Cleanup Program Review:

Best Practices Report for the Defense Environmental Restoration Program

March 31, 2000

Office of the Deputy Under Secretary of Defense (Environmental Security)

FOREWORD

This *Best Practices Report* summarizes best practices—effective environmental restoration tools and solutions—gathered from the field. The challenges and tools presented in this Report come from a recent Cleanup Program Review performed by my office, in conjunction with the Services and the Defense Logistics Agency, to identify systemic institutional issues and solutions in the Defense Environmental Restoration Program.

The Department's Environmental Restoration Program has successfully completed cleanup activities at 62 percent of its sites to date. We believe that collecting and sharing best practices across the program with our installations is part of running a safe, cost effective and timely cleanup program while maintaining open communication with stakeholders.

The Report reaffirms the program's success in light of continuing environmental restoration challenges. I want to acknowledge and express appreciation for the efforts of field personnel working with regulatory agencies and communities to meet the day-to-day challenges of cleaning up military installations. Without them and their successes, the information and tools presented in this *Best Practices Report* would not be possible.

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EXECUTIVE SUMMARY

The Office of the Deputy Under Secretary of Defense (Environmental Security), which oversees the Department of Defense's Environmental Restoration Program, convened a Cleanup Program Review to examine the cleanup program's best practices at military installations and properties. This is the latest of many initiatives by which the Department of Defense proactively manages its environmental restoration efforts: the program employs a range of environmental management tools and techniques to protect human health and the environment.

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Held in late 1999, the Cleanup Program Review provided a forum for select military installations and properties to tell their stories and present their successes and issues to an audience of senior officials from the Department of Defense (DoD), Army, Navy, Air Force, and the Defense Logistics Agency. Other traditional program oversight mechanisms focus on detecting and resolving implementation and progress issues. The Cleanup Program Review sought to identify ways in which individual military installations and properties have been successful in overcoming cleanup challenges. DoD believes that proactively collecting and disseminating best practices is part of managing a cost-effective, innovative environmental restoration program.

This report is a summary of best practices—effective environmental restoration tools and solutions—that were presented and discussed by the military installations and properties that participated in the review. Each installation or property faces challenges on its way to cleanup program success: some of these are site-specific; others are program-wide. This report describes the measures that field personnel are taking in response to these challenges. In essence, it looks at the question "what works?" at the installation and property level—giving due credit for individual program successes and facilitating the dissemination of these best practices throughout DoD's Environmental Restoration Program.

Field personnel can use this information to enhance their own cleanup activities. The report shows how other remedial project managers and environmental restoration staff address common cleanup challenges. Each example lists reference tools, such as guidance documents and Web sites, that provide further information on the best practices. These additional resources give environmental restoration field personnel the information they need to implement the best practices.

This report is not a DoD directive, policy, or guidance document. Rather, it is a way for DoD to recognize and export effective cleanup program initiatives and innovations executed at the installation level.

The issues, best practices, and references in this report are grouped into four sections: Program Management, Streamlining Cleanup, Partnering and Outreach, and Property Transfer. Boiled down to their essence, the best practices identified during the Cleanup Program Review and presented in this report can be summarized in key characteristics or hallmarks of an ideal military installation's environmental restoration efforts. These characteristics are shown in the following box.

Hallmarks of an Ideal Installation's Environmental Restoration Activities

- ✓ DoD cleanup personnel and regulators work from the same plan describing the strategy and extent of the cleanup required, and agree on how business will be completed.
- ✓ DoD cleanup staff maintain open channels of communication.
- ✓ Regulators are involved early and continuously throughout the process.
- ✓ Stakeholders are involved throughout the cleanup process at the installation, and are proactively consulted by DoD cleanup personnel.
- ✓ DoD leads the partnering process and the cleanup team at installations.
- ✓ DoD cleanup staff and stakeholders agree early and consistently on the regulatory program, process, and standards to be used throughout the cleanup at the installation.
- ✓ Project management practices at the installation-level focus on effective contracting strategies, cost savings, compliance with schedules, and reliable cleanup projections.
- ✓ Remedial Project Managers and other on-site cleanup personnel are qualified, and there is sufficient staff to get the job done.
- ✓ DoD cleanup staff uses streamlined procedures for decision documents such as Records of Decision.
- ✓ DoD cleanup personnel use expedited remediation approaches (e.g., interim remedial actions and removal actions, presumptive remedies, or innovative technologies) in managing the cleanup.

INTRODUCTION

The Department of Defense (DoD) Environmental Restoration Program is reducing environmental risk and pursuing program completion through competent program execution. Responsible for program management and oversight, the Office of the Deputy Under Secretary of Defense (Environmental Security) (ODUSD(ES)) held the Cleanup Program Review to:

- Identify systemic issues in the Defense Environmental Restoration Program
- Propose recommendations for resolving program-wide impediments to cleanup
- Identify best management practices in the environmental restoration program.

By inquiring into individual installation's and property's recipe for success, DoD sought to determine what is working, what is not, and where program improvements are needed.

DoD held the Cleanup Program Review to determine:

- What is working in the environmental restoration program?
- What is not working in the program?
- Where are program improvements needed?

The mainstay of the Defense Environmental Restoration Program's management oversight is the In-Progress Review (IPR), a semiannual assessment of program implementation and progress. During the fiscal year 1998 End-of-Year (EOY) IPRs, each Military Service, the Defense Logistics Agency (DLA), and Formerly Used Defense Sites (FUDS) (together referred to as Military Components) conveyed their successes and issues in reaching program milestones and overcoming performance impediments. Some systemic issues identified during the FY98 EOY IPRs included—

- Addressing cleanup progress at more complex sites (e.g., dealing with such issues as groundwater remediation system selection and turn-off criteria, unforeseen field conditions)
- Responding to regulatory requirements for additional review and sampling
- Moving active base and Base Realignment and Closure (BRAC) policies on cleanup program execution toward a more business-like approach (i.e., private-sector tools such as outsourcing, contracting, financial management)
- Achieving consistent stakeholder buy-in for cleanup program plans and objectives
- Dealing with multiple tiers of oversight (state, U.S. Environmental Protection Agency (EPA), and Restoration Advisory Boards (RABs)) and their impact on cleanup project progress
- Improving consistency in use of cleanup program definitions and terminology.

These issues provided a foundation for a new kind of discussion about site-specific and programmatic challenges and how installations and properties are overcoming them. ODUSD(ES) decided to use an innovative approach to take a fresh look at the program, holding a Cleanup Program Review instead of the midyear FY99 IPR to proactively pursue these issues.

Overview of the Cleanup Program Review

In November 1999 DoD accepted the Services' nominations of 16 installations and properties to participate in the review. The 16 installations and properties, identified in Appendix B, consisted of 4 Army installations, 4 Navy installations, 4 Air Force installations, 2 DLA sites, and 2 FUDS. In addition to balancing installation and property representation evenly among the Military Components, the review included representatives of both BRAC and active installations.

The Cleanup Program Review took place over a three-day period. Along with military installation and property representatives, a headquarters work group was present daily and a steering group attended the afternoon sessions. The work group comprised ODUSD(ES) Cleanup office staff and representatives from each of the Military Components; the steering group consists of the Principal Assistant Deputy Under Secretary of Defense (Environmental Security), Assistant Deputy Under Secretary of Defense (Environmental Cleanup) and Military Component environmental Deputy Assistant Secretaries (DASs). Appendix C provides a list of the work group and steering group members who participated in the Cleanup Program Review. During the morning sessions, representatives of the participating installations and properties discussed the challenges and successes of their cleanup programs with the work group. Following this dialogue, the installation representatives and the work group prepared a summary of issues for discussion with the steering group. Afternoon sessions were dedicated to an open dialogue among the installation representatives, the work group, and the steering group. To facilitate free discussion, comments made during these sessions were not attributed to individual participants. The afternoon dialogue with the steering group focused on the most important issues that arose during the morning session. The purpose of the afternoon roundtable discussions was to:

- Identify ways of improving installation cleanup performance
- Identify issues that continue to impede environmental restoration performance and developing recommendations to address them
- Promote “outside-the-box” thinking on program challenges.

Results of the Cleanup Program Review

The Cleanup Program Review yielded two primary work products. The *Best Practices Report* (this document) captures installation successes in overcoming both unique challenges and programmatic impediments.

The second product is a follow-up plan that defines issues requiring engagement at the DoD and Component headquarters level, as well as with other stakeholders. The primary focus of these issues is to work cooperatively toward achieving consistent cleanup performance measures and definitions of success. These actions will require collaboration among parties within DoD, and between DoD, and with U.S. EPA and state regulatory agencies.

DoD's environmental restoration program has successfully completed cleanup activities at 62 percent of its sites to date by focusing on environmental risk reduction, safe and timely cleanup, and program efficiencies. The Cleanup Program Review reaffirms the program's success in light of continuing environmental challenges.

Section 1: PROGRAM MANAGEMENT

Effective program management is essential to the success of DoD's cleanup program. Program management involves more than resource oversight. DoD cleanup personnel must continually improve the cleanup process to ensure that the program meets its objectives in the most effective and efficient manner possible. This section, Program Management, addresses the following topics—

A. Regulatory authority and cleanup team agreement: Overlap in regulatory oversight (e.g., EPA and state regulatory agencies), ambiguities within and between regulatory authorities (e.g., the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Resource Conservation and Recovery Act (RCRA)), and regulator differences of opinion are challenges for most installations and properties.

B. Contracting: Contractor continuity and flexible contract mechanisms expedite the cleanup process and decrease costs.

C. Knowledge retention: Employee transition procedures can help installations retain valuable knowledge about the cleanup process at the installation, maintain continuity, and avoid unnecessary repetition of cleanup activities.

D. Recognition of success: To decrease staff turnover, managers of installations and properties need to recognize superior performance by remedial project managers (RPMs) through awards or incentives.

E. Qualification requirements for remedial project managers: DoD and regulatory RPMs must have sufficient training to have confidence in their own decision-making ability. They must have sufficient technical expertise to make appropriate decisions. Also, in order to make more timely and effective decisions, RPMs must have competent technical staff available to support them.

F. Funding optimization: Adequate and consistent funding keeps the process moving. Although installations and properties do not allocate their own funding, they can proactively plan and prioritize based on their anticipated budgets.

Each topic begins with an issue statement and description, then presents one or more best practices with relevant references. Best practices case studies are presented throughout. At the end of the topic, some general references are listed.

A. Regulatory Authority and Cleanup Team Agreement

Issue Coping with regulatory overlap and ambiguities and promoting agreement among cleanup team members

Issue Description Regulatory oversight overlap and regulatory ambiguities are obstacles in the cleanup process. Such overlaps occur between EPA and state regulatory agencies, EPA headquarters and EPA regions, and different regulatory authorities (e.g., CERCLA, RCRA, and the Safe Drinking water Act (SDWA)). Regulatory impediments that DoD cleanup personnel encounter include the following:

- Different agencies and different regulatory levels (e.g., EPA headquarters, EPA regions and state regulatory agencies) may interpret regulations differently. This problem is compounded when the different entities publish or endorse conflicting guidance.

- Ambiguities within regulations can create confusion concerning the regulations' application and enforcement. For example, the integration of CERCLA authority and RCRA corrective action authority is not always clear. Also, CERCLA authority may overlap or conflict with other authorities such as the Toxic Substances Control Act (TSCA).

