

## Appendix H: Active Installations Environmental Restoration Progress

The Department of Defense (DoD) currently conducts its training and operations on bases called active installations. Under the Defense Environmental Restoration Program (DERP), DoD has conducted environmental restoration activities at 21,513 sites on active installations across all DoD Components through Fiscal Year (FY) 2008. DoD has achieved remedy in place (RIP) or response complete (RC) at 18,488 sites or approximately 86 percent of all sites on active installations.

### Applicable Requirements

Environmental restoration programs executed on active installations are driven by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, commonly referred to as Superfund. CERCLA provides a framework for the identification, investigation, and cleanup of hazardous substances resulting from past practices. While CERCLA was not originally applied at federal facilities, the Superfund Amendments and Reauthorization Act (SARA) of 1986 created the DERP, codified DoD's environmental stewardship responsibilities and established restoration standards for use in the United States and its territories. Additionally, the primary requirement for reporting on environmental restoration activities at active installations is stipulated in 10 United States Code §2706(a) (2), which defines the information to be included in the Defense Environmental Programs Annual Report to Congress.

The September 2001 Management Guidance for the DERP, which provides guidance and procedures on managing the DERP, is one of DoD's internal policies developed to meet these requirements. DoD Instruction 4715.7: Environmental Restoration Program, and the DoD Directive 4715.E: Environment, Safety, and Occupational Health (ESOH) also govern environmental restoration activities at active installations. Objective 3.3 of the 2007 Defense Installations Strategic Plan requires the Department to restore contaminated property to a condition that is protective of human health and the environment. Additional internal requirements governing the cleanup of munitions at active installations include the Management Principles for Implementing Response Actions at Closed, Transferring, and Transferred (CTT) Ranges; the Munitions Response Site Prioritization Protocol (MRSP); and the Quality Assurance Guidance for the MRSP.

### Current Management Practices

These external and internal requirements lay the foundation for DoD's management practices at active installations. The DERP is used to restore environmentally impacted property and pursue restoration activities. To manage the diverse range

of restoration processes, the DERP is divided into three programs: the Installation Restoration Program (IRP), the Military Munitions Response Program (MMRP), and the Building Demolition and Debris Removal (BD/DR) Program.

Established in 1985, the IRP addresses the release of hazardous substances, pollutants, and contaminants resulting from past practices that pose environmental health and safety risks. The MMRP, established in 2001, focuses on safety, environmental, and health hazards from unexploded ordnance, discarded military munitions, and munitions constituents. The BD/DR Program provides for the demolition and removal of unsafe buildings or structures at facilities or sites that meet specified criteria. As a result of the small size of the BD/DR Program, BD/DR sites are included in the IRP site counts. Through the DERP, DoD is systematically mitigating these threats. Through FY2008, DoD has conducted environmental activities at 21,513 sites under the IRP and the MMRP on active installations. Figures H-1 and H-2 illustrate the distribution of IRP sites and munitions response sites (MRSs) by Component, respectively.

IRP sites and MRSs sites at active installations are funded through five environmental restoration (ER) accounts, one for each Component and one DoD-wide, each managed by its respective Component. Funding is allocated through a “worst first” approach, where sites with significant hazards are given priority over those that pose a lesser risk. To ensure funding is allocated to maximize risk reduction DoD developed two priority tools to determine the risk posed by each site relative to other sites in its inventory. The Relative Risk Site Evaluation is used to prioritize IRP sites, and the MRSPP is applied to prioritize MRSs. The Components began to report results from the application of the MRSPP in FY2007. Appendix G: Restoration Budget Overview provides additional information on cleanup funds.

A number of formal and informal work groups help assess IRP and MMRP progress and evaluate metrics that measure program success. Support of the IRP is provided by the DERP Cleanup Committee, the DERP Management Guidance Work Group, the Environmental Liabilities Work Group, and the Defense State Memorandum of Agreement

Work Group. Support of the MMRP is provided by the MRSPP Work Group, the State-led Munitions Response Forum, the Defense Science Board Task Force on Unexploded Ordnance, the Munitions and Explosives of Concern Hazard Assessment Work Group, and the Operational and Environmental Executive Steering Committee for Munitions. Membership to these work groups may include representatives from DoD, the States, and other federal agencies.

**Performance Evaluation Criteria**

DoD monitors DERP progress by environmental restoration phase (e.g., investigation, cleanup) and risk category, demonstrating program progress as sites move from investigation through the cleanup phase to completion of all restoration requirements. DoD has developed comprehensive program goals and performance metrics to directly measure program success. Several milestones are used, most notably RIP, which indicates that remedial action is operating at a site, and RC, which demonstrates that all cleanup objectives are complete. DoD examines both progress to date and projections of future progress when evaluating program success.

The Department also measures DERP progress through program cost-to-complete (CTC) estimates, or estimations of anticipated funds necessary to complete restoration requirements at IRP sites and MRSs. CTC estimates are derived from site-level funding information during the budgeting process. They provide the most accurate picture of the anticipated cost of addressing future restoration requirements. The Department values CTC estimates as an important oversight and program management tool to ensure that the most cost-effective cleanup strategies are implemented at active installations. The total CTC for the DERP will continue to decline as IRP sites and MRSs move through the cleanup phases and achieve their program goals.

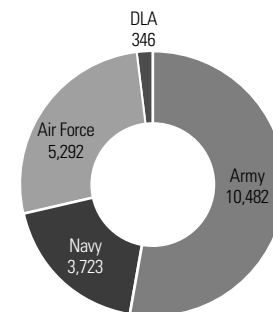
DoD has set the following IRP and MMRP goals for active installations:

- ▶ Reduce risk or achieve RIP/RC at all medium relative risk IRP sites by the end of FY2011

- ▶ Reduce risk or achieve RIP/RC at all low relative risk sites by the end of FY2014
- ▶ Complete site inspections (SIs) at all MRSs by the end of FY2010
- ▶ Achieve RIP/RC at all MRSs by the end of FY2020.

