

April 2010

MILITARY  
MUNITIONS  
RESPONSE  
PROGRAM

Opportunities Exist to  
Improve Program  
Management



GAO

Accountability \* Integrity \* Reliability



Highlights of [GAO-10-384](#), a report to congressional committees

## Why GAO Did This Study

The Department of Defense (DOD) established the military munitions response program (MMRP) in 2001 to clean up sites known to be or suspected of being contaminated with military munitions and related hazardous substances. Cleanup of sites on active and base realignment and closure installations is the responsibility of the military service—Air Force, Army, Navy, or Marine Corps—that currently controls the land, and the Army has delegated execution of cleanup of formerly used defense sites (FUDS) to the U.S. Army Corps of Engineers (Corps). GAO was mandated to assess the (1) MMRP staffing and funding levels; (2) progress DOD has made in cleaning up munitions response sites; (3) extent to which DOD has established MMRP performance goals; and (4) extent to which DOD collects data on factors influencing project duration, as well as the accuracy of its cleanup cost estimates. GAO analyzed MMRP data and DOD documents and interviewed officials from DOD, the military services, and the Corps.

## What GAO Recommends

GAO recommends that Congress consider requiring DOD to report separately on sites where response is complete because they needed no cleanup, and that DOD issue guidance on how factors other than relative risk should be considered in munitions response site sequencing decisions, and set FUDS performance goals as required by law. DOD partially agreed with the recommendations but not with the matter for congressional consideration.

View [GAO-10-384](#) or [key components](#). For more information, contact Anu Mittal at (202) 512-3841 or [mittala@gao.gov](mailto:mittala@gao.gov).

# MILITARY MUNITIONS RESPONSE PROGRAM

## Opportunities Exist to Improve Program Management

### What GAO Found

The military services and the Corps do not track the time that staff work on MMRP activities separately from the time they spend on another environmental restoration program—the Installation Restoration Program (IRP). Consequently, it is not possible to determine the staffing levels for the MMRP. In addition, obligated funds for the MMRP increased from \$95 million in fiscal year 2002 to approximately \$284 million in fiscal year 2008, and the military services and the Corps directed 11 percent of their total MMRP and IRP environmental restoration funds to the MMRP during the period—a total of about \$1.2 billion to the MMRP compared with \$9.7 billion to the IRP.

DOD reported to Congress that it had completed its cleanup response for 1,318 of its 3,674 sites by the end of fiscal year 2008; however, for 1,234 of these sites, DOD's response was an investigation that determined cleanup was not necessary. The remaining 84 sites were cleaned up because of such factors as imminent danger to public safety and pressing military mission and land reuse needs. In addition, the military services and the Corps are still in the process of gathering information necessary to prioritize most sites in the MMRP inventory for cleanup. When this process is complete, the military services and the Corps will consider this information along with other factors, such as land reuse plans, to determine which sites to clean up first. However, DOD has not issued guidance on how factors other than risk should be considered when making decisions about which sites to sequence first for cleanup, and the Air Force, the Army, and the Corps have begun to independently develop their own approaches. Using varying approaches could lead to inconsistent sequencing decisions.

DOD has not yet established a performance goal for implementing the cleanup remedy (referred to as “remedy in place”) or achieving the cleanup objective (referred to as “response complete”) at munitions response sites located on FUDS, as required by the fiscal year 2007 National Defense Authorization Act. The act also directs DOD to report on interim goals it determines feasible for achieving the performance goals, but DOD has not yet done so. Performance goals are important because they are used to track progress toward cleaning up munitions response sites. By establishing goals, DOD would have better information with which to measure MMRP progress.

DOD gathers data on two of the factors—site size and type of hazard—that can influence project duration at military munitions response sites. As would be expected, these data indicate that the larger the munitions response site and the more complex the type of hazard, the longer it takes to clean up the site. In addition, because data on funds obligated to complete specific phases of the cleanup process are not included in DOD's database for many munitions response sites, it is not possible to assess the accuracy of the military services' and the Corps' cost estimates for the MMRP.

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## Abbreviations

BRAC	base realignment and closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
Corps	U.S. Army Corps of Engineers
DOD	Department of Defense
FUDS	formerly used defense sites
IRP	Installation Restoration Program
MMRP	Military Munitions Response Program

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United States Government Accountability Office  
Washington, DC 20548

April 9, 2010

The Honorable Carl Levin  
Chairman  
The Honorable John McCain  
Ranking Member  
Committee on Armed Services  
United States Senate

The Honorable Ike Skelton  
Chairman  
The Honorable Howard P. McKeon  
Ranking Member  
Committee on Armed Services  
House of Representatives

The Department of Defense (DOD) has identified over 3,600 sites known to be, or suspected of being, contaminated with military munitions from training and other activities. These sites can pose risks to human health and the environment. Military munitions include unexploded ordnance (explosives that were fired but did not detonate as planned), discarded military munitions (munitions that were abandoned without proper disposal), and munitions constituents (propellants or other materials originating from munitions).<sup>1</sup> Sites that contain munitions (other than operational ranges) that require a response from DOD are known as munitions response sites. These sites are located on active installations, base realignment and closure (BRAC) installations, and formerly used defense sites (FUDS) across the country. About half of the land on which munitions response sites are located has been or will be converted to nonmilitary uses, which may include residential or commercial development and recreation, according to DOD officials.

Under its Defense Environmental Restoration Program, DOD identifies, investigates, and cleans up contamination from hazardous substances, pollutants, and contaminants including military munitions at active, BRAC, and FUDS locations that were contaminated while under DOD's

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<sup>1</sup>For complete definitions, see 10 U.S.C. §§ 2710(e)(2)-(3), 101(e)(5) (2010).

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jurisdiction.<sup>2</sup> To carry out activities under the Defense Environmental Restoration Program, over time DOD has established three programs, including the Installation Restoration Program (IRP) and the Military Munitions Response Program (MMRP).<sup>3</sup> Specifically, in 1985, DOD established the IRP to address the release of hazardous substances and other contamination, and most of DOD's environmental remediation work to date has been conducted under this program. In 2001, DOD established the MMRP, which focuses on remediating unexploded ordnance, discarded military munitions, and munitions constituents on munitions response sites. Cleanup of munitions response sites on active and BRAC installations is the responsibility of the military service—Air Force, Army, or Navy<sup>4</sup>—that currently controls the land, and cleanup of FUDS sites is the responsibility of the U.S. Army Corps of Engineers (Corps).<sup>5</sup> While DOD has overall responsibility for the MMRP, it allows each of the military services and the Corps to implement and manage their own munitions response programs, including determining how best to organize their programs, set program and funding priorities, and track management information, in accordance with DOD policies and guidance.

The National Defense Authorization Act for fiscal year 2009 mandated that we review and report to Congress by October 14, 2009, on various aspects of DOD's organization, operation, and management of the MMRP.<sup>6</sup> We briefed the staffs of the Senate and House Committees on Armed Services on October 14, 2009. We are following up with this report, which provides

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<sup>2</sup>To be eligible for FUDS cleanup under the Installation Restoration Program and the Military Munitions Response Program, according to the Defense Environmental Restoration Program Management Guidance (2001) and FUDS program policy, a property must have been under the jurisdiction of DOD and owned by, leased to, or otherwise possessed by the United States at the time of actions leading to contamination by hazardous substances prior to October 17, 1986. This jurisdiction extends to governmental entities that are the legal predecessors of DOD or the components—Army, Navy and Marine Corps, Air Force, and the Defense Logistics Agency.

<sup>3</sup>DOD also operates the much smaller Building Demolition/Debris Removal Program to address the demolition and removal of unsafe buildings or structures at facilities or sites that meet specified criteria.

<sup>4</sup>The Department of the Navy implements the MMRP at both Navy and Marine Corps munitions response sites.

<sup>5</sup>The Army is the executive agent for the FUDS program but has delegated day-to-day program management and execution responsibilities to the U.S. Army Corps of Engineers.

<sup>6</sup>Duncan Hunter National Defense Authorization Act for Fiscal Year 2009, Pub. L. No. 110-417, § 345, 122 Stat. 4425 (2008).

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more detail on the topics covered in the briefing. As agreed with your offices, this report assesses the (1) MMRP staffing and funding levels; (2) progress DOD has made in cleaning up munitions response sites; (3) extent to which DOD has established MMRP performance goals; and (4) extent to which DOD collects data on factors influencing project duration, as well as the accuracy of DOD's cleanup cost estimates.

In addressing these objectives, we reviewed each of the individual MMRPs as implemented by the Air Force, Army, Navy, and the Corps at active and BRAC installations and FUDS. We analyzed MMRP funding data, as well as data in DOD's environmental programs management database—known as the Knowledge-Based Corporate Reporting System—which includes relative priority scores, project duration, and cost estimates. We reviewed key documents, such as DOD's *Defense Environmental Programs Annual Report to Congress*, which includes information on program performance goals, and the Munitions Response Site Prioritization Protocol that is used to assign a relative priority to sites in order to prioritize sites for cleanup. We visited one BRAC installation (Fort Ord), one active installation (Beale Air Force Base), and one FUDS (Camp Beale) to ensure we had the opportunity to review various types of MMRP activities at active and BRAC installations, as well as FUDS. We met with and obtained information and data needed for our review from a key senior DOD official responsible for the MMRP within DOD's Office of the Deputy Under Secretary of Defense (Installations and Environment); and we interviewed senior officials from the Army, Air Force, Navy, and the Corps. We also interviewed headquarters and regional officials from the Environmental Protection Agency to discuss the MMRP.

We assessed the reliability of data for certain variables related to our objectives in DOD's Knowledge-Based Corporate Reporting System, by electronically testing for obvious errors in accuracy and completeness, reviewing information about the data and the system that produced them, and interviewing agency officials knowledgeable about the data. When we found inconsistencies in the data, we worked with DOD officials to clarify them before conducting our analyses. We determined that the data were sufficiently reliable for the purposes of providing basic descriptive information about the MMRP and for analyzing the duration of phases of the cleanup process. However, we found data on funds obligated for cleanup to be incomplete and therefore not suitable for analysis. We discuss this data reliability problem in more detail later in the report. We conducted this performance audit from January 2009 to April 2010 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient,

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appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. Appendix I provides additional detail on our scope and methodology.

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## Background

The National Defense Authorization Act for fiscal year 2002 requires DOD to develop and maintain an inventory of defense sites known or suspected to contain unexploded ordnance, discarded military munitions, or munitions constituents and to annually update the inventory and list prioritizing these sites for cleanup.<sup>7</sup> Figure 1 shows an example of unexploded ordnance found at a munitions response site on Beale Air Force Base in 2008.

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<sup>7</sup>Pub. L. No. 107-107 §§ 311(a), (c) (2001); 10 U.S.C. § 2710 (2010).



