing scrutiny and criticism from local residents. However, in the one year since its inception, the RAB has succeeded in providing a forum in which the members of the community and representatives from the Army, EPA, and the state regulatory agency work together to achieve a common goal—cleanup.

USACE has undertaken efforts to foster a continuous flow of information so that the community can participate as active, informed partners in the environmental restoration program. Significant training efforts included a discussion on ordnance by an expert from Yuma Proving Ground, a field demonstration of various geophysical investigation techniques and equipment, and training on the typical process for cleanup actions. Training about risk assessment is planned for FY96.

USACE also identified a mechanism to provide independent technical assistance to the RAB members. Individuals at Kansas State University, which is the recipient of a grant from EPA's Technical Outreach Services to Communities (TOSC) program, will begin reviewing all technical documents regarding cleanup activities at the former depot and will provide a report of their findings to the RAB.

Community members have used the RAB to communicate their concerns about environmental restoration activities at the former depot. In several instances, USACE has acted on the advice provided by the RAB. For example, members of the RAB expressed concern that an initial search of installation archives had not fully explored former practices at the depot. In response, USACE agreed to conduct a second archives search, including interviewing former depot employees and other individuals who were knowledgeable about past operations.

RAB members also stated that sampling efforts are not progressing as quickly as the community would like. Traditionally, USACE samples for potential contamination after all ordnance has been removed from the area. RAB members were concerned that with this approach, the sampling could not begin until 1999. USACE has agreed to conduct sampling in restricted areas (where there is unexploded ordnance) by using existing site documentation to identify surface ordnance and various geophysical techniques to identify buried ordnance.

Although the environmental restoration program at the former Black Hills Army Depot continues to be scrutinized by the community, USACE believes that significant progress has been made in building support for the depot's environmental restoration program. With the implementation of the RAB, the community has a forum to keep informed and to have their concerns heard and addressed.

The RAB has succeeded in providing a forum in which the members of the community and representatives from the Army, EPA, and the state regulatory agency work together to achieve a common goal—cleanup.

"...work hard with area residents and the rewards will come—eventually."

— Mr. Kevin Quinn
U.S. Army Corps of Engineers

Index

INDEX

This index provides brief descriptions of the 45 stories included in the first volume and supplement of this *Defense Environmental Restoration Program Annual Report to Congress for FY95*. The short stories in this index recount environmental restoration successes for FY95. The index entries below are arranged in the order of their appearance in the report. When available, the name of a contact person and a telephone number are provided for each installation featured in a story. Installation representatives listed below are willing to share materials and information regarding their specific program. Congress and the public are encouraged to contact them to gain a better understanding of the environmental restoration program and the work done to protect human health and the environment.

The installation experience stories are a new feature in the *Defense Environmental Restoration Program Annual Report to Congress for FY95*. The stories are designed to provide a view of the everyday activities at a variety of installations, as well as the lessons learned from those activities and the realities of DoD's environmental restoration program. They appear in their own section of the report. The Environmental Cleanup Award is the newest category in the annual Environmental Security Awards.

DoD CLEANUP AWARD

FAST-TRACK CLEANUP PROGRAM

ACCELERATING CLEANUP

ENVIRONMENTAL TECHNOLOGY

CONTINUED OPPORTUNITIES FOR SMALL BUSINESS

INDEX

BUILDING PARTNERSHIPS

DEFENSE AND STATE MEMORANDUM OF AGREEMENT (DSMOA)

AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

INSTALLATION EXPERIENCE STORIES

Sacramento Army Depot, CA
This model installation has thrived under the Fast-Track Cleanup Program, and has been transformed into one of the nation's largest computer manufacturers. . . . . *Page 88*
Contact: Dan Oburn
(916) 557-7936

Homestead Air Force Base, FL
Under the Fast-Track Cleanup Program, the installation is addressing 500 sites where contaminants may have been released as a result of Hurricane Andrew. . . . . *Page 92*

Alameda Naval Air Station, CA
The story of Alameda Naval Air Station illustrates the role of the Restoration Advisory Board, state interaction through DSMOA, and the link between future land use and relative risk factors at closing installations with great economic importance in the community. . . . . *Page 96*

