

Fiscal Year 2012

Defense Environmental Programs

Annual Report to Congress



November 2013

Office of the Under Secretary of Defense
for Acquisition, Technology, and Logistics

The estimated cost of report or study for the Department of Defense is approximately \$308,000 in Fiscal Years 2012 - 2013. This includes \$139,000 in expenses and \$168,000 in DoD labor.

Generated on May 24, 2013 RefID: B-3371689

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INTRODUCTION

This FY 2012 Defense Environmental Programs Annual Report to Congress presents the funding invested in and progress of Department of Defense (DoD) environmental programs – Environmental Restoration, Environmental Quality (EQ), and Environmental Technology. This report satisfies the requirements of 10 U.S.C. § 2711. In FY 2012, DoD obligated approximately \$4.1 billion for its environmental programs: \$2.0 billion for environmental restoration activities; \$1.9 billion for environmental quality activities; and \$213.6 million for environmental technology.

The Department has long made it a priority to protect the environment on our installations, not only to preserve irreplaceable resources for future generations, but to ensure that we have the land, water and airspace we need to sustain military readiness. To achieve this objective, the Department has made a commitment to continuous improvement, pursuit of greater efficiency and adoption of new technology. In the President's FY 2014 budget, we requested \$3.83 billion to continue the legacy of excellence in our environmental programs.

Table 1 summarizes overall DoD environmental program funding from FY 2008 through FY 2014.

Table 1: Overall DoD Environmental Program Funding (millions of dollars)

	FY 2008 Actual	FY 2009 Actual	FY 2010 Actual	FY 2011 Actual	FY 2012 Actual	FY 2013 Estimated	FY 2014 Requested
Environmental Restoration							
Active Installations and Formerly Used Defense Sites (FUDS)	\$1,508.2	\$1,494.2	\$1,564.9	\$1,592.0	\$1,521.2	\$1,424.4	\$1,302.9
Legacy Base Realignment and Closure (BRAC)	\$483.4	\$452.2	\$471.9	\$335.8	\$382.3	\$322.1	\$379.3*
BRAC 2005	\$55.5	\$74.3	\$194.7	\$138.4	\$127.3	\$71.0	
Restoration Total	\$2,047.1	\$2,020.7	\$2,231.5	\$2,066.2	\$2,030.8	\$1,817.5	\$1,682.2
Environmental Quality							
Compliance	\$1,494.2	\$1,513.2	\$1,492.1	\$1,423.0	\$1,388.4	\$1,450.8	\$1,460.3
Natural and Cultural Resources	\$352.8	\$350.0	\$437.4	\$394.7	\$387.7	\$379.7	\$362.6
Pollution Prevention	\$121.3	\$114.4	\$90.9	\$85.6	\$97.9	\$107.0	\$106.4
EQ Total	\$1,968.3	\$1,977.6	\$2,020.4	\$1,903.3	\$1,874.0	\$1,937.5	\$1,929.3
Environmental Technology							
Technology Total	\$263.6	\$252.5	\$255.8	\$217.9	\$213.6	\$220.2	\$214.4
DoD Total ⁺	\$4,279.0	\$4,250.8	\$4,507.7	\$4,187.4	\$4,118.4	\$3,975.2	\$3,825.9

* The Legacy BRAC and BRAC 2005 accounts are merging in FY 2014.

⁺ Due to rounding, subtotals may not equal FY totals.

For more information on DoD's environmental programs, please visit: <http://www.denix.osd.mil>.

I. ENVIRONMENTAL RESTORATION PROGRAM

The Department began environmental restoration in 1975 under the Installation Restoration Program (IRP). The IRP addresses contamination from a hazardous substance or pollutant or contaminant at active installations, Formerly Used Defense Sites (FUDS), and Base Realignment and Closure (BRAC) locations. In 2001, DoD established the Military Munitions Response Program (MMRP) to address sites (referred to as munitions response sites or MRSs) known or suspected to contain unexploded ordnance (UXO), discarded military munitions (DMM), or munitions constituents (MC). Through the IRP and MMRP, DoD complies with environmental cleanup laws, such as the Comprehensive Environmental Response, Compensation, and Liability Act, also known as Superfund.

The Department measures cleanup progress against two milestones:

- Remedy In Place (RIP), which occurs when cleanup systems are constructed and operational; and
- Response Complete (RC), which occurs when the cleanup activities are complete (though DoD or a subsequent owner may continue to monitor the site).

Our focus remains on continuous improvement in the restoration program: minimizing overhead; developing new technologies to reduce cost and accelerate cleanup; and refining and standardizing our cost estimating. All of these initiatives help ensure that we make the best use of our available resources to complete cleanup. The Department is making steady progress, moving sites through the cleanup process towards achieving program goals. Of the more than 38,000 restoration sites, over 29,000 are now in monitoring status or complete.