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**Figure 1: Unexploded Ordnance Found at a Munitions Response Site**



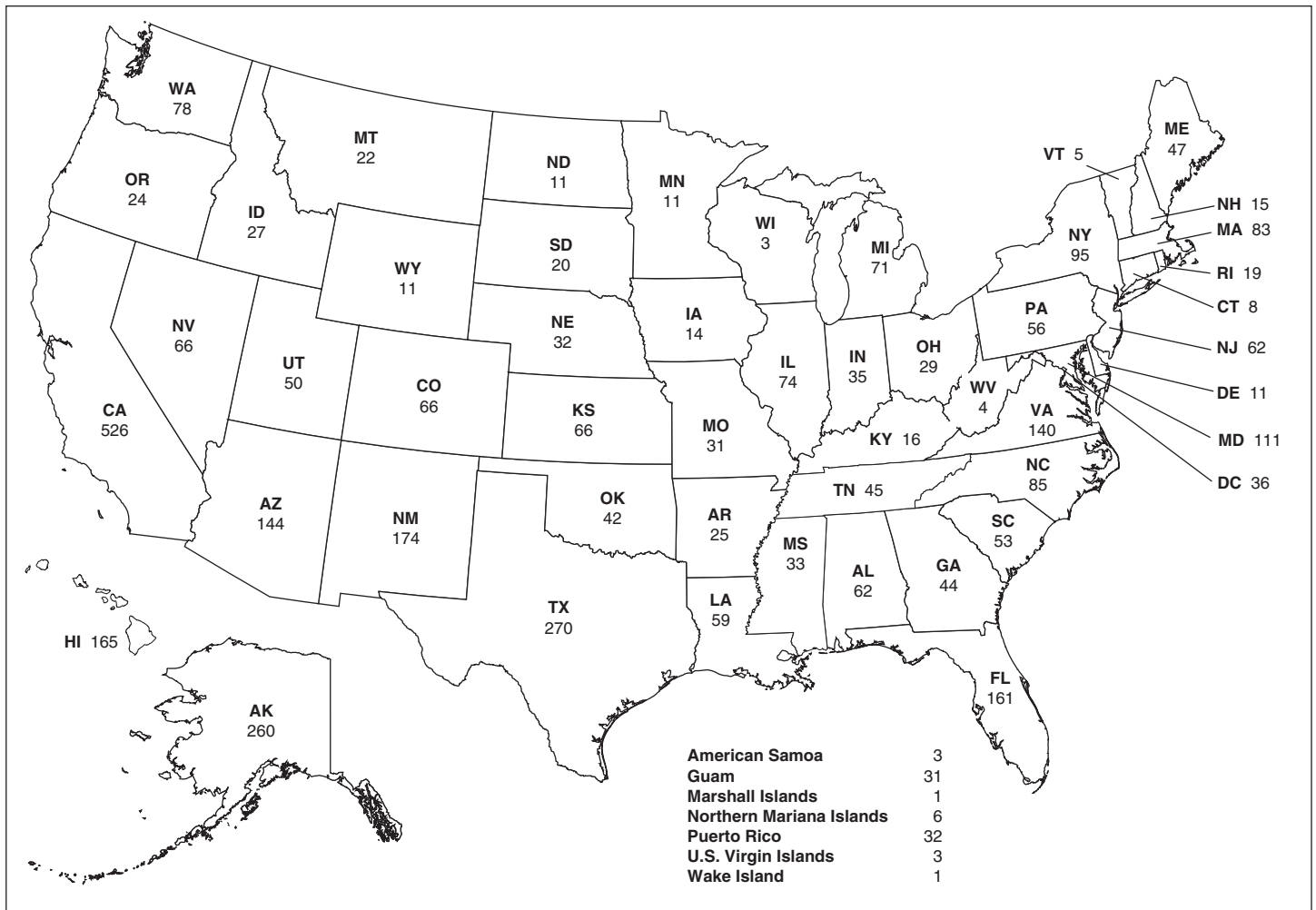
Source: Air Force.

As of fiscal year 2008, DOD had identified 3,674 munitions response sites in the United States and its territories and outlying areas.<sup>8</sup> Figure 2 shows the number of sites in each state and in United States territories and outlying areas.

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<sup>8</sup>American Samoa, Guam, Puerto Rico, the U.S. Virgin Islands, the Commonwealth of the Northern Mariana Islands, and Wake Island are all U.S. territories. The Marshall Islands is associated with the United States through a Compact of Free Association.

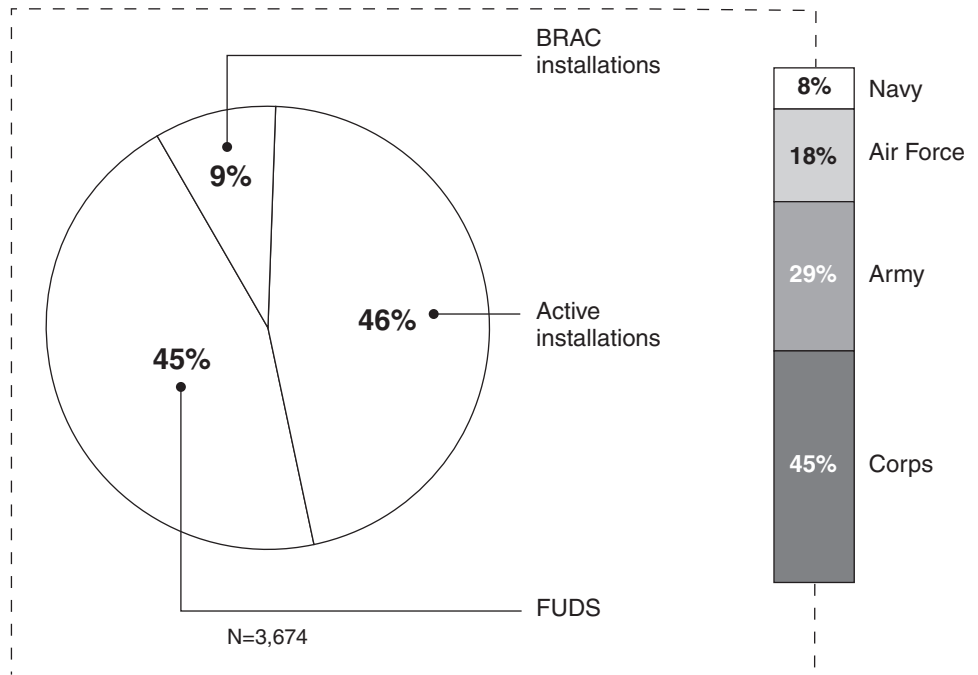
**Figure 2: Location and Number of Munitions Response Sites, as of Fiscal Year 2008**



Source: GAO analysis of DOD data; Map Resources (map).

The majority of munitions response sites are located on active installations (46 percent) and FUDS (45 percent), with the remainder located on BRAC installations (9 percent). The Corps is responsible for cleanup at 45 percent (1,661) of the munitions response sites, the Army for 29 percent (1,080), the Air Force for 18 percent (644), and the Navy for 8 percent (289), as shown in figure 3.

**Figure 3: Percentage of Munitions Response Sites at Active and BRAC Installations and FUDS, and Distribution among the Military Services and the Corps**



Source: GAO analysis of DOD data.

Each of the military services and the Corps have established their own individual organizational structures to implement the MMRP. These structures, which are similar to the structures of their respective IRPs, have various levels of management, but for ease of discussion, we have identified three broad levels of management. At the operational level, key responsibilities rest with project managers who directly oversee MMRP activities at Army, Air Force, and Navy active and BRAC installations and at FUDS. The project managers' responsibilities may include planning munitions response actions, developing cleanup cost estimates, coordinating with stakeholders,<sup>9</sup> and ensuring oversight of program activities, such as monitoring technical work conducted by the contractors who are responsible for various aspects of the cleanup process. Next, at

<sup>9</sup>Stakeholders for military munitions cleanups include, but are not limited to, federal and state environmental protection agencies, federal land managers, environmental and other advocacy groups, and members of the general public.

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the middle-management level, managers provide direct oversight of MMRP activities conducted at the operational level and also serve as liaisons between the operational level and the top leadership level of the organization. Managers at the middle-management level may be responsible for monitoring MMRP activities, such as reviewing cleanup plans developed at the operational level, determining operational level funding, and ensuring that their munitions response programs are in compliance with applicable laws and policies. Finally, managers at the leadership level of the organization may conduct program reviews to ensure MMRP activities implemented by the operational and middle-management levels are in compliance with applicable laws, regulations, and DOD policy and to approve funding requests for munitions response actions that have been recommended by the levels below them.

Some munitions response sites pose a greater risk to human health or the environment than others. The National Defense Authorization Act for fiscal year 2002 requires DOD to develop a protocol for assigning a relative priority for cleanup for all sites based primarily on factors relating to safety and environmental hazard potential.<sup>10</sup> Initially, the military services and the Corps used a process that produced what are known as risk assessment code scores to rank the relative risk of munitions response sites based on the risk they pose relative to other sites. However, in 2005, DOD, in conjunction with the states, tribes, and the Environmental Protection Agency, established a new process, known as the Munitions Response Site Prioritization Protocol,<sup>11</sup> which establishes a consistent and transparent approach to evaluating the relative risks at munitions response sites and prioritizes them for cleanup. The new process uses three hazard evaluation modules to determine a site's relative priority score—Explosive Hazard Evaluation, Chemical Warfare Materiel Hazard Evaluation, and Health Hazard Evaluation.<sup>12</sup> After the military service or the Corps has gathered sufficient data about a site's characteristics to be

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<sup>10</sup>Pub. L. No. 107-107 §§ 311(b)(1) (2001); 10 U.S.C. § 2710(b)(1) (2010).

<sup>11</sup>70 Fed. Reg. 58,016 (Oct. 5, 2005) (codified at 32 C.F.R. Pt. 179 (2010)).

<sup>12</sup>The Explosive Hazard Evaluation module provides a single DOD-wide approach for the evaluation of explosive hazards posed by unexploded ordnance, discarded military munitions or munitions constituents. Similarly, the Chemical Warfare Materiel Hazard Evaluation module provides evaluation of the chemical hazards associated with the physiological effects of chemical warfare material such as chemical munitions or toxic chemical agents. Finally, the Health Hazard Evaluation module provides a process for evaluating the relative risk to human health and the environment posed by munitions constituents.

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able to complete at least one of the protocol's modules, it assigns the site a relative priority score of one through eight, with one representing the highest priority or greatest risk and eight the lowest priority or lowest risk. The military services and the Corps may not assign a relative priority score to some sites and instead assign one of the following alternative designations:<sup>13</sup>

- *Evaluation pending.* Indicates that there are known or suspected hazards present but that sufficient information is not available to populate the data elements for at least one of the modules and the site requires further evaluation.
- *No longer required.* Indicates that the site no longer requires a priority score because DOD has conducted a response action and determined that no further action is required.
- *No known or suspected hazard.* Indicates that the site does not require an evaluation to determine a relative priority score because review of the site concluded that no hazards are present.