West Virginia Ordnance Works, WV
This Formerly Used Defense Site (FUDS) was deeded to the State of West Virginia and became a wildlife refuge; this story illustrates the workings of the FUDS program.
. . . . . *Page 104*

RESTORATION ADVISORY BOARDS

Hill Air Force Base, UT
The installation received 155 applications for membership in the Restoration Advisory Board after conducting an outreach project targeted at the six surrounding communities.
. . . . . *Page S-6*

Fort Carson, CO
Installation officials credit the ongoing training of Restoration Advisory Board members as an invaluable tool for keeping the community involved in the restoration process. . . . *Page S-7*
Contact: David Sealander
(719) 526-1722

McClellan Air Force Base, CA
The Restoration Advisory Board at this installation has formed a Base Reuse Subcommittee to monitor activities of the Local Redevelopment Authority. The Restoration Advisory Board has also focused efforts on environmental issues and avoidance of costly delays. . . . . *Page S-8*
Contact: Margaret Gedding
(916) 643-1742

Kirtland Air Force Base, NM
This installation's relative risk rankings accelerated site investigation projects. Kirtland Air Force Base was one of the first installations to complete relative risk evaluations of all its contaminated sites with the full involvement of stakeholders.
. . . . . *Page S-12*
Contact: Kari Paseur
(505) 846-0053

North Island Naval Air Station, CA
This installation's Restoration Advisory Board recently gave the Navy high praise for its quick response to concerns about the cleanup of a shoreline site.
. . . . . *Page S-12*
Contact: Cindy Turlington
(703) 602-5330

Cecil Field Naval Air Station, FL
The installation developed a training program for the Restoration Advisory Board that resulted in a compromise on stringent cleanup standards, resulting in a cost avoidance of an estimated $15 to $20 million for the Navy. . . . . *Page S-13*

Fort Detrick, MD
The installation's Restoration Advisory Board has been instrumental in addressing the public's fears and correcting misperceptions. A public meeting held to discuss potential buried biological agents was broadcast on cable television and helped the installation gain credibility with the community. . . . . *Page S-14*
Contact: Norman M. Covert
(301) 619-2018

Former Black Hills Army Depot, SD
The implementation of a Restoration Advisory Board has provided a forum for the community to have their concerns addressed at this formerly used defense site. . . . . *Page S-15*
Contact: Kevin Quinn
(402) 221-3917

Whidbey Island Naval Air Station, WA
Input from the installation's Restoration Advisory Board was a crucial factor in the selection of a restoration alternative that allowed the Navy to avoid $4.5 million. . . . . *Page S-10*

INDEX OF OTHER DOD SUCCESSES

The following summaries describe the accomplishments of installations that were nominated for but not included in the body or supplement of Volume 1 of this report. The summaries are categorized by theme alphabetically, with entries in each category arranged alphabetically by state.

ACCELERATING CLEANUP

Fort Huachuca, AZ

Initial corrective actions to address a leaking underground storage tank (UST) included the removal and replacement of the UST system, followed by excavation and on-site thermal treatment of soil. An air sparging system installed in 1994, significantly reduced benzene concentrations, with complete site remediation anticipated within 2 to 3 years.
Contact: Frank Shirar
(502) 533-1285

Barstow MCLB, CA

An emergency removal action in July 1995 provided water to nearby residents, and carbon treatment units were installed on private drinking water wells. Groundwater remediation techniques include vapor extraction combined with air sparging.
Contact: Michael Cox
(619) 577-6887

Twentynine Palms MGAGCC, CA

Under the Pilot Expedited Environmental Cleanup Program, the installation has accelerated environmental cleanup, reduced cleanup costs, and achieved an environmentally clean facility in a timely manner.
Contact: Leon Bowling
(619) 830-5728

Fort George G. Meade, MD

Under BRAC, 7,000 acres were transferred to the Department of the Interior. Unexploded ordnance (UXO) remediation at another area revealed 14,000 pieces of UXO; more than 4,000 pieces were exploded by the 144th Ordnance Detachment during cleanup operations in FY95.
Contact: Don McClow
(301) 677-1361

Minneapolis-St. Paul Air Force Reserve Base, MN

The installation is currently working with EPA Region 5 to have a site deleted from the NPL. The site has progressed through the entire SI/RI/FS/ROD/RA process and it is believed that it will be the first Air Force site permanently removed from the NPL.
Contact: Joan Bentley
(612) 725-8132