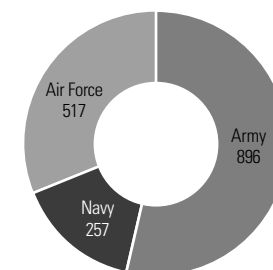
While DoD did not achieve RIP/RC at all high relative risk sites by the end of FY2007, it is working aggressively to achieve the risk reduction goal at the remaining sites, which generally pose significant challenges due to their complexity. By FY2008, only 287, or 7 percent, of the 4,091 high relative risk sites identified to date had not achieved RIP/RC. In FY2008, DoD had completed preliminary assessments (PAs) at 95 percent of MRSs, with only a few sites not meeting the FY2007 goal to complete PAs at all MRSs. By the end of FY2008, DoD completed SIs at 51 percent of MRSs and achieved RIP/RC at 34 percent MRSs, showing progress toward its future MMRP goals.

**Figure H-1** Number of IRP sites at Active Installations



**Total Sites: 19,843**

**Figure H-2** Number of MRSs at Active Installations



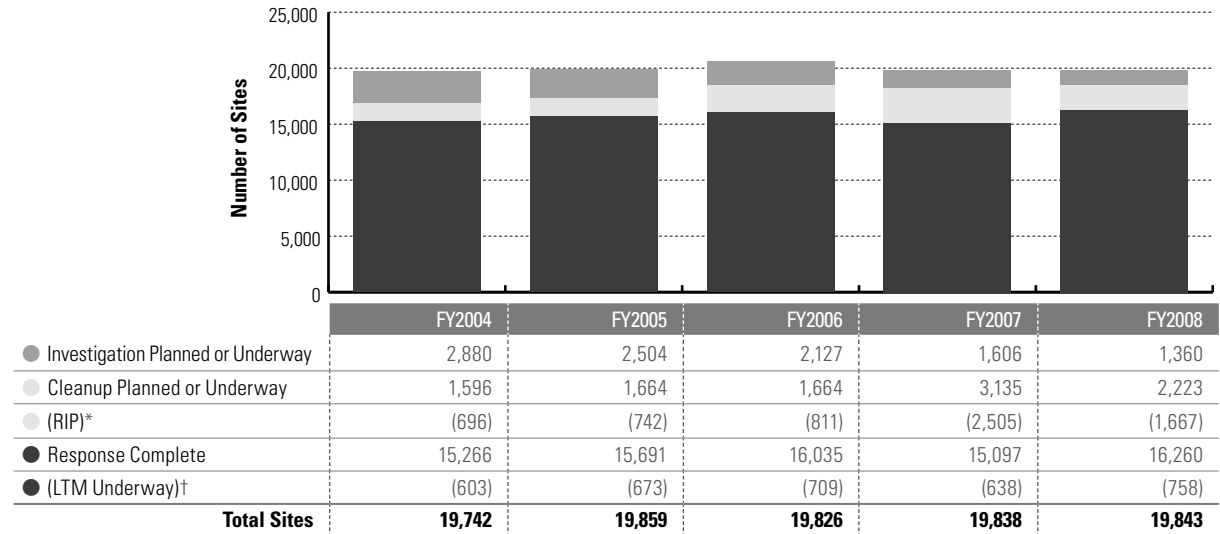
**Total Sites: 1,670**

## DoD

Figure H-3 illustrates DoD's IRP site status at active installations by cleanup phase from FY2004 through FY2008. Since FY2004, sites have consistently completed investigation activities and proceeded to the cleanup phase and RC milestone. From FY2004 to FY2008, sites in the investigation phase decreased by 53 percent. The number of IRP sites in cleanup decreased from 3,135 sites in FY2007 to 2,223 sites in FY2008. As expected, this was accompanied by an influx in RC sites, which increased by 1,163 sites in FY2008.

Figure H-4 illustrates DoD's progress in identifying new MRSs and achieving the RC milestone. New sites are identified as DoD continues to better characterize sites through preliminary assessments and investigations. While many of these sites remain in the investigation phase, the number of MRSs at active installations with cleanup planned or underway increased by 53 percent in FY2008. At the same time, the number of MRSs in RC increased by 63 percent. Since FY2004, sites achieving RC have grown nearly fivefold.

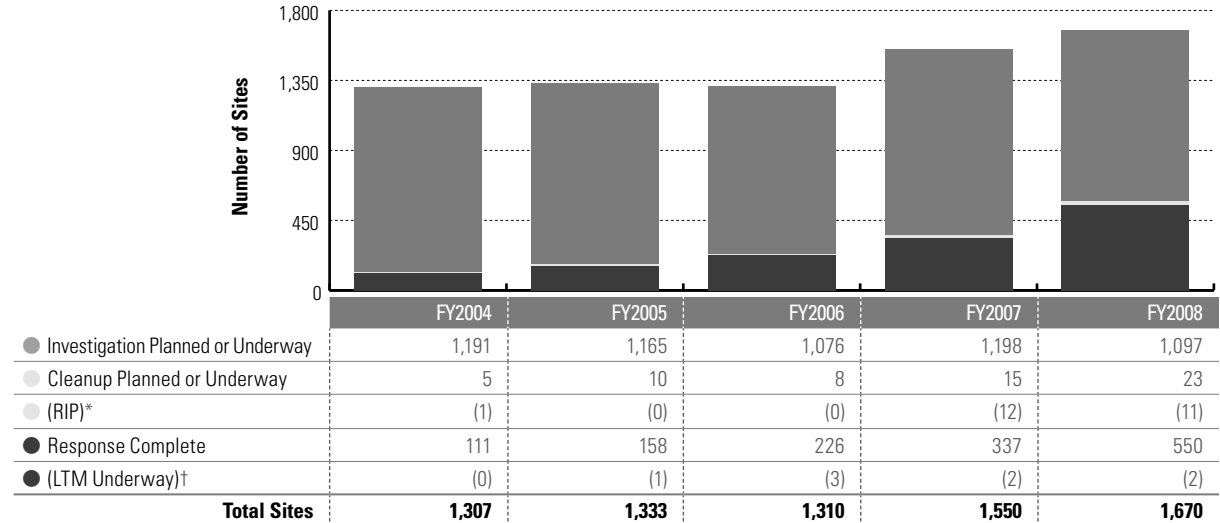
**Figure H-3** DoD IRP Site Status at Active Installations by Cleanup Phase