According to DOD's policy, the military services and the Corps will clean up munitions response sites with a higher relative priority score before a site with a lower score. However, the military services and the Corps also can consider other factors, such as military mission needs, land reuse plans, and stakeholder concerns, in determining which sites to clean up first. DOD refers to the process of deciding which sites to clean up first based on relative priority scores in combination with other factors as "sequencing" sites for cleanup.

In deciding what actions, if any, are needed to clean up a site identified as potentially contaminated with military munitions, DOD officials told us that the military services and the Corps follow the process established

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<sup>13</sup>For complete definitions, see 32 C.F.R. § 179.6(d)(4)-(5) (2010).

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under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980.<sup>14</sup> Key steps in this process are:<sup>15</sup>

- *Preliminary assessment.* To determine through a review of existing information whether a potential military munitions hazard is present and whether further action is needed.
- *Site inspection.* To determine whether a hazard or potential hazard exists and the nature of any associated threats to human health or the environment. The site inspection builds upon the preliminary assessment and involves sampling, as appropriate, to determine the nature of contamination and potential pathways of exposure and to recommend whether further action is warranted. (Figure 4 shows a site inspection team surveying a munitions response site at Beale Air Force Base.)
- *Remedial investigation/feasibility study.* To collect data necessary to determine the nature and extent of the hazard and to assess risk to human health and the environment. Also, establish objectives for the remedial action, and analyze and evaluate cleanup approaches. According to DOD, cleanup approaches could include limiting public access by installing controls such as barriers, fences, and signs coupled with land use controls.
- *Remedial design/remedial action.* To design, construct, and operate the cleanup remedy selected by the feasibility study. DOD considers that it has the “remedy in place” when testing shows that the remedy will operate as designed. DOD considers that it has attained “response complete” when the cleanup objective is achieved.<sup>16</sup>

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<sup>14</sup>Pub. L. No. 96-510, as amended. A key law amending CERCLA was the Superfund Amendments and Reauthorization Act of 1986, Pub. L. No. 99-499 (1986), which provided that federal agencies “shall be subject to, and comply with, this Act in the same manner and to the same extent, both procedurally and substantively,” as any private party. Id., § 120. See 42 U.S.C. § 9620 (2010).

<sup>15</sup>For complete descriptions, see 40 C.F.R. §§ 300.420, 300.430, 300.435 (2010).

<sup>16</sup>After a site reaches response complete, the military services and the Corps may conduct long-term management at the site. For example, they may monitor environmental conditions, enforce land use controls, and maintain any remedies to ensure continued protection as designed. Long-term management occurs until no further environmental restoration response actions are appropriate or anticipated.

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**Figure 4: Site Inspection at Beale Air Force Base**



Source: Air Force.

The National Defense Authorization Act for fiscal year 2007 directs DOD to establish the following performance goals for defense sites under the MMRP:

- complete, by September 30, 2007, preliminary assessments of all munitions response sites on active installations and FUDS;
- complete, by September 30, 2010, site inspections of all munitions response sites at active installations and FUDS;
- achieve, by September 30, 2009, a remedy in place or response complete for all munitions response sites at all military installations realigned or closed prior to 2005; and
- achieve, by a date to be established by the Secretary of Defense, a remedy in place or response complete for all munitions response sites at all active installations, FUDS, and all military installations realigned or closed under the 2005 round of base closures (BRAC 2005).<sup>17</sup>

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<sup>17</sup>John Warner National Defense Authorization Act for Fiscal Year 2007, Pub. L. No. 109-364, § 313, 120 Stat. 2083, 2138 (2006).

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In addition, the act requires that DOD report “such interim goals as the Secretary determines feasible” for the military services and the Corps to reach their performance goals for remedy in place or response complete at active, FUDS, and BRAC 2005 munitions response sites.

To track information pertaining to the number, description, and status of munitions response sites being managed under each of their MMRPs, the military services and the Corps maintain their own databases. Twice a year they report information requested by DOD about their munitions response sites. This information is compiled in a database DOD calls the Knowledge-Based Corporate Reporting System. DOD uses the information in this database to help oversee the overall MMRP; track progress toward the achievement of its program performance goals; and to support its need to report on the progress of the MMRP to Congress and others, for example in DOD’s *Defense Environmental Programs Annual Report to Congress*.

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## The Military Services and the Corps Do Not Track MMRP Staffing Levels, and the MMRP Receives a Small Share of DOD’s Environmental Restoration Funds

According to a senior DOD official, DOD does not require the military services or the Corps to track the time they spend working on MMRP activities separately from the time they spend working on other environmental restoration program activities. As a result, we were unable to determine the staffing levels dedicated to the MMRP. According to officials from the Army, Air Force, Navy, and the Corps, their staff support both the IRP and the MMRP. However, these officials told us they do not separately track the time that staff spend working on each of the two programs because Congress does not appropriate funding for these programs separately and tracking staff time separately would add no value to accomplishing cleanup of these sites. Moreover, a senior Army official told us that the extent to which staff work on the IRP and MMRP varies greatly among employees from day to day, making it extremely difficult to quantify the time devoted to each program.

DOD provides the military services and the Corps combined annual funding for all of their environmental restoration programs.<sup>18</sup> It is the responsibility of the military services and the Corps to make decisions about how to prioritize that funding among their environmental programs, such as the IRP and MMRP. Between 2002 and 2008, the military services

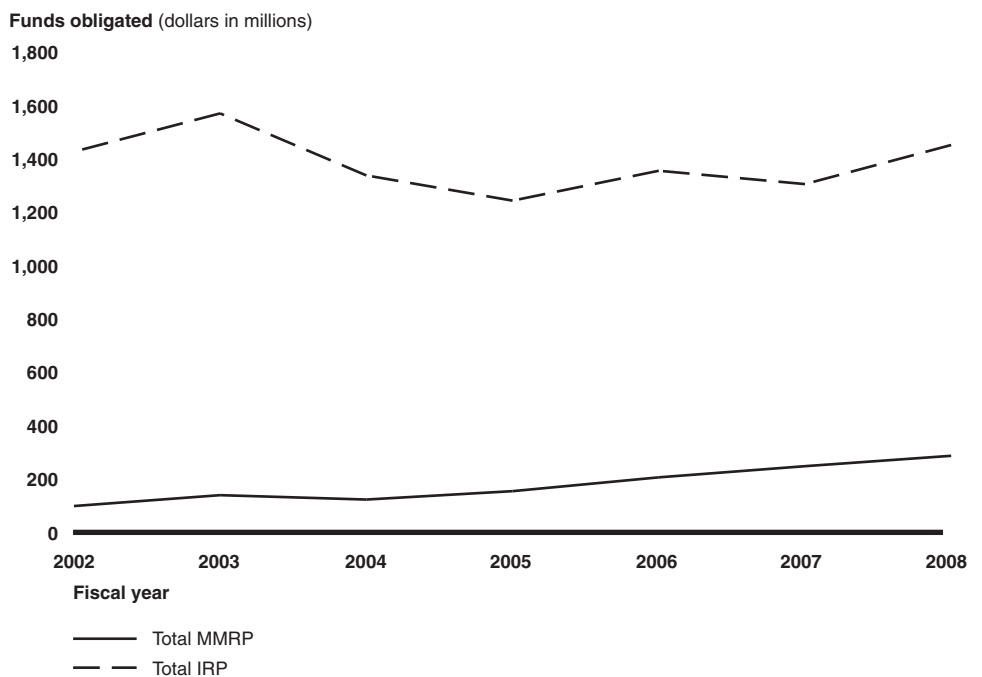
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<sup>18</sup>For the purpose of this report, the amount of money the military services and the Corps obligated for MMRP activities is used to approximate funding received.



and the Corps directed most of their IRP and MMRP environmental restoration funds to their respective IRPs—a total of about \$9.7 billion compared with the approximately \$1.2 billion they directed to their respective MMRPs (see fig. 5).

**Figure 5: IRP and MMRP Obligated Funds, Fiscal Years 2002 through 2008**



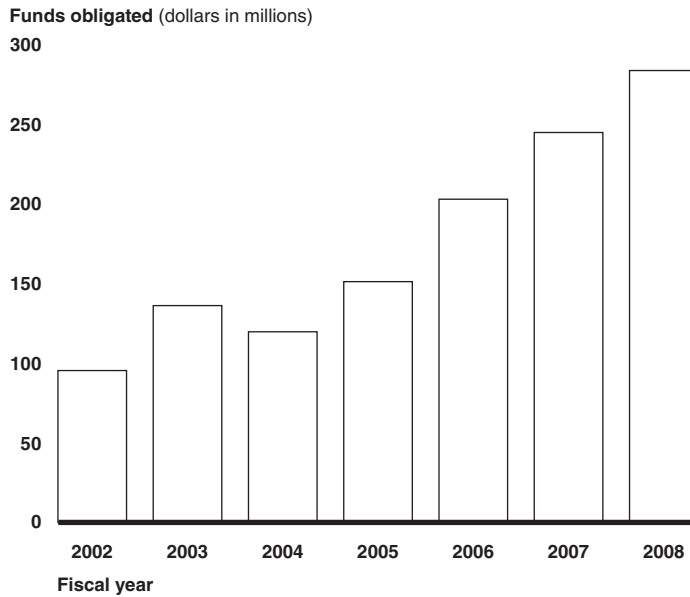
Source: GAO analysis of DOD data.

Note: Totals do not include program management and support costs.

Annual obligations<sup>19</sup> for the MMRP have increased from about \$95 million in fiscal year 2002, the program’s first full year of operation, to approximately \$284 million in fiscal year 2008 (see fig. 6).

<sup>19</sup>The term “obligations” refers to the amount of money the military services and the Corps legally committed for payment.

**Figure 6: MMRP Obligated Funds, Fiscal Years 2002 through 2008**



Source: GAO analysis of DOD data.

Note: Totals do not include program management and support costs.

According to DOD officials, the majority of munitions response sites are still in the investigative phases and are not yet ready for cleanup. Officials said that the military services and the Corps obligated more money to the IRP than the MMRP for the following reasons: (1) most sites in the IRP are being cleaned up or are ready for cleanup; (2) cleanup is more costly than investigation; and (3) the IRP was established long before the MMRP. As of the end of fiscal year 2008, according to DOD's 2008 annual report to Congress, the military services and the Corps had achieved response complete status at about 79 percent of their IRP sites. Officials from the military services and the Corps said they plan to apply more funding to the MMRP and less to the IRP as they achieve remedy in place or response complete status for additional IRP sites. For example, a senior Corps official said that after the Corps meets its IRP goals for FUDS in fiscal year 2020, FUDS munitions response program funding should increase. Similarly, Air Force officials told us they are directing more funding to the IRP to reach its goals. For example, in fiscal year 2007, the Air Force directed almost \$430 million to its IRP, while directing less than \$19 million to its MMRP. Air Force officials said that after the Air Force achieves remedy in place or response complete at its IRP sites, it will increase funding to address cleanup needs at its munitions response sites.