Mississippi State Fair Grounds, MS

Commercial contractors digging utility lines uncovered glass vials containing chemical materiel. The U.S. Army Corps of Engineers remediated the area in one month with assistance from Aberdeen Proving Ground's Technical Escort Unit.
Contact: Robert E. DiMichele
(205) 895-1691

Missouri and New Mexico Army National Guard

Missouri and New Mexico are the first two Army National Guard units to remove all USTs.
Contact: Robert Gondek (NM)
(505) 473-3882

U.S. Military Academy, West Point, NY

A RCRA facility assessment determined that the Morgan Farm Landfill's embankment was unstable and metals were detected in groundwater and seeps. An interim remedial action was initiated through the U.S. Army Corps of Engineers, Omaha District to address the situation.
Contact: William J. Kavanaugh
(914) 938-4459

Camp Lejeune, NC

Camp Lejeune completed two time-critical removal actions—one for pesticide-contaminated soils and the other for dangerous metallic debris. In addition, two groundwater remediation systems were installed to remove volatile organic compounds from USTs that are undergoing study and closure. Over 25,400 gallons of free product have been recovered from groundwater remediation systems at UST sites to date.
Contact: Neal Paul
(910) 451-5068

McAlester Army Ammunition Plant, OK

Under the Fast-Track Cleanup Program, this installation has achieved restoration goals in a timely and cost-effective manner.
Contact: Steven A. Creech
(918) 421-2551

Letterkenny Army Depot, PA

The Area K cleanup was completed and several emergency removal actions took place. Community involvement included the formation of a Restoration Advisory Board and publication of an environmental newsletter.
Contact: Alan R. Loessy

Tobyhanna Army Depot, PA

A removal action for contaminated soil at Area B addressed groundwater contamination concerns and saved about 75 percent of a $4 million planned remedial action. The removal action was made possible through partnering efforts with EPA and PADEP and contracting assistance from the U.S. Army Corps of Engineers. Area residents were connected to the installation's water line.
Contact: Craig Coffman
(717) 895-6494

DGSC Richmond, VA

Exploratory trenching at a landfill provided data necessary for DLA to conduct a more detailed evaluation of cleanup alternatives. Construction of a groundwater remediation system began, a Record of Decision was signed, and six expanded site investigations were completed. In addition, DLA completed remedial investigation reports and a feasibility study report.
Contact: William Saddington
(804) 279-3781

Fort Pickett, VA

The installation is removing and replacing 76 heating fuel USTs with aboveground vaulted tanks. Fort Pickett's approach includes the selection of the oldest USTs for replacement under the initial contract.
Contact: David L. Foley
(804) 292-2630

Quantico MCCDC, VA

A removal action accelerated cleanup of a pesticide-contaminated site and prompted a no further action document for the site.
Contact: John Burleson
(703) 784-4030

Woodbridge Research Facility, VA

The BRAC Cleanup Team determined that an interim removal action was necessary to clean up PCB contamination near an outfall located just above an environmentally-sensitive wetlands area. The U.S. Army Corps of Engineers, Omaha District removed 1,100 tons of contaminated soil and concrete and treated more than 40,000 gallons of PCB-contamiated groundwater.
Contact: Robert P. Craig
(301) 394-4511

BUILDING PARTNERSHIPS

Yuma Marine Corps Air Station, AZ

This installation saved 2 to 3 years and about $10 million by partnering with regulatory agencies to obtain concurrence on cleanup decisions.
Contact: Larry M. Leake
(520) 341-5215

Presidio of Monterey Annex (formerly Fort Ord), CA

Successful working relationships have been established among all members of the BRAC Cleanup Team (BCT), and the BCT conducts regularly-scheduled meetings to discuss and resolve comments before finalizing comment letters.
Contact: Gail Youngblood
(408) 242-7918

Eglin Air Force Base, FL

Through focused partnering efforts, an agreement was successfully negotiated with the State of Florida to accelerate cleanup, prioritize effectively, and involve regulators earlier in the assessment and cleanup process.
Contact: Steve Williams
(904) 992-2878 x594