\* RIP is a subset of Cleanup Planned or Underway.

† LTM is a subset of Response Complete.

**Figure H-4** DoD MRS Status at Active Installations by Cleanup Phase

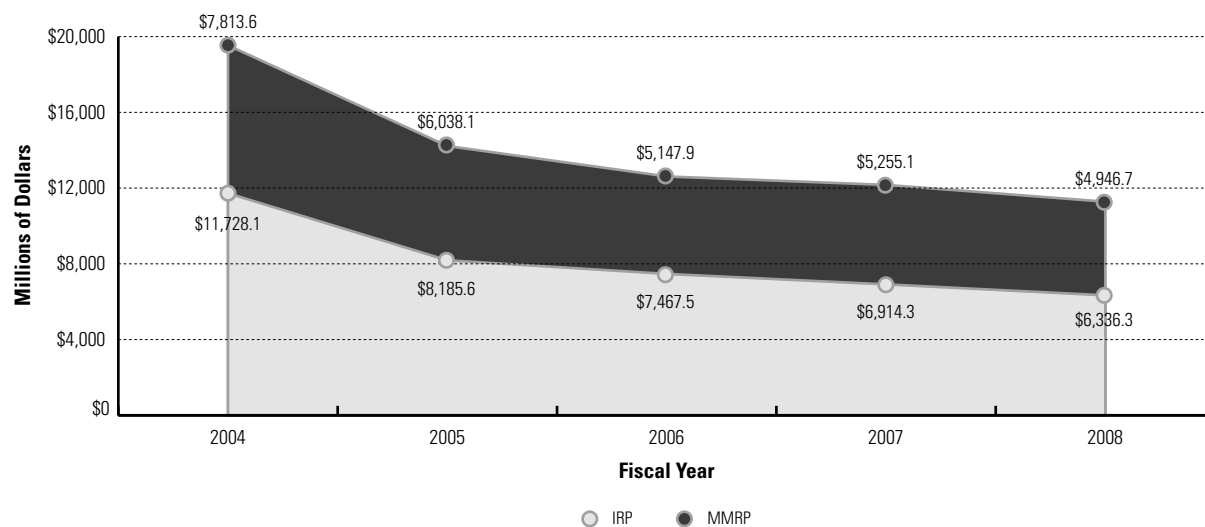


\* RIP is a subset of Cleanup Planned or Underway.

† LTM is a subset of Response Complete.

At active installations in FY2008, DoD estimated cost-to-complete (CTC) efforts at IRP sites at \$6.3 billion, and MRSs at \$4.9 billion, as illustrated in Figure H-5. DoD's IRP CTC estimate has decreased by 46 percent since FY2004. Similarly, DoD's MMRP CTC estimate has decreased by 37 percent since FY2004. Despite a slight increase in DoD's MMRP CTC estimate in FY2007, the downward trend in both IRP and MMRP CTC estimates exhibits DoD's success in moving sites through the cleanup phases, achieving RC.

Figure H-5 DoD IRP and MMRP CTC estimates at Active Installations\*



\* Funding represents site-level data and does not include management and support costs not directly attributable to specific sites.

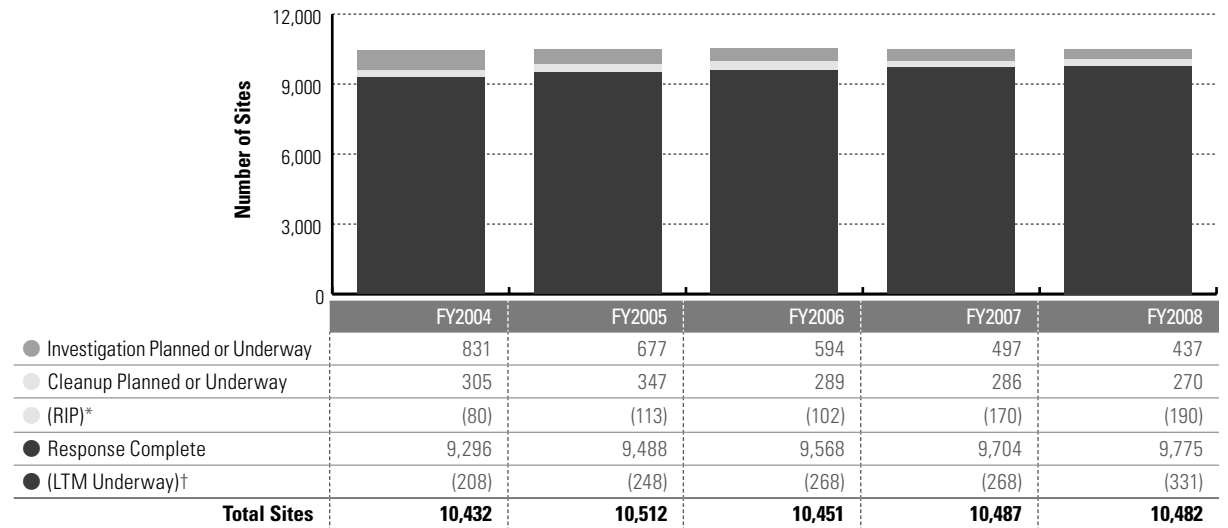
## Army

The Army continues to identify the most efficient and cost-effective strategies for achieving program completion, while making progress in the successful cleanup of sites and ensuring that land is best able to support the Army's mission at active installations.