- The overlap of state and Federal laws may cause delays in the cleanup process. Unless otherwise agreed on, installations and properties must meet the requirements of both state and Federal environmental laws.

Securing agreement among cleanup team members (installation personnel, the state regulator and EPA regulator) is essential to an installation's or property's ability to progress through cleanup phases and reach milestones. Up-front agreements help avoid situations where:

- Additional sampling was required because team members did not consider past agreements or previously collected scientific data.

- Lack of consensus delayed cleanup schedules and prevented the team from meeting other deadlines.

- Additional sampling activities were required beyond those mandated by the regulations.

☑ **Best Practice** **Up-front Agreements**

To ensure a smooth and efficient process, DoD personnel and regulators should agree in advance on the cleanup regulatory vehicle (i.e., the governing set of regulations), cleanup activities, review times and schedules. Installation and property personnel and regulators must listen to each other, respond to one another's needs in the process, and understand that there may be limitations on what the other group can achieve. To promote trust within the process, it is essential that each participant express his/her expectations and those of his/her parent organization.

- *Management Action Plans/Installation Action Plans*
  Both Fort Campbell and Twin Cities Army Ammunition Plant (TCAAP) host annual workshops to reach agreement on and update their management action plans (MAPs) (or installation action plans (IAPs), as referred to by the Army). At these workshops, cleanup stakeholders:
  – Review the current management action plan
  – Update cleanup activities in the plan as needed
  – Prioritize cleanup activities and schedule according to the budget.

See the Fort Campbell case study on page 6 for a detailed discussion of Fort Campbell's IAP workshops.

References

Updating the BRAC Cleanup Plan[1]
http://www.dtic.mil/envirodod/envdocs.html

Installation Restoration Program Action Plan Guidance[2]
http://www.denix.osd.mil/denix/Public/Policy/Army/IRP/iap.html

Management Guidance for the Defense Environmental Restoration Program[3]
http://www.denix.osd.mil/denix/Public/ES-Programs/Cleanup/DERP/guide.html

Up-front Agreements (Continued)

- *Consensus Documents*
  After securing agreement on cleanup program decisions at Wright-Patterson Air Force Base, personnel use consensus documents to record the decisions. As an example, Wright-Patterson uses finalized meeting minutes to document major decisions. Consensus documents commit installation personnel and regulators to a specific cleanup activity, schedule, or process. Wright-Patterson also uses consensus documents as part of the knowledge retention process to familiarize new employees and cleanup team members with past issues and decisions. Wright-Patterson also relies on Risk Assessment Assumption Documents (RAADs), consensus documents that discuss the installation's streamlined risk assessment process.

  See the Wright-Patterson case study on page 7 for more information about the decision-making process at Wright-Patterson and the use of meeting minutes as consensus documents. For more information on RAADs at Wright-Patterson, see the case study on page 24.

Best Practice

Single Lead Regulator

The Navy's Naval Facilities Engineering Command (NAVFAC) Northern Division benefited from single-agency oversight in its cleanup of a Navy landfill site. When one agency oversees the cleanup, site cleanup and closeout are expedited and less costly. At this site, the state environmental protection agency was the lead, because the Navy was cleaning up the 10-acre non-National Priorities List site under the Rhode Island site remediation guidelines. EPA was not involved in the cleanup process, because it deferred its role as regulator to the state.

Reference

Lead Regulator Policy for Cleanup Activities at Federal Facilities[4]
http://www.epa.gov/swerffrr/doc/leadreg.htm

Best Practice Case Study
Fort Campbell, Fort Campbell, Kentucky
Installation Action Plan Workshops

DoD policy calls for each installation or property to update its management action plan each fiscal year. The MAP or its equivalent is a key document in the management of an installation's environmental restoration program. It should outline the entire multiyear, integrated, coordinated approach that the installation or property will use to achieve its environmental restoration goals. The installation or property should use the MAP to identify and monitor requirements, schedules, and project funding requirements. The MAP is also the basis for program planning, budget development and project execution decisions, and for discussion with all stakeholders on the installation's or property's planned restoration activities.

At Fort Campbell, an annual workshop is held to update its installation action plan (as the management action plan is called in the Army). Workshop attendance has evolved to include many of the stakeholders involved in the installation's cleanup program: installation personnel, EPA Region 4, State of Tennessee, Commonwealth of Kentucky, Army Environmental Center, FORSCOM, Contracting Office representatives, RAB members, and contractors.

At each workshop, participants review the IAP site by site. They examine the status of each site (i.e., what phase of cleanup it is in) and update the IAP as needed. Participants also review the proposed cleanup activities for each site for the upcoming fiscal year. They then scrutinize the proposed activities in relation to funding for the fiscal year and prioritize the proposed activities if all cannot be completed as planned. The IAP undergoes revision to reflect any changes in the cleanup schedule.

Because the workshop participants review the IAP site by site against the current fiscal year budget, each stakeholder is aware of both the cleanup plan and the installation's funding limitations. By achieving agreement early, Fort Campbell also achieves more effective and efficient management and execution of cleanup. Other benefits include opened lines of communication and the development of trust among participants.

Best Practice Case Study
Wright-Patterson Air Force Base, Dayton, Ohio
Consensus Documents

Wright-Patterson Air Force Base uses consensus documents to expedite the cleanup process and eliminate many of obstacles that impede cleanup. Even more important than the documents themselves is the decision-making process that participants go through to reach agreement on the cleanup activities. This process is not formal, but exemplifies the installation's successful partnering and atmosphere of teamwork. Installation personnel and regulators are up-front about their expectations and requirements for each cleanup activity because the consensus agreements create an accountability mechanism for the cleanup team.

Once a consensus document is created, it serves as a strategy or road map for the cleanup process. For example, Wright-Patterson's risk assessment assumption documents explain the approved process for risk assessments at the installation. The installation also revisits each consensus document if the cleanup process strays from the agreed path.

Along with their other benefits, consensus documents serve as useful transitioning tools for new employees. In this capacity, they are often used to familiarize new employees or cleanup team members with past issues and the decisions made on them.

References

US Army Environmental Restoration Programs Guidance Manual[5]
http://www.denix.osd.mil/denix/Public/Policy/Army/ERP/erptoc.html

Army Regional Environmental Coordinators Semiannual Report[6]
http://www.denix.osd.mil/denix/State/Partnering/REC/Semi/AprSep98/3_1.html

CERCLA/RCRA Overlap in Environmental Cleanup[7]
http://www.dtic.mil/envirodod/envdocs.html

Consolidated Guide to Consultation Procedures for Superfund Response[8]
http://www.epa.gov/superfund/resources/cnsltsum.htm

Streamlining Federal Facility Cleanup[9]
http://www.epa.gov/swerffrr/doc/factsht22.htm

B. Contracting

Issue Contractor continuity and contract flexibility

Issue Description Time and resources can be lost in the cleanup process during contractor transitions because a new contractor must familiarize himself/herself with the installation cleanup program. Additional sampling or repetitive cleanup activities also may result from contractor transitions.

☑ **Best Practice** **Choosing an appropriate contracting mechanism**

Installations and properties use various contracting mechanisms to complete their investigation and remediation work. Below are several of the contracting mechanisms used by installations and properties to complete their environmental restoration activities:

- *TERCs and Other Indefinite Delivery/Indefinite Quantity (ID/IQ) Contracts*
  Total Environmental Restoration Contracts (TERCs), and the similar Navy CLEAN/RAC contracts, are cradle-to-grave contracts that allow for a variety of remediation activities. Both Shaw Air Force Base and Reese Air Force Base use TERCs, which provide flexibility to tailor cleanup activities to their specific circumstances. The prime contractor orchestrates all phases of cleanup work at installations and properties.

📖 **Reference** *US Army Environmental Restoration Programs Guidance Manual*[10]
http://www.denix.osd.mil/denix/Public/Policy/Army/ERP/

Choosing an appropriate contracting mechanism (Continued)

- *Firm-Fixed Price Task Order Contracts*
  This contracting mechanism is used for tasks where the scope of work is well defined (e.g., digging and hauling contaminated soil or installing a landfill cap). Contractors on these types of contracts are responsible for performing the work outlined in the statement of work (SOW) at the bid price, provided that site conditions are the same as described in the SOW. Using firm-fixed price task order contracting, Wright-Patterson Air Force Base paid a set price for specific remedial actions regardless of the length of time these actions took or amount of resources the contractor used. Task orders are competitively bid between four contractors; Wright-Patterson then selects the lowest responsive, responsible bidder to perform the work.

- *Direct Installation Management of Contracts*
  Many installations and properties rely on environmental restoration contracts administered by a central or regional technical center. Typically, the contractor performs the work at the installation, but is managed by the technical center. Wright-Patterson Air Force Base, which has a large procurement office on the installation, procured contracts for both

investigation and remediation work through a competitive process using the on-base procurement office. This local management and control of the cleanup contractors by Wright-Patterson has resulted in more responsive work by the contractor with elimination of costs associated with paying for the technical center's overhead. While this contracting approach offers many benefits, it may only be suitable for installations with large procurement offices staffed with the appropriate contracting and legal staff.

☑ **Best Practice** **Contractor Continuity**

Contractor continuity is important for an installation or property as valuable time can be lost during the cleanup process for contractor transition, or additional sampling or repetitive cleanup activities may result. Personnel at Shaw Air Force Base began using TERCs in an effort to eliminate the use of multiple contractors during the cleanup process. By using the same prime contractor throughout a site cleanup, Shaw saved time (i.e., they did not have to explain site details multiple times) and resources (i.e., they reduced start-up costs and repetitive cleanup work). Shaw personnel also streamlined the process and created a positive, long-term working relationship with its contractors. An additional benefit to keeping the same contractor throughout the project was being able to adjust work efforts in response to changes in the field requirements.

The Defense Distribution Depot Memphis also sought greater contractor continuity. In an effort to avoid the delays associated with new contracts, the installation obtained a multiple year construction contract, a Pre-Placed Remedial Action Contract (PRAC), with its contractor. To date, the PRAC has covered the operation and maintenance of the existing groundwater system and performance of a surface soil removal and building decontamination action at the facility's paint shop. The transfer of the groundwater system operation from the former contractor to the PRAC proceeded smoothly with no interruption of service. This 4-year PRAC should last until all the remedial actions at the Memphis site are complete.

C. Knowledge Retention

Issue Continuity in Staffing (DoD and regulators)

Issue Description Effective employee transition procedures are essential to preserving valuable knowledge. When an individual assumes a new position on the cleanup team, he or she must receive information on all previous work completed to avoid the repetition of past activities.

☑ **Best Practice** **Transition Process**

One way of eliminating delays in the cleanup process and the need for additional sampling is to create an effective employee transition process. New employees and cleanup team members must be informed of agreements and decisions

previously made so that they do not duplicate past sampling or cleanup activities. Installation and property personnel are using consensus documents to ease and improve the transition process. For more information on consensus documents, see the best practice on page 5.

☑ **Best Practice** **Retention of RPMs throughout Project**

When possible, retaining the same RPM throughout a cleanup project yields the most effective and efficient process.