INDEX OF OTHER DoD SUCCESSES

ENVIRONMENTAL TECHNOLOGY

Dutch Harbor, Unalaska Island, AK
An underwater, remote-controlled vehicle was used to locate waste after several hundred glass vials belonging to chemical agent identification sets were found off a commercial fishing dock. As part of the engineering evaluation/cost analysis, the U.S. Army Corps of Engineers explored the harbor, and no additional such materiel was discovered.
Contact: Robert E. DeMichele
(205) 895-1691

Fort Richardson, AK
An innovative cleanup approach was used to remove contamination from wetlands at Fort Richardson's Eagle River Impact Area. After white phosphorus from UXO was found to be causing waterfowl deaths in the area, the Army developed an electro-hydraulic, remote-control dredge to remediate pond sediments.
Contact: William A. Gossweiler
(907) 384-3017

Yuma Proving Ground, AZ
The Environmental Security Technology Certification Program is sponsoring the demonstration of technologies for detecting UXO originally developed for mine detection activities. A remote-controlled detector capable of differentiating explosive material from non-explosive shrapnel is being tested. Initial results indicate that a moderately skilled operator can survey seven times more area per hour than a highly skilled operator with a hand held detector. An advanced airborne based suite of active and passive sensors is also being tested for surveying large areas contaminated with UXO.

Camp Pendleton, CA
Cost control measures being implemented at the installation include: reduced sampling efforts; analytical testing for monitoring wells; elimination of production well sampling; maximizing the use of non-time critical removal actions; and streamlined engineering evaluation and cost analysis and feasibility studies by selecting proven treatments.
Contact: Keith LeBouef
(619) 725-9742

McClellan Air Force Base, CA
This installation is demonstrating soil gas and off gas treatment techniques to remediate chlorinated hydrocarbons in groundwater and soil.

Port Hueneme Naval Construction Battalion Center, CA
The installation is using sensor validation for Site Characterization and Analysis Penetrometer System (SCAPS) applications used in conjunction with fuel hydrocarbon and waste oil investigations and remediation activities. A biopile demonstration was also completed, and a HAVE demonstration has just begun.

Presidio of San Francisco, CA
The installation is using an innovative *in situ* groundwater treatment system developed in Germany. The method uses a vacuum system to move contaminated groundwater, the water flows upward where it is injected with tiny air bubbles that strip volatile organic compounds from the water. Preliminary results indicate that contaminants are being successfully removed by the system.
Contact: Thomas C. Appling, III
(415) 749-3205

San Diego MCRD, CA
This installation has been very effective in the assessment and removal of underground storage tanks. In addition to removing five tanks in less than 3 months, state-of-the-art technology has been used to develop a SCAPS summary report.
Contact: Eric C. Green
(619) 524-0655

Seal Beach Naval Weapons Station, CA

The Environmental Security Technology Certification Program is demonstrating enhanced *in situ* anaerobic bioremediation methods to remediate fuel-contaminated groundwater. Anaerobic degradation is anticipated to cost two-thirds less than traditional activated carbon treatment.

Groundwater Remediation Field Laboratory, Dover Air Force Base, DE

The first contained release cell was constructed at Dover Air Force Base to demonstrate site characterization, monitoring, and remediation techniques for dense nonaqueous phase liquid in groundwater.

Hawaii MCB, HI

The installation is using several innovative technologies to facilitate the cleanup and prevention of future pollution. Bioventing and bioslurping are being used to stimulate the aerobic biodegradation of contaminants in soil and recover free product from the water table. Biopile remediation is being used to apply native microorganisms to excavated fuel-contaminated soils, and research is being conducted to identify landfill cover materials that are cost-effective and that minimize the amount of rainwater infiltrating soil.
Contact: James Abbott
(808) 257-9974

Pacific Missile Range Facility, HI

The Environmental Security Technology Certification Program sponsored the Naval Facilities Engineering Service Center to demonstrate an integrated geophysical underwater survey technology to detect underwater UXO.

Savanna Army Depot, IL

The installation is conducting a technology demonstration at its largest contaminated site. Commercially available soil sifting and screening equipment is being used to remove debris created by testing, demilitarization, open detonation, and open burning of ammunition in contaminated soils. The debris-laden soil is excavated, initially screened in the field to remove very large items, and then transported to a building where it is screened to remove all debris.
Contact: James E. Sisk

Iowa Army Ammunition Plant, IA

The U.S. Army Environmental Center, under the sponsorship of the Environmental Security Technology Certification Program, is applying biotreatment techniques in a slurry reactor to treat explosives-contaminated soils. The technique is expected to provide advantages over conventional incineration options.