Since FY2004, a large percentage of active IRP sites have achieved RC, reducing investigation requirements and edging sites toward completion. Figure H-6 illustrates the Army's IRP site status by cleanup phase from FY2004 through FY2008. IRP sites in the investigation phase fell from 8 percent in FY2004 to 4 percent in FY2008. As investigation activities dropped in favor of cleanup, sites at RC increased from 89 percent in FY2004 to 93 percent in FY2008.

Under the MMRP, the Army has identified 896 MRSs through FY2008. As shown in Figure H-7, the Army has progressed MRSs out of the investigation phase, to achieve RC. In FY2004, only 6 percent of sites had reached RC. As of FY2008, 384 sites, or 43 percent of all MRSs, had achieved RC. Conversely, 93 percent of MRSs were in the investigation phase in FY2004. This number decreased each year to 57 percent in FY2008.

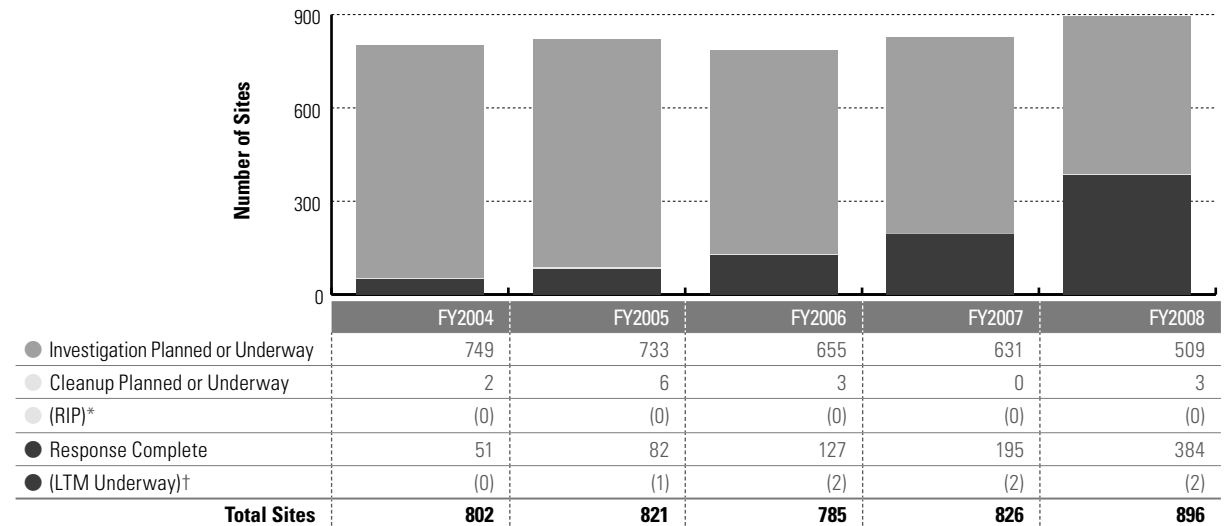
**Figure H-6** Army IRP Site Status at Active Installations by Cleanup Phase



\* RIP is a subset of Cleanup Planned or Underway.

† LTM is a subset of Response Complete.

**Figure H-7** Army MRS Status at Active Installations by Cleanup Phase

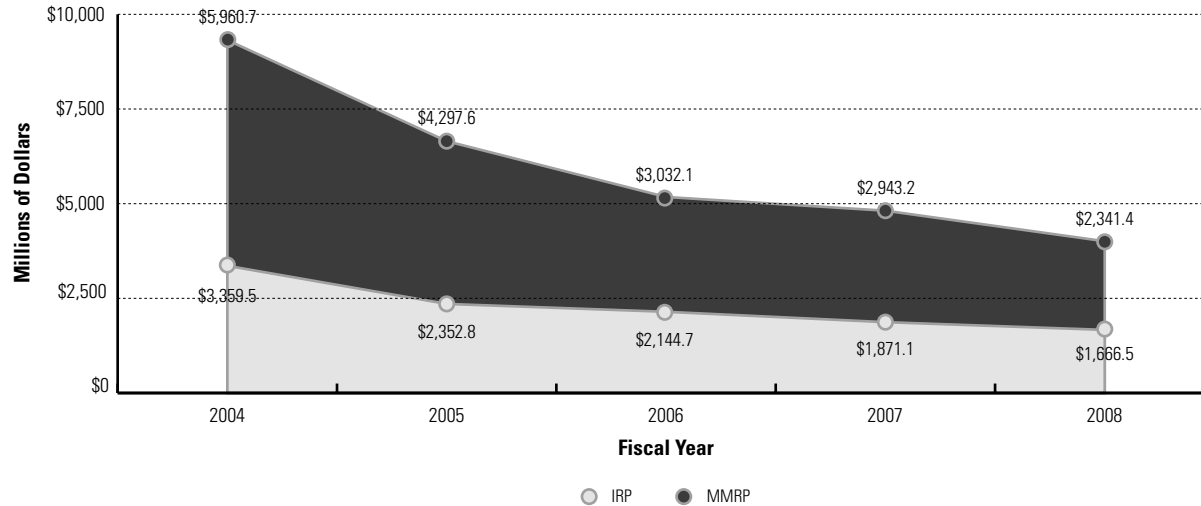


\* RIP is a subset of Cleanup Planned or Underway.