Also during this fiscal year, DoD performed a thorough review and analysis of the existing goals, and in March 2013, established updated and consolidated environmental restoration goals. These updated goals reflect the maturation of the Environmental Restoration program, further enabling the DoD Components to advance sites through the final phases of cleanup to site closeout. These goals allow for increased flexibility to apply resources where most needed, and in the most cost-effective manner. They will also enable DoD to demonstrate overall program progress in a more streamlined, transparent fashion.

Table 2 lists the updated RIP and RC goals and summarizes DoD's progress. The table presents the number and percentage of sites that have achieved the goals from the beginning of the program through FY 2012, the number and percentage of sites projected to achieve the goals in FY 2013 and FY 2014, and the number and percentage of sites projected to achieve the goals from the beginning of the program through FY 2014.

Table 2: Environmental Restoration Goals and Progress*

Goal	Number of Sites Subject to the Goal	Number (and Percentage) of Sites that Achieved the Goal Through FY 2012	Number (and Percentage) of Sites Projected to Achieve the Goal in FY 2013	Number (and Percentage) of Sites Projected to Achieve the Goal in FY 2014	Number (and Percentage) of Sites Projected to Achieve the Goal Through FY 2014
Achieve RIP at 95% of IRP sites at active installations and BRAC locations by the end of FY 2014	30,804	26,557 (86%)	446 (1%)	1,365 (4%)	28,375 (92%)
Achieve RC at 90% and 95% of IRP sites and MRSs at active installations and BRAC locations, and IRP sites at FUDS properties, by the end of FY 2018 and FY 2021, respectively	36,660	28,400 (77%)	609 (2%)	1,418 (4%)	30,434 (83%)

* Excludes potentially responsible party sites, which are sites where an individual or company has been identified as being potentially responsible for or having contributed to the contamination. Site counts and percentages may not add due to reopening of a small number of sites due to regulator request and for administrative actions.

Through FY 2012, DoD achieved RIP at 86 percent of IRP sites at active installations and BRAC locations. The Department also achieved RC at 77 percent of IRP sites and MRSs at active installations and BRAC locations and IRP sites at FUDS properties. Although DoD is currently on track to meet its RC goals, DoD is not on target to achieve its RIP goal by the end of FY 2014. The complex nature of IRP sites at active installations and BRAC locations and the limitations of available technology have impacted DoD's progress. This problem is not unique to DoD. For example, technically complex groundwater sites present challenges across federal and private sectors. To address these challenges, DoD is working with other Federal agencies to develop an approach that effectively uses resources while protecting human health and the environment. Specific DoD efforts are described in the Environmental Technology Programs section of this report. The Department will focus on optimizing remedies and working with regulators, contractors, and other Federal agencies to implement new technologies.

To move sites toward RIP and RC and ensure protection of human health and the environment, DoD continues to assess emerging requirements and the impact from new and/or more stringent cleanup standards. For example, with the consultation of the U.S. Environmental Protection Agency (EPA), DoD is developing an assessment tool to determine the appropriate course of action at sites where vapor intrusion may be of concern.

While DoD is on track to achieve its RC goals for IRP sites and MRSs, one challenge to completing cleanup at FUDS properties includes obtaining rights of entry from current land owners to allow DoD to conduct investigations and cleanup. This challenge can delay finishing

investigations and cleaning up sites. DoD also faces challenges managing the potential threat to human health posed at MRSs when a long periods of time elapse between site identification and achieving RC. The Department is developing an Interim Risk Management policy to provide methods to protect human health during this period.

Another challenge to cleaning up MRSs in a timely and cost effective manner is distinguishing subsurface metallic objects (e.g., scrap metal, horse shoes, nails, cultural debris) from potentially dangerous subsurface military munitions. To address this challenge DoD developed classification technology that significantly improves DoD's ability to distinguish subsurface military munitions (i.e., UXO, DMM) from other metal objects. This technology is described in greater detail in the Environmental Technology section of this report. The Department continues to conduct demonstrations of this technology at MRSs and other areas known to contain military munitions with great success. The Department, working with state and Federal environmental regulators, will use the results from these demonstrations to (1) document procedures; (2) develop training, tools, and guidance; (3) capture the costs associated with its use; and (4) identify potential obstacles to move beyond the technology demonstrations phase and into the common use of this technology. The Department is working with EPA, state regulators, and Federal land managers in its Munitions Response Dialogue to resolve issues with and advance the use of classification technology.

IRP Site Status and Funding

Table 3 summarizes the status of IRP sites at active installations, FUDS properties, Legacy BRAC locations, and BRAC 2005 locations for each DoD Component. The table presents the number of sites in the inventory, the number of sites at RIP and RC through FY 2011 and FY 2012, and the changes in RIP and RC status from FY 2011 to FY 2012.

