Defense Environmental Programs Annual Report to Congress for Fiscal Year 2022

October 2023

Office of the Under Secretary of Defense for Acquisition and Sustainment

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I. INTRODUCTION

This Defense Environmental Programs Annual Report to Congress for FY 2022 contains information on the progress of DoD's environmental programs, including Environmental Restoration, Environmental Conservation and Planning, Environmental Compliance, Climate Resilience, and Environmental Technology, pursuant to section 2711 (sections II-IV) of title 10, United States Code (U.S.C.). Each mission within our environmental portfolio is directly engaged in the successful execution of the 2022 National Defense Strategy. We are building the enduring advantage needed to advance our defense and security goals by effectively managing both the built and natural environment and ensuring that our warfighters have access to the land, water, and airspace they need to maintain their readiness.

II. ENVIRONMENTAL RESTORATION PROGRAM

The Department began environmental restoration in 1975 with the Installation Restoration Program (IRP). The IRP addresses contamination from hazardous substances or pollutants or other contaminants at active installations, Formerly Used Defense Sites (FUDS) properties, and Base Realignment and Closure (BRAC) locations in the United States. [1] In 2001, DoD established the Military Munitions Response Program to address defense sites (e.g., closed military ranges) known or suspected to contain unexploded ordnance, discarded military munitions, or munitions constituents. These sites are referred to as munitions response sites (MRSs). Through these programs, DoD complies with the Federal cleanup law, the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, also known as Superfund.

The Department remains focused on continuous improvement in the restoration program: minimizing overhead, adopting new technologies to reduce cost and accelerate cleanup, refining and standardizing our cost estimating, and improving our relationships with Federal and State regulators and affected communities through increased dialogue. These initiatives help ensure that we make the best use of our available resources to complete cleanup. The Department measures cleanup progress against the Response Complete (RC) milestone, which occurs when the cleanup activities are complete (although DoD or a subsequent owner may continue to monitor the site and/or implement land use controls). Of the 40,327 IRP sites and MRSs in the inventory, DoD has achieved the RC milestone at more than 34,000 sites (85 percent).

Additional information about the status of DoD's cleanup efforts and funding can be found on the DoD Cleanup website at https://www.denix.osd.mil/cleanup/.

[1] The IRP also addresses releases at National Guard facilities in accordance with title 10, U.S.C., section 2707(e).

IRP Site Inventory and Status

Table 1 summarizes the inventory and cleanup status of IRP sites at active installations, FUDS properties, and BRAC locations. The table presents the number of sites in the inventory, the number of sites at Remedy in Place (RIP)[2] and RC through FY 2021 and FY 2022, and the changes RIP and RC status from FY 2021 to FY 2022.

Table 1: IRP Site Inventory and Status

	Total IRP Inventory (FY 2022)	RIP			RC		
		Number of IRP Sites at RIP through FY 2021	Number of IRP Sites at RIP through FY 2022	Change in RIP Status from FY 2021 to FY 2022	Number of IRP Sites at RC through FY 2021	Number of IRP Sites at RC through FY 2022	Change in RC Status from FY 2021 to FY 2022
Active Installations							
Army	11,438	10,677	10,709	32	10,404	10,433	29
Department of the Navy (DON)*	4,047	3,691	3,689	-2+	3,468	3,477	9
Air Force	7,498	6,161	6,182	21	5,768	5,780	12
Defense Logistics Agency (DLA)	222	197	197	0	189	189	0
Active Total	**23,205**	**20,726**	**20,777**	**51**	**19,829**	**19,879**	**50**
FUDS Properties							
FUDS Total	**3,123**	**2,776**	**2,783**	**7**	**2,723**	**2,730**	**7**
BRAC Locations							
Army	2,114	2,028	2,024	-4**	1,983	1,980	-3**
DON*	1,152	1,112	1,115	3	1,005	1,013	8
Air Force	5,147	5,048	5,045	-3++	4,921	4,929	8
DLA	48	48	48	0	47	47	0
BRAC Total	**8,461**	**8,236**	**8,232**	**-4**	**7,956**	**7,969**	**13**
DoD Total	**34,789**	**31,738**	**31,792**	**54**	**30,508**	**30,578**	**70**

* DON includes Navy and Marine Corps; DON manages Navy and Marine Corps environmental restoration activities as a combined program.
+ The number of sites at RIP decreased because DON reopened this milestone to investigate per- and polyfluoroalkyl substances (PFAS) at some sites.
** The number of sites at RIP and RC decreased because the Army reopened these milestones to investigate PFAS at some sites, and to make corrections to historic data for sites declared RIP and RC prematurely.
++ The number of sites at RIP decreased because the Air Force reopened this milestone to investigate PFAS at some sites, and to make corrections to historic data, such as removing duplicate sites from its Defense Environmental Restoration Program (DERP) inventory.

[2] The Department measures the number of sites at RIP, which occurs when cleanup systems are constructed and operational.

MRS Inventory and Status

Table 2 summarizes the inventory and cleanup status of MRSs at active installations, FUDS properties, and BRAC locations. The table presents the number of MRSs in the inventory, the number of MRSs at RIP and RC through FY 2021 and FY 2022, and the changes in RIP and RC status from FY 2021 to FY 2022.

Table 2: MRS Inventory and Status

	Total MRS Inventory (FY 2022)	RIP			RC		
		Number of MRSs at RIP through FY 2021	Number of MRSs at RIP through FY 2022	Change in RIP Status from FY 2021 to FY 2022	Number of MRSs at RC through FY 2021	Number of MRSs at RC through FY 2022	Change in RC Status from FY 2021 to FY 2022
Active Installations							
Army	1,385	1,195	1,223	28	1,189	1,216	27
DON*	422	216	224	8	215	216	1
Air Force	1,043	860	867	7	860	867	7
DLA	7	0	0	0	0	0	0
Active Total	**2,857**	**2,271**	**2,314**	**43**	**2,264**	**2,299**	**35**
FUDS Properties							
FUDS Total	**2,318**	**1,043**	**1,066**	**23**	**1,043**	**1,066**	**23**
BRAC Locations							
Army	179	144	142	-2+	143	141	-2+
DON*	42	21	22	1	21	22	1
Air Force	142	136	132	-4**	132	130	-2**
DLA++	0	N/A	N/A	N/A	N/A	N/A	N/A
BRAC Total	**363**	**301**	**296**	**-5**	**296**	**293**	**-3**
DoD Total	**5,538**	**3,615**	**3,676**	**61**	**3,603**	**3,658**	**55**

* DON includes Navy and Marine Corps; DON manages Navy and Marine Corps environmental restoration activities as a combined program.
\+ The number of sites at RIP and RC decreased because the Army reopened these milestones to make corrections to historic data for sites declared RIP and RC prematurely.
** The number of sites at RIP and RC decreased because the Air Force reopened these milestones to make corrections to historic data, such as removing duplicate sites