† LTM is a subset of Response Complete.

At active installations in FY2008, the Army estimated CTC efforts at IRP sites at \$1.7 billion and MRSs at \$2.3 billion, as illustrated in Figure H-8. The Army's IRP CTC estimate has decreased 50 percent since FY2004. Similarly, the Army's MMRP CTC estimate has decreased by 61 percent during the same period. As the Army continues to make progress moving sites through the cleanup phases, CTC estimates will likely continue to decline.

Figure H-8 Army IRP and MMRP CTC estimates at Active Installations\*



\* Funding represents site-level data and does not include management and support costs not directly attributable to specific sites.

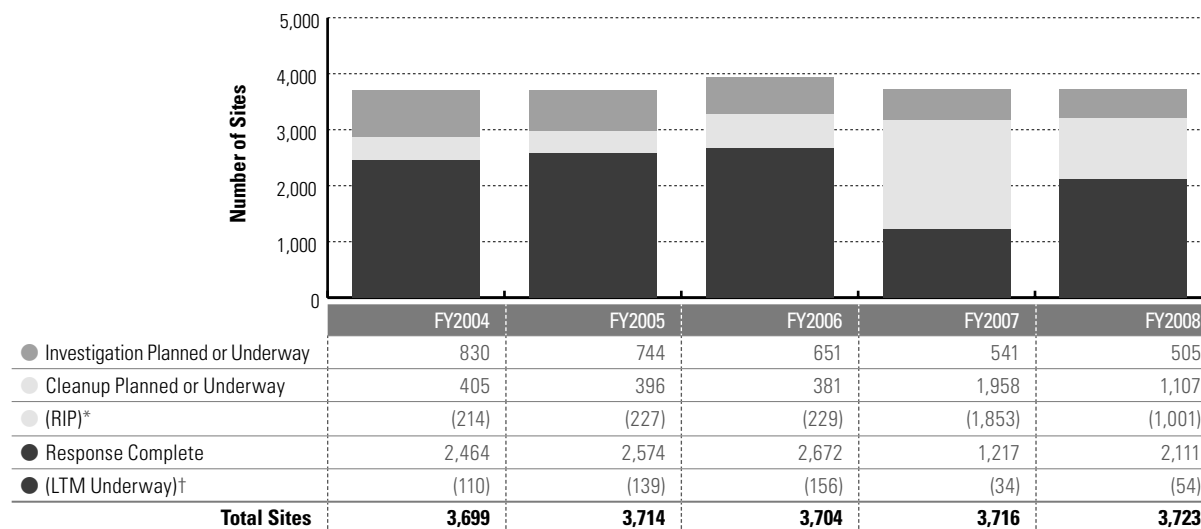
## Navy and Marine Corps

The Department of the Navy's (DON's) Environmental Restoration Program, which addresses cleanup activities at Navy and Marine Corps installations, is focused on moving sites through the appropriate environmental restoration phases to complete all cleanup requirements.

Figure H-9 shows DON's IRP site status at active installations by cleanup phase. To date, DON has identified 3,723 active IRP sites, approximately 84 percent of which have reached RIP/RC. In FY2007, the DON reclassified a number of RC sites as RIP due to a requirement to provide documentation to regulators in order to classify sites as RC. The DON completed many response actions, and provided the necessary documentation for these sites in FY2008, increasing the number of RC sites by 894.

Under the MMRP, the DON has identified 257 MRSs through FY2008. As illustrated in Figure H-10, DON has moved sites from the investigation and cleanup phases to RC. In FY2004, only 4 percent of sites had attained RIP/RC. As of FY2008, 54 sites, or 21 percent of all MRSs, had reached RIP/RC. Conversely, 95 percent of MRSs were in the investigation phase in FY2004. In FY2008, 77 percent of MRSs remained under investigation.

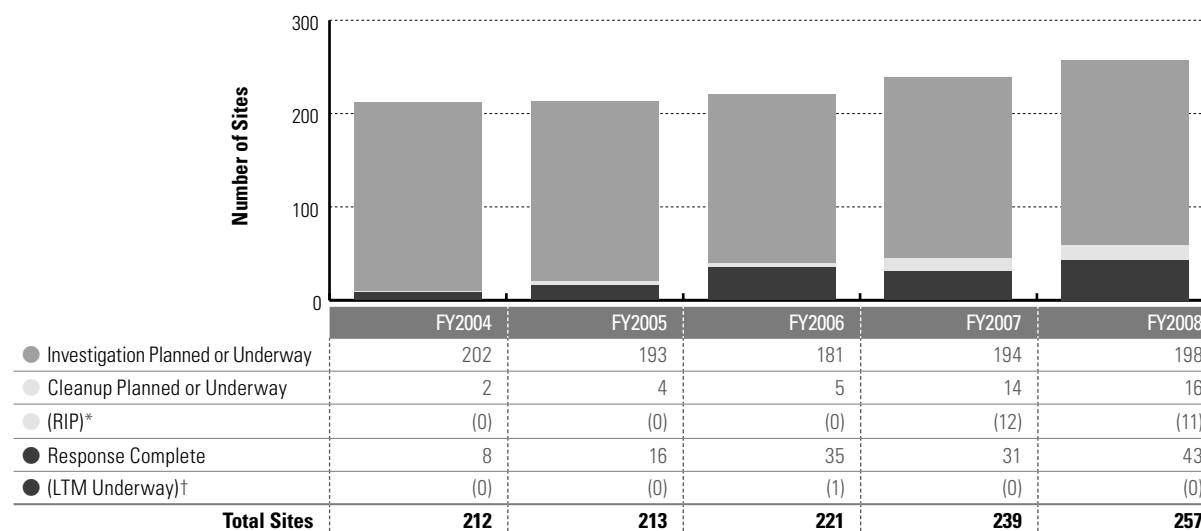
**Figure H-9** Navy and Marine Corps IRP Site Status at Active Installations by Cleanup Phase



\* RIP is a subset of Cleanup Planned or Underway.