Table 3: IRP Site Status

	Total IRP Inventory (FY 2012)	Remedy in Place (RIP)			Response Complete (RC)		
		Number of IRP Sites at RIP Through FY 2011	Number of IRP Sites at RIP Through FY 2012	Change in RIP Status from FY 2011 to FY 2012	Number of IRP Sites at RC Through FY 2011	Number of IRP Sites at RC Through FY 2012	Change in RC Status from FY 2011 to FY 2012
Active Installations							
Army	11,034	10,188	10,253	65	9,956	10,027	71
Department of Navy (DON)*	3,985	3,356	3,527	171	2,347	2,958	611 ⁺
Air Force	7,141	5,098	5,131	33	4,505	4,485	-20**
Defense Logistics Agency (DLA)	367	344	343	-1 ⁺⁺	330	325	-5***
Active Total	22,527	18,986	19,254	268	17,138	17,795	657
FUDS Properties							
FUDS Total	2,983	2,184	2,251	67	2,162	2,227	65
Legacy BRAC Locations							
Army	2,006	1,877	1,903	26	1,847	1,868	21
DON*	1,091	1,000	1,008	8	847	856	9
Air Force	4,884	1,421	4,188	2,767 ⁺⁺⁺	1,276	3,990	2,714 ⁺⁺⁺
DLA	48	48	48	0	47	47	0
Legacy BRAC Total	8,029	4,346	7,147	2,801	4,017	6,761	2,744
BRAC 2005 Locations							
Army	109	68	59	-9 [‡]	43	43	0
DON*	28	17	19	2	7	8	1
Air Force	111	28	78	50 ⁺⁺⁺	27	77	50 ⁺⁺⁺
DLA ^{‡‡}	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BRAC 2005 Total	248	113	156	43	77	128	51
DoD Total	33,787	25,629	28,808	3,179	23,394	26,911	3,517

* DON includes Navy and Marine Corps, as these Components manage Environmental Restoration as a combined program.

⁺ DON reverted sites from RC to RIP status in FY 2011 based on DON requirements for written regulatory approval of RC. DON obtained written regulatory approval for these sites in FY 2012 and updated the dates to reflect the original RC dates.

** The Air Force reverted sites from RC to RIP status in FY 2012 to verify the documentation supporting the RC milestone.

⁺⁺ The number of sites at RIP decreased because additional studies are required at a site reported at RIP in FY 2011.

^{***} The number of sites at RC decreased because additional studies and cleanup are required at sites reported at RC in FY 2011.

⁺⁺⁺ The Air Force added 3,171 sites previously managed under BRAC Planning and Compliance to the IRP in FY 2012. Many of these sites achieved RIP and RC prior to FY 2012.

[‡] The number of sites at RIP decreased because the Army reopened sites to obtain documentation to support the RIP milestone.

^{‡‡} DLA does not have BRAC 2005 locations.

Table 4 summarizes IRP funding from FY 2008 through FY 2014 at active installations, FUDS properties, Legacy BRAC locations, and BRAC 2005 locations.

Table 4: IRP Funding (millions of dollars)

	FY 2008 Actual	FY 2009 Actual	FY 2010 Actual	FY 2011 Actual	FY 2012 Actual	FY 2013 Estimated	FY 2014 Requested
Active Installations							
Army	\$396.2	\$337.3	\$327.8	\$236.6	\$263.4	\$253.3	\$220.0
DON*	\$261.2	\$245.5	\$247.7	\$246.9	\$251.3	\$246.7	\$252.0
Air Force	\$414.9	\$387.8	\$393.7	\$448.8	\$480.6	\$454.6	\$405.3
Defense-wide ⁺	\$14.8	\$11.5	\$15.2	\$10.1	\$11.7	\$11.1	\$8.8
Active Total	\$1,087.1	\$982.1	\$984.4	\$942.4	\$1,007.0	\$965.7	\$886.1
FUDS Properties							
FUDS Total	\$153.9	\$167.6	\$164.5	\$243.0	\$214.3	\$169.4	\$168.1
Legacy BRAC Locations							
Army	\$53.8	\$34.0	\$77.7	\$50.5	\$38.6	\$46.5	\$96.3
DON*	\$268.2	\$219.2	\$201.5	\$130.3	\$180.5	\$116.0	\$115.3
Air Force	\$118.3	\$112.3	\$108.3	\$110.6	\$90.6	\$112.6	\$118.0
Defense-wide ⁺	\$3.6	\$2.6	\$4.0	\$0.0	\$0.0	\$0.0	\$0.0
Legacy BRAC Total	\$443.9	\$368.1	\$391.5	\$291.4	\$309.7	\$275.1	\$329.6
BRAC 2005 Locations**							
Army	\$4.3	\$17.5	\$8.9	\$7.9	\$46.4	\$19.2	\$0.0
DON*	\$16.2	\$2.6	\$13.7	\$12.9	\$32.9	\$8.1	\$0.0
Air Force	\$0.0	\$0.0	\$14.8	\$3.0	\$1.6	\$1.6	\$0.0
Defense-wide ⁺	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BRAC 2005 Total	\$20.5	\$20.1	\$37.4	\$23.8	\$80.9	\$28.9	\$0.0
DoD Total⁺⁺	\$1,705.4	\$1,537.9	\$1,577.8	\$1,500.6	\$1,611.9	\$1,439.1	\$1,383.8

* DON includes Navy and Marine Corps, as these DoD Components manage Environmental Restoration as a combined program.