The BRAC Cleanup Team (BCT) at the Army Materials Technology Laboratory (AMTL) has been particularly successful because of the long working relationship of its members. The three members of the BCT have worked together on cleanup issues since 1992. This collaboration has been possible because each member continually stressed to his respective agency that the project worked best if RPMs were not continually reassigned. The BRAC Environmental Coordinator (BEC) continued to work on the installation projects after the installation was closed and all other AMTL cleanup personnel were reassigned to other duties. Because AMTL retained this knowledge, the excellent working relationship and trust that AMTL built with the Local Redevelopment Authority (LRA) and community has not been broken.

D. Recognition of Success

Issue Recognition of Accomplishments

Issue Description Recognizing successes through awards or incentives demonstrates an installation's or property's acknowledgement and appreciation of the RPM's contribution to the cleanup process.

☑ **Best Practice** **Award Programs**

Several Components have awards programs to recognize outstanding individuals. For example, the Navy's Drum "E" (Excellence) Award is distributed annually to nine individuals within the Navy (one for each Engineering Field Division and Activity and Service Center). The recipient receives a metal drum trophy, a certificate, and a monetary award. The award is distributed to individuals who exhibit exemplary performance and are nominated by their command.

📖 **References**

Army Environmental Award Program[11]
http://aec-www.apgea.army.mil:8080/prod/usaec/eq/programs/awards.htm

Restoration Employees of the Year Awards Announced[12]
http://www.denix.osd.mil/denix/Public/News/Navy/EnvNews/jul99.html#33

E. Qualification Requirements for Remedial Project Managers

Issue DoD, state, and EPA RPM qualifications, leadership skills, and training

Issue Description Partnering at installations is a personality-driven process, but it is also greatly influenced by the training and qualifications of those involved. DoD and regulatory agency RPMs are able to execute cleanup activities most effectively when they:

- Have confidence in their own decision-making ability
- Have the specific technical expertise needed to make judgment calls
- Have sufficient authority to make and execute decisions.

When DoD and regulatory RPMs are well trained, qualified, and empowered to make decisions, the decision-making process can run smoothly and efficiently.

☑ **Best Practice** **Training**

Providing adequate training is one way in which installations can help RPMs gain the knowledge and confidence they need to do their jobs. To help RPMs select the courses they need, the Inter-Service Environmental Education Review Board (ISEERB) reviews and endorses environmental education and training courses for DoD personnel including RPMs. While individual Component personnel teach these courses, the courses are open to all Components. ISEERB is currently reviewing 17 environmental restoration courses. In addition, several Components have internal environmental training programs:

- *CECOS*
  The Navy's Civil Engineering Corps Officers School (CECOS) has representatives travel to each Navy Engineering Field Division and Activity location to provide on-site training to Navy personnel. CECOS offers 12 on-site training courses to address the main areas of the cleanup program. One class that has been of particular value to Navy RPMs is the Environmental Negotiation Workshop, which provides instruction on negotiating and communicating to achieve productive agreements with regulatory and public stakeholders. Some Navy RPMs invite EPA and state regulators to the training sessions. In addition, CECOS offers many other training courses on site at the naval school in Port Hueneme, California and through the Internet. All CECOS training courses are open to personnel from the other military Components. For more information on CECOS, see http://www.cecos.navy.mil/

  To supplement training, the Engineering Field Division/Activities have developed special joint Navy-regulator training sessions on partnering or hazardous waste disposal at the local level.

- *Structured Partnering in Air Force Air Combat Command*
  Another progressive training program is the Structured Partnering in Air Force Air Combat Command. Shaw Air Force Base has a well-developed

training system for structured partnering that begins with a personality assessment. The system teaches its participants how to effectively resolve conflicts to accomplish goals and how to work together and understand each other's position on issues. The training has proved to be effective and has shown the benefit of open lines of communication.

Reference *Environmental Restoration and Environmental Training – N453*[13]
http://206.5.146.100/n45/branch/n453/

Best Practice **Decision-Making Empowerment**

Several installations and properties are working to empower their cleanup team members to make necessary decisions. In the process they are developing strong working relationships with their regulators by educating them on the installation or property and its cleanup program. By working together and including regulators in every step of the cleanup process, DoD personnel and regulators develop a relationship based on trust. The following are brief examples of how this goal is being accomplished:

- DoD personnel become acquainted with regulators and develop a team approach to business by attending retreats, such as the installation action plan workshops at Fort Campbell, or by taking regulators on tours of their installations or properties.

  For more information on Fort Campbell's installation action plan workshops see the case study on page 6.

- Personnel invite regulators' technical staff to meetings so that the state and EPA RPMs have the information and technical support they need to make qualified decisions. (Shaw Air Force Base)

- Decision-makers at BCT meetings are provided with data and background information before the meetings. Thus, the RPM knows what will be covered and can obtain prior approval from his or her superiors on cleanup decisions or bring the appropriate personnel to the meetings. These data are stored on an Intranet, which serves as the central repository for information on Reese's cleanup decisions and activities. See the best practice on web sites on page 21 for more information . (Reese Air Force Base)

- DoD RPMs use geographic information systems (GIS) to educate regulators on the terrain of their installation or property and explain the effects of contamination. The use of GIS helps the cleanup team make decisions, such as whether additional sampling points are needed or which type of remediation technology to use. (Mayport Naval Station)

  For more information on Mayport's use of GIS, see the case study on page 13.

Best Practice Case Study
Mayport Naval Station, Mayport, Florida
Geographic Information Systems

Mayport Naval Station used GIS to expedite its cleanup decisions and create a climate in which its cleanup team could make decisions more cost-effectively. GIS allowed the Mayport cleanup team to view site data in a 3-dimensional format, rather than in the traditional tabular form. This innovation allowed team members and regulators to more clearly identify contaminants, contaminant levels, and contaminant depth.

GIS provides a number of benefits to the cleanup program. Specifically, its use can help simplify complicated program decisions, such as whether additional sampling points are needed or what type of remediation technology is most appropriate. GIS is available to the Mayport cleanup team through a password-protected Web site.

Using GIS does present an additional overhead cost after data collection; however, this cost is often minor when compared with the resources that can be saved by forgoing unnecessary sampling or remediation. This use of GIS was cost-effective for Mayport Naval Station, where the cleanup team managed to avoid high cleanup costs by making more informed decisions.

F. Funding Optimization

Issue Effective use of funding

Issue Description Although funding levels are not determined at the installation level, installation personnel are obligated to work within the established funding limits. Installations and properties that disclose funding constraints up-front to their stakeholders gain credibility and trust. Being realistic about what can be accomplished within existing funding constraints maintains stakeholder trust and leads to a smoother cleanup process.

☑ **Best Practice** **Agreement on Schedule and Work**

Gaining an overall perspective of an installation's or property's cleanup activities helps the cleanup team make the most efficient use of funding. Fort Campbell's IAP workshops exemplify how installation and property personnel and regulators can work together to prioritize cleanup activities based on the installation's or property's anticipated budget. These workshops help RPMs identify future funding needs so that project requirements and priorities can be properly addressed. The workshops also provide a forum in which Fort Campbell's staff and regulators can share their expectations on what should be completed during the fiscal year. For more information on the Fort Campbell IAP workshops, see the Fort Campbell case study on page 6.

☑ **Best Practice** **Defense and State Memorandum of Agreement**

The Defense and State Memorandum of Agreement (DSMOA) program, managed by the Corps of Engineers, was established to reimburse states and territories for reviewing investigation and cleanup efforts at installations and properties. DSMOA funds are transferred when a state and DoD sign a cooperative agreement. The 6-step cooperative agreement process establishes a 2-year plan for restoration activities in the designated state, a plan of action for the following four years, and a payment process. See the case study on page 15 for an example of how this process benefits installations and properties.

📖 **References**

Working Together to Achieve Cleanup: A Guide to the Cooperative Agreement Process[14]
http://38.202.14.109/caguide

DSMOA[15]
http://www.denix.osd.mil/denix/State/DSMOA/dsmoa.html

☑ **Best Practice** **Accounting for Resources**

Deciding on a method to track how resources are spent, and where they will be allocated in the future helps cleanup teams make funding decisions. Twin Cities Army Ammunition Plant personnel work with their state regulators to track and monitor their installation spending on DSMOA expenditures through a quarterly report provided by the Corps of Engineers.

☑ **Best Practice** **Recycling Cleanup Hardware**

Installations and properties that execute a certain cleanup activity at numerous sites may be able to cut costs by reusing the equipment or sending it to another installation or property for reuse. Shaw Air Force Base recycles cleanup hardware by transferring it to other installations that have the same cleanup needs. Typically, the hardware Shaw transfers is packaged systems, such as skid-mounted incinerator units with pumps and blowers that are used in soil vapor extraction. Once Shaw has finished using such a hardware system, the installation personnel disassemble it and repackage it for reuse.

Best Practice Case Study
Twin Cities Army Ammunition Plant, Arden Hills, Minnesota
Accounting for Resources through the DSMOA Process

TCAAP personnel and state officials have been working together under the DSMOA program since 1991. When the Army realized that TCAAP's cleanup process was being delayed by Minnesota's limited resources (i.e., the state representative was not able to meet his/her review deadlines), it agreed to fund the state for additional personnel. As a result, the state had the personnel to devote sufficient attention to TCAAP cleanup issues. In addition, TCAAP personnel receive a quarterly financial report from the US Army Corp of Engineers. This report keeps TCAAP apprised of the state's expenditures. The cooperative agreement made the cleanup process more efficient and strengthened the cooperation between the state and the installation.

Reference *Guide to the DoD Environmental Security Budget*[16]
http://www.denix.osd.mil/denix/Public/Library/Envirsb/envirsb.html

Section 2: STREAMLINING CLEANUP

Delays in decision-making also present obstacles in the cleanup process. One such obstacle is the inability of stakeholders to reach agreement on cleanup decisions. DoD personnel have employed various practices to avoid these delays and refocus resources on cleanup. This section covers several of these practices—

A. Expedited decision-making tools: Expediting decision-making and encouraging stakeholder agreement helps keep the cleanup process on track.

B. Cleanup levels: Obtaining up-front stakeholder agreement on desired cleanup levels focuses everyone on the same goals.

Each topic begins with an issue statement and description, then presents one or more best practices with relevant references. Best practices case studies are presented throughout. At the end of the topic, some general references are listed.

A. Expedited Decision-Making Tools

Issue Expedited decision-making

Issue Description Many installations and properties have to consider a vast array of contaminant types and execute cleanup activities at numerous cleanup sites. The logistics involved in making decisions about, and administering, remediation work for such a wide range of sites is difficult. Delays in the process are not uncommon because of the volume of decisions that must be made and the number of statutory and administrative requirements that must be met. Taking steps to expedite decision-making can help avoid such delays.

☑ **Best Practice** **Risk-Based Decision-Making (e.g., risk-based corrective action) and Future Land Use**

Risk-based decision-making focuses risk assessment on hot spots—the locations that pose the greatest potential risk. Installations or properties then devote resources to full-scale human health or ecological risk assessments only where these assessments are needed. Risk data for specific sites can be used to determine the most reasonable and efficient remedial action. Planned future land use also is important since it influences which risk scenarios an installation or property examines for a site.

Personnel at Defense Distribution Depot San Joaquin, Sharpe Facility found that risk-based natural attenuation and optimization are effective in remediating underground storage tanks (USTs), volatile organic compounds (VOCs), and low-level trichloroethylene (TCE). The installation and various government and State regulatory agencies worked together to calculate the risk factors involved in choosing natural attenuation as the remedial action.