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Additionally, Army and Navy officials told us that as they continue to make progress toward completing IRP cleanups, they have begun to direct more funding to MMRP sites. For example, according to the Army's fiscal year 2009 environmental restoration program management plan, the Army expects MMRP funding for active installations to reach almost \$285 million in fiscal year 2011, compared with about \$33 million in fiscal year 2008. Furthermore, Navy officials told us that over the past few years, the Navy has begun shifting some funding from its IRP to its MMRP. For example, in fiscal year 2005, the Navy directed about \$20 million to its MMRP, while in 2008, it directed approximately \$71 million.

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**Most Sites That DOD Has Reported as Response Complete Did Not Require Cleanup, and Cleanup Priorities Are Still Being Determined for the Majority of Sites**

DOD reported to Congress that it had achieved response complete at more than one-third of its munitions response sites by the end of fiscal year 2008. According to DOD, most of these sites did not require cleanup under the MMRP. For the small number of sites where the military services and the Corps have conducted cleanup activities under the MMRP, a variety of factors influenced the selection of these sites, including immediate danger to public safety and pressing military mission needs. However, for the majority of sites in the MMRP inventory, the military services and the Corps are still in the process of gathering information necessary to assess the sites' relative risk levels in order to set cleanup priorities. In some cases, they have also begun to develop approaches to sequencing their respective sites for cleanup.

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**Most Sites DOD Reported as Response Complete Did Not Require Cleanup, although DOD Has Cleaned Up a Small Number of Sites for Various Reasons**

DOD reported to Congress having achieved response complete at 1,318 of a total of 3,674 munitions response sites by the end of fiscal year 2008.<sup>20</sup> However, according to our analysis of data provided by the military services and the Corps, 1,234 of these 1,318 sites did not require actual cleanup under the MMRP and were instead administratively closed.<sup>21</sup> An administrative closure can occur for a variety of reasons but does not involve any actual cleanup under the MMRP.<sup>22</sup> One of the most common reasons for an administrative closure was that the sites were investigated and found to be free of hazards. Our analysis found more than 700 of the 1,234 administratively closed sites were closed because, during the preliminary assessment, site inspection, or remedial investigation of the site, the military services and the Corps concluded that the threats assumed to be present when the site was included in the MMRP inventory were actually negligible or did not exist.<sup>23</sup> For example, according to a senior Corps official, the Corps assumed that all FUDS forts and camps had firing ranges and therefore included all of them in the MMRP inventory. Upon further study, the Corps found that many former forts and camps did not have firing ranges, so cleanup under the MMRP at these sites was not necessary. Corps and military service officials also told us that some sites were administratively closed for a variety of reasons, such as (1) they were not eligible for MMRP (either because the sites were funded under another program—such as the IRP—or were discovered to

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<sup>20</sup>DOD, *Defense Environmental Programs Annual Report to Congress (Fiscal Year 2008)*, pp.16-17.

<sup>21</sup>DOD views “cleanup” as any activity that falls within the CERCLA process, including studies and investigation. While we acknowledge that these are critical steps in the CERCLA process, for purposes of this report we distinguish between these activities conducted during the earlier phases of the CERCLA process from activities undertaken during the remedial action phase. Specifically, we refer to activities undertaken during the remedial action phase as “actual cleanup” because activities in this phase usually involve physical, on-site work to remedy hazards. We refer to sites that DOD determined needed no remedial action as “administratively closed.”

<sup>22</sup>Although administratively closed sites did not undergo remedial actions, according to military service and Corps officials, actions intended to reduce risk, such as erecting fences or warning signs, may have been taken at some sites during the investigative phases.

<sup>23</sup>Our analysis of available data indicated the military services and the Corps investigated 741 sites and found them to be free of hazards. However, Army and Corps officials believe there were likely additional response complete sites where no hazard was present, but they were not able to provide us with a specific number.

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be currently in use by the military);<sup>24</sup> (2) they were merged with other sites and therefore ceased to exist as independent sites; (3) they never actually existed and were added to the inventory in error; or (4) the hazard was not of DOD origin and therefore not DOD's responsibility to clean up.

Since 2001, we have been concerned about the lack of clarity in DOD's approach for reporting on response complete sites. That year we recommended that DOD exclude projects from its "completed" list that did not require actual cleanup and were closed solely as the result of an administrative action.<sup>25</sup> According to DOD's *Defense Environmental Restoration Program Management Guidance*, response complete means, in essence, that the military services or the Corps have taken and completed remedial actions at a site.<sup>26</sup> Nevertheless, the department disagreed with our recommendation, and its environmental programs annual reports to Congress since 2001 have continued to report administratively closed sites as response complete with very limited explanation. Specifically, in its fiscal year 2008 annual report,<sup>27</sup> DOD mentioned in a note to a figure that the response complete category included both sites it cleaned up and sites that did not require actual cleanup, which we have defined as administratively closed. A senior DOD official told us that DOD reports administratively closed sites and sites that were actually cleaned up as response complete because in both cases it has completed its response under the CERCLA process. Nonetheless, because DOD does not clearly and prominently explain in its reports that many of these sites were not actually cleaned up under the MMRP, we continue to believe that the information being provided to Congress and the public is misleading and overstates the level of progress made cleaning up sites under the MMRP.

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<sup>24</sup>The services and the Corps may have cleaned up some munitions response sites under the IRP before the MMRP was established as a separate program in 2001. Operational ranges are excluded from the MMRP. A senior DOD official explained that cleaning up munitions—beyond normal clearance operations—from past military actions while new munitions are being deposited by current activities would waste resources.

<sup>25</sup>GAO, *Environmental Contamination: Cleanup Actions at Formerly Used Defense Sites*, [GAO-01-557](#) (Washington, D.C.: July 31, 2001).

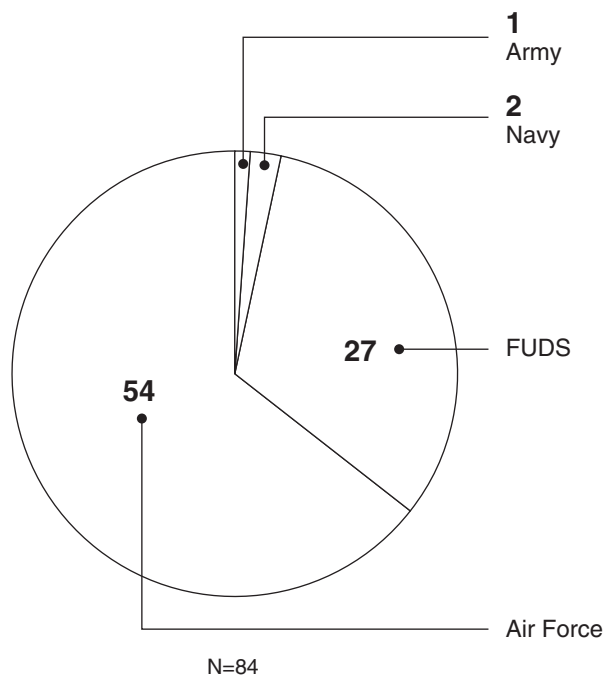
<sup>26</sup>To reach response complete, any operations required for the remedial action must also be completed. For example, a groundwater pump-and-treat system would need to operate for some period of time before the cleanup objective could be accomplished and the site could be considered response complete.

<sup>27</sup>DOD's fiscal year 2008 annual report is the most recent report as of April 2010.

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Our analysis indicates that the military services and the Corps have conducted cleanup activities under the MMRP at 84 of the 1,318 sites it reported as response complete as of fiscal year 2008, as shown in figure 7.

**Figure 7: Sites the Military Services and the Corps Cleaned Up under the MMRP, as of Fiscal Year 2008**



Source: GAO analysis of DOD data.

According to military service and Corps officials, these sites were selected for cleanup based on an assessment of relative risk and other factors. These other factors included imminent danger to public safety, pressing military mission needs, land reuse plans, and stakeholder concerns, for example:

- *Imminent danger.* According to a senior Army official, the Corps cleaned up the Dolly Sods North FUDS, located in the Monongahela National Forest in West Virginia, for imminent danger reasons. This site had been

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assigned a medium risk assessment code score.<sup>28</sup> Hikers visiting the site—a wilderness area currently owned by the U.S. Forest Service and visited by approximately 60,000 people annually—reported finding military munitions on the ground. For example, in 1996, a piece of live ordnance was found about 300 feet from a visitor parking lot. As a result, the Corps took cleanup actions that involved removing ordnance from trail areas and campsites because it determined that these items presented an imminent danger to the public. The Corps completed the cleanup in 2000 and also implemented an explosives safety education program for visitors to the site, which is ongoing.

- *Mission needs.* According to Air Force officials, the Air Force selected the sole munitions response site at Little Rock Air Force Base in Arkansas for cleanup in fiscal year 2009 to meet mission needs, even though it received a low prioritization protocol score. The factors that drove the decision to clean up this site were that (1) the site is a possible location for a future Security Forces Regional Training Center, and (2) by cleaning up the only MMRP site on the base, it would release the entire base from the program and thus reduce related administrative costs. The Air Force estimates that site cleanup will be complete in fiscal year 2010.
- *Land reuse plans.* According to a senior Army official, the Army funded cleanup work done by a local redevelopment authority on a munitions response site at Fort Ord, a BRAC installation near Monterey, California, to meet land reuse plans, even though the Army assigned the site a medium risk assessment code score and has not scored it under the munitions response site prioritization protocol. The Army initiated cleanup at this site largely in response to the community's request to implement a land reuse plan to construct a veterans' cemetery. The central California coast region currently lacks burial space for the approximately 50,000 veterans residing in the area, some of whom served in World War II and now wish to be buried at Fort Ord. According to a senior Army official, as of January 2010, the redevelopment authority had completed cleanup, and the veterans' cemetery can be developed as soon as funding is available.
- *Stakeholder concerns.* According to a senior Army official, the Corps decided to clean up the Torpedo and Bombing Range FUDS at Pyramid Lake northeast of Reno, Nevada, because of stakeholder concerns, even

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<sup>28</sup>Risk assessment code scores were used to rank sites by relative risk prior to 2007 when the military services and the Corps began reporting scores based on the Munitions Response Site Prioritization Protocol. This site would not have been scored using the prioritization protocol because it was cleaned up in 2000.

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though the Corps assigned the site a low risk assessment code score.<sup>29</sup> The Corps responded to concerns expressed by the Pyramid Lake Paiute Tribe by initiating cleanup using funds from FUDS and another program managed by the Corps, the Native American Lands Environmental Mitigation Program. Pyramid Lake covers more than 20 percent of the Pyramid Lake Indian Reservation and is of high cultural and social value to the tribe. The Corps removed surface bunkers and debris from the site, as well as over 13 tons of rockets and other discarded munitions submerged in the lake, and cleanup was completed in 2006.