⁺ Defense-wide accounts include other defense agencies and DLA. DLA does not have BRAC 2005 locations.

** The Legacy BRAC and BRAC 2005 accounts are merging in FY 2014.

⁺⁺ Due to rounding, subtotals may not equal FY totals.

MRS Status and Funding

Table 5 summarizes the status of MRSs at active installations, FUDS properties, Legacy BRAC locations, and BRAC 2005 locations for each DoD Component. The table presents the number of MRSs in the inventory, the number of MRSs at RIP and RC through FY 2011 and FY 2012, and the changes in RIP and RC status from FY 2011 to FY 2012.

Table 5: MRS Status

	Total MRS Inventory (FY 2012)	Remedy in Place (RIP)			Response Complete (RC)		
		Number of MRSs at RIP Through FY 2011	Number of MRSs at RIP Through FY 2012	Change in RIP Status from FY 2011 to FY 2012	Number of MRSs at RC Through FY 2011	Number of MRSs at RC Through FY 2012	Change in RC Status from FY 2011 to FY 2012
Active Installations							
Army	1,400	648	900	252	648	899	251
DON*	371	129	143	14	116	131	15
Air Force	951	225	356	131	225	347	122
DLA	7	0	0	0	0	0	0
Active Total	2,729	1,002	1,399	397	989	1,377	388
FUDS Properties							
FUDS Total	1,773	691	787	96	691	787	96
Legacy BRAC Locations							
Army	132	78	81	3	78	81	3
DON*	26	11	10	-1 ⁺	11	10	-1 ⁺
Air Force	129	116	124	8	114	122	8
DLA**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Legacy BRAC Total	287	205	215	10	203	213	10
BRAC 2005 Locations							
Army	48	21	24	3	21	24	3
DON*	12	5	5	0	5	5	0
Air Force	1	0	0	0	0	0	0
DLA**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BRAC 2005 Total	61	26	29	3	26	29	3
DoD Total	4,850	1,924	2,430	506	1,909	2,406	497

* DON includes Navy and Marine Corps, as these DoD Components manage Environmental Restoration as a combined program.

⁺ The number of sites at RIP and RC decreased due to a data error; DON inadvertently reported one site at RIP and RC in FY 2011 that had not achieved the milestones.

** DLA does not have MRSs at Legacy BRAC locations. DLA does not have any BRAC 2005 locations.

Table 6 summarizes MMRP funding from FY 2008 through FY 2014 at active installations, FUDS properties, Legacy BRAC locations, and BRAC 2005 locations.

Table 6: MMRP Funding (millions of dollars)

	FY 2008 Actual	FY 2009 Actual	FY 2010 Actual	FY 2011 Actual	FY 2012 Actual	FY 2013 Estimated	FY 2014 Requested
Active Installations							
Army	\$41.2	\$64.6	\$108.5	\$85.5	\$82.7	\$82.6	\$78.8
DON*	\$51.7	\$49.4	\$38.0	\$55.4	\$56.7	\$63.9	\$64.1
Air Force	\$41.3	\$107.4	\$100.6	\$52.2	\$44.9	\$74.6	\$34.5
Defense-wide⁺	\$0.0	\$0.0	\$0.0	\$0.0	\$1.6	\$0.0	\$2.0
Active Total	\$134.2	\$221.4	\$247.1	\$193.1	\$185.9	\$221.1	\$179.4
FUDS Properties							
FUDS Total	\$132.8	\$123.1	\$168.8	\$213.5	\$114.0	\$68.1	\$69.4
Legacy BRAC Locations							
Army	\$33.4	\$52.1	\$30.4	\$15.8	\$27.1	\$27.3	\$26.3
DON*	\$22.9	\$20.0	\$8.2	\$6.4	\$22.9	\$12.8	\$14.3
Air Force	\$1.8	\$1.4	\$2.5	\$1.7	\$4.1	\$0.3	\$1.4
Defense-wide⁺	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Legacy BRAC Total	\$58.1	\$73.5	\$41.1	\$23.9	\$54.1	\$40.4	\$42.0
BRAC 2005 Locations**							
Army	\$0.4	\$2.4	\$1.9	\$17.7	\$24.8	\$3.1	\$0.0
DON*	\$2.3	\$0.1	\$1.3	\$2.1	\$10.5	\$5.0	\$0.0
Air Force	\$0.0	\$0.0	\$0.0	\$43.7	\$0.0	\$0.0	\$0.0
Defense-wide⁺	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BRAC 2005 Total	\$2.7	\$2.5	\$3.2	\$63.5	\$35.3	\$8.1	\$0.0
DoD Total⁺⁺	\$327.8	\$420.5	\$460.2	\$494.0	\$389.3	\$337.7	\$290.8

* DON includes Navy and Marine Corps, as these DoD Components manage Environmental Restoration as a combined program.

