

We have a shared commitment to protect the environment and sustain the mission of the Department of Defense now and for generations to come.

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



Environmental restoration Defense Planning Guidance goals ensure that DoD addresses first those sites with the greatest potential for causing harm to human health or the environment.

DoD is deeply committed to completing the Defense Environmental Restoration Program and has a strong sense of responsibility for completing that mission safely, efficiently, and effectively. But how does DoD know if it is making progress? How does DoD decide where to allocate resources? When will all restoration be complete? Knowing the answers to those questions is a fundamental part of the program.

Performance Goals Keep the DERP on Track

DoD has set specific performance goals to ensure that its environmental restoration program is running efficiently and effectively. DoD's overall program planning document, the Defense Planning Guidance (DPG), outlines these goals.

DoD uses these performance goals to determine the environmental restoration program investment and to evaluate the program. DoD provides guidance to the Military Components to assist them in reaching these goals through the DERP Management Guidance.



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DERP Management Guidance:

<http://www.denix.osd.mil/denix/Public/ES-Programs/Cleanup/DERP/guide.html>

DPG Goals for Active Installations and FUDS Properties

Active installations and FUDS properties have different program goals than BRAC installations. DPG goals for active installations and FUDS properties focus on cleaning up sites to a lower relative-risk category, putting remedies in place, and completing site restoration. Active installations and FUDS properties measure program progress against the following goals —

- **High Relative-Risk Sites**
 - 50 percent reduced by the end of FY02
 - 100 percent reduced by the end of FY07

Keep the DERP on Track

- **Medium Relative-Risk Sites**
 - 100 percent reduced by the end of FY11
- **Low Relative-Risk Sites**
 - 100 percent reduced by the end of FY14
- **All Installations and Sites**
 - 100 percent with all remedies in place (RIP) or Response Complete (RC) by the end of FY14.

DoD reviews its progress toward the DPG goals each year. At active installations, the Department is on track to reduce 50 percent of high relative-risk sites by the end of FY02, reduce 100 percent of low relative-risk sites by the end of FY14, and have all installations and sites with RIP/RC by the end of FY14. DoD is close to meeting its other goals for active sites.

In addition to properties these goals address, some FUDS properties have additional unexploded ordnance and building demolition and debris removal requirements.

DPG Goals for BRAC Installations

Like active installations, the BRAC DPG goals set targets for BRAC installations' achievement of RIP and RC. In addition to restoration, DoD's DPG goals for BRAC installations focus on making property environmentally suitable for transfer under CERCLA, so that land is available for economic redevelopment. DoD divides BRAC property into seven condition-of-property types, or categories.

The condition-of-property categories describe the condition of the property at an installation. Acreage in Categories 1 through 4 is suitable for transfer under the CERCLA remediation framework, whereas acreage in Categories 5 through 7 needs additional cleanup or evaluation. DoD measures environmental restoration at BRAC installations against the following goals:

- **Sites with RIP or RC**
 - 90 percent by the end of FY01
- **Installations with RIP or RC**
 - 75 percent by the end of FY01
 - 100 percent by the end of FY05



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BRAC Cleanup Web site:

*[http://www.dtic.mil/
envirodod/brac](http://www.dtic.mil/envirodod/brac)*

- **Environmental Condition of Property Categories 5–7, suitable for transfer**
 - 75 percent by the end of FY01
 - 100 percent by the end of FY05.

Currently, 82 percent of BRAC property is environmentally suitable for transfer; that is, it is designated as Category 1 through 4. The remaining 18 percent of BRAC property, which fall into Categories 5, 6, and 7, is the focus of DoD's BRAC environmental restoration efforts.

How Does DoD Measure Progress?

To measure and report on progress toward its DPG goals, DoD uses performance metrics called Measures of Merit (MOMs). MOMs provide a consistent benchmark and reference points for reporting on and evaluating the program.

Each MOM reflects both status to date and projections of future progress. Comparing projections to performance and comparing performance year-to-year give an in-depth look at program progress. The following discussion reviews how the DERP is performing according to its MOMs. The information includes relative-risk reduction status, progress through program phases and milestones, and BRAC acreage that is environmentally suitable for transfer.

DoD Completes Cleanup at 62 Percent of Sites

Each year DoD measures the number of sites in the investigation, cleanup, and RC categories. DoD looks at the number of sites in these categories to determine progress in cleaning up and closing out sites. All sites undergoing investigation and cleanup are categorized as Sites in Progress. Within the Sites in Progress category, an important DoD milestone is Remedy in Place (RIP). At sites with RIP, DoD has finished constructing the remedy and has begun operating the remedial system. When all intended investigation and cleanup activities at a site are complete, the site is said to be Response Complete (RC). An increasing number of sites moving from investigation to cleanup to RC indicates program progress. Movement of sites through the phases toward site closeout is the key to completing the DERP successfully.

MOMs Tell the Story...

MOMs provide a snapshot of the DERP at a specific time. MOMs look at —

- Relative-risk reduction
- Phase progress
- Installations and sites achieving RIP/RC
- Number of BRAC acres suitable for transfer under CERCLA.

DoD's Performance Metrics

Monitoring Progress:

Figures 8, 9, and 10 show the status of all sites in DoD's environmental restoration program at active and BRAC installations and at FUDS properties. The figures show the number of sites that are in progress, sites where work will be under way in

Figure 8
Active Installations
Overall Site Status (Does Not include FUDS)
(as of September 30, 1999)

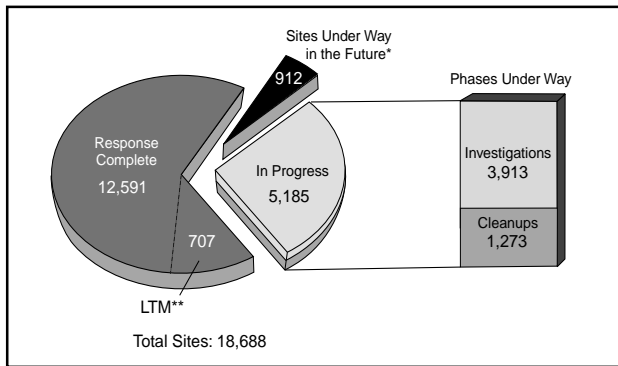


Figure 9
FUDS Properties Overall Status
(as of September 30, 1999)