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### The Military Services and the Corps Have Evaluated Few Munitions Response Sites for Relative Risks and Lack Consistent Approaches for Sequencing Sites

Before beginning cleanup at most of their munitions response sites, the military services and the Corps first gather enough information to use the prioritization protocol to assign a relative priority score to each site based on its potential environmental and safety hazards. Officials from the military services and the Corps told us that data necessary to derive a reliable priority score are gathered during the site inspection phase. However, as of the end of fiscal year 2008, the military services and the Corps had completed the site inspection phase for only 38 percent of munitions response sites.<sup>30</sup> Consequently, during fiscal year 2007—the year the military services and the Corps began reporting prioritization protocol scores—and fiscal year 2008, the military services were only able to report relative priority scores to DOD for 432 sites, or 19 percent of the 2,333 munitions response sites that needed scoring.<sup>31</sup> Specifically, the Air Force reported scores for 53 sites, or 13 percent of its 417 sites; the Army reported scores for 175 sites, or 29 percent of its 603 sites; and the Navy reported scores for 204 sites, or 89 percent of its 230 sites. The military services and the Corps assigned the remaining 1,901 sites the alternative rating “evaluation pending” as of the end of fiscal year 2008, indicating that they needed more information before they could calculate relative priority scores.

According to a senior Army official, the Corps has not reported any prioritization protocol scores for FUDS to DOD because the scores have

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<sup>29</sup>This site would not have been scored using the Munitions Response Site Prioritization Protocol because cleanup was completed in 2006.

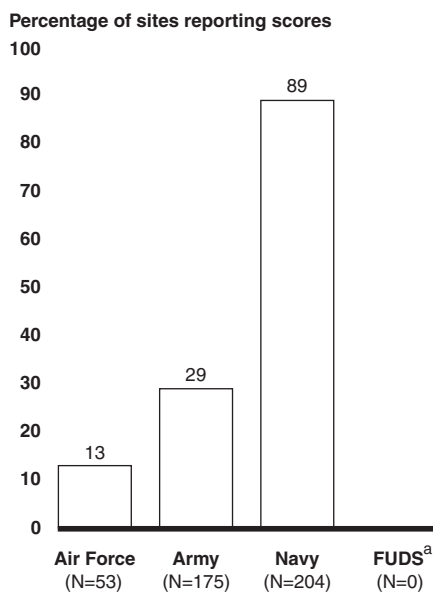
<sup>30</sup>Thirty-eight percent represents the number of sites that had a site inspection completion date in DOD’s Knowledge-Based Corporate Reporting System database.

<sup>31</sup>The military services and the Corps reported that 1,341 munitions response sites no longer required scoring using the Munitions Response Site Prioritization Protocol, primarily because they categorized the sites as response complete.



not yet been finalized pending an internal review. The same official said that the Corps will report scores for about 600 sites to DOD by the end of fiscal year 2010 and will report scores for the remaining sites by fiscal year 2014. The percentage of sites with reported scores by military service and the Corps is shown in figure 8.

**Figure 8: Sites with Prioritization Protocol Scores Reported to DOD, as of Fiscal Year 2008**



Source: GAO analysis of DOD data.

<sup>a</sup>The Corps has not reported any prioritization protocol scores for FUDS.

After they have assigned prioritization protocol scores to all of their sites, each of the military services and the Corps are to determine which sites to sequence and allocate funding to first for the next phase of the cleanup process.<sup>32</sup> However, currently there is no consistent DOD approach for or guidance on considering factors other than risk in making sequencing

<sup>32</sup>DOD's regulation establishing the Munitions Response Site Prioritization Protocol provides for subsequent sequencing to consider other factors and provides a nonexclusive list of example factors, such as mission needs and stakeholder input. The military services and the Corps are to use their installation-specific management action plans—plans that describe an integrated, coordinated approach for conducting all required environmental restoration activities, including schedules and cost estimates—as a vehicle for sequencing. The regulation does not, however, establish a methodology for how such other factors are to be considered.

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decisions. In the absence of guidance from DOD that establishes a consistent set of requirements, we found that the Air Force, Army, and the Corps have begun to independently develop their own approaches for sequencing, and the Navy has not yet determined whether it needs to develop such an approach. Specifically, we found the following:

- The Air Force has developed detailed, written guidance for incorporating factors other than risk into its site sequencing decisions. The guidance requires the use of a numerical scoring process that incorporates prioritization protocol scores, as well as legal, scheduling, and mission factors, to sequence its sites for cleanup. According to Air Force officials, the Air Force is applying this approach to a single pool of both IRP and MMRP sites, which they believe allows them to fund cleanups of the highest-priority sites first across both programs. In addition, a senior Air Force official told us that using the standardized process ensures fairness and transparency in site sequencing.
- According to a senior Army official, the Army is currently developing a sequencing policy that it hopes to release by May 2010, which will apply to sites managed by both the Army and the Corps. The policy will likely require program managers to document the reasons for their sequencing decisions to facilitate transparency and allow for more effective Army oversight. However, the official said that the Army does not plan to require a particular approach to sequencing and believes a quantitative approach similar to the Air Force's approach could be too restrictive and not allow adequate flexibility for decision making.
- According to a senior Navy official, it is too early to determine whether the Navy needs to issue additional guidance beyond the framework that establishes the prioritization protocol and sequencing considerations currently provided in the DOD regulations. According to the official, although the Navy has initially prioritized many sites based on preliminary assessment data, it does not expect to begin fully sequencing sites until 2011, when it completes site inspections and applies the data gathered to generate relative priority scores. The Navy will wait to see if it encounters any difficulties before deciding on whether to develop additional guidance.

According to a senior DOD official, the department plans to give the military services and the Corps the flexibility to make sequencing decisions as they see fit. This official said that the military services and the Corps have experience making sequencing decisions for the IRP, and DOD has not encountered any problems with these decisions. As a result, the official said DOD sees no need to provide guidance on how factors other than risk should be considered when making decisions about which sites

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to sequence first for cleanup. However, in the absence of such guidance, the military services and the Corps may not consistently (1) consider the same range of factors in making their decisions or (2) give the same relative significance to risk and other factors in making their cleanup sequencing decisions. As a result, we believe that this could impact the consistency and transparency of sequencing decisions.

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## DOD Has Not Established a Key Performance Goal for Its MMRP at FUDS, as Required by Law, and Has Not Determined and Reported on the Feasibility of Interim Goals

DOD has not yet implemented the statutory requirement contained in the fiscal year 2007 National Defense Authorization Act to establish a key performance goal for reaching remedy in place or response complete at munitions response sites on FUDS, although DOD has established the required performance goals for active and BRAC 2005 sites.<sup>33</sup>

According to a senior DOD official, the primary reason DOD has not established a remedy in place or response complete performance goal for munitions response sites on FUDS is that the Corps has not completed site inspections at most of these sites. This official told us that it is not possible to fully understand each site's cleanup requirements before the site inspection is complete, and therefore, establishing a goal at this time is premature. In addition, the official said that the number of munitions response sites on FUDS is still changing because the Corps is subdividing munitions response areas into smaller, more manageable sites. The anticipated increase in the number of sites is likely to impact cleanup schedules, according to this official. Finally, the official told us that DOD expects to establish a performance goal for munitions response sites on FUDS after the Corps completes site inspections, which is expected at the end of fiscal year 2010. Until DOD sets the goal, Congress and the public will have less information with which to monitor the progress of cleanups at munitions response sites on FUDS.

The fiscal year 2007 National Defense Authorization Act also requires DOD to report "such interim goals as the Secretary determines feasible" for the military services and the Corps to reach their remedy in place or response

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<sup>33</sup> After a final remedial action has been constructed and is operating as planned, DOD describes the site status as remedy in place. While operation of the remedy is ongoing but cleanup objectives have not yet been met, the site cannot be considered response complete. DOD categorizes sites as response complete at any point in the process when it determines no further response is appropriate, including sites without a remedy in place. According to DOD, such determinations are made in conjunction with regulators and stakeholders.

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complete performance goals.<sup>34</sup> However, DOD has not yet determined whether such goals are feasible—the necessary initial step before reporting interim goals. A senior DOD official said that DOD will determine whether interim goals are feasible after the military services and the Corps have completed the site inspection phase for all munitions response sites, which they expect to do by the end of fiscal year 2010. The DOD official said that it is not practical for DOD to establish interim goals without first understanding the nature and extent of cleanup requirements at munitions response sites. However, DOD was able to establish its performance goals for reaching remedy in place or response complete for munitions response sites at active and BRAC 2005 installations, and we believe DOD should therefore be able to determine the feasibility of related interim goals. Furthermore, until DOD determines whether interim goals are feasible, and if so, reports them to Congress, DOD will not have addressed this requirement. Moreover, since DOD’s MMRP remedy in place or response complete performance goals are long-term—2017 for sites at BRAC 2005 installations, 2020 for sites at active installations, and possibly 2060 or later for FUDS—without this determination and reporting of interim goals, Congress may have limited information with which to measure progress of the MMRP over the next decade.

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<sup>34</sup>The act requires the reporting of such feasible interim goals in association with the remedy in place or response complete performance goals for munitions response sites at active and BRAC 2005 installations, and FUDS.

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## DOD Collects Limited Data on Factors That Can Affect MMRP Project Duration, and Incomplete Data Prevent an Assessment of the Accuracy of Its MMRP Cost Estimates

DOD collects data on two of the many factors that can influence project duration at munitions response sites.<sup>35</sup> Our analysis of DOD's data on these two factors indicates that the larger the munitions response site and the more complex the type of hazard the longer the site takes to clean up. However, we were unable to assess the accuracy of the military services' and the Corps' estimates of the costs to complete phases of the cleanup process because DOD's database does not contain complete data on funds obligated for completing specific phases of the cleanup process for many munitions response sites.<sup>36</sup>

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## DOD Collects Information on Two Factors That Can Affect MMRP Project Duration

Although a number of factors can affect project duration at a munitions response site, DOD collects information on two of these factors—site size and the type of hazard. Specifically, DOD requires the military services and the Corps to report the acreage of sites and the type of hazard present, such as unexploded ordnance or munitions constituents. This information is compiled in DOD's environmental programs management database, known as the Knowledge-Based Corporate Reporting System. As would be expected, our analysis of DOD's data shows a relationship between these two factors and project duration—that the average project duration for a munitions response site corresponds with the size of the site and the type of hazard. For example, small munitions response sites have an average project duration of 4.3 years, whereas larger sites have an average project duration of 5.9 years. Additionally, sites with the longest project duration, 5.8 years, were the ones that had unexploded munitions and ordnance. In contrast, sites with small arms ranges, had an average project duration of 5 years.

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<sup>35</sup>We measured project duration, which was calculated using both month and year information, as the length of time between the earliest phase start date and the latest phase end date. For the purposes of our analysis, if the most recent phase was still in process, we used September 2008 as the end date because that was the latest date for which we had Knowledge-Based Corporate Reporting System data.

<sup>36</sup>The military services and the Corps report funds obligated for cleanup activities at munitions response sites in a fiscal year to DOD.