References

Superfund Risk Assessment[17]
http://www.epa.gov/superfund/programs/risk/

Office of Research and Development, National Center for Environmental Assessment[18]
http://www.epa.gov/ncea/

Best Practice **Presumptive Remedies**

Presumptive remedies are remedies that have proved to be the most protective remedies in commonly encountered cleanup scenarios. An installation or property can employ these remedies at a site by conducting an abbreviated remedial investigation and feasibility study (RI/FS).

Wright-Patterson Air Force Base's use of a presumptive remedy for landfills allowed it to move more quickly through cleanup activities by eliminating repetitive evaluations. The installation developed a generic basewide presumptive remedy approach to landfill cleanups, a strategy on how to address each affected site, and then used this approach as the basis for site-specific work plans. Presumptive remedies are no less protective of human health and the environment than any other remedy and are effective tools that an installation or property can use in its cleanup activities.

References

Presumptive Remedies[19]
http://www.epa.gov/superfund/resources/presump/index.htm

Landfill Presumptive Remedy Saves Time and Cost[20]
http://www.epa.gov/superfund/pubs.htm

Best Practice **Interim Remedial Actions and Removal Actions**

Interim remedial actions and removal actions are protective measures for addressing immediate risks posed by a release of hazardous substances. These actions are implemented before the completion of final cleanup remedies and, in many cases, may serve as the final remedy. In situations where these actions become the final remedy, an installation can issue a No Further Action Record of Decision (ROD) noting that the remedy protects human health and the environment.

Reference

Expediting BRAC Cleanup Using CERCLA Removal Authority[21]
http://www.dtic.mil/envirodod/envdocs.html

Best Practice **On-Site Laboratories**

Personnel at Wright-Patterson Air Force Base expedite the cleanup process and reduce sampling and costs dramatically using on-site laboratories. During cleanup investigations, a contractor supplies a mobile laboratory with the necessary facilities and equipment (e.g., a portable gas chromatograph mass spectrometer) to complete testing on site. This practice significantly shortens the

waiting time for data analysis, allowing virtually same-day test results. For quality control purposes, Wright-Patterson still typically sends 10 percent of its samples to an off-site laboratory for verification.

☑ **Best Practice** **Coordinating Different Types of Cleanup**

Scheduling different types of cleanup activities for simultaneous execution enables installation personnel to optimize use of expertise and available resources, including time. Personnel at Black Hills Ordnance Depot discovered that they could save time and resources by combining ordnance and explosives (OE), chemical warfare material (CWM), and hazardous, toxic, and radioactive waste (HTRW) clearance and investigation. For more information on cleanup activity synchronization, see the Black Hills case study on page 20.

☑ **Best Practice** **Innovative Technology**

Innovative technologies are allowing personnel at installations and properties to expedite site cleanup, increase cleanup effectiveness, and reduce remedy costs. Use of innovative technologies is most successful when the regulator is involved early in the remedy selection process and fully supports the remedy decision.

DoD has established several programs to allow increased use of innovative technologies. One of the most notable programs is at Mayport Naval Station. Mayport is one of two Navy installations in the Navy Environmental Leadership Program (NELP). NELP enhances and underscores the Navy's commitment to sound environmental practices by identifying innovative ideas and technologies that work. Therefore, the cleanup effort at Naval Station Mayport is the immediate beneficiary of these efforts. For more information on NELP, refer to Navy's Web site at http://www.nelp.navy.mil/.

📖 **References**

Naval Facilities Engineering Service Center[22]
http://enviro.nfesc.navy.mil/ps/index.html

Interstate Technology and Regulatory Cooperation (ITRC)[23]
http://www.ITRCweb.org

Environmental Technologies Certification Program (ESTCP)[24]
http://www.estcp.org

Strategic Environmental Research and Development Program (SERDP)[25]
http://www.serdp.org

Federal Remediation Technologies Roundtable[26]
http://www.frtr.gov

Federal and State Environmental Issues[27]
http://www.cedar.ca.gov/military/environ.html

Tech Trends[28]
http://clu-in.org/products/newsltrs/ttrend/default.htm

Technology Innovation Office[29]
http://www.epa.gov/swertio1/index.htm

Best Practice **Monitored Groundwater Natural Attenuation**

Use of monitored natural attenuation, where appropriate, can provide a way of using cleanup funds most efficiently. With the appropriate level of regulator support, use of natural attenuation is an acceptable, effective, and protective remedy that should be considered as an alternative method of cleanup.

Personnel at Defense Distribution Depot San Joaquin, Sharpe Facility found that risk-based natural attenuation and optimization were effective in remediating USTs, VOCs, and low-level TCE. Installation and various government and state regulatory agencies worked together to calculate the risks involved in using natural attenuation as the remedial action. This helped foster cooperation among cleanup team members and support for the selected cleanup option.

References

Commonly Asked Questions Regarding The Use Of Natural Attenuation For Petroleum-Contaminated Sites At Federal Facilities[30]
http://www.denix.osd.mil/denix/Public/Library/Attenuation/attenuation.html

Seminars: Monitored Natural Attenuation for Groundwater[31]
http://www.epa.gov/ORD/WebPubs/monitor/

Issues Associated with Natural Attenuation.[32]
http://www.epa.gov/OUST/rbdm/issues.htm

Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites[33]
http://www.epa.gov/swerust1/directiv/d9200417.htm

Best Practice **Treating Groundwater with a Regional Approach**

Typically, installations and properties manage cleanup activities according to sites. Personnel at Wright Patterson Air Force Base found it more appropriate to address groundwater contamination using operable units as opposed to sites. Wright-Patterson established the concept of a groundwater operable unit to create a focused regional approach to the groundwater investigation. Wright-Patterson's regional approach avoided the repetition of site-specific approaches. This approach allowed the expedited cleanup and closure of contaminant source areas.

Best Practice **Groundwater Symposium Program**

Fort Campbell hosts a Groundwater Symposium each year to validate its groundwater characterization efforts. The installation invites regional and national experts to attend the symposium, where they examine Fort Campbell's current work and recommend any needed changes. For more information on the Fort Campbell Groundwater Symposium, see the case study on page 20.

References

Groundwater Cleanup at Superfund Sites[34]
http://www.epa.gov/superfund/tools/gw/brochure.htm

Guidance on Remedial Actions for Contaminated Ground Water at Superfund[35]

Best Practice Case Study
Black Hills Ordnance Depot, Edgemont, South Dakota
Integrating Different Types of Cleanup

The cleanup team at Black Hills Ordnance Depot implemented a system that greatly streamlined the property's cleanup process. The U.S. Army Corps of Engineers (USACE), Omaha Division, discovered that if it combined OE, CWM, and HTRW clearance and investigation, it would conserve both time and resources. The seasonal constraints of Edgemont, South Dakota (e.g., long and harsh winters), required all fieldwork to be completed during the three summer months. Operating on this schedule, the property would have needed 2 years to complete a cleanup project that other installations or properties would have completed in one field season. Combining remediation activities at Black Hills allowed all necessary personnel to be on hand throughout the cleanup process. By combining OE, CWM, and HTRW clearance and investigation, USACE, Omaha Division cut the cleanup schedule in half and the cost of cleanup by one-fourth.

Best Practice Case Study
Fort Campbell, Fort Campbell, Kentucky
Ground Water Symposium

Because Fort Campbell is located in both Kentucky and Tennessee, the installation must accommodate regulatory agencies in both states as well as EPA Region 4. In an effort to combine cleanup forces, Fort Campbell has hosted a Groundwater Symposium over the past 3 years to review groundwater characterization efforts and recommend changes. More than 50 regional and national experts, regulatory agencies, and executors gather at Fort Campbell annually. Fort Campbell focuses the symposium on the current issues faced by the installation. During the symposium, participants discuss and validate the previous work at Fort Campbell. In addition, they identify recommendations and priorities that Fort Campbell later integrates into the goals and work scopes for upcoming activities. Each year's symposium begins with a summary of how Fort Campbell integrated the recommendations from the previous symposium.

The structure of the symposium makes it an effective cleanup management tool. Fort Campbell provides the symposium attendees and external reviewers with preliminary data and the results of the most recent studies. Participants then review the information and develop questions before the symposium begins. The symposium begins with concise, informative presentations of data and new methods, which are followed by a brainstorming session where participants present ideas, questions, and comments generated from the earlier presentations. The next step is discussing and summarizing the ideas, questions, and comments. Finally, the installation solicits comments on the following year's planned investigation program. The entire process is very effective in introducing new ideas and clarifying data gaps.

Issue Using innovative program management tools and processes to promote agreement on goals

Issue Description It is difficult to make progress through cleanup phases and reach milestones without everyone working on the same plan with the same goals. Cleanup personnel are using effective communication and business management tools to overcome differences of opinion. Also, many installations and properties are bringing private sector business models to the cleanup arena to foster cooperation, ease communications, and expedite cleanup.

☑ **Best Practice** **Master Schedule**

The Twin Cities Army Ammunition Plant employs a computerized schedule to document its past and planned future cleanup activities. This schedule lists cleanup activities, along with corresponding dates and funding requirements. It is updated weekly and published monthly. The schedule helps TCAAP maintain program continuity because it is shared with the regulators and the RAB. TCAAP also uses the schedule as the basis for the agenda of its monthly project management meetings because it keeps the cleanup team focused on their critical activities, schedules, and costs. The cleanup team reviews schedule dates weekly and at every meeting to ensure timely completion of activities.

☑ **Best Practice** **Web sites**

Many installations and properties are using Web sites that streamline the cleanup process and open communication channels with cleanup stakeholders, such as the community, RABs, and LRAs.

Reese Air Force Base created an internal password-protected Web site (i.e., Intranet) so that its contractors, regulators, and DoD personnel could share current sampling data and the cleanup schedule for its sites. The Reese Intranet is a central repository for information on Reese's cleanup decisions and activities and allows members of the Reese cleanup team to track the installation's many site cleanups. This tool helps the contractors working at Reese because it keeps everyone informed about current cleanup activities and the next steps in the process. Regulators can attend any planned sampling if they choose. Reese also keeps an online administrative record.

📖 **Reference** *Making Hazardous Waste Information Available– Lessons Learned from the Superfund Internet Web Site*[36]
http://www.epa.gov/superfund/resources/sf18/paper/confpap4.htm

Issue Redundancy in Documents and Document Processes

Issue Description As they have been interpreted in the past, cleanup regulations require a lot of documentation. As the environmental restoration program matures, DoD personnel are reassessing regulatory requirements and finding ways to consolidate documentation and streamline the cleanup process.

☑ **Best Practice** **Generic Work Plans**

Often installations and properties have multiple sites that share an identical or similar problem (e.g., landfills). Cleanup teams can generate one work plan template for all of these sites and insert site-specific criteria or data later. This approach prevents duplication of effort and promotes consistency in the cleanup effort. In creating generic work plans, DoD personnel and regulators must agree in advance on the process and the specific type of data to be collected. Thus, the use of generic work plans increases flexibility, reduces redundancy, and decreases work plan review time.

Wright-Patterson Air Force Base created a general work plan to serve as the basis for each of its site-specific work plans. This practice streamlined the installation's RI/FS paperwork substantially.