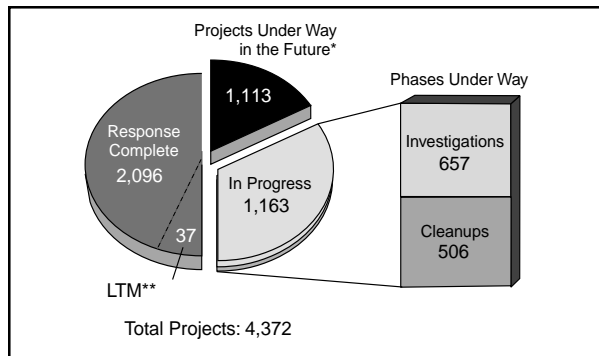
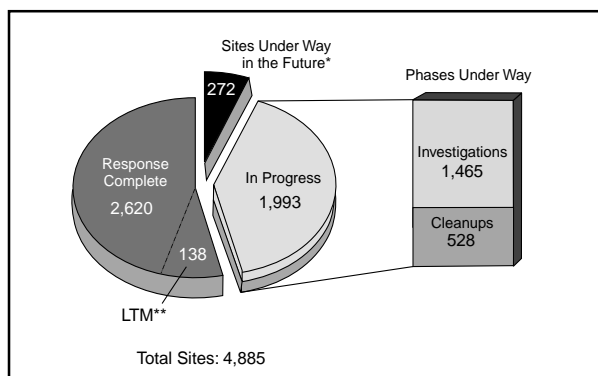


Figure 10
BRAC Installations Overall Site Status
(as of September 30, 1999)



* Includes sites with future Preliminary Assessment starts planned and cleanup sites that are between phases.

**LTM is a subset of Response Complete.

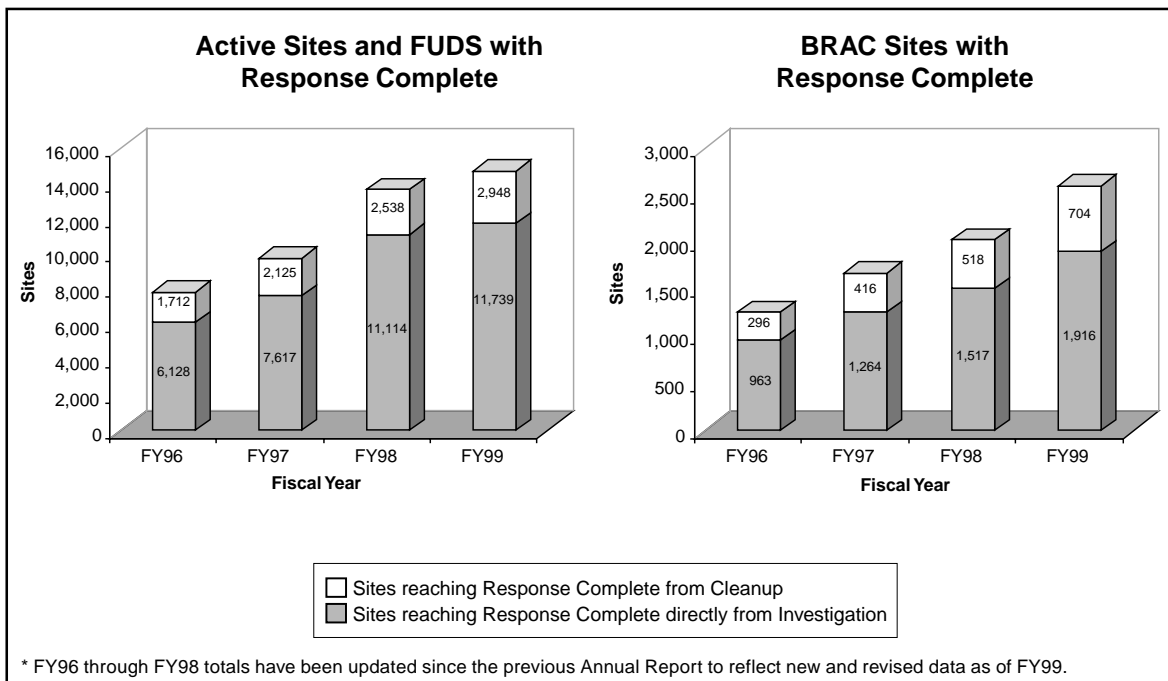
the future, and sites that have achieved RC. The in-progress category is broken down to show the number of sites in both investigation and cleanup phases.

Sixty-seven percent of active sites, 48 percent of FUDS properties, and 54 percent of BRAC sites have reached RC as of September 30, 1999. Overall, 62 percent of the sites in the DERP have reached the RC milestone.

Figure 11 shows the increase in the number of DoD sites and properties that have reached RC from FY96 through FY99. The number of sites at RC has almost doubled since FY96 and has increased by 1,620 sites since last year. These figures demonstrate DoD's continued progress toward site restoration goals.

In addition to the total number of sites at RC, Figure 11 shows the number of sites that achieved RC directly from the investigation phase and the number that reached RC as a result of cleanup actions. DoD classified nearly 80 percent of sites in the RC category upon completion of the investigation phase because no cleanup activities were required.

Figure 11
Status of Sites Reaching Response Complete
(cumulative, FY96 through FY99)*



DoD's Performance Metrics

Installations Continue to Reach Key Milestones

DoD has greatly improved the DERP through dedication to specific restoration needs at the site level. At the same time, DoD's ultimate goal is to finish all restoration activities at all installations and at FUDS properties. For this reason, the Department also measures progress in reaching RIP/RC at the installation level. Installations achieve RIP when *all* sites at the installation reach the RIP milestone. Similarly, when *all* sites at an installation achieve RC status, the entire installation reaches RC. FUDS properties achieve RIP status when *all* projects on a given property reach the RIP/RC milestone.

Figures 12, 13, and 14 show DoD installation and FUDS property progress in achieving final RIP/RC as of the end of FY99. These figures also show projections of when remaining installations and properties will reach the RIP or RC milestone. Figure 12 shows accomplishments for active installations; Figure 13 shows the status for FUDS properties; Figure 14 shows BRAC installation status. At the end of FY99, DoD had all remedies in place or had reached RC at 67 percent of active installations, 45 percent of FUDS properties, and 43 percent of BRAC installations. These statistics mean that DoD has finished all cleanup activities, except possibly remedial action operation and long-term monitoring, at almost 56 percent of its installations and properties.