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Officials from the military services and the Corps told us that a number of other factors can influence project duration, but DOD's database does not include information on these factors, which include the following:

- The need to achieve consensus with stakeholders, such as regulators or community members, can increase project duration. For example, failure to reach consensus with regulators increased project duration at the Jackson Park Naval Housing Complex, according to Navy officials. One area of disagreement between Navy officials and federal regulators was over the number of detected metal pieces that needed to be excavated during the remedial investigation phase. Federal regulators wanted the Navy to excavate a higher percentage of detected metal pieces than the Navy initially intended to excavate. After a lengthy process, the Navy and federal regulators were able to reach consensus on the percentage of metal pieces to excavate.
- Obtaining entry rights from current owners of FUDS properties takes time and can increase project duration. For example, a senior official from the Corps told us that a landowner at the Campbell Island, North Carolina, FUDS refused to grant the Corps access to the site because of dissatisfaction with the government. The site inspection phase was scheduled to start sometime after December 2008; however, as of February 2010, the Corps had not yet initiated the site inspection because the agency has not yet been able to obtain entry rights from the current landowner. Corps officials plan to contact the landowner sometime in 2010 in an effort to resolve the issue.
- Site-specific factors arise that can extend project duration in some cases. For example, Air Force officials told us that strict requirements from the New Hampshire State Historic Preservation Office delayed cleanup at New Boston Air Force Base. It took the Air Force longer to complete the investigative phases of the cleanup process because the Historic Preservation Office required that all objects discovered on the site, that were not unexploded ordnances or munitions constituents, be left in place to allow an archeologist to photograph and log each item for the historical record.

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### Incomplete Data Prevent an Assessment of the Accuracy of MMRP Cleanup Cost Estimates

We found that DOD lacks complete site-level data on obligated funds for the three phases of the cleanup process we examined—preliminary assessment, site inspection, and remedial investigation/feasibility study—for fiscal years 2001 through 2008. These are funds that DOD has legally committed to pay for activities conducted during a particular phase of the cleanup process. Assessing the extent to which DOD's estimates of costs

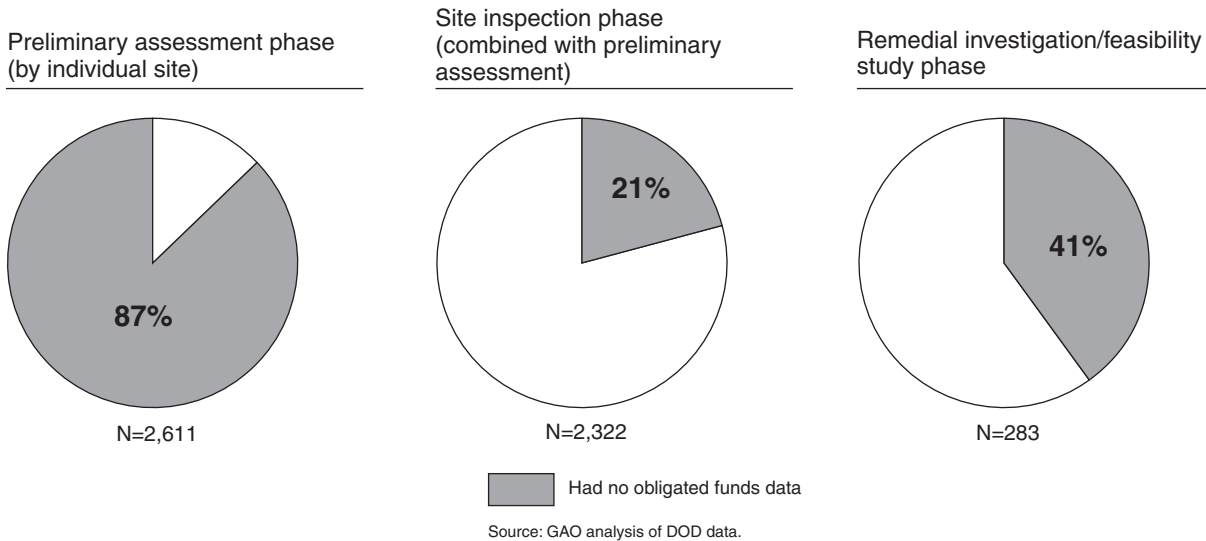
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for MMRP cleanup phases are accurate requires both data on the estimated costs and funds obligated so they can be compared to determine how closely the estimates match the obligations. Our analysis of the 2,611 munitions response sites where work was conducted during the preliminary assessment phase in fiscal years 2001 through 2008 found that the database did not contain obligated funds data for 2,272 (or 87 percent) of the sites.<sup>37</sup> According to a senior DOD official, the military services and the Corps often are unable to report funds obligated for preliminary assessments for individual sites because they sometimes conduct preliminary assessments for all sites on an installation at the same time. In these instances, obligated funds are reported for the entire installation as opposed to on a site-by-site basis. Moreover, according to this official, the preliminary assessment and site inspection phases are often conducted concurrently and obligated funds for these two phases are consolidated in the site inspection phase. However, our analysis of the 2,322 munitions response sites where work was conducted during the site inspection phase in fiscal years 2001 through 2008—including those sites that had a combined preliminary assessment and site inspection phase—found that the database did not have obligated funds data for 488 (or 21 percent) of these sites. Finally, our analysis of the 283 sites where work was conducted during the remedial investigation/feasibility study phase in fiscal years 2001 through 2008 found the database did not have obligated funds data for 116 (or 41 percent) of these sites. Figure 9 summarizes our analysis of the percentage of sites in these three phases of the cleanup process that did not have obligated funds data.

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<sup>37</sup>We did not conduct a similar analysis on the extent to which DOD had complete data on cost estimates.

**Figure 9: Percentage of Sites with No Obligated Funds Data, by Phase**



A senior DOD official told us that in fiscal year 2009, DOD implemented additional, more rigorous quality assurance and control processes designed to detect errors and inconsistencies in its MMRP cost estimates. For example, the official said that one of the new data checks DOD began performing in 2009 was to examine sites scheduled to begin a cleanup phase in the future to ensure that the database also includes an estimate of the cost to complete that phase. However, the official said DOD is not currently evaluating whether the military services and the Corps are reporting obligated funds data for project phases that have been completed. DOD requires the military services and the Corps to gather obligated funds data and, according to the DOD official, they should be reporting these data to DOD for inclusion in the Knowledge-Based Corporate Reporting System. In the absence of complete site-level information on obligated funds, DOD or Congress may not be able to determine the accuracy of the military services' and the Corps' reported cost estimates for completing the various phases of the cleanup process. Furthermore, DOD or Congress ultimately may not have sufficient information to assess whether DOD's estimates of its future cleanup liabilities under the MMRP are reliable.

## Conclusions

Thousands of munitions response sites that potentially pose risks to human health and the environment may need to be cleaned up before they can be reused, often for nonmilitary purposes. While we recognize that



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managing the MMRP is a large and complex task for DOD, the military services, and the Corps, we believe that in several areas there are opportunities for program management improvements. First, there is a need for guidance on how to conduct site sequencing in a manner that is consistent and transparent. While Congress mandated a consistent and transparent approach to assessing relative risks to assign cleanup priorities at sites, it did not provide for a process for assessing other factors, such as stakeholder concerns and military mission needs, when making site sequencing decisions; and DOD has not provided guidance to the military services and the Corps on how to conduct such assessments. Without DOD guidance on how to determine which sites to sequence first for cleanup, we are concerned that the military services and the Corps could use inconsistent processes for making these decisions. Second, we remain concerned about the transparency of DOD's response complete information provided to Congress. DOD has categorized 1,234 sites as response complete, but these sites did not require actual cleanup under the MMRP, and we believe that this fact is not adequately explained in DOD's annual report to Congress. As a result, Congress and the public may be misled about the extent to which actual cleanups have taken place under the MMRP to date. Third, despite a legal requirement to do so, DOD has not yet established the remedy in place or response complete goal for FUDS nor determined and reported any interim goals it finds feasible for the MMRP. Implementing these requirements would provide DOD, Congress, and the public better information to track progress toward cleaning up munitions response sites. Finally, the database that DOD uses to help manage its MMRP does not contain complete site-level data on obligated funds for the cleanup phases we examined. As a result, it is not possible to assess the accuracy of the cost estimates for activities conducted during these phases. As the MMRP matures and more sites begin actual cleanups, program costs will continue to increase and it will be critical for DOD to be able to determine whether its cost estimates for phases of the cleanup process are accurate, so that Congress and the public can have reasonable assurance that DOD's estimates of its future cleanup liabilities under the MMRP are likely to be reliable.

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## Matter for Congressional Consideration

To improve transparency for progress DOD has made in cleaning up MMRP sites, Congress may wish to consider requiring that DOD report, in a separate category from its accounting of "response complete" sites in the *Defense Environmental Programs Annual Report to Congress*, any sites that DOD determined did not require actual cleanup under the MMRP and were administratively closed.

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## Recommendations for Executive Action

To improve consistency, transparency, and management of the MMRP, we recommend that the Secretary of Defense take the following three actions:

- develop guidance for the military services and the Corps that establishes a consistent approach for how factors other than relative risk should be considered in munitions response site sequencing decisions;
- establish and report to Congress (1) a goal for achieving remedy in place or response complete for FUDS, as required by law, and (2) such interim goals as DOD determines feasible for the remedy in place or response complete goals at munitions response sites on active and BRAC 2005 installations and FUDS; and
- establish a process to ensure the completeness of site-level obligated funds data in DOD's Knowledge-Based Corporate Reporting System database.

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## Agency Comments and Our Evaluation

We provided a copy of a draft of this report to the Department of Defense for its review and comment. DOD partially agreed with two of our recommendations and disagreed with one recommendation and the matter for congressional consideration.

DOD said that it partially agreed with our first recommendation that the Secretary of Defense develop guidance for the military services and the Corps that establishes a consistent approach for how factors other than relative risk should be considered in munitions response site sequencing decisions. DOD said that it will collect and evaluate information and lessons learned from the military services regarding their processes for sequencing munitions response sites. If DOD determines that additional guidance is necessary, DOD said it will develop specific sequencing protocols and issue further guidance to ensure consistency across the military services. However, DOD did not specify what additional information it needs to collect from the military services and the Corps to determine that they currently are taking different approaches to sequencing their sites for cleanup. Nor did DOD explain in its comments the need for providing the military services and the Corps the flexibility to develop different approaches to sequencing munitions response sites. Given that this flexibility could result in inconsistent processes for making sequencing decisions, we continue to believe that DOD needs to provide guidance to the military services and the Corps that establishes a consistent approach to sequencing. This guidance will ensure that the military services and the Corps not only use the Munitions Response Site Prioritization Protocol to assign site priorities in a consistent and

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transparent fashion, but also ensure that they consider the same range of other factors, in addition to relative risk, in making their decisions and assess the significance of those factors in a consistent way.

DOD also partially concurred with our second recommendation, that DOD establish a goal of remedy in place or response complete for FUDS, as required by law, and interim goals at munitions response sites on active and BRAC 2005 installations and FUDS. DOD said that it did not concur with what it understood to be a separate part of the recommendation—to set a date for “completing cleanup” of FUDS. However, we did not intend to convey a further requirement beyond the remedy in place or response complete goal for FUDS, and we clarified the recommendation accordingly. DOD said that it will establish a remedy in place or response complete goal for munitions response sites at FUDS and will establish additional short-term interim goals for active and BRAC 2005 installations and FUDS once it has a better understanding of the nature and extent of cleanup requirements at these sites. However, DOD has not committed to a date by which it will establish these goals. We believe it is important for DOD to set these goals as soon as possible because, until it does so, Congress and the public will have less information with which to monitor the progress of cleanups at munitions response sites.