⁺ Defense-wide accounts include other defense agencies and DLA, which began reporting MRSs at active installations in FY 2011. DLA does not have MRSs at Legacy BRAC locations. DLA does not have any BRAC 2005 locations.

** The Legacy BRAC and BRAC 2005 accounts are merging in FY 2014.

⁺⁺ Due to rounding, subtotals may not equal FY totals.

Planning, Compliance, and Other BRAC Funding

Table 7 summarizes planning, compliance, and other funding from FY 2008 through FY 2014 at Legacy BRAC and BRAC 2005 locations.

Table 7: Planning, Compliance, and Other Funding* (millions of dollars)

	FY 2008 Actual	FY 2009 Actual	FY 2010 Actual	FY 2011 Actual	FY 2012 Actual	FY 2013 Estimated	FY 2014 Requested
Legacy BRAC Locations							
Army	\$9.8	\$1.2	\$28.8	\$2.8	\$0.4	\$1.6	\$7.2
DON⁺	-\$32.1*	\$5.5	\$7.5	\$16.2	-\$1.8*	\$0.7	\$0.5
Air Force	\$3.6	\$4.1	\$3.0	\$1.5	\$19.8	\$4.2	\$0.0
Defense-wide**	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Legacy BRAC Total	-\$18.7*	\$10.8	\$39.3	\$20.5	\$18.4	\$6.5	\$7.7
BRAC 2005 Locations⁺⁺							
Army	\$13.0	\$19.9	\$136.9	\$46.3	\$41.2	\$35.5	\$0.0
DON⁺	\$1.2	\$5.8	\$4.6	\$0.2	-\$30.0*	\$0.0	\$0.0
Air Force	\$18.2	\$26.0	\$12.6	\$4.6	\$0.0	-\$1.6	\$0.0
Defense-wide**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BRAC 2005 Total	\$32.4	\$51.7	\$154.1	\$51.1	\$11.2	\$33.9	\$0.0
DoD Total***	\$13.7	\$62.5	\$193.4	\$71.6	\$29.6	\$40.4	\$7.7

* Other funding may include revenue from land sales or funds reprogrammed from other FYs or to other FYs. Negative values indicate that the DoD Components obligated more funds for the IRP and/or MMRP than Congress provided in the given FY.

⁺ DON includes Navy and Marine Corps, as DoD these Components manage Environmental Restoration as a combined program.

** Defense-wide accounts include other defense agencies and DLA, which does not have BRAC 2005 locations.

⁺⁺ The Legacy BRAC and BRAC 2005 accounts are merging in FY 2014.

*** Due to rounding, subtotals may not equal FY totals.

II. ENVIRONMENTAL QUALITY PROGRAMS

Compliance

The DoD Compliance Program provides resources to comply with applicable requirements such as Federal, state, and local environmental laws and regulations and requirements on overseas installations. Under this Program, DoD activities include sampling and analyzing pollutant discharges to air and water, maintaining environmental permits for regulated activities, providing safe drinking water, and disposing of regulated waste. It also includes projects upgrading wastewater treatment facilities and installing air pollution controls to meet new regulatory standards. In FY 2012, DoD increased the Clean Water Act permit compliance rate to 95 percent, maintained the Drinking Water compliance rate above national average, increased the solid waste diversion rate to 66 percent, and reduced emissions of Criteria Air Pollutants by more than 1,200 tons.

Table 8 summarizes Compliance Program funding from FY 2008 through FY 2014 for Army, Navy, Air Force, Marine Corps, and the Defense-wide accounts.

Table 8: Compliance Program Funding (millions of dollars)

	FY 2008 Actual	FY 2009 Actual	FY 2010 Actual	FY 2011 Actual	FY 2012 Actual	FY 2013 Estimated	FY 2014 Requested
Army	\$475.4	\$409.4	\$401.1	\$393.4	\$341.6	\$423.9	\$397.0
Navy	\$394.3	\$390.3	\$337.0	\$369.0	\$403.0	\$393.1	\$406.9
Air Force	\$312.8	\$311.7	\$354.9	\$338.9	\$295.9	\$348.2	\$367.4
Marine Corps	\$108.7	\$189.0	\$125.0	\$126.0	\$131.1	\$127.6	\$114.5
Defense-wide*	\$203.0	\$212.8	\$274.1	\$195.7	\$216.8	\$158.0	\$174.5
DoD Total⁺	\$1,494.2	\$1,513.2	\$1,492.1	\$1,423.0	\$1,388.4	\$1,450.8	\$1,460.3

* Defense-wide accounts include DLA and other defense agencies.

⁺ Due to rounding, subtotals may not equal FY totals.