Fort Polk, LA

The U.S. Army Environmental Center and the Navy Facilities Engineering Support Center are jointly demonstrating under the Environmental Security Technology Certification Program a suite of technologies to remove lead bullets from berms at small arms ranges and extract the remaining lead contamination from the soil. These technologies will allow the soil to be cost effectively cleaned and left on site.

Louisiana Army Ammunition Plant, LA

The Environmental Security Technology Certification Program has brought together the installation and the U.S. Army Waterways Experiment Station to demonstrate the advantage of natural attenuation as a low cost alternative to treating explosives contamination in groundwater.

Naval Air Engineering Station, NJ and New Orleans Naval Air Station , LA

The Navy, under the sponsorship of the Environmental Security Technology Certification Program, has demonstrated and validated the Laser-induced fluorescence Site Characterization and Analysis Penetrometer System (SCAPS). These demonstrations were done in coordination with local and regional regulators across the country to achieve regulatory acceptance of the technology.

Index of other DoD Successes

Aberdeen Proving Ground, Building 103, MD
For a landfill site in the Canal Creek Study Area, the installation has signed a Record of Decision to install a new double-liner cap using a sodium bentonite geocomposite liner and geosynthetic membrane to reduce infiltration and animal intrusion. The installation has also consolidated waste from two nearby burn areas to reduce disposal costs. At another site, the installation is studying the potential use of natural attenuation and degradation to reduce volatile organic compound concentrations in a marsh area.
Contact: Kenneth Stachiw
(410) 671-3320

National Center for Integrated Bioremediation Research and Development, Wurtsmith Air Force Base, MI
The installation is evaluating bioremediation techniques designed to remediate fuel- and solvent-contaminated soil and groundwater. Survey site candidates have undergone comprehensive analyses, and the installation has conducted controlled subsurface injection and ecological biomarkers demonstrations.

Cornhusker Army Ammunition Plant, NE
The U.S. Army Environmental Center under the sponsorship of the Environmental Security Technology Certification Program and the installation have teamed to demonstrate a peroxone treatment technology for remediating explosives-contaminated groundwater. The demonstration has the potential to reduce costs compared to more traditional treatment methods.

Hastings Groundwater Contamination Site, NE
At this site, a new type of air sparging is expected to significantly improve groundwater quality by pumping air underground to vaporize volatile organic compounds across a larger area.
Contact: George Hanley
(816) 426-5241

Umatilla Army Depot, OR; Naval Submarine Base Bangor, WA
The Naval Research Laboratory, under the sponsorship of the Environmental Security Technology Certification Program, is demonstrating a fiber optic biosensor that would meet DoD's need for a hand-held device capable of detecting TNT contaminants in water. Fiber optic biosensing would drastically reduce the costs of and the time currently needed to obtain analytical results.

Erie Ordnance Depot, PA
The U.S. Army Corps of Engineers safely removed UXO remaining in Lake Erie sediments near the installation. A unique dredging technique employed closed-circuit television cameras and a conventional clamshell bucket fitted with explosion-proof blast shields to separate ordnance from sediments.
Contact: Robert E. DeMichele
(205) 895-1691

Tobyhanna Army Depot, PA
A powerful information management software known as the Executive Information System is being used in various environmental cleanup applications. The system applications equip executives, managers, and analysts with visual information access and an analysis reporting method with capabilities such as easy access to supporting data, trend analysis, calculations, cross-reference reports, and exception reporting.
Contact: Craig H. Coffman
(717) 895-6494

Camp Croft Infantry Replacement Training, SC
Two time-critical removal actions involving high levels of ordnance and explosives contamination were conducted in an area now used for a commercial landfill development and in another high-use recreation area. Cleanup activities have been effectively prioritized at live ammunition training ranges, a grenade court, a gas chamber, and other impact areas. The installation now contains a popular state park and residential, agricultural, and industrial areas.
Contact: Robert E. DiMichele
(205) 895-1691

Milan Army Ammunition Plant, TN
The Environmental Security Technology Certification Program has brought together the installation and the U.S. Army Environmental Center to demonstrate phytoremediation methods in constructed wetlands to treat explosives-contaminated groundwater.