Figure 12
DoD Active Installations (DERA)
Achieving Final Remedy in Place or Response Complete
(cumulative, FY90 through completion)

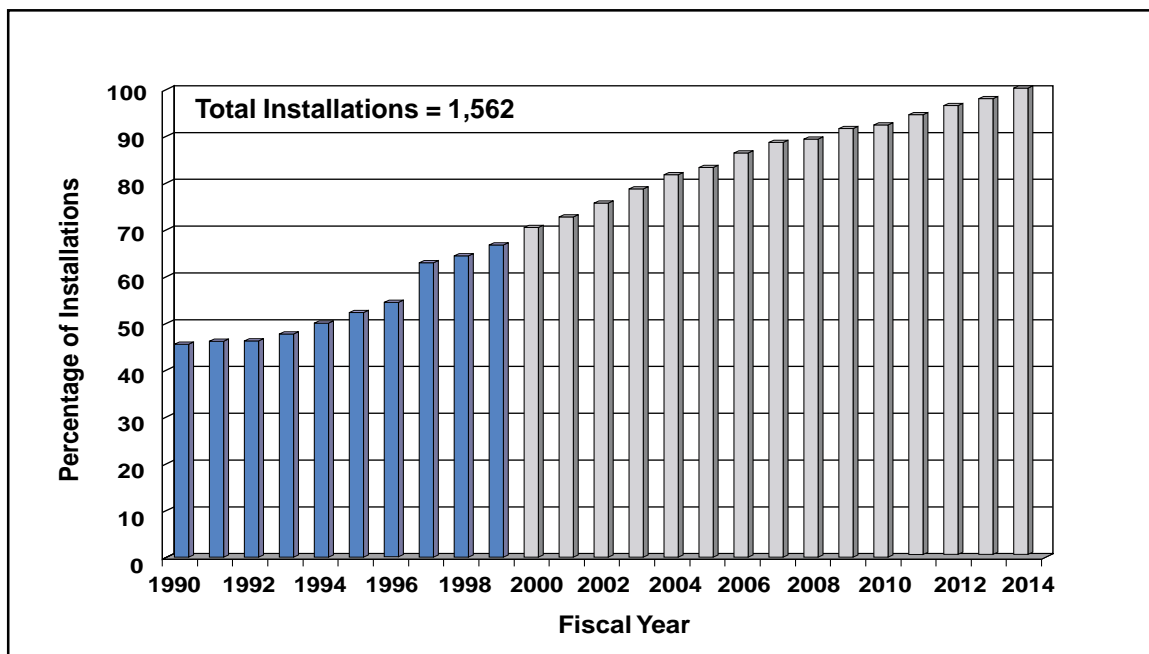


Figure 13
FUDS Properties*
Achieving Final Remedy in Place or Response Complete
(cumulative, FY90 through completion)

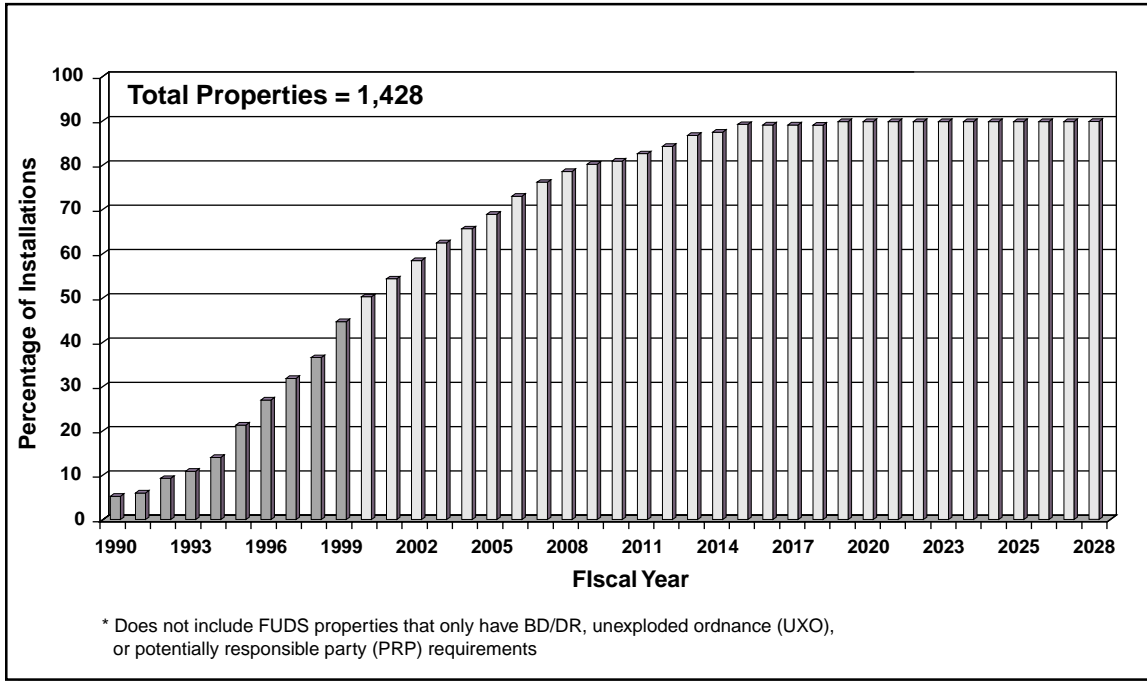
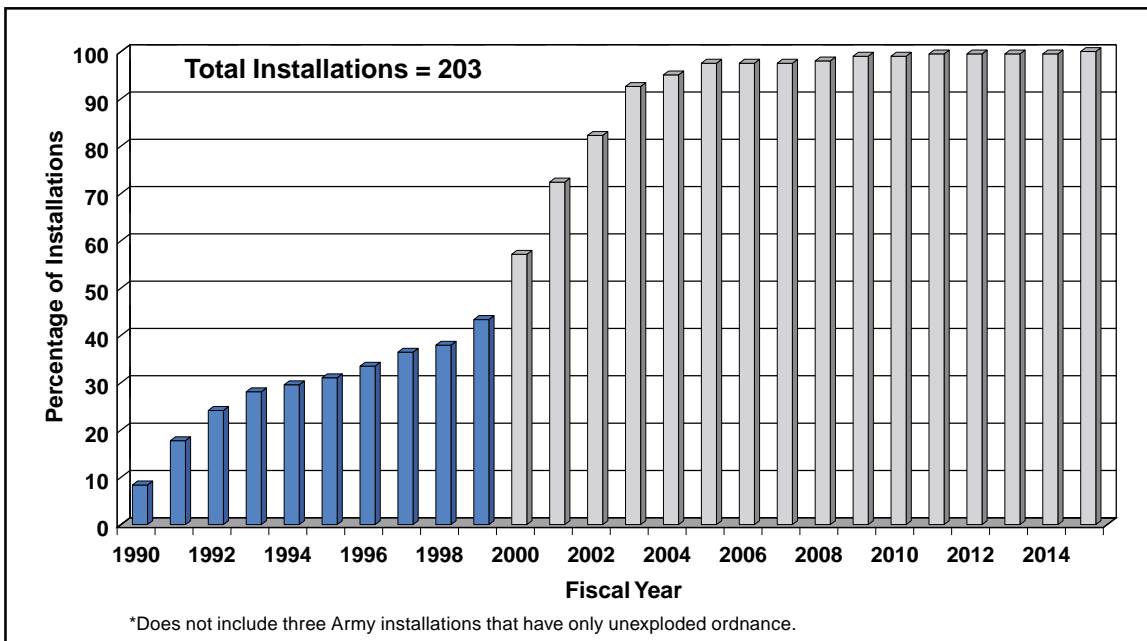