† LTM is a subset of Response Complete.

**Figure H-10** Navy and Marine Corps MRS Status at Active Installations by Cleanup Phase

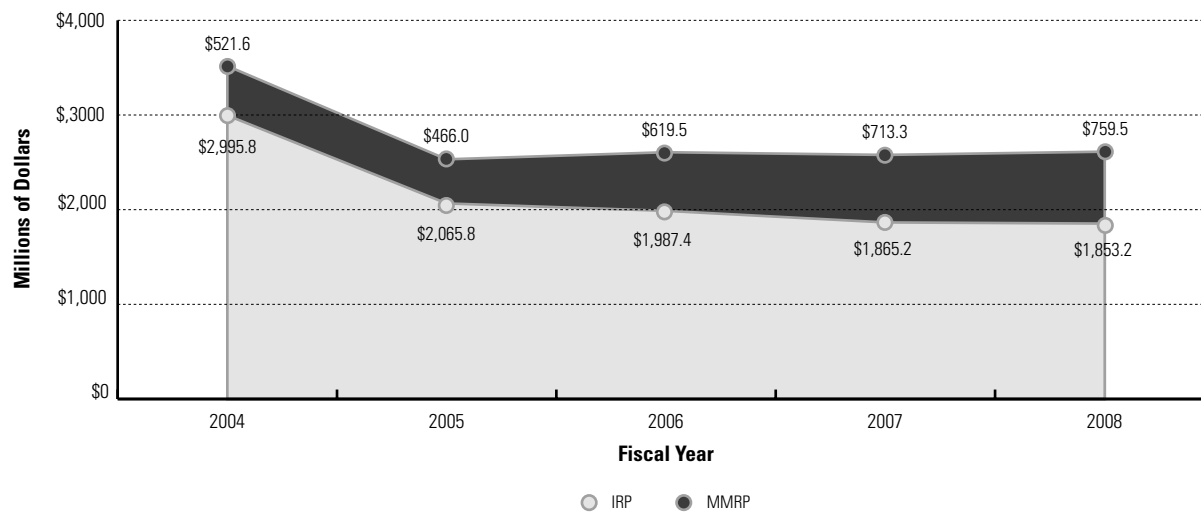


\* RIP is a subset of Cleanup Planned or Underway.

† LTM is a subset of Response Complete.

At active installations in FY2008, the DON estimated CTC efforts at IRP sites at \$1.9 billion and MRSs at \$759.5 million, as illustrated in Figure H-11. DON's IRP CTC estimate has decreased by 38 percent since FY2004, demonstrating DON's decrease in funding required to move sites through cleanup phases. In contrast, DON's MMRP CTC has increased 65 percent since FY2004 as new MRSs are continuously identified.

Figure H-11 Navy and Marine Corps IRP and MMRP CTC estimates at Active Installations\*



\* Funding represents site-level data and does not include management and support costs not directly attributable to specific sites.



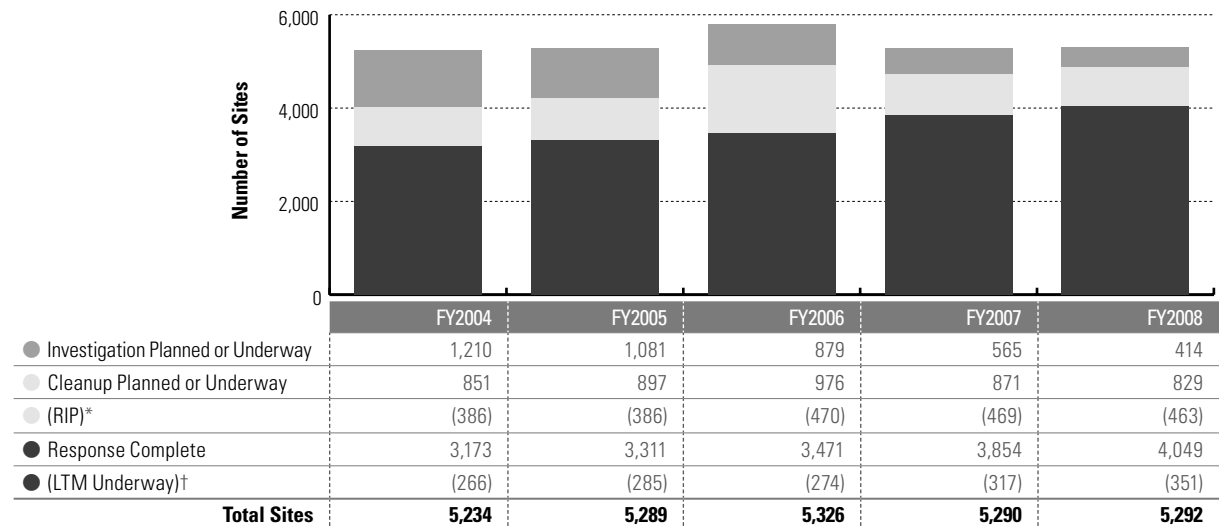
## Air Force

In FY2008, the Air Force continued to progress toward accomplishing program goals under the IRP and MMRP.