☑ **Best Practice** **Generic Risk Assessment Strategy Documents**

Generic risk assessment documents standardize the risk assessment process for all sites across an installation or property. This approach clarifies which guidance the installation or property should use (e.g., risk-based corrective action) and establishes the background levels and risk, and commits regulators and DoD personnel to a set process.

In creating Risk Assessment Strategies (RASs), DoD personnel and regulators must agree in advance on the risk scenarios and background contaminant levels they will use. Fort Campbell created RASs to standardize its risk assessment process. Wright-Patterson Air Force Base uses a similar document called a Risk Assessment Assumption Document. For more information on Wright-Patterson's use of RAADs, see the case study on page 24.

☑ **Best Practice** **Decision-Matrices to Expedite Site Cleanup Decisions**

Cleanup scenarios are often identical or similar to scenarios that were previously encountered. Decision matrices are a way for cleanup personnel to apply previous decision-making criteria and established sets of decisions to new scenarios. Decision matrices allow decision-makers to capitalize on previous efforts, apply lessons learned, and save time and resources.

Reese Air Force Base has used decision matrices to create a uniform process for determining what actions to take at individual sites. By using the matrices, Reese has avoided delays in cleanup and has achieved better decision management. For more information on Reese's use of decision matrices, see the case study on Reese's war room concept on page 23.

Best Practice **Contingency Records of Decisions**

A contingency ROD provides an alternative remedy in the same ROD in the event that an installation or property does not meet its goals for contaminant reduction at a site or group of sites. Using contingency RODs enables installations and properties to avoid re-negotiation of the ROD.

Homestead Air Force Base's use of this flexible kind of ROD is expected to save the installation the time and costs. For more information on Homestead's contingency ROD, see the Homestead case study on page 24.

Reference *Superfund Reforms: Updating Remedy Decisions*[37]
http://www.epa.gov/superfund/programs/reforms/remedy/index.htm

Best Practice Case Study
Reese Air Force Base, Lubbock, Texas
Effective Program Management: The Environmental War Room

The BCT at Reese Air Force Base achieved its high level of success through a variety of innovative project management tools. One of these tools is the BCT's Environmental Vision Center, or as the BCT refers to it—the War Room, which helped team members communicate about and visualize the Reese cleanup program. Reese team members mounted sheets of insulation board on the walls, allotting space to each major site. Here, the BCT displayed critical, need-to-know information. This War Room kept team members apprised of site status.

One of the most important information tools in the War Room is the decision matrix for each site. The BCT determined in advance where the decision points for each site would be and what actions would take place at those junctures. This system provides a number of advantages, including early buy-in from cleanup regulators. Furthermore, because of the up-front approval, the BCT does not need to deliberate with regulators before proceeding from one step to another. The decision matrix helps keep the team focused and minimizes the need for lengthy discussions to determine the next step. These benefits, among others, have streamlined the cleanup process.

Best Practice Case Study
Wright-Patterson Air Force Base, Dayton, Ohio
Use of Risk Assessment Assumption Documents

Risk Assessment Assumption Documents are consensus statements at Wright-Patterson Air Force Base that record the installation personnel-, stakeholder-, and regulator-approved process for risk assessments at the installation. At Wright-Patterson both generic and site-specific RAADs were created. The generic RAAD is an installation-wide document that outlines general risk assessment information, including standard exposure assumptions, such as toxicity values and exposure parameters. The RAAD also indicates how to address specific contaminants, such as lead. The site-specific RAAD addresses site-specific issues, such as number of samples, sampling locations, and nonstandard exposure scenarios.

Wright-Patterson's tiered approach to risk assessments was developed to expedite remedial action decisions by circumventing the time-consuming, baseline quantitative risk assessment process. At Wright-Patterson, the initial step is a semi-quantitative risk assessment (SQRA) based on available remedial investigation data. The SQRA identifies which sites have contaminants at certain contamination levels. After the initial step, the installation divides the RAAD-based risk assessment process into three tiers. Depending on the amount of contamination found by the SQRA, sites are slated for early action (first tier), no further action (second tier), or a complete risk assessment (third tier).

Best Practice Case Study
Homestead Air Force Base, Homestead, Florida
Use of Contingency RODs

Homestead decided to use a contingency remedy in its ROD to allow more flexibility during cleanup. A contingency ROD can be issued when there is significant uncertainty about the ability of the primary remedy to achieve appropriate cleanup levels. A contingency ROD may be appropriate when the performance of a treatment technology seems to have potential, but the performance of the technology is unknown. In this case, a remedy with a well-documented success rate could be identified as the contingency remedy. For Homestead the primary remedy is groundwater extraction/treatment/disposal. The contingency remedy (in case the primary remedy is ineffective) is monitored natural attenuation with land use controls.

Reference *Rules of Thumb for Superfund Remedy Selection*[38]
http://www.epa.gov/superfund/resources/rules/index.htm

B. Cleanup Levels

Issue Agreement on cleanup levels (e.g., residential vs. industrial)

Issue Description Obtaining stakeholder agreement on cleanup levels (i.e., the target level of remaining contamination after cleanup) can be a difficult process, particularly when the installation or property is adjacent to an urban or suburban area. This can cause some initial disparity over what is the most reasonable and beneficial reuse of the property and how this reuse affects and is affected by cleanup levels.

☑ **Best Practice** **Land Use Controls**

The term Land Use Controls (LUCs) includes physical, legal or administrative mechanisms that restrict the use of, and limits access to, real property to prevent exposure to hazardous substances. For example, when contaminated soil meets industrial levels and the future use of the property is industrial, LUCs, such as deed restrictions, restrict the use of the property for current and future owners.

At AMTL, the Army and LRA agreed, with EPA and state regulatory support that commercial/industrial standards would satisfy the reuse requirements for AMTL. The Army developed a LUC to prohibit excavation of contaminated soils under the floors of 10 buildings that were historically significant. The LUC documented that the soil below the flooring of each of these buildings had not been cleaned to residential standards. The LUC puts developers on notice that they would have to clean the property to residential standards if they want to change the use of the buildings.

☑ **Best Practice** **Effective communication with LRA on land use alternatives**

Within the BRAC framework, the BCT and the LRA have different functions and priorities. While DoD is responsible for making cleanup decisions, the LRA is responsible for developing a reuse plan that includes proposed land use. Cleanup decisions and reuse decisions must be made in close coordination with each other and need to consider the past use of the property, fiscal and technical practicalities, and the desired future land use. DoD officials, regulators, RABs and LRAs must work closely together to reach cleanup and reuse decisions that are both compatible and practicable. While DoD strives to support the desired reuse and have property environmentally suitable for transfer in the time frame to meet the LRA's reuse needs, cleanup to the extent desired by the LRA may not be practical or technically possible in all cases. BCTs and LRAs need to work in partnership to strike the right balance between reuse and cleanup decisions. Within legal limits DoD should try to meet the LRA's needs, but the DoD is ultimately responsible for making cleanup decisions.

DoD policy states that cleanup decisions will, "to the extent reasonably practicable," attempt to facilitate the land use stated in approved community reuse plans. As an example, if the Navy had a landfill with an existing cleanup remedy of a cap that must not be disturbed, the most practical solution would be to design a land use that would ensure no disturbance occurred. In most cases, the Navy would consider excavation and relocation of the landfill an impractical alternative.

For more information about effective communication on cleanup levels and land use alternatives, see the AMTL case study below.

References

Assessing Reuse and Remedy Alternatives at Closing Military Installations[39]
http://www.dtic.mil/envirodod/brac/guide.html

DoD Base Reuse Implementation Manual[40]
http://www.acq.osd.mil/iai/reinvest/manual/toc.html

Closing Bases Right – A Commander's Handbook[41]
http://www.denix.osd.mil/denix/Public/Library/Closing/closing.html

Best Practice Case Study
Army Materials Technology Laboratory, Watertown, MA
Effective Communication between the BCT and the LRA

The LRA for a community conveys the reuse priorities of the community to the BCT. Early interaction between the BCT and the LRA can be effective in resolving disparities over desired cleanup levels. At the Army Materials Technology Laboratory, the initial goal of the LRA , as detailed in its initial reuse plan, was to have the property cleaned to residential use standards. However, the installation property was more suitable for commercial/industrial use. Through close and effective communication with the BCT and base transition coordinator, the LRA realized the technical and financial limitations on restoration, and consequently, the limitations on reuse. With both EPA and state regulatory support, the Army persuaded the LRA that commercial/industrial standards would satisfy the community's reuse requirements. The LRA therefore decided to amend its reuse plan in favor of commercial standards. With the help of the BCT, the LRA was able to revise its reuse requirements so that they were more realistic but were still beneficial and profitable to the community. Given the nature of the contamination and the "hot" real estate market in the area, commercial reuse turned out to be the most realistic and economically viable option.

Section 3: PARTNERING AND OUTREACH

For the DoD RPM, partnering includes working with stakeholders to build consensus, while maintaining a leadership role throughout the process. It is important for DoD personnel to both carry forth the mission of the DoD cleanup program and guide their particular installation or property program to meet cleanup deadlines and successfully reach milestones. This section addresses the following two partnering and outreach topics—

A. Reaching consensus: Reaching agreement among stakeholders is a challenging and complicated process, but one with potentially great rewards.

B. Community perceptions: Obtaining community support is important to a cleanup program and requires effective, honest, and constant communication.

Each topic begins with an issue statement and description, then presents one or more best practices with relevant references. Best practices case studies are presented throughout. At the end of the topic, some general references are listed.

A. Reaching Consensus

Issue Achieving agreement among stakeholders

Issue Description Partnering is always a challenge. Some delays in the cleanup schedule are likely to arise when DoD personnel do not involve stakeholders and address their needs early in the process. Stakeholders have differing technical backgrounds and specialties and approach the cleanup process with differing objectives. Nevertheless, installations have been able to balance the needs of the various parties in the cleanup process.

☑ **Best Practice** **Up-Front Agreement on Cleanup Regulatory Vehicle, Cleanup Goals, Schedules, and Deadlines**

Having agreements up-front greatly contributes to reaching consensus efficiently. See the best practice on up-front agreements on page 4 for more information.

☑ **Best Practice** **Tiered Partnering**

Tiered partnering creates structured interaction and facilitates accountability and efficiency by establishing a hierarchy for addressing issues among EPA, DoD, and state employees. This approach helps meetings run more smoothly, because those present are capable of resolving the issues discussed without referring questions to superiors or other parties.

Both Fort Campbell and Shaw Air Force Base use tiered partnering to improve their working relationships with EPA Region 4 and state regulators. For more information on tiered partnering and its structure, see the Shaw Air Force Base

case study on page 29. For more information on empowerment of decision-makers, see best practice on page 12.

☑ Best Practice **Early Identification and Involvement of Stakeholders**

Stakeholders in the cleanup process (e.g., regulators, DoD personnel, the LRA, or the RAB) are most successful when they work together from the beginning of the cleanup process. Working together over a long period of time establishes mutual trust, enables better coordination, and leads to effective integration of stakeholder needs and priorities into the cleanup process.

Fort Benjamin Harrison successfully identified its stakeholders and worked well with the community throughout the reuse process. This partnering initiative assisted the installation in transferring all of its property by the established closure date. The installation included natural resource trustees in the process early to alleviate concerns.