Figure 14
DoD BRAC Installations*
Achieving Final Remedy in Place or Response Complete
(cumulative, FY90 through completion)



DoD uses relative risk to —

- Help prioritize cleanup and funding
- Measure progress by tracking the reduction in the number of sites in all relative-risk categories.

DoD Efforts Target Highest Relative-Risk Sites

In the early 1990s, DoD recognized two major problems associated with the pace of its environmental restoration program:

- Trying to address too many sites with different priorities at the same time was hindering progress at all sites
- The most contaminated sites were not being addressed first.

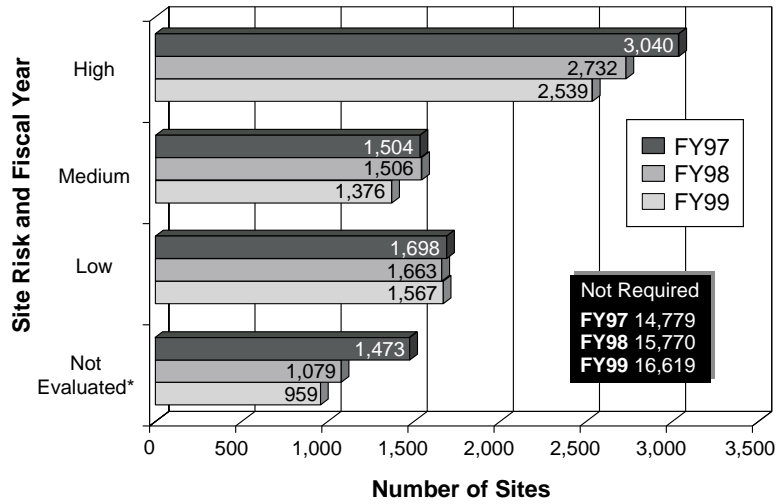
In response, DoD developed a methodology called the Relative-Risk Site Evaluation framework. Using this framework, DoD evaluates sites and groups them into high, medium, and low relative-risk categories based on the amount and type of contaminants present, the potential for the contaminant to migrate from the source, and the impact that the contamination will have on possible receptors (e.g., humans and the environment). In addition to the relative-risk category, DoD factors in stakeholder concerns, other risk assessments, program goals, statutory and regulatory status, and economic considerations in determining a site's funding priority.

By measuring the reduction in the number of sites in each relative-risk category, DoD can view overall relative-risk reduction status and progress toward restoration goals. Figures 15 and 16 illustrate DoD's success in meeting relative risk-related DPG goals.

Because of the possible health threat at high relative-risk sites, the most important progress is the significant reduction of the number of sites in this category. The Department's success in this respect is apparent in the trend from FY97 to FY99. In FY99, DoD eliminated an additional 193 active installation sites and FUDS properties and 136 BRAC sites from the high relative-risk category through environmental restoration activities.

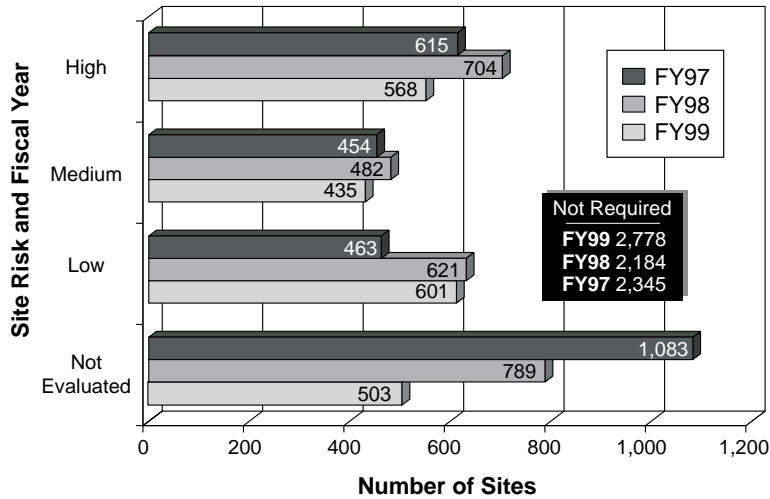
Although the reduction of the number of sites in the high relative-risk category is a strong indicator of program progress and of reduction of risk to human health and the environment, it is not the sole indicator. Other categories within the relative-risk framework also mark progress at this stage of the program. The Not Evaluated category represents the sites in the program that have not entered the investigation phase. The reduction of the number of sites in this category is another important indicator of program progress. In the past year, DoD moved 403 sites out of the Not Evaluated category. Sites that reach RIP and RC no longer require a relative-risk designation and are categorized Not Required (NR).

Figure 15
Relative-Risk Site Evaluation Progress:
Active Installations and FUDS



*The Not Evaluated category includes a large number of FUDS projects that are exclusively associated with above ground and underground storage tanks and their needs for relative-risk site evaluation will be determined after tank removal.