DOD did not agree with our third recommendation to establish a process to ensure the completeness of site-level obligated funds data in its Knowledge-Based Corporate Reporting System database. DOD stated that it has procedures in place to plan, program, budget, and execute funds for cleanup actions at munitions response sites. DOD also said that it has information on obligated funds but that it is not typically available at the individual site level and is tracked outside of the Knowledge-Based Corporate Reporting System database. Although we recognize that DOD has these phase-level data in another database, we continue to believe that without site-level obligations data, DOD does not have the ability to compare the corresponding cost estimates to determine if they are accurate. In the absence of such a comparison, DOD or Congress may not be able to determine the accuracy of the military services’ and the Corps’ estimates of the costs to complete various phases of the cleanup process.

Finally, DOD did not agree with our matter for congressional consideration that would require DOD to report in a separate category from its “response complete” sites in the *Defense Environmental Programs Annual Report to Congress* any sites that DOD determined did not require actual cleanup under the MMRP and were administratively closed. DOD said that it believes that all sites that complete the CERCLA

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process should be considered equal accomplishments whether they require a removal or remedial action or not. DOD also said that it believes it is misleading to characterize a site that achieves closure without an actual cleanup differently from one that has been cleaned up, and that this undermines the significant work and progress DOD has made. We recognize that DOD must conduct assessments and investigations to determine that no physical cleanup actions will be needed and that this process can require significant time and effort to complete. Nonetheless, we believe it is misleading to group administratively closed and actually cleaned up sites together because the actions DOD took to close those two types of sites are significantly different. Also, we do not believe that listing these sites in separate categories undermines the progress DOD has made. Rather, doing so will improve transparency and more clearly indicate the nature of the actions that DOD has taken to reach response complete for its munitions response sites. Consequently, we continue to believe that Congress may wish to consider requiring DOD to report sites that were administratively closed in a separate category from those sites requiring actual, physical cleanup.

DOD also provided technical comments in an enclosure to its letter, which we have incorporated in this report as appropriate. DOD's letter is included in appendix II.

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We are sending copies of this report to the appropriate congressional committees, the Secretary of Defense, and other interested parties. In addition, the report will be available at no charge on the GAO Web site at <http://www.gao.gov>.

If you or your staffs have any questions about this report, please contact me at (202) 512-3841 or [mittala@gao.gov](mailto:mittala@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made major contributions to this report are listed in appendix III.



Anu K. Mittal  
Director, Natural Resources  
and Environment

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# Appendix I: Objectives, Scope, and Methodology

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The National Defense Authorization Act for fiscal year 2009 mandates that we assess the (1) Military Munitions Response Program's (MMRP) staffing and funding levels; (2) progress the Department of Defense (DOD) has made cleaning up munitions response sites; (3) extent to which DOD has established performance goals for the MMRP; and (4) extent to which DOD collects data on factors influencing project duration, as well as the accuracy of its cleanup cost estimates.

In addressing these four objectives, we analyzed MMRP data for fiscal years 2001 through 2008 in DOD's environmental programs management database—the Knowledge-Based Corporate Reporting System—and the *Defense Environmental Programs Annual Reports to Congress* for fiscal years 2002 through 2008. We assessed the reliability of the data for relevant variables in the Knowledge-Based Corporate Reporting System by electronically testing for obvious errors in accuracy and completeness. We also reviewed information about data verification, reporting, and security, and the systems that produced the data, and interviewed officials knowledgeable about the data. When we found inconsistencies in the data, we worked with the officials responsible for the data to clarify these inconsistencies before conducting our analyses. We determined that the data were sufficiently reliable for the purposes of providing descriptive information about the MMRP and for analyzing the duration of phases of the MMRP cleanup process. However, we found MMRP obligated funds data to be incomplete and therefore not suitable for analysis. We discuss this data reliability issue in more detail later in this appendix. In addition, we reviewed key laws, regulations, policies, and guidance from DOD, the military services (Army, Air Force, and Navy),<sup>1</sup> and the U.S. Army Corps of Engineers (Corps). We visited one base realignment and closure (BRAC) installation (Fort Ord), one active installation (Beale Air Force Base), and one formerly used defense site (FUDS) (Camp Beale) to ensure we had the opportunity to review MMRP operations at active and BRAC installations and FUDS. We also interviewed headquarters and regional officials from the Environmental Protection Agency to discuss the MMRP.

To assess the military services' and the Corps' MMRP staffing and funding levels, we spoke with senior officials from the Office of the Deputy Under Secretary of Defense (Installations and Environment), the military services, and the Corps who are knowledgeable about how MMRP staffing

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<sup>1</sup>The Department of the Navy (Navy) implements the MMRP at both Navy and Marine Corps munitions response sites.

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and funding levels are determined. In addition, we reviewed the *Defense Environmental Programs Annual Reports to Congress* for fiscal years 2002 through 2008 to determine funding obligated for the MMRP.

To assess the progress DOD has made in cleaning up munitions response sites, we identified, as of the end of fiscal year 2008, how many sites DOD had administratively closed and how many had been actually cleaned up. We defined a site as administratively closed if after investigating, DOD determined that it could safely close the site without taking remedial action. Specifically, we analyzed data in the Knowledge-Based Corporate Reporting System to identify sites that fit two criteria: (1) the “response complete”<sup>2</sup> date matched the end date for the three investigative phases during which no remediation actions are taken (preliminary assessment, site inspection, and remedial investigation) and (2) no costs were reported in the remedial action construction or the remedial action operations phase. Senior officials from DOD, the military services, and the Corps agreed that these criteria would identify sites that had been closed without actual cleanup, which we have defined as being administratively closed. These criteria allowed us to identify 712 of the 1,318 sites DOD reported as having achieved response complete. However, we were unable to determine if any of the remaining 606 sites had been administratively closed because sites may have been administratively closed without the response complete date matching the end date of one of the investigative phases. Therefore, we asked the military services and the Corps to identify which sites they had administratively closed. The Air Force and the Navy were able to provide the information for their relatively small number of sites, but senior Army and Corps officials said they did not keep such information in a centralized database and it would take them too much time to gather it for their many sites. Instead, they provided us with the number of sites they had actually cleaned up and indicated that we could assume the remaining sites had been administratively closed. In addition, we assessed the progress the military services and the Corps have made in applying the Munitions Response Site Prioritization Protocol to generate relative priority scores for their sites by reviewing prioritization protocol data in the Knowledge-Based Corporate Reporting System. We considered a site to be scored if it was listed in the Knowledge-Based Corporate Reporting System as having a numerical relative priority score of one

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<sup>2</sup>After the military services or the Corps completes its response to potential military munitions hazards, and when no further response action is appropriate, DOD describes the site’s status as “response complete.”

through eight or if it had been given the alternative designation of “no known or suspected hazard” as of the end of fiscal year 2008. We considered sites to not be scored if they had a designation of “evaluation pending” because this designation indicates that the military services or the Corps need more information to assign the site a relative priority score. We excluded from our analysis the 1,341 sites for which the military services and the Corps indicated that scoring was no longer required because DOD reported that most of these sites had already reached response complete.

To assess the extent to which DOD has established performance goals for the MMRP, we reviewed the fiscal year 2007 National Defense Authorization Act, the *Military Munitions Response Program Comprehensive Plan*, and the fiscal year 2008 *Defense Environmental Programs Annual Report to Congress*. We also spoke with a senior official responsible for the MMRP from the Office of the Deputy Under Secretary of Defense (Installations and Environment) to determine the progress DOD has made in establishing performance goals.

To assess the extent to which DOD collects data on factors influencing project duration, we reviewed and analyzed data from the Knowledge-Based Corporate Reporting System to determine the average length of time munitions response sites have been in the cleanup process. To determine project duration, we attempted to identify start and end dates for phases of the cleanup process for all 3,674 sites in the Knowledge-Based Corporate Reporting System. We measured project duration as the length of time between the earliest phase start date and the latest phase end date, calculated using both month and year information.<sup>3</sup> Using this method, we were able to calculate project duration for 3,112 sites. We were unable to calculate project duration for 47 sites because they had no phase dates in the Knowledge-Based Corporate Reporting System. We did not calculate project duration for the remaining 515 sites because they had phase start and end dates prior to fiscal year 2001 (when the MMRP was established) and were therefore outside the scope of this review. Next, we analyzed site size and type to assess their relationship to project duration. To analyze site size, we divided the list of sites into three similarly sized categories: (1) small (less than 23 acres); (2) medium (between 23 and 649

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<sup>3</sup>If the latest phase did not have an end date, we used September 2008 as the end date because we assumed that the site was still in that phase at the end of fiscal year 2008, the year for which we had Knowledge-Based Corporate Reporting System data.

acres); (3) large (650 acres or larger). We also created a fourth category for sites reported as zero acres or those with missing size data. Once we assigned sites to a category, we were able to combine this analysis with our analysis on project duration to calculate the mean and median project duration for small, medium, and large sites. We reported the mean project duration in the report, and there was no substantive difference between the mean and median. We used the site-type data in the Knowledge-Based Corporate Reporting System to determine the relationship between project duration and type of hazard. We limited our analysis of site types to categories that included at least 5 percent of the total number of sites and then combined the remaining categories into an “other” category. This allowed us to analyze project duration for six site-type categories: (1) unexploded munitions and ordnance areas, (2) small arms ranges, (3) firing ranges, (4) explosive ordnance disposal areas, (5) other, and (6) unknown (i.e., information on site type was not available). Once we had determined these categories, we combined this analysis with our project duration analysis to calculate the mean and median project duration for each site type. We reported the mean project duration in the report, and there was no substantive difference between the mean and median. We also interviewed senior officials from the military services and the Corps to obtain their views on factors influencing project duration.

To assess the accuracy of DOD’s cleanup cost estimates, we assessed the reliability of data on obligated funds in the Knowledge-Based Corporate Reporting System for fiscal years 2001 through 2008. We analyzed the data to determine the extent to which sites with reported activities in three phases of the cleanup process also included data on funds obligated for those activities. We restricted our analysis to the first three phases of the cleanup process—preliminary assessment, site inspection, and remedial investigation/feasibility study—because most munitions response sites are in one of these phases. To determine if we had a sufficient number of sites to conduct our analysis, we calculated the number of sites in each of the three phases that had obligated funds data. We found that over 10 percent of sites for all three phases were missing obligated funds data. Therefore, we concluded that the data were not sufficiently reliable to allow us to compare obligated funds to cost estimates for the sites in all three phases to determine the accuracy of the estimates.