The Defense Distribution Depot Memphis believes that every concern or comment from the community must be treated with as much care and professionalism as a regulator's comment. The US Army Center for Health Promotion and Preventive Medicine (USACHPPM) was brought in to assist this effort. The Depot and USACHPPM instituted many initiatives to aid in the sharing of information with the community. Many of these initiatives provide substantial two-way communication. Examples are a bimonthly newsletter, a Web page, several focus groups, community surveys, fact sheets which are distributed door-to-door and by mail, and the attendance of community meetings by government officials.

References

Restoration Advisory Board Implementation Guidelines[42]
http://www.dtic.mil/envirodod/rab/finalrab.html

Keys to Opening the Door to BCT Success[43]
http://www.dtic.mil/envirodod/brac/keys.html

Partnering Guide for Environmental Missions of the Air Force, Army, Navy[44]
http://www.hq.usace.army.mil/cemp/c/partner.htm

Best Practice Case Study
Shaw Air Force Base, Sumter, South Carolina
Tiered Partnering

In 1994, tiered partnering was created as a new and innovative tool at EPA Region 4 installations and properties to expedite the decision-making process and promote consensus between DoD, EPA, and state personnel. This partnering process begins with the assignment of members of participating organizations to the appropriate tier. There are three tiers: tier 1 is the base-level team; tier 2 is the statewide team; and tier 3 is the regional team. The three tiers are given different partnering objectives, but all share the goal of cleaning up the environment. Shaw team members recognize the many benefits of tiered partnering. It provides an accountability mechanism for cleanup decisions. It reduces layers of documentation. Furthermore, it saves both time and resources. Shaw has saved $2.3 million through tiered partnering.

Another facet of Shaw's success with tiered partnering and consensus building is its structured partnering training program. This program was designed to teach personnel how to effectively resolve conflicts and accomplish goals. It also helps individuals understand one another's positions on issues.

Shaw extended its commitment to teamwork through use of consensus documents. These documents, along with the partnering training, have helped create an atmosphere of teamwork, while serving as records of major decisions. Shaw's training has proven to be very effective. Once the lines of communication were open, Shaw team members were able to work together on common cleanup goals.

B. Community Perceptions

Issue Effective community outreach

Issue Description The community is an important stakeholder and cannot be overlooked in the cleanup process. An installation or property must effectively communicate the issues involved in the cleanup program and the associated risk to gain community support. A positive and trusting relationship between the local community, DoD personnel, and regulators facilitates an efficient and effective cleanup process.

☑ **Best Practice** **Identify Stakeholders Early in the Process**

By identifying stakeholders early, the community realizes the installation or property views them as an integral part of the cleanup process. See the best practice on page 28, for a detailed description of this issue.

References

Restoration Advisory Board Resource Book[45]
http://www.dtic.mil/envirodod/rab/rabresource/

Management Guidance for the Defense Environmental Restoration Program[46]
http://www.denix.osd.mil/denix/Public/ES-Programs/Cleanup/DERP/guide.html

Closing Bases Right – A Commander's Handbook[47]
http://www.denix.osd.mil/denix/Public/Library/Closing/closing.html

Federal and State Environmental Issues[48]
http://www.cedar.ca.gov/military/environ.html

Community Advisory Groups: Partners in Decisions at Hazardous Waste Sites, Case Studies[49]
http://www.epa.gov/superfund/tools/cag/cagdoc/stdydoc.htm

Best Practice **Risk Communication**

DoD installation and property personnel and regulators should use terminology and the level of detail that are appropriate for their target audience. They also should ensure that the audience has sufficient background information to understand the information they are providing. Risk communication is a tool for doing that—it is a way of communicating highly scientific or technical information effectively to a non-technical, concerned, or anxious audience. For example, communities may want a site to be cleaned to residential levels even if the property will not be used for this purpose. The installation or property can use risk communication to differentiate actual risks from perceived risk to educate the community that the actual risks present do not endanger the community.

One way of informing the community about the condition of the property is to hold some RAB meetings (or other community meetings) on the installation or property. By having RAB meetings on-site, personnel at AMTL were able to better educate the community members about the actual risks at the installation. Army Materials Technology Laboratory had to overcome a great deal of skepticism because the installation had been a restricted area in the center of Watertown for more than 175 years. However, because of the on-site meetings and informational tours of the remediation areas, residents became more informed about the sites and came to realize that it did not pose a hazard to them.

Personnel at Weldon Springs Ordnance Works used risk communication to proactively address community concerns about the remediation process for the property's TNT contamination. The cleanup staff attempted to educate the community about both the general cleanup process and the details of efforts to clean a site contaminated with TNT at the property. Staff at Weldon Springs Ordnance Works explained the problem, detailed how they would proceed with cleanup, and described the risk assessment process and the results. The property held a 3-day open house at the site so that the public could see the site and discuss their concerns with Weldon Springs personnel. The local news and radio

stations and the appropriate local community groups also received a video documenting the cleanup process at the site.

DoD has several resources to assist installations or properties with risk communication. One is the USACHPPM Risk Communication team, which offers risk communication training and workshops and consultative services. More information on USACHPPM's risk communication services may be found at http://chppm-www.apgea.army.mil/hrarcp/default.htm.

Reference *Risk Communication and Public Participation Fact Sheet*[50]
http://www.epa.gov/opperspd/comm.htm

Best Practice **Third-Party Experts Confirm Data Validity**

Use of third-party experts, such as the Agency for Toxic Substances and Disease Registry (ATSDR), can help installations and properties alleviate regulator or community concerns about public health risks. For example, the results of an independent ATSDR public health assessment may later prove valuable to DoD personnel. ATSDR's data are often used to settle disputes between cleanup team members by reconfirming results from past studies. (Although involving a third-party expert can sometimes slow the process it can pay long term dividends by increasing stakeholder acceptance.) For information on Newport Naval Education and Training Center's (NETC) successful use of third-party data verification, see the case study below.

Best Practice Case Study
Newport Naval Education and Training Center, Newport, Rhode Island
Use of Third-Party Experts to Convey Real Risk to Public

At NETC Newport, to help address community concerns, the Navy enlisted the assistance of both the ATSDR and the Naval Environmental Health Center (NEHC). These agencies have a wealth of knowledge on risk communication, environmental toxicity, and public health assessments. ATSDR conducted an independent public health assessment. Some stakeholders had concerns about a specific site. As an independent third party, ATSDR assessed the site sampling data. The results of the ATSDR study indicated that the site was safe. This independent study upheld the original findings of the Navy: that the site was safe for recreational use. With the assistance of the NEHC and ATSDR, the January 26, 1999, headlines in the *Providence Journal* read, "No Health Risk at Katy Field, Federal Officials Say."

Section 4: PROPERTY TRANSFER

Property transfer is the end goal of the BRAC process and a relatively new challenge for DoD and the Services. Just as there is no uniform approach to base cleanup, there is no one route to property transfer. Communities can achieve productive reuse through leases or deed transfers of DoD property. Making property available for transfer and transferring it from DoD involves entering the real estate market. While DoD cannot control the real estate market, installations can educate themselves on local real estate interests and possibilities that may expedite the transfer or lease process once property becomes available. These issues primarily relate to BRAC installations; however, it should be noted that some of the identified solutions can be useful at active installations. This section addresses the following two property transfer topics—

A. Expediting transfer: Use of mechanisms for expediting transfer can help installations overcome obstacles within the transfer process.

B. Regulator buy-in: Obtaining regulator buy-in on findings of suitability to transfer (FOSTs) and Findings of Suitability to Lease (FOSLs) is occasionally a challenge for installations.

Each topic begins with an issue statement and description, then presents one or more best practices with relevant references. Best practices case studies are presented throughout. At the end of the topic, some general references are listed.

A. Expediting Transfer

Issue Mechanisms for expediting property transfer

Issue Description Once BRAC property has been cleaned up to a suitable level and is available for transfer, the real estate market drives the transfer process to a great extent. This poses a unique challenge for the BRAC process, because the real estate market is beyond DoD's control. Leasing property before it is transferred and transferring portions of property while cleanup is ongoing on other portions are ways in which DoD can facilitate reuse in an uncertain market or regulatory environment.

☑ **Best Practice** **Early Transfer Authority**

Early Transfer Authority (ETA) is a statutory mechanism that allows DoD (with state approval) to transfer property before all cleanup is complete. It can also entail arranging for the cleanup to be performed by another entity, such as the new owner, on DoD's behalf. This type of transfer benefits the LRA as well as the installation, because it allows the LRA to closely coordinate cleanup and reuse activities.

📖 **References** *Early Transfer Authority*[51]
http://www.dtic.mil/envirodod/brac/etafinal.pdf

DoD Guidance on the Environmental Review Process Required to Obtain the Finding of Suitability for use of Early Transfer Authority for Property not on the NPL as Provided by CERCLA Section 120(h)(3)(C)[52]
http://www.dtic.mil:80/envirodod/brac/non-npl.html

EPA Guidance on the Transfer of Federal Property by Deed Before All Necessary Remedial Action Has Been Taken Pursuant to CERCLA Section 120(h)(3) -- (Early Transfer Authority Guidance)[53]
http://www.epa.gov/swerffrr/doc/hkfin.htm

Overview of Early Transfer Guidance[54]
http://www.epa.gov/swerffrr/doc/earlytrans.htm

B. Regulator Buy-in

Issue Addressing lack of regulator buy-in on FOSTs and FOSLs

Issue Description Up-front agreement on cleanup guidelines and standards does not always ensure agreement throughout the process. There are instances in which regulators question previously agreed on cleanup guidelines and standards. For instance, a regulator may be unwilling to sign off on a FOST or FOSL even when all the previously agreed upon cleanup requirements have been met, because they insist on conditions not required by law or regulation.

☑ **Best Practice** **Demonstrating Leadership in the FOST or FOSL Process**

DoD can transfer or lease BRAC property if, and only if, it has complied with all regulatory requirements, has met all risk levels, and determines that human health and the environment are protected. The FOST or FOSL process helps DoD demonstrate that environmental requirements have been met. A draft of the FOST or FOSL is sent for regulatory comment before DoD making a final determination on the transfer or lease. In some cases, where DoD has done all it is obligated and required to do—and all that it can do to facilitate property transfer—it still encounters objections from regulators. While the installation should pursue all reasonable alternatives to gain regulatory buy-in and if applicable laws and regulations have been satisfied, the installation may make the final FOST or FOSL determination by noting the regulatory comments and proceeding with the transfer or lease.

Personnel at Fort Benjamin Harrison were forced to proceed with their transfer of the property without agreement from the state RPM. The BCT was unable to resolve state and EPA objections to Army property category classifications because of the presence of lead-based paint residue in the soil. As a result, the state invoked the DSMOA dispute resolution process. In negotiations with the state, the Army demonstrated its complete adherence to applicable federal, state, and local regulations regarding lead-based paint and its performance of soil

cleanup and remediation to the extent recommended in Department of Housing and Urban Development/EPA lead-based paint guidelines. The Army advised the state that it did not intend to conduct further soil remediation. The time constraints under the dispute resolution process expired, thereby ending the dispute, so the Army proceeded with the property transfer.

☑ **Best Practice** **Working through Transfer Obstacles**

Because property transfer is a recent challenge, installations going through the transfer process may encounter a problem with no known solution. Installations are working through new issues and setting precedents that will help other installations transfer property. For more information on how Indianapolis Naval Warfare Center worked through its transfer obstacles, see the case study below.