Figure H-12 illustrates the Air Force's IRP site status at active installations by cleanup phase. The Air Force has demonstrated progress from FY2004 to FY2008, as sites in investigation decreased while sites at RC increased. From FY2004 to FY2008, the Air Force completed investigations and increased the number of sites at RIP. Simultaneously, sites at RC steadily increased between FY2004 and FY2008 from 61 percent to 77 percent of the total IRP sites, respectively.

The Air Force also continues to identify and respond to MRSs at its active installations. As illustrated in Figure H-13, the Air Force had identified 517 MRSs by FY2008, 24 percent of which had achieved RC. As a result of the large increase in MRSs identified in FY2007, 75 percent of sites had investigations planned or underway in FY2008.

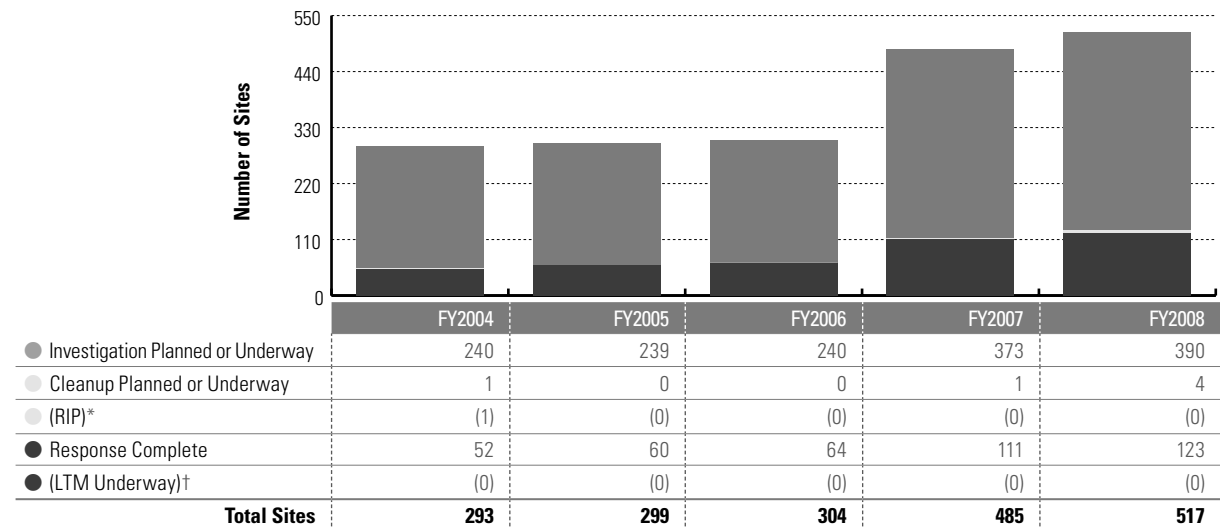
**Figure H-12** Air Force IRP Site Status at Active Installations by Cleanup Phase



\* RIP is a subset of Cleanup Planned or Underway.

† LTM is a subset of Response Complete.

**Figure H-13** Air Force MRS Status at Active Installations by Cleanup Phase

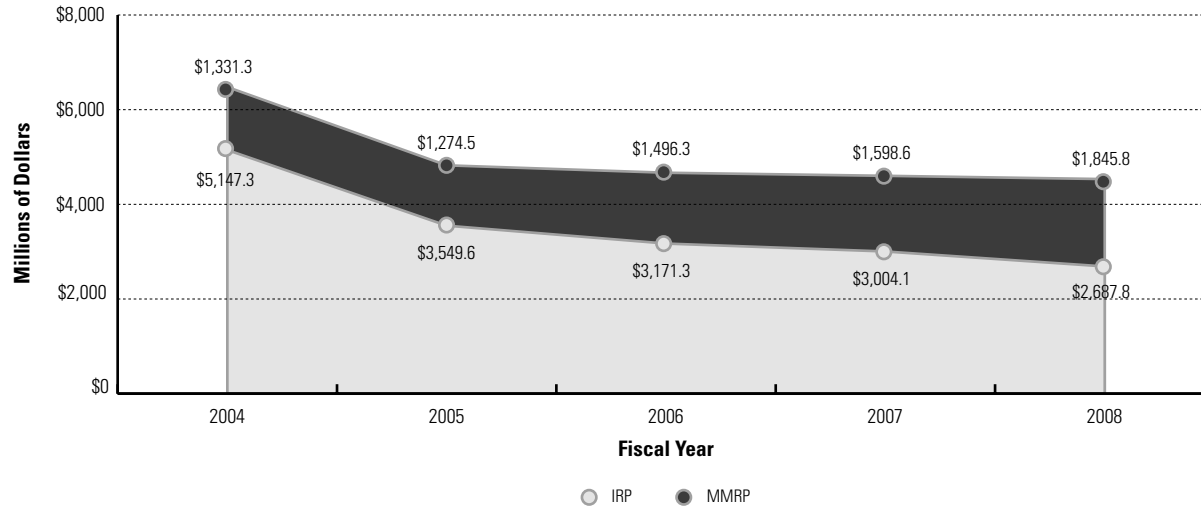


\* RIP is a subset of Cleanup Planned or Underway.

† LTM is a subset of Response Complete.

At active installations in FY2008, the Air Force's estimated CTC efforts at IRP sites at \$2.7 billion and MRSs at \$1.8 billion, as illustrated in Figure H-14. CTC estimates at the Air Force's IRP sites have consistently decreased during the last five fiscal years, down 48 percent since FY2004. In contrast, the Air Force's MMRP CTC estimate has steadily increased, up 39 percent since FY2004, due to cost estimate changes and newly discovered sites based on data collected during this time.