Volunteer Army Ammunition Plant, TN

A SCAPS demonstration conducted at the installation characterized explosives and heavy metals contamination in groundwater and soil.

Naval Air Station Joint Reserve Base Fort Worth, TX

The Environmental Security Technology Certification Program is demonstrating plant-enhanced bioremediation techniques to remediate contaminated groundwater and soil. Plant bioremediation promises a natural, energy-conserving, and economical method that can be used alone or in conjunction with other methodologies.

Puget Sound Naval Shipyard, WA

An innovative technology, steam sparging, is being used to remove oil from the subsurface environment.
Contact: Dave Rodgers
(206) 396-0056

Badger Army Ammunition Plant, WI

The Armament Research, Development, and Engineering Center has teamed with the installation under the Environmental Security Technology Certification Program to demonstrate bioremediation of nitrocellulose-based energetic materials in soils. The technique is considerably less costly than incineration and composting processes.

OPPORTUNITIES FOR SMALL BUSINESS

Redstone Arsenal, AL

A $325 million total environmental restoration contract for the entire installation will be awarded to one contractor in 1996. Before releasing the request for proposal, a networking session was held for small businesses to meet prime contractors, as the contract award requires 40 percent of subcontracts to go to small businesses and 8 of the 40 percent to go to small-disadvantaged businesses.
Contact: James N. Parker, Jr.
(912) 652-5279

USACE Little Rock District, AR

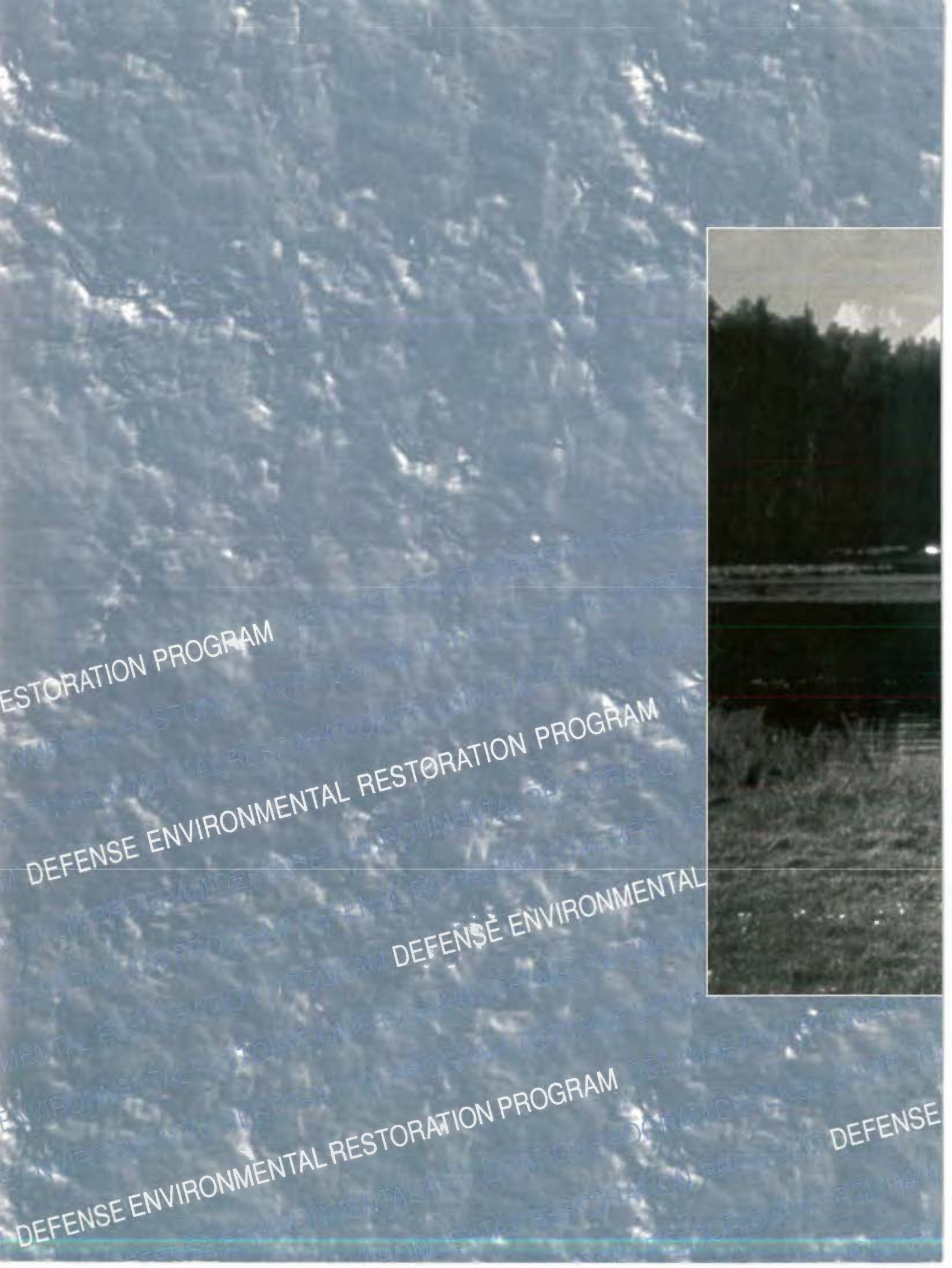
The U.S. Army Corps of Engineers, Little Rock District, has contracted with a small business to remove hazardous waste at the Gurley Pit. The contractor provided an air monitoring prototype that was later used by EPA as a model for other sites.
Contact: Paula Crane
(501) 324-7194