Best Practice Case Study
Indianapolis Naval Air Warfare Center (NAWC), Indianapolis, Indiana
Working Through Transfer Obstacles: PCB Issue Resolution

Indianapolis Naval Air Warfare Center (NAWC) has been working with NAVFAC and Navy headquarters to resolve a polychlorinated biphenyls (PCB) issue at the NAWC Indianapolis facility that is currently holding up transfer. The potential resolution would not only allow this particular transfer to proceed, but it would set a precedent for resolution of this issue at other installations and properties.

There are non-liquid PCB containing construction materials and equipment present within Building 1000 at Indianapolis NAWC. These materials and equipment are not unlike what would be found at a similar commercial facility. The Navy recently completed a risk assessment to determine the risk of continued use of the building to workers. The risk is within an acceptable range. The city wants to use the building as soon as possible because revenues are being lost.

EPA Region 5 representatives have indicated that the continued existence of the PCB is unauthorized and that the proposed deed transfer would constitute an impermissible distribution in commerce of regulated PCB. EPA can allow the transfer to proceed by agreeing to exercise its enforcement discretion through the execution of a compliance agreement or issuance of an enforcement discretion letter to the Navy, the City of Indianapolis and its successors. The Navy has drafted a sample compliance agreement through which EPA could exercise such discretion and allow the transfer to proceed.

📖 **References**

Fast Track Cleanup at Closing Installations[55]
http://www.dtic.mil/envirodod/brac/reissued.html

Fast Track to FOST: A Guide to Determining if Property is Environmentally Suitable for Transfer[56]

http://www.dtic.mil/envirodod/brac/index.html

Field Guide to FOSL[57]
http://www.dtic.mil/envirodod/brac/factsht.html

Appendix A
Acronym List

Acronyms	
AEC	Army Environmental Center
AMTL	Army Materials Technology Laboratory
ATSDR	Agency for Toxic Substances and Disease Registry
BCA	Base Conversion Agency
BCT	BRAC Cleanup Team
BEC	BRAC Environmental Coordinator
BRAC	Base Realignment and Closure
CAAE	DLA Environmental and Safety Policy Office
CECOS	Civil Engineering Corps Officers School
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLEAN	Comprehensive Long-term Environmental Action Navy
CNO	Chief of Naval Operations
CWM	Chemical Warfare Material
DAS	Deputy Assistant Secretary
DDD	Defense Distribution Depot
DLA	Defense Logistics Agency
DoD	Department of Defense
DSMOA	Defense and State Memorandum of Agreement
DUSD(ES)	Deputy Under Secretary of Defense (Environmental Security)
ECOS	Environmental Council of the States
EFD/A	Engineering Field Division/Activity
EOY	End-of-Year
EPA	U.S. Environmental Protection Agency
FORSCOM	U.S. Army Forces Command
FOSL	Finding of Suitability to Lease
FOST	Finding of Suitability to Transfer
FUDS	Formerly Used Defense Sites
GIS	Geographic Information Systems
HTRW	Hazardous, Toxic, and Radioactive Wastes
IAP	Installation Action Plan
ID/IQ	Indefinite Delivery/Indefinite Quantity
IPR	In-Progress Review
ILEVR	Installation Logistics Environmental Restoration (Air Force)

ISEERB	Inter-Service Environmental Education Review Board
LRA	Local Redevelopment Authority
LUC	Land Use Control
MAP	Management Action Plan
MOU	Memorandum of Understanding
NAVFAC	Naval Facilities Engineering Command
NAWC	Naval Air Warfare Center
NCEA	National Center for Environmental Assessment
NEHC	Naval Environmental Health Center
NELP	Navy Environmental Leadership Program
NETC	Naval Educating and Training Center
NPL	National Priorities List
ODEP	Office of the Director Environmental Programs (Army)
ODUSD(ES)	Office of the Deputy Under Secretary of Defense (Environmental Security)
OE	Ordnance and Explosive
OSWER	Office of Solid Waste and Emergency Response (U.S. Environmental Protection Agency)
PCB	Polychlorinated Biphenyls
PRAC	Pre-Placed Remedial Action Contract
RAB	Restoration Advisory Board
RAC	Remedial Action Contract
RAAD	Risk Assessment Assumption Document
RAS	Risk Assessment Strategy
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
SDWA	Safe Drinking Water Act
SOW	Statement of Work
SQRA	Semi-Quantitative Risk Assessment
TCAAP	Twin Cities Army Ammunition Plant
TCE	Trichloroethylene
TERC	Total Environmental Restoration Contract
TSCA	Toxic Substances Control Act
USACHPPM	US Army Center for Health Promotion and Preventive Medicine
UST	Underground Storage Tank
UXO	Unexploded Ordnance
VOC	Volatile Organic Compound

Appendix B
Installations and FUDS Properties Participating in the Cleanup Program Review

Installation or Property	Location	Web site Address
Army Materials Technology Laboratory Watertown*	Watertown, MA	Not Applicable
Fort Benjamin Harrison*	Lawrence, IN	Not Applicable
Fort Campbell	Fort Campbell, KY	http://www.campbell.army.mil/envdiv
Twin Cities Army Ammunition Plant	Arden Hills, MN	http://www.ioc.army.mil/rm/iocfact/tcaap.htm
Indianapolis Naval Air Warfare Center*	Indianapolis, IN	http://www.epa.gov/swerffrr/bracsite.indiana.htm
Mayport Naval Air Station	Mayport, FL	Not Applicable
Newport Naval Education and Training Center	Newport, RI	www.cnet.navy.mil/newport/netc.htm
Novato Housing Facility*	Novato, CA	Not Applicable
Homestead Air Force Base*	Homestead, FL	Not Applicable
Reese Air Force Base*	Lubbock, TX	Not Applicable
Shaw Air Force Base	Sumter, SC	http://www.shaw.af.mil/
Wright-Patterson Air Force Base	Dayton, OH	http://www.af.mil/sites/afmc.html
Defense Distribution Depot Memphis*	Memphis, TN	http://project1.parsons.com/memphis
Defense Distribution Depot San Joaquin-Sharpe Facility	Lathrop, CA	Not Applicable
Black Hills Ordnance Depot	Edgemont, SD	Not Applicable
Weldon Springs Ordnance Works	St. Charles County, MO	http://www.mrk.usace.army.mil/weldon/weldon.html

*BRAC installation

Appendix C
Cleanup Program Review Steering Group and Work Group Members

Steering Group Members	Title
Mr. Gary Vest	Principal Assistant Deputy Under Secretary of Defense (Environmental Security)
Ms. Karla Perri	Assistant Deputy Under Secretary of Defense (Environmental Cleanup)
Mr. Ray Fatz	Deputy Assistant Secretary of the Army
Ms. Elsie Munsell	Deputy Assistant Secretary of the Navy
Mr. Tad McCall	Deputy Assistant Secretary of the Air Force
Mr. Jan Reitman	Staff Director, Environmental & Safety Policy

Work Group Members	Organization
Mr. Shah Choudhury	ODUSD(ES/CL)
Mr. Bob Turkeltaub	ODUSD(ES/CL)
LTC Larry Powell	Army (ODEP)
Ms. Karen Wilson	Army (AEC)
Ms. Wanda Holmes	Navy (CNO)
Mr. Michael Toland	Air Force (ILEVR)
Mr. Al Loftin	Air Force (BCA)
Lt Col Daniel Welch	HQ DLA/CAAE
Ms. Kimberly Dailey	FUDS
Mr. Dave Moeller	FUDS

Appendix D
References

[1] *Updating the BRAC Cleanup Plan*. DoD. Spring 1999.
http://www.dtic.mil/envirodod/envdocs.html
An online fact sheet developed for BRAC Cleanup Teams that have completed a bottom-up review and have prepared an initial BRAC Cleanup Plan (BCP). It highlights sections of the BCP that should be updated and modified to keep the BCP a living document and summarizes the five-step BCP process.

[2] *Installation Restoration Program Action Plan Guidance*. DoD. US Army Environmental Center. 1998.
http://www.denix.osd.mil/denix/Public/Policy/Army/IRP/iap.html
An online manual that provides guidance on Installation Action Plans (IAPs), funding, Restoration Advisory Boards, and obtaining approval and concurrence.

[3] *Management Guidance for the Defense Environmental Restoration Program*
http://www.denix.osd.mil/denix/Public/ES-Programs/Cleanup/DERP/guide.html
An online guide to the DERP Cleanup Program. Includes chapters on relationships with regulatory agencies, community involvement, and risk management.

[4] *Lead Regulator Policy for Cleanup Activities at Federal Facilities*
http://www.epa.gov/swerffrr/doc/leadreg.htm
An online EPA memorandum with the purpose to clarify roles and minimize overlapping Federal and State regulatory oversight of cleanups at federal facilities on the National Priorities List (NPL), and to encourage more efficient use of Federal and State oversight resources.

[5] *US Army Environmental Restoration Programs Guidance Manual*. US Army Environmental Center. April 1998.
http://www.denix.osd.mil/denix/Public/Policy/Army/ERP/erptoc.html
An online Army guide that includes chapters on BRAC, authorities and responsibilities, the restoration response action process, and contracting.

[6] *Army Regional Environmental Coordinators Semiannual Report*
http://www.denix.osd.mil/denix/State/Partnering/REC/Semi/AprSep98/3_1.html
An online version of DoD's Semi-Annual report for the period April-September 1998. Specific issues, overarching areas of concern, and success stories related to each of the regions is reported. The most common success stories center on partnering within DoD and regulatory agencies.

[7] *CERCLA/RCRA Overlap in Environmental Cleanup*. DoD. Spring 1998.
http://www.dtic.mil/envirodod/envdocs.html
An online factsheet that presents an overview of CERCLA and RCRA, highlights their differences and similarities, and provides some guidance on the scenarios in which each would be used.

[8] *Consolidated Guide to Consultation Procedures for Superfund Response*. EPA. Office of Solid Waste and Emergency Response (OSWER). EPA 540-F-97-009, OSWER 9200.1-18FS. 1997.
http://www.epa.gov/superfund/resources/cnsltsum.htm
An EPA fact sheet that describes management review procedures employed by EPA to ensure that national remedy selection policies and procedures are being implemented in a reasonable and consistent manner.

[9] *Streamlining Federal Facility Cleanup.* Office of Solid Waste and Emergency Response 9272.0-12. 1998.
http://www.epa.gov/swerffrr/doc/factsht22.htm
An online fact sheet that summarizes the findings from a newly released report titled *Streamlining Initiatives: Impact of Federal Facilities Cleanup Process*.

[10] *US Army Environmental Restoration Programs Guidance Manual*
http://www.denix.osd.mil/denix/Public/Policy/Army/ERP/erptoc.html
An online Army guide that includes chapters on contracting (Firm Fixed Price).

[11] *Army Environmental Award Program*
http://aec-www.apgea.army.mil:8080/prod/usaec/eq/programs/awards.htm
An army web site with a number of links to different award program announcements.

[12] *Restoration Employees of the Year Awards Announced*
http://www.denix.osd.mil/denix/Public/News/Navy/EnvNews/jul99.html#33
A segment of the online Navy newsletter that lists the winners of the Naval Operations' Environmental Restoration Employees of the Year Awards.

[13] *Environmental Restoration and Environmental Training – N453*
http://206.5.146.100/n45/branch/n453/
This online site links to a number of Navy training programs and environmental restoration web sites.