We conducted this performance audit from January 2009 to April 2010 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence



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**Appendix I: Objectives, Scope, and  
Methodology**

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obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

# Appendix II: Comments from the Department of Defense



ACQUISITION,  
TECHNOLOGY  
AND LOGISTICS

## OFFICE OF THE UNDER SECRETARY OF DEFENSE

3000 DEFENSE PENTAGON  
WASHINGTON, DC 20301-3000

MAR 31 2010

Ms. Anu K. Mittal  
Director, Natural Resources and Environment  
U.S. Government Accountability Office  
441 G Street, N.W.  
Washington, DC 20548

Dear Ms. Mittal:

This is the Department of Defense (DoD) response to the GAO Draft Report 10-384, "Military Munitions Response Program, Opportunities Exist to Improve Program Management," dated March 2010, (GAO Code 361041). DoD's detailed responses to the GAO recommendations and the matter for Congressional consideration are provided at Enclosure 1. Enclosure 2 provides additional substantive issues DoD has with the GAO draft report. Additional technical comments have been provided to GAO under separate cover.

The Department partially concurs with GAO's first recommendation that the Secretary of Defense develop guidance that establishes a consistent approach for how the Military Services consider factors other than relative risk in munitions response site sequencing decisions. DoD will collect and evaluate information and lessons learned from the Military Services describing their processes for sequencing munitions response sites for munitions response activities. If additional guidance is necessary, DoD will develop specific sequencing protocols and issue further guidance to ensure consistency across the Military Services.

The Department partially concurs with GAO's second recommendation that the Secretary of Defense establish and report to Congress: (1) a target date for completing cleanup of Formerly Used Defense Sites (FUDS), as required by law; and (2) such interim goals as DoD determines feasible for the remedy in place or response complete goals at munitions response sites on active installations, installations closed under the 2005 Round of Base Realignment And Closures (BRAC), and FUDS. The Fiscal Year (FY) 2007 National Defense Authorization Act (NDAA) requires DoD to establish a remedy in place or response complete goal for munitions response sites at FUDS; DoD will set target dates for remedy in place or response complete, not for completing cleanup. The FY2007 NDAA also requires DoD to establish interim goals to track remedy in place or response complete progress at active and BRAC 2005 installations and FUDS properties. DoD will

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**Appendix II: Comments from the Department  
of Defense**

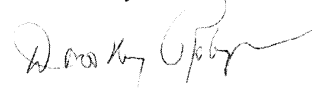
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comply with the requirements outlined in the FY2007 NDAA establishing additional short- and long-term performance goals once it has a better understanding of the nature and extent of cleanup requirements at these sites.

The Department does not concur with GAO's third recommendation that the Secretary of Defense establish a process to ensure the completeness of obligated funds data for phases of the Military Munitions Response Program cleanup process in DoD's Knowledge-Based Corporate Reporting System database. GAO's suggestion that obligated funds are incomplete is not correct. Obligated funds data are available but are not typically reported for individual sites because contracts are often awarded at the installation-level or for groups of sites. Further, the Department has procedures in place to plan, program, budget, and execute funds for cleanup actions by phase at munitions response sites.

The Department does not concur with GAO's request for Congress to consider requiring DoD to report separately on sites closed because they did not require removal or remedial actions. DoD believes that all sites that complete the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process should be considered equal accomplishments whether they require a removal or remedial action or not. The Department expends significant resources to conduct preliminary assessments, site inspections, remedial investigations, and feasibility studies to determine and document that it has met its cleanup objectives, and that there is no requirement for removal or remedial action. When the Department meets the cleanup objectives at a given site, the response action is complete, regardless of the phase of the CERCLA process in which the action is completed.

Sincerely,



Dorothy Robyn  
Deputy Under Secretary of Defense  
(Installations and Environment)

Enclosures:  
As stated

GAO Draft Report Dated March 2010  
GAO-10-384 (GAO CODE 361041)  
Enclosure 1

“MILITARY MUNITIONS RESPONSE PROGRAM, Opportunities Exist to Improve  
Program Management”

DEPARTMENT OF DEFENSE COMMENTS TO THE GAO RECOMMENDATIONS

**RECOMMENDATION 1:** The GAO recommends that the Secretary of Defense develop guidance for the Military Services and the Corps that establishes a consistent approach for how factors other than relative risk should be considered in munitions response site sequencing decisions. (p. 33/GAO Draft Report)

**DOD RESPONSE:** DoD partially concurs. OSD believes that it has issued sufficient guidance on this subject at this time. This guidance appears in the Final Rule of the Munitions Response Site Prioritization Protocol (32 CFR Part 179) and is further explained in OSD’s internal publication entitled *Munitions Response Site Prioritization Protocol Primer*, dated April 2007. Using the guidance provided in these documents, the Military Services sequence munitions response sites based primarily on the priority determined by applying the Munitions Response Site Prioritization Protocol, but also consider a range of factors including, but not limited to regulator and stakeholder concerns, and cultural, social and economic issues. These site-specific factors may influence the sequencing decision, but do not alter the priority. In the past three years of implementing this guidance, the Military Services have tested various sequencing practices and learned from their experiences in the field. Next year, after the Military Services begin sequencing their munitions response sites in earnest, OSD will collect and evaluate information and lessons learned from the Military Services describing their processes for sequencing munitions response sites for cleanup action. If we determine that the current amount of flexibility enjoyed by the Military Services is causing issues, OSD will consider developing additional guidance to establish more uniformity across the Military Services.

**RECOMMENDATION 2:** The GAO recommends that the Secretary of Defense establish and report to Congress (1) a target date for completing cleanup of FUDS, as required by law, and (2) such interim goals as DoD determines feasible for the remedy in place or response complete goals at munitions response sites on active and BRAC 2005 installations and FUDS. (p. 33/GAO Draft Report)

**DOD RESPONSE:** DoD partially concurs. The FY2007 National Defense Authorization Act requires the Secretary to establish a remedy in place or response complete goal for FUDS. The legislation does not require DoD to set a target date for completing cleanup of FUDS; therefore,

DoD does not concur with this part of the recommendation. In addition, the law does not require DoD to establish these goals within any certain timeframe.

The Military Services are currently completing site inspections on a very aggressive schedule at munitions response sites on active installations and FUDS properties. The data gathered during the site inspection phase are critical to informing DoD of cleanup requirements. Specifically, the site inspection data is necessary to determine how many sites will require additional response actions under the Military Munitions Response Program (MMRP) and the potential scope of the work. Once the site inspections are complete and the Department has sufficient information about site-specific conditions, DoD will evaluate performance data to understand the nature and extent of cleanup requirements. The Department will use this analysis to meet its statutory requirement to establish a long-term remedy in place or response complete goal for FUDS. In addition, DoD will establish short-term interim goals for active and BRAC 2005 installations and FUDS properties that are both challenging and reasonable.

**RECOMMENDATION 3:** The GAO recommends that the Secretary of Defense establish a process to ensure the completeness of obligated funds data for phases of the MMRP cleanup process in DOD's Knowledge Based Corporate Reporting System database. (p. 33/GAO Draft Report)

**DOD RESPONSE:** DoD does not concur. The Department has procedures in place to plan, program, budget, and execute funds for cleanup actions at munitions response sites. The Military Services prepare cost estimates for future work at the site-level, while obligation data is often aggregated across multiple sites because contracts are typically awarded at the installation-level or for a group of sites. The cost estimating programs DoD uses are based on ongoing and detailed data gathering on costs incurred for various types of environmental restoration work at a very detailed level. The Military Services report this data in DoD's Knowledge-Based Corporate Reporting System database. The Department reviews this data for accuracy and completeness prior to inclusion of the site-level obligations and cost estimates in the Defense Environmental Programs Annual Report to Congress. The Military Services also report obligations and cost estimates at the phase-level in the Select and Native Programming Data Input System. Because this data is at the phase- rather than site-level, obligations for contracts awarded at the installation-level or for a group of sites are captured in the system. This information is reported in the Defense Environmental Programs Annual Report to Congress. Thus, complete obligation data is captured and provided to Congress and the public, but the Knowledge-Based Corporate Reporting System is not the source of the data.

**CONGRESSIONAL CONSIDERATION:** The GAO recommends a matter for Congressional Consideration. To improve transparency for progress DoD has made in cleaning up MMRP sites, Congress may wish to consider requiring that DoD report in a separate category from its accounting of "response complete" sites in the Defense Environmental Programs Annual Report to Congress, any sites that DoD determined did not require actual cleanup under the MMRP and were administratively closed. (p.33/GAO Draft Report)

**DOD RESPONSE:** DoD does not concur. DoD believes that sites achieving all cleanup objectives at any point in the process can be characterized as response complete under the

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**Appendix II: Comments from the Department  
of Defense**

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Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), whether they require a removal or remedial action or not. DoD objects to a separate classification of “administrative closure” to categorize sites that did not require a removal or remedial action because CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) do not distinguish the status of sites where response complete is determined early in the process from those where response complete is determined after active remediation. Furthermore, the NCP requires that a “no action” alternative be evaluated throughout the investigative phase and selected in the Record of Decision if the standards are already satisfied or there is no risk, so that unnecessary actions are not taken using taxpayer funds or required by responsible parties.

In addition, the Department expends significant resources to conduct preliminary assessments, site inspections, remedial investigations, and feasibility studies to determine and document that it has met its cleanup objectives, and that there is no requirement for removal or remedial action. When the Department meets the cleanup objectives at a given site, the response action is complete, regardless of the phase of the CERCLA process in which the action is completed. It is misleading to characterize a site that achieves closure without a removal or remedial action differently from sites characterized as response complete after active remediation. This undermines the significant work and progress, including collaboration and work with regulators and stakeholders, that the Department is making under the MMRP.

The term “response complete” is appropriate for the purposes of MMRP metrics and reporting because it reflects that the necessary CERCLA response actions for which the Department is responsible have been completed. “Response complete” is used by DoD to track progress, but is not used to communicate with the public regarding the protectiveness of the situation at a specific site. Finally, this term is accurate and does not misrepresent progress because it means that further response work, other than possibly long-term management, is not required. This is what DoD is required to report and is an accurate representation of progress by the program in the completion of necessary CERCLA response actions under the Defense Environmental Restoration Program.

In the past, DoD has identified some sites that it believed required cleanup, but later determined that these sites did not require actions under CERCLA. For example, some sites were funded under the Installation Restoration Program, some sites were double counted, and some sites never existed and were added to the inventory in error. DoD stopped reporting these sites in its inventory beginning with the FY2009 Defense Environmental Programs Annual Report to Congress.

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# Appendix III: GAO Contact and Staff Acknowledgments

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## GAO Contact

Anu K. Mittal, Director, (202) 512-3841 or [mittala@gao.gov](mailto:mittala@gao.gov)

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## Staff Acknowledgments

In addition to the individual named above, Stephen D. Secrist, Assistant Director; Leo G. Acosta; Elizabeth Beardsley; Mark Braza; Nancy Crothers; Pamela Davidson; Janida Grima; Amanda Leissoo; Laina Poon; and Kim Raheb made significant contributions to this report.

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