Figure 16
Relative-Risk Site Evaluation Progress:
BRAC Installations



Sites that have Remedy in Place, Response Complete, or No Further Action Required designations do not require relative-risk evaluation because DoD has committed to funding remedial action operation and LTM requirements at these sites. These sites are designated Not Required for relative-risk purposes.

Early Transfer Authority

Early transfer authority allows federal agencies to transfer property before all necessary restoration activities are completed. DoD uses early transfer authority to help communities accelerate reuse of BRAC installations.

Preparing BRAC Property for Transfer

An imperative for the environmental restoration process at BRAC installations is to quickly and effectively clean up closing installations so that the property is suitable for transfer. The requirements of CERCLA must be met before DoD can transfer property.

The DPG states that DoD's goal is to have all property currently in the BRAC program suitable for transfer by FY05. DoD is striving to attain this goal while promoting safety and efficiency in its restoration and transfer efforts and involving affected communities. At the end of FY99, 82 percent of the total BRAC acreage was environmentally suitable for transfer. This is 2 percent less than the 84 percent DoD reported in FY98. DoD has made progress overall; the 2 percent decrease resulted from the Army transferring 9,000 acres at one installation from Category 4 back to Category 5 due to the discovery of UXO.

In 1996, through an amendment to CERCLA, Congress created a valuable tool for empowering communities dealing with cleanup issues. Known as early transfer authority, it allows full transfer of property before the completion of all restoration activities. Early transfer authority gives communities the opportunity to play a more active role in reuse and redevelopment decisions by allowing them to gain ownership, and consequently control, of the property at an earlier stage of the transfer process.



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Early Transfer Authority:

<http://www.dtic.mil/envirodod/brac/etafinal.pdf>

Interim Actions Completed

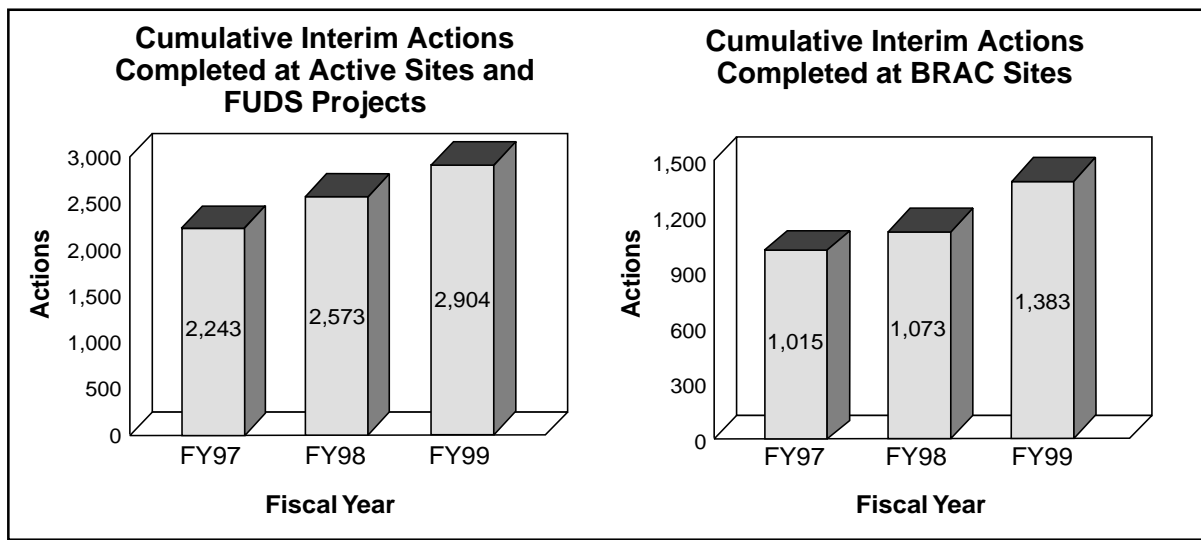
Interim actions are activities that help reduce imminent threats at a site — such as fencing contaminated areas; removing, treating, or disposing of contaminated soil; or providing bottled water. In many cases, an interim action can become the final remedy at a site if further study shows that there is no further risk to human health or the environment. The number of interim actions completed serves as a performance indicator for the DERP.

Figure 17 shows the number of interim actions completed through FY99 at active and BRAC installations and FUDS properties. As of September 30, 1999, DoD had completed 4,287 interim actions. Of this total, DoD completed —

- 2,766 interim actions at active installation sites
- 138 interim actions at FUDS projects
- 1,383 interim actions at BRAC installation sites.

In some cases, the interim action is selected as the final remedy, after further study shows that it has eliminated risk to human health or the environment or reduced risk to an acceptable level. As of September 30, 1999, 925 sites had achieved RIP or RC directly after implementing an interim action.

**Figure 17
Status of Completed Interim Actions**



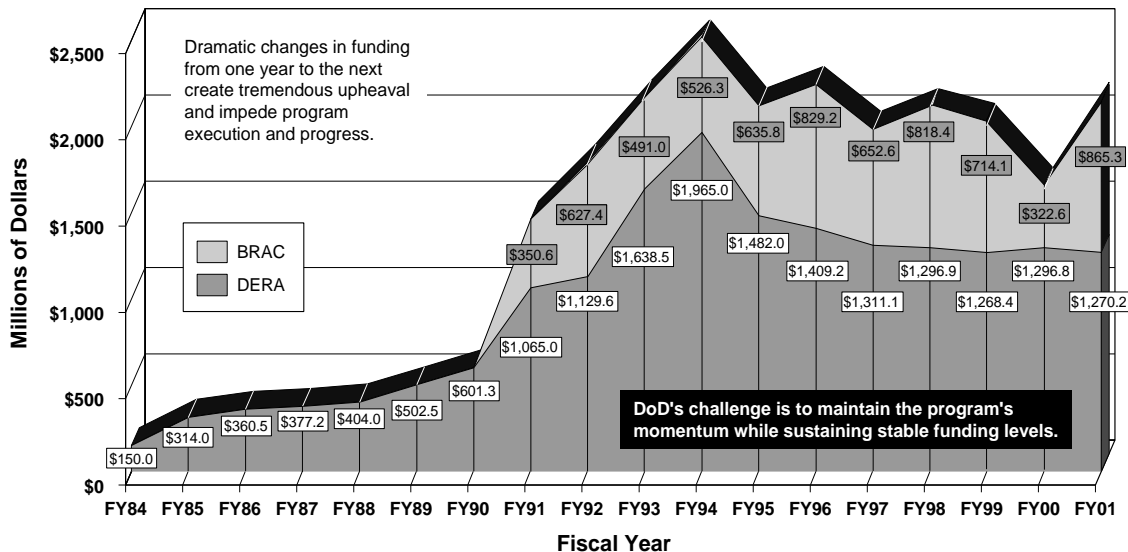
Funding Projections Predict Future Progress

In addition to improving the methods used to assess sites and define goals for the overall environmental restoration program, DoD has improved how it plans and estimates the cost of actions that it needs to take. With more reliable cost estimates and stable funding, DoD is on its way to fulfilling its environmental restoration mission. This section presents past, current, and future funding information on DoD's environmental restoration program.