Overall Trend Analysis

From FY 2008 to FY 2011, overall DoD funding decreased mostly due to fluctuations in one-time projects. FY 2012 funding decreased largely due to the migration of funds out of the Compliance Program into other, non-environmental programs.

Explanation of Significant Changes in Funding Amounts

- From FY 2011 to FY 2012, the 13.2 percent decrease in Army funding was due to the migration of funding from compliance to pollution prevention and non-environmental programs. The 9.2 percent increase in Navy funding addressed Clean Water Act requirements and studies. The 12.7 percent decrease in Air Force funding resulted from reduced personnel costs caused by reorganization as well as the Air Force moving funds to natural and cultural resources conservation requirements and other non-environmental programs. The increase in Defense-wide account funding (10.8 percent) was caused by one-time projects to address Clean Water Act requirements.

- From FY 2012 to FY 2013, Army's 24.1 percent and Air Force's 17.7 percent significant increases in funding are the result of a return to normal funding levels from the low FY 2012 budget execution. The Defense-wide account funding reduction (-27.1 percent) is due to the completion of two Clean Water Act projects for fuel storage facilities.
- From FY 2013 to FY 2014, the anticipated decrease in Army funding (-6.3 percent) is the result of personnel reductions and reductions in other recurring costs. The 3.5 percent increase in Navy funding is to address increased storm water fees, Chesapeake Bay Assessments, and installation oil spill response plans. The projected increase in Air Force funding (5.5 percent) is due to increased requirements to maintain compliance. The Marine Corps' 10.3 percent decrease in funding is the result of completing studies for Guam in FY 2013. The Defense-wide account's 10.4 percent funding increase reflects support for three Clean Water Act compliant fuel facilities.

Natural and Cultural Resources

The Department supports mission readiness and training flexibility by managing its natural and cultural resources to enable continued access to testing and training lands while complying with existing laws (e.g., Endangered Species Act (ESA), Sikes Act, National Historic Preservation Act), and by ensuring long-term sustainability of our Nation's natural and cultural heritage. Military installations are home to more than 440 threatened and endangered species. Additionally, they are home to more than 500 species at risk, about 75 of which are found only on DoD lands. The Department also manages and maintains cultural resources at more than 320 DoD installations that contain over 123,000 archaeological sites.

Table 9 summarizes natural and cultural resources funding from FY 2008 through FY 2014 for Army, Navy, Air Force, Marine Corps, and the Defense-wide accounts.

Table 9: Natural and Cultural Resources Funding (millions of dollars)

	FY 2008 Actual	FY 2009 Actual	FY 2010 Actual	FY 2011 Actual	FY 2012 Actual	FY 2013 Estimated	FY 2014 Requested
Army	\$177.1	\$180.4	\$267.1	\$177.1	\$156.7	\$187.7	\$163.2
Navy	\$22.4	\$24.2	\$34.3	\$41.4	\$75.3	\$48.5	\$56.2
Air Force	\$73.7	\$67.9	\$57.2	\$66.3	\$68.1	\$64.8	\$58.5
Marine Corps	\$27.9	\$20.1	\$20.5	\$20.2	\$35.7	\$21.0	\$27.6
Defense-wide*	\$51.7	\$57.4	\$58.3	\$89.7	\$51.9	\$57.7	\$57.1
DoD Total⁺	\$352.8	\$350.0	\$437.4	\$394.7	\$387.7	\$379.7	\$362.6

* Defense-wide accounts include DLA and other defense agencies.

⁺ Due to rounding, subtotals may not equal FY totals.

Overall Trend Analysis

Funding for natural and cultural resources activities increased overall between FY 2008 and FY 2012, with a significant spike in FY 2010. The 25 percent increase from FY 2009 to FY 2010 was the result of an increase in Army Integrated Natural Resources Management Plan

costs, additional cultural resources efforts, additional threatened and endangered species costs, and Army Compatible Use Buffers. The Department anticipates that overall funding levels will slowly decrease in FY 2013 and FY 2014 due to the completion of one-time projects by the Army and Air Force and the execution of fewer Compatible Use Zone Agreements.