[14] *Working Together to Achieve Cleanup: A Guide to the Cooperative Agreement Process*
http://38.202.14.109/caguide
An online document that is the product of a collaborative effort among States and DoD. Includes guidelines on the following: preparing and approving the Cooperative Agreement application and reporting the State's services under the Cooperative Agreement.

[15] *DSMOA*
http://www.denix.osd.mil/denix/State/DSMOA/dsmoa.html
This is the DSMOA home page. It includes links to guidance for cooperative agreements, regulations, and success stories.

[16] *Guide to the DoD Environmental Security Budget.* DoD. Environmental Council of States. 1998.
http://www.denix.osd.mil/denix/Public/Library/Envirsb/envirsb.html
An online DoD environmental Budget Guide that describes how the Military Services and Defense Agencies determine requirements, plan, make decisions, and ultimately budget for their environmental protection program.

[17] *Superfund Risk Assessment*
http://www.epa.gov/superfund/programs/risk/
Homepage of the Superfund Risk Assessment program. Contains links to policy and procedure documents, databases, and technological information.

[18] *Office of Research and Development, National Center for Environmental Assessment*
http://www.epa.gov/ncea/
Homepage of EPA's National Center for Environmental Assessment (NCEA). Contains links to risk assessment guidelines and technological information.

[19] *Presumptive Remedies*
http://www.epa.gov/superfund/resources/presump/index.htm
A Superfund web site that contains a number of links to download documents that explain policies and procedures for a variety of contaminants. Includes a list of the benefits of presumptive remedies.

[20] *Landfill Presumptive Remedy Saves Time and Cost.* EPA. Office of Solid Waste and Emergency Response (OSWER). EPA 540-F-96-017, OSWER 9355.0-66I. 1997.
http://www.epa.gov/superfund/pubs.htm
This EPA document explains time and cost savings that result from the implementation of presumptive remedies and includes case studies.

[21] *Expediting BRAC Cleanup Using CERCLA Removal Authority*. DoD. Spring 1997.
http://www.dtic.mil.envirodod/envdocs.html
Online factsheet on how DoD can expedite cleanup using the CERCLA Section 104 removal authority. Factsheet describes the steps in a removal action and provides references on removal actions.

[22] *Naval Facilities Engineering Service Center*
http://enviro.nfesc.navy.mil/ps/index.html

[23] *Interstate Technology and Regulatory Cooperation (ITRC)*
http://www.ITRCweb.org
The ITRC is a national coalition of state environmental regulatory agencies working cooperatively with federal agencies and other stakeholders to improve the acceptance, and interstate deployment of innovative environmental technologies.

[24] *Environmental Technologies Certification Program (ESTCP)*
http://www.estcp.org
ESTCP's goal is to demonstrate and validate promising, innovative technologies that target the Department of Defense's (DoD's) most urgent environmental needs.

[25] *Strategic Environmental Research and Development Program (SERDP)*
http://www.serdp.org
SERDP is DoD's corporate environmental research and development program, planned and executed in full partnership with the Department of Energy and EPA, with participation by numerous other Federal and non-Federal organizations.

[26] *Federal Remediation Technologies Roundtable*
http://www.frtr.gov
The Federal Remediation Technologies Roundtable is an interagency working group seeking to build a more collaborative atmosphere among the federal agencies involved in hazardous waste site remediation.

[27] *Federal and State Environmental Issues*
http://www.cedar.ca.gov/military/environ.html
A comprehensive list of links to web sites and references that deal with cleanup technologies, cleanup policy and management, and RABs.

[28] *Tech Trends*
http://clu-in.org/products/newsltrs/ttrend/default.htm
Online newsletter with a searchable database containing cleanup technology.

[29] *Technology Innovation Office*
http://www.epa.gov/swertio1/index.htm
Homepage of the EPA Technology Innovation Office. Provides technology selection tools, information about treatment technologies, and program descriptions.

[30] *Commonly Asked Questions Regarding The Use Of Natural Attenuation For Petroleum-Contaminated Sites At Federal Facilities*
http://www.denix.osd.mil/denix/Public/Library/Attenuation/attenuation.html

[31] *Seminars: Monitored Natural Attenuation for Groundwater*
http://www.epa.gov/ORD/WebPubs/monitor/
An online list of links to download documents on groundwater sampling, analysis, and monitoring, site characterization, attenuation rate constants, and criteria for success.

[32] *Issues Associated with Natural Attenuation.* EPA. Office of Underground Storage Tanks. 1998.
http://www.epa.gov/OUST/rbdm/issues.htm
An online overview of EPA guidelines on Natural Attenuation.

[33] *Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites*. EPA. Office of Solid Waste and Emergency Response (OSWER). OSWER 9200.4-17P. 1999.
http://www.epa.gov/swerust1/directiv/d9200417.htm
An OSWER Directive that clarifies EPA's policy with regard to the use of monitored natural attenuation for the remediation of contaminated soil and groundwater at sites regulated under all programs administered by EPA's OSWER, including Superfund, RCRA Corrective Action, and Underground Storage Tanks.

[34] *Groundwater Cleanup at Superfund Sites*
http://www.epa.gov/superfund/tools/gw/brochure.htm
A Superfund web page that provides a general description of groundwater issues. Includes groundwater statistics and contact information.

[35] *Guidance on Remedial Actions for Contaminated Ground Water at Superfund*. EPA. EPA 9355.5-02. 1990.

[36] *Making Hazardous Waste Information Available– Lessons Learned from the Superfund Internet Web Site*. Conference Proceedings. 1997.
http://www.epa.gov/superfund/resources/sf18/paper/confpap4.htm
A web site that provides hazardous waste professionals and other audiences with an overview of Superfund's Internet site. Focuses on lessons learned and tools used to achieve effective design and management of this site, both from a technical standpoint and in terms of meeting user needs. Contains a useful bibliography.

[37] *Superfund Reforms: Updating Remedy Decisions*. EPA. Office of Waste and Emergency Response (OSWER). OSWER 9200.0-22.
http://www.epa.gov/superfund/programs/reforms/remedy/index.htm
An OSWER Directive with the purpose of encouraging appropriate changes to remedies selected in existing Superfund RODs. These updates are intended to bring past decisions into line with the current state of knowledge with respect to remediation science and technology.

[38] *Rules of Thumb for Superfund Remedy Selection.* EPA. OSWER 9355.0-69. August 1997.
http://www.epa.gov/superfund/resources/rules/index.htm
This guidance document describes key principles and expectations, interspersed with "best practices", that should be consulted during the Superfund remedy selection process.

[39] *Assessing Reuse and Remedy Alternatives at Closing Military Installations*
http://www.dtic.mil/envirodod/brac/guide.html
This online fact sheet provides a tool for identifying and helping to resolve the complex issues related to restoration and reuse of contaminated sites at closing DoD installations.

[40] *DoD Base Reuse Implementation Manual*
http://www.acq.osd.mil/iai/reinvest/manual/toc.html
An online manual laying out the BRAC process of reuse planning and implementation, property disposal, and leasing; includes information on LRAs.

[41] *Closing Bases Right-A Commander's Handbook*. DoD. Office of the Assistant Secretary of Defense for Economic Security. 1995.
http://www.denix.osd.mil/denix/Public/Library/Closing/closing.html
An online guide that provides information on property reuse and disposal and community relations.

[42] *Restoration Advisory Board Implementation Guidelines*
http://www.dtic.mil/envirodod/rab/finalrab.html
This online guide provides information on forming and running RABs. It includes samples of publications, letters, and regulations for community and installation members.

[43] *Keys to Opening the Door to BCT Success*
http://www.dtic.mil/envirodod/brac/keys.html
This online brochure, which was developed for BRAC Cleanup Teams, identifies the criteria for an efficient and successful program. The six principle issues are: teamwork, empowerment, and shared goals; consensus building; communication and community outreach; coordination of contracts and schedules; efficient procedures; and elimination of impediments.

[44] *Partnering Guide for Environmental Missions of the Air Force, Army, Navy*. DoD. USACE. 1996.
http://www.hq.usace.army.mil/cemp/c/partner.htm
An online guide developed by the Army Corp of Engineers on partnering. Includes guidelines for partnering among DoD Components, regulatory agencies, and contractors.

[45] *Restoration Advisory Board Resource Book*
http://www.dtic.mil/envirodod/rab/rabresource/
This online guide to RABs includes meeting preparation, technical assistance, and membership guidelines.

[46] *Management Guidance for the Defense Environmental Restoration Program*
http://www.denix.osd.mil/denix/Public/ES-Programs/Cleanup/DERP/guide.html
An online guide to the DERP Cleanup Program. Includes chapters on community involvement.

[47] *Closing Bases Right- A Commander's Handbook*
http://www.denix.osd.mil/denix/Public/Library/Closing/closing.html
An online guide that provides information on property reuse and disposal and community relations.

[48] *Federal and State Environmental Issues*
http://www.cedar.ca.gov/military/environ.html
A comprehensive list of environmental issues, including links to web sites and references that deal with RABs.

[49] *Community Advisory Groups: Partners in Decisions at Hazardous Waste Sites, Case Studies.* EPA. EPA 540-R-96-043. 1996.
http://www.epa.gov/superfund/tools/cag/resource/casestdy.htm
This web site provides a list of lessons learned and successful methods for involving the public in cleanup programs.

[50] *Risk Communication and Public Participation Fact Sheet*. EPA. 1996.
http://www.epa.gov/opperspd/comm.htm
This EPA fact sheet includes the seven cardinal rules of risk communication.

[51] *Early Transfer Authority*. DoD. Spring 1998.
http://www.dtic.mil/envirodod/brac/etafinal.pdf
This online fact sheet outlines an eight-step process for using early transfer authority at BRAC installations

[52] *DoD Guidance on the Environmental Review Process Required to Obtain the Finding of Suitability for use of Early Transfer Authority for Property not on the NPL as Provided by CERCLA Section 120(h)(3)(C)*. DoD. April 24, 1998.
http://www.dtic.mil:80/envirodod/brac/non-npl.html
This online document specifies basic requirements for military components and ETA.

[53] *EPA Guidance on the Transfer of Federal Property by Deed Before All Necessary Remedial Action Has Been Taken Pursuant to CERCLA Section 120(h)(3) -- (Early Transfer Authority Guidance)*. EPA. 1998.
http://www.epa.gov/swerffrr/doc/hkfin.htm
This online document establishes EPA's process to determine that property is suitable for transfer before all necessary remedial action being taken.

[54] *Overview of Early Transfer Guidance*. EPA. 1998.
http://www.epa.gov/swerffrr/doc/earlytrans.htm
This online fact sheet provides acronyms, steps, and contact information for Early Transfer.

[55] *Fast Track Cleanup at Closing Installations*. DoD. May 18, 1996.
http://www.dtic.mil/envirodod/brac/reissued.html
An online memorandum with a link to the DoD Policy on the Environmental Review Process to Reach a FOSL.

[56] *Fast Track to FOST: A Guide to Determining if Property is Environmentally Suitable for Transfer*. DoD. Fall 1996.
http://www.dtic.mil/envirodod/brac/index.html
Online guide describing the 6-step FOST process and documentation needed.

[57] *Field Guide to FOSL*. DoD. Fall 1996.
http://www.dtic.mil/envirodod/brac/factsht.html
Online factsheet describing the FOSL process and contents of a FOSL.