Acronyms

ACRONYMS

AAP	Army Ammunition Plant
AEC	Army Environmental Center
AFB	Air Force Base
AFBCA	Air Force Base Conversion Agency
AFP	Air Force Plant
ATSDR	Agency for Toxic Substances and Disease Registry
BCT	BRAC Cleanup Team
BRAC	Base Realignment and Closure
CA	Cooperative Agreement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLEAN	Comprehensive Long-Term Environmental Action-Navy
DDOU	Defense Distribution Depot Ogden
DDRW	Defense Distribution Region West
DERA	Defense Environmental Restoration Account
DERP	Defense Environmental Restoration Program
DERTF	Defense Environmental Response Task Force
DLA	Defense Logistics Agency
DNA	Defense Nuclear Agency
DoD	Department of Defense
DOE	Department of Energy
DSMOA	Defense and State Memorandum of Agreement
EPA	Environmental Protection Agency
EPD	Environmental Protection Division
ESTCP	Environmental Security Technology Certification Program
FFA	Federal Facilities Agreement
FFERDC	Federal Facilities Environmental Restoration Dialogue Committee
FOST	Finding of Suitability to Transfer
FUDS	Formerly Used Defense Site
FY	Fiscal Year
HSWA	Hazardous and Solid Waste Amendments of 1984
IAG	Interagency Agreement
LRA	Local Redevelopment Authority
MADEP	Massachusetts Department of Environmental Protection
MCAS	Marine Corps Air Station

MUDSS	Mobile Underwater Debris Survey System
NAS	Naval Air Station
NCP	National Oil and Hazardous Substances Contingency Plan
NELP	Navy Environmental Leadership Program
NGB	National Guard Base
NPL	National Priorities List
NSCS	Navy Supply Corps School
ODUSD(ES)	Office of the Deputy Under Secretary of Defense (Environmental Security)
OSD	Office of the Secretary of Defense
RAB	Restoration Advisory Board
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation and Feasibility Study
RNSI	Rational National Standards Initiative
RPM	Remedial Project Manager
SADBU	Small and Disadvantaged Business Utilization
SARA	Superfund Amendments and Reauthorization Act of 1986
SCAPS	Site Characterization and Analysis Penetrometer System
SERDP	Strategic Environmental Research and Development Program
SITE	Superfund Innovative Technology Evaluation
SSAB	Site-Specific Advisory Board
TAPP	Technical Assistance for Public Participation
TCE	Trichloroethene
TNT	Trinitrotoluene
TOSC	Technical Outreach Service to Communities
TRC	Technical Review Committee
UST	Underground Storage Tank
UXO	Unexploded Ordnance
VO	Variable Oversight
WVOW	West Virginia Ordnance Works
USACE	U.S. Army Corps of Engineers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