Explanation of Significant Changes in Funding Amounts

- From FY 2011 to FY 2012, the significant decrease in Army funding (-11.5 percent) was caused by reduced personnel costs and fewer studies. The 81.9 percent increase in Navy funding was mostly attributed to an increase in non-recurring costs associated with cultural resources and a concerted focus on environmental conservation on ranges. The Marine Corps' 76.7 percent budget increase in FY 2012 was due in part to the need to conduct natural and cultural resources inventories in support of several proposed land expansion initiatives and also due to the receipt of a \$12.5 million congressional budget line increase for natural and cultural resources projects that support use of military ranges. The Marine Corps used the budget line increase for cultural resource inventories and evaluations, land rehabilitation to improve access and use of ranges and training areas, and off-base partnerships for endangered species protection and habitat restoration.
- From FY 2012 to FY 2013, the increase in Army funding (19.8 percent) is due to an increase in personnel and studies for both natural and cultural resources. The significant decrease in Navy funding (-35.6 percent) is caused by the anticipated completion of range conservation projects including environmental surveys, modeling efforts, and assessments at various locations. The decrease in U.S. Marine Corps funding (-41.1 percent) reflects the congressional add in FY 2012.
- From FY 2013 to FY 2014, Army's projected funding reduction (-13.1 percent) is due to fewer studies since the completion of BRAC relocations. The 15.9 percent increase in Navy funding is to address various natural resources requirements associated with federal laws such as the Marine Mammal Protection Act and the ESA. The increase in Marine Corps funding (31.4 percent) is to address planning and management for anticipated increased land holdings at Marine Corps Air Ground Combat Center Twentynine Palms, California; Townsend Bombing Range, Georgia; and the re-withdraw of the Chocolate Mountain Aerial Gunnery Range, California.

Pollution Prevention

The Department created the Pollution Prevention Program to reduce or eliminate waste generation, natural resources losses, and process emissions. The Department also implements energy, water, and fuel efficiency measures that further reduce pollution and better use existing resources. As a result, DoD's pollution prevention investments have the potential to reduce costs Department-wide. The Program is built on a flexible framework that helps DoD prioritize cost-effective initiatives while maintaining safe, uninterrupted operations and sustaining military readiness.

Table 10 summarizes Pollution Prevention Program funding from FY 2008 through FY 2014 for Army, Navy, Air Force, Marine Corps, and the Defense-wide accounts.

Table 10: Pollution Prevention Funding (millions of dollars)

	FY 2008 Actual	FY 2009 Actual	FY 2010 Actual	FY 2011 Actual	FY 2012 Actual	FY 2013 Estimated	FY 2014 Requested
Army	\$28.7	\$23.2	\$18.7	\$18.6	\$37.4	\$33.6	\$33.1
Navy	\$14.6	\$16.9	\$12.8	\$15.8	\$11.7	\$6.6	\$6.8
Air Force	\$59.4	\$50.5	\$36.0	\$33.8	\$22.2	\$46.0	\$44.2
Marine Corps	\$15.5	\$19.5	\$19.9	\$14.3	\$21.4	\$15.9	\$17.6
Defense-wide*	\$3.1	\$4.3	\$3.5	\$3.1	\$5.2	\$4.9	\$4.7
DoD Total⁺	\$121.3	\$114.4	\$90.9	\$85.6	\$97.9	\$107.0	\$106.4

* Defense-wide accounts include DLA and other defense agencies.

⁺ Due to rounding, subtotals may not equal FY totals.

Overall Trend Analysis

Funding for the Pollution Prevention Program declined from FY 2008 through FY 2011, including a significant decrease (-20.5 percent) from FY 2009 to FY 2010. However, pollution prevention activities have not decreased, but are now integrated into daily operations that are funded by other programs.

Explanation of Significant Changes in Funding Amounts

- From FY 2011 to FY 2012, Army funding doubled as a result of moving the Hazardous Material Management system from Compliance to Pollution Prevention and making investments in the industrial process to save overall costs. From FY 2011 to FY 2012, the Air Force's decrease in funding (-34.3 percent) was due to a significant number of unfilled civilian positions as a result of a reorganization.
- From FY 2012 to FY 2013, the Navy's decrease in funding (-43.6 percent) is the result of funding the Consolidated Hazardous Material Reutilization and Inventory Management Program as a routine part of the supply process instead of through the Pollution Prevention Program. The 107.2 percent increase in Air Force funding is due to a return to normal funding levels to support pollution prevention efforts. Pollution prevention efforts now receive higher priority as the most efficient environmental alternative.

III. ENVIRONMENTAL TECHNOLOGY PROGRAMS

The Office of the Secretary of Defense (OSD) administers the Strategic Environmental Research and Development Program (SERDP) and the Environmental Security Technology Certification Program (ESTCP). Environmental Technology is included in this report to satisfy the requirements of 10 U.S.C. § 2711.

Table 11 summarizes Environmental Technology Program funding from FY 2008 through FY 2014 for Army, Department of Navy (including Marine Corps), Air Force, and the Defense-wide accounts.