At the end of FY99, DoD had invested almost \$21 billion in the environmental restoration program: \$15.3 billion for active installations and FUDS properties and \$5.6 billion for BRAC installations (Figure 18). In FY99, Congress appropriated almost \$1.3 billion for Environmental Restoration accounts and \$698 million for BRAC environmental accounts. The funding for the BRAC environmental restoration program is part of the overall BRAC account, which encompasses much more than environmental restoration efforts. BRAC funding also addresses closure-related compliance and environmental planning activities. Funding for active installations and FUDS activities decreased slightly in FY99; DoD has realigned funding during FY99 program execution, and the current estimate for the FY99 BRAC environmental program is \$714 million.

DoD is completing scheduled base closures as rapidly as possible to realize potential savings to the government and to make property available to local communities for redevelopment. The Department must complete environmental restoration and compliance work at these bases. In FY01, the BRAC environmental program increases from \$322.6 million

Figure 18
DERA and BRAC Environmental Funding Trend
(in millions of dollars)



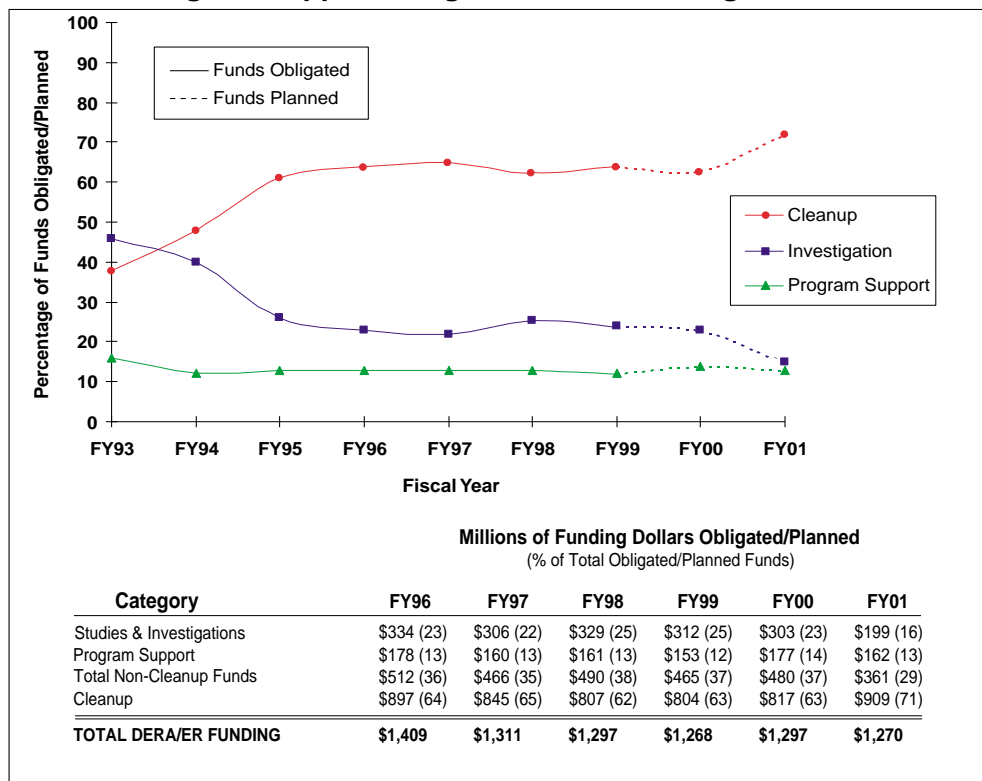
in FY00 to \$865.3 million, a difference of \$542.7 million. The FY01 level provides for the completion of projects begun in FY00 as well as fully funding the FY01 projects. Although the BRAC environmental funding increases by \$542.7 million in FY00, the FY01 program actually decreases by about \$200 million when the financing to complete FY00 projects is removed from the FY01 estimate. The roughly \$200 million for the BRAC program decrease reflects refinement of cost estimates, re-phasing of the environmental restoration schedule, and the reapplication of cost savings from prior BRAC projects.

Active Installation and FUDS Account Status

Figure 19 shows actual and planned program obligations for program support, investigation, and cleanup. DoD is increasing cleanup activities using the information obtained from the extensive site investigations conducted in the first half of the 1990s. DoD will continue to spend most of its funding on cleanup and plans to spend fewer dollars on investigation as sites enter the more costly cleanup phase.

Funding for site investigations decreased slightly in FY99 (by \$17 million). Funding for cleanup remained at approximately the same level as in FY98. DoD allocated 63 percent of its environmental restoration funding to cleanup in FY99. In FY99, program support funding levels decreased by \$8 million.

Figure 19
DERA/ER Active Installation and FUDS Cleanup, Investigation, and Program Support Obligations and Planning Estimates



Funding Requirements by Relative-Risk Category

DoD allocates its funding for environmental restoration activities by using the Relative-Risk Site Evaluation framework and other modifying factors. Figures 20 and 21 show the estimated cost to complete the program, by relative-risk category, for DoD overall and each Military Component. As Figure 20 shows, DoD will spend more money at sites in the high relative-risk category than at sites in other relative-risk categories. In this sense, the allocation of funds is consistent with achievement of DPG goals, another indicator of DoD’s commitment to reducing risks to human health and the environment.