Figure H-14 Air Force IRP and MMRP CTC estimates at Active Installations\*



\* Funding represents site-level data and does not include management and support costs not directly attributable to specific sites.

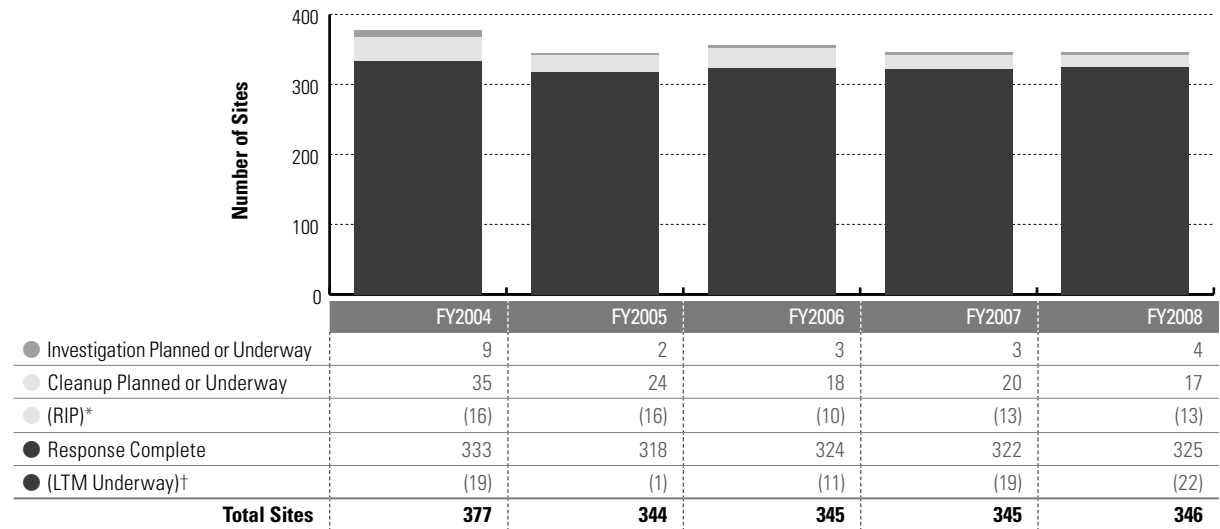
## DLA

The Defense Logistics Agency (DLA) is committed to remaining a DoD leader in environmental restoration, and will continue to manage a successful environmental restoration program until cleanup actions at all DLA sites are completed. In FY2008, DLA demonstrated restoration program progress, and thereby decreased the overall risk to human health and the environment.

By FY2008, DLA had identified 346 IRP sites at active installations, as illustrated by Figure H-15. DLA demonstrated progress with three sites completing cleanup activities, achieving RC. As of FY2008, DLA reached RC at 94 percent of its IRP sites. To date, DLA has not identified any MRSs.

At active installations in FY2008, DLA estimated CTC efforts at IRP sites at \$128.9 million, as illustrated in Figure H-16. Despite a slight increase from FY2006 to FY2007, DLA's IRP CTC estimate has steadily decreased over the last five FYs. Since FY2004, DLA's CTC estimate decreased by 43 percent, demonstrating progress as sites require less funding to achieve RC.

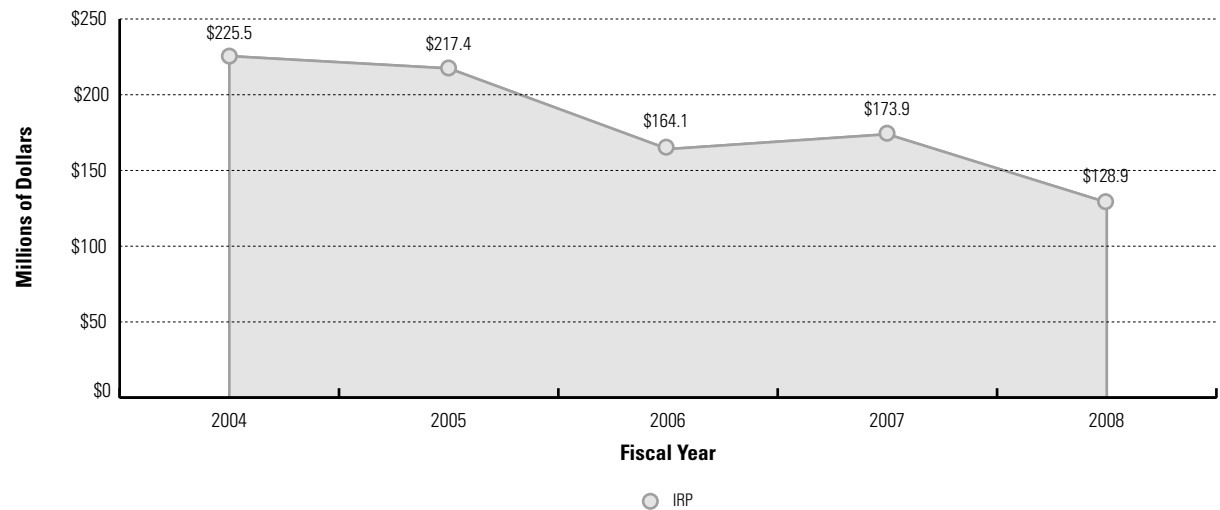
**Figure H-15** DLA IRP Site Status at Active Installations by Cleanup Phase



\* RIP is a subset of Cleanup Planned or Underway.

† LTM is a subset of Response Complete.

**Figure H-16** DLA IRP CTC estimates at Active Installations\*



\* Funding represents site-level data and does not include management and support costs not directly attributable to specific sites.