Table 11: Environmental Technology Funding (millions of dollars)

	FY 2008 Actual	FY 2009 Actual	FY 2010 Actual	FY 2011 Actual	FY 2012 Actual	FY 2013 Estimated	FY 2014 Requested
Army*							
Army Total	\$79.6	\$76.0	\$75.0	\$53.1	\$54.2	\$50.9	\$46.1
DON⁺							
DON Total	\$48.7	\$46.2	\$46.6	\$41.3	\$42.4	\$42.3	\$39.1
Air Force							
Air Force Total	\$25.8	\$25.6	\$26.1	\$25.6	\$15.7	\$10.4	\$12.0
Defense-wide**							
SERDP***	\$65.8	\$63.1	\$62.3	\$64.0	\$64.2	\$65.3	\$72.3
ESTCP***	\$38.8	\$36.6	\$41.0	\$28.8	\$31.8	\$45.9	\$39.5
Defense Warfighter Protection	\$5.0	\$5.0	\$4.8	\$5.1	\$5.3	\$5.4	\$5.4
Defense-wide Total	\$109.6	\$104.7	\$108.1	\$97.9	\$101.3	\$116.6	\$117.2
DoD Total⁺⁺	\$263.6	\$252.5	\$255.8	\$217.9	\$213.6	\$220.2	\$214.4

* The National Defense Center for Energy and Environment is included in the Army Program line.

+ DON includes Navy and Marine Corps.

** Defense-wide accounts include DLA and other defense agencies.

++ Due to rounding, subtotals may not equal FY totals.

*** SERDP/ESTCP values are for environment only and do not include energy projects.

Overall Trend Analysis

The Department's funding for Environmental Technology declined from FY 2008 to FY 2012, including a 29.2 percent decrease in Army funding from FY 2010 to FY 2011 due to a loss of congressional earmarks. Despite a slight increase from FY 2012 to FY 2013, DoD's funding is projected to continue to slowly decline through FY 2014.

Explanation of Significant Changes in Funding Amounts

- From FY 2011 to FY 2013, total funding varies slightly. Air Force funding declines beginning in FY 2012 because current initiatives are being completed.

Progress in Achieving Objectives and Goals

OSD administers the SERDP and ESTCP Defense-wide programs and oversees the Military Departments' environmental technology programs. The mission of the Defense-wide programs is to address high priority, cross-service environmental challenges. The DoD Components' environmental technology investments focus on unique Military Service requirements and complement the Defense-wide investments. SERDP, ESTCP, and the DoD Components work together to coordinate and leverage these investments.

Through advances in environmental technology, DoD has avoided spending significant resources for environmental cleanup and compliance and has reduced the life-cycle costs in the acquisition, operations and maintenance, and disposal of multiple weapon systems. For example, as discussed in the Environmental Restoration section, DoD has been challenged by the technical complexity of many remaining IRP sites, such as sites with contaminated groundwater. The Department has been developing technologies to cleanup these sites for many years and one successful example is the development and acceptance of bio-augmentation, the addition of microorganisms to groundwater to biodegrade contaminants. SERDP initiated research in the 1990s to better understand the role of microorganisms in cleaning up contaminants on DoD sites. Application of SERDP's research progressed rapidly, and DoD demonstrated bio-augmentation through ESTCP.

Today, multiple commercial biological cultures are available along with authoritative guidance documents and broad regulatory acceptance. The Department has used bio-augmentation at over 100 sites across DoD, and nearly 1,000 sites in the private sector, saving DoD significant resources that would have been applied to relatively ineffective cleanup. DoD's efforts are focused on the emerging and developing technologies to address the remaining, very complex sites that are not amenable to established technologies. As the National Academy of Sciences highlighted in their recently released report, "Alternatives for Managing the Nation's Complex Contaminated Groundwater Sites," SERDP and ESTCP are leading a national effort to find effective technologies to address this issue for DoD.

The Department has been following this same progressive process to address the other previously mentioned, unique, and significant cleanup challenge regarding the timeliness and cost associated with distinguishing subsurface metallic objects from potentially hazardous military munitions. Although the technologies currently used to investigate an MRS for subsurface military munitions are capable of detecting munitions at sites with diverse conditions, they are extremely limited in their ability to distinguish military munitions from other metal objects. The conservative approach taken in their use results in the unnecessary excavation of hundreds of thousands of metal objects that are not military munitions.

The estimated cost to clean up all known MRSs is more than \$14 billion. Over the past 10 years, DoD has invested in the development of classification technologies that can, with a high degree of reliability, distinguish between subsurface munitions and other metal objects. Since 2011 ESTCP has conducted accelerated demonstrations on sites across the United States, primarily at MRSs, to prove the effectiveness of classification technology. After completing demonstrations at 10 sites with diverse site conditions, classification technology continues to

provide outstanding results. By focusing removal efforts on military munitions, DoD believes using this technology will improve the efficiency of munitions responses, including reducing costs, while maintaining the protectiveness of response actions. The Department is planning 10 additional technology demonstrations through 2015 to substantiate further this technology's capabilities and facilitate both its acceptance by the regulatory community and its transition to common use.

The Department also supports developing and demonstrating innovative technologies that enable DoD to reduce its future environmental liability by reducing or eliminating hazardous materials in production and maintenance processes, reducing hazardous waste streams, and mitigating emissions and other environmental impacts that result from DoD operations. Reducing DoD's reliance on toxic and hazardous materials will lower life-cycle costs associated with worker safety, materiel acquisition, and waste disposal. Finally, DoD invests in a broad assortment of issues that impact DoD's range and installation management.