Figure 21 shows relative-risk cost-to-complete estimates with totals by Military Component. The Services estimate that the highest amount of funding will go to sites in the high relative-risk category in order to continue addressing the worst sites first. For FUDS and DLA, however, the highest funding estimates are for sites in the Not Required category, which includes costs for long-term monitoring. The FUDS estimate for the Not Required category is much larger

Figure 20
Active Installation and FUDS Property Budget Year Cost Estimates
by Relative-Risk Category* (in millions of dollars)

Phase	Cost-to-Complete						
	FY00	FY01	FY02	FY03	FY04	FY05	FY06-Complete
High	660.8	678.0	655.9	672.6	660.6	628.5	4,211.0
Medium	89.5	95.8	115.7	118.4	95.3	88.1	1,486.0
Low	77.4	77.8	76.2	50.7	59.4	55.7	754.1
Not Evaluated	36.9	23.0	25.6	35.4	39.2	44.0	541.8
Not Required	210.3	187.7	184.9	173.5	168.7	160.8	4,795.5
Total	1,074.9	1,062.3	1,058.3	1,050.6	1,023.2	977.1	11,788.4

*Does not include Program Management and some other miscellaneous costs

Figure 21
Active Installation and FUDS Property Cost-to-Complete
by Relative-Risk Category and Component* (FY00-Complete)
(in millions of dollars)

Relative Risk Category	Cost-to-Complete					
	Army	Navy	Air Force	DLA	FUDS	Total
High	3,481.7	1,837.3	1,978.9	20.2	849.3	8,167.4
Medium	841.8	457.2	423.7	8.4	357.7	2,088.8
Low	370.5	312.3	394.3	2.9	71.2	1,151.2
Not Evaluated	13.4	64.9	51.0	21.1	595.5	745.9
Not Required	352.8	534.1	682.3	75.2	4,237.1	5,881.5
Total	5,060.2	3,205.8	3,530.2	127.8	6,110.8	18,034.8

*Does not include Program Management and some other miscellaneous costs

than the other Military Components' estimates for this category, because much of the FUDS funding encompasses ordnance and explosives waste, building demolition and debris removal, and potentially responsible party projects, which are not ranked for relative risk.

Planned Funding by Phase for Active Installations and FUDS Properties

By showing how DoD plans to spend its funding on the various phases of environmental restoration, cost-to-complete estimates provide an effective way of anticipating DoD's future progress. The environmental restoration process encompasses several phases within the investigation and cleanup categories. Figure 22 shows that DoD plans to spend most of its funding on constructing remedies (RA-C) and operating remedies (RA-O). DoD plans to decrease funding for investigation activities as more sites move into the cleanup phases. As Figure 23 shows, this is the case for every Military Component.

Figure 22
Active Installation and FUDS Property Budget Year Cost Estimates by Phase Category* (in millions of dollars)

Phase	Cost-to-Complete						
	FY00	FY01	FY02	FY03	FY04	FY05	FY06-Complete
Investigation	294.3	190.0	128.6	127.4	89.6	88.1	797.9
IRA	146.2	143.4	106.5	81.9	71.8	47.5	278.4
Design	52.4	79.1	52.3	34.1	32.4	22.6	223.7
RA-C	411.4	483.8	568.3	553.6	547.4	555.4	6,000.7
RA-O	113.4	108.2	134.8	169.1	187.3	172.6	3,177.4
LTM	57.2	57.8	67.8	84.5	94.7	90.9	1,310.3
Total	1,074.9	1,062.3	1,058.3	1,050.6	1,023.2	977.1	11,788.4

*Does not include Program Management and some other miscellaneous costs

Figure 23
Active Installation and FUDS Property Cost-to-Complete by Phase Category and Component (FY00-Complete)* (in millions of dollars)

Phase	Cost-to-Complete					
	Army	Navy	Air Force	DLA	FUDS	Total
Investigation	267.7	398.4	338.9	4.0	706.9	1,715.9
IRA	62.8	464.8	300.0	-	48.3	875.9
Design	142.4	122.1	48.2	0.5	183.3	496.5
RA-C	2,548.0	1,265.5	631.4	33.3	4,642.4	9,120.6
RA-O	1,290.6	798.2	1,536.7	78.6	358.6	4,062.7
LTM	748.7	156.8	675.0	11.4	171.3	1,763.2
Total	5,060.2	3,205.8	3,530.2	127.8	6,110.8	18,034.8

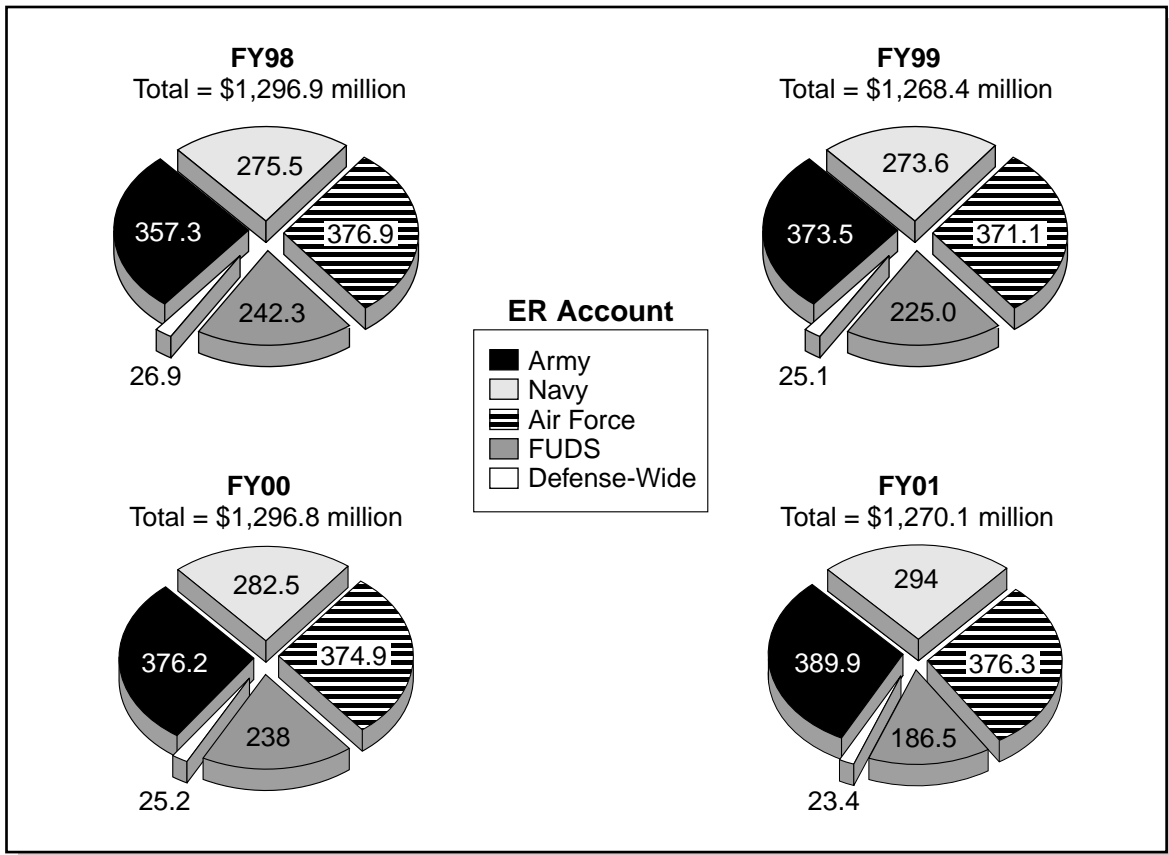
*Does not include Program Management and some other miscellaneous costs

Future Progress

Active Installations and FUDS Funding Profile

The funding profile in Figure 24 shows actual and estimated funding levels for DoD program oversight and the Military Components in FY98, FY99, FY00, and FY01. For FY99, Congress appropriated \$373.5 million for ER, Army; \$273.6 million for ER, Navy; \$371.1 million for ER, Air Force; \$225.0 million for ER, FUDS; and \$25.1 million for ER, Defense-wide, which is predominantly DLA.

Figure 24
Environmental Restoration Funding Profile
for DoD Program Oversight and Military Components
(in millions of dollars)



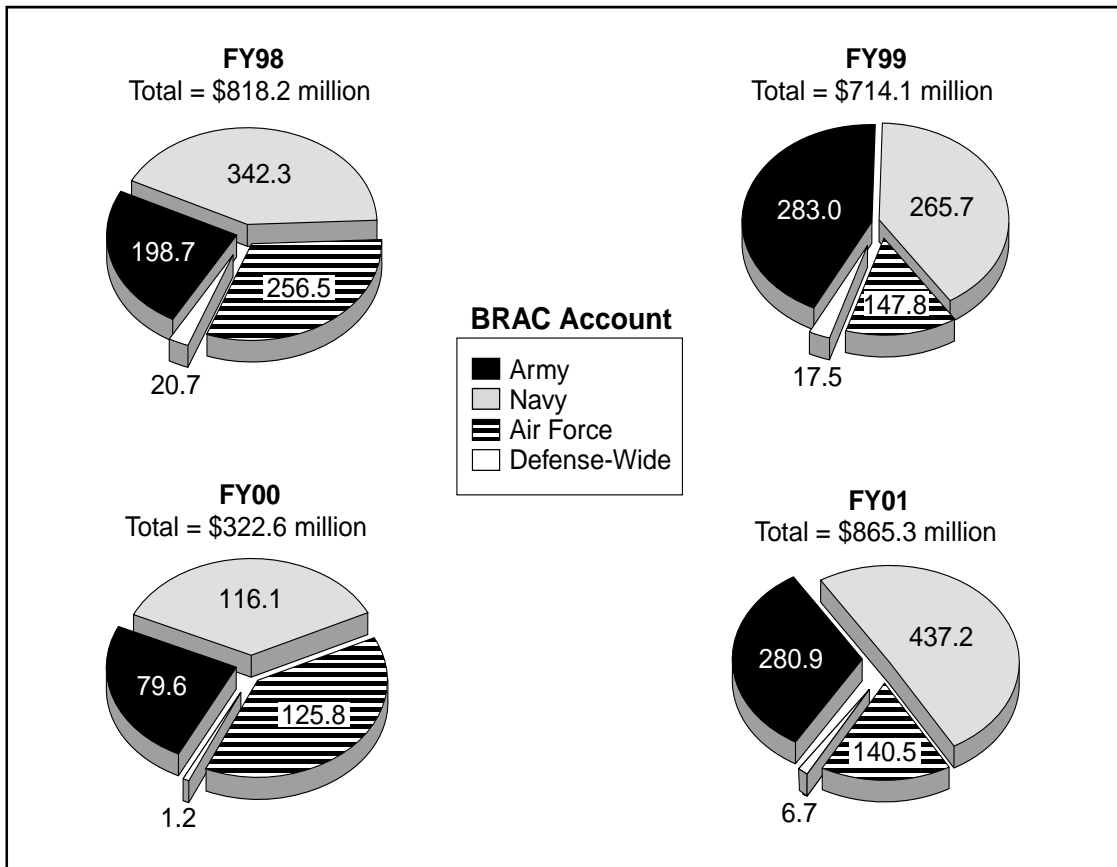
The BRAC Funding Account

The BRAC account provides funding for BRAC environmental activities, including restoration. Congress has authorized four rounds of base realignments and closures, which occurred in 1988, 1991, 1993, and 1995. In addition to funding environmental restoration requirements, the BRAC account funds other BRAC-specific requirements, such as environmental compliance and closure-related requirements.

BRAC Installation Funding Profile

The BRAC environmental funding profile in Figure 25 shows actual and projected total BRAC environmental funding for each Military Component for FY98, FY99, FY00, and FY01. For FY99, Congress appropriated \$283.0 million for Army BRAC; \$265.7 million for Navy BRAC; \$147.8 million for Air Force BRAC; and \$17.5 million for the Defense-wide BRAC account.

Figure 25
BRAC Environmental Funding Profile
for DoD Program Oversight and Military Components
(in millions of dollars)



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Programmatic performance goals, and metrics to measure progress toward these goals, are critical to tracking and achieving successful program completion. By focusing on specific indicators, DoD can effectively direct and plan the environmental restoration program without wasting resources on administrative burdens. We use these indicators to create a picture of the program now and forecast its future, as shown in this chapter. The Military Components and the Office of the Secretary of Defense work together to analyze that collected information and use it to manage the program effectively. Making sure we use resources responsibly and make wise decisions about priorities means that the program receives a thorough review at every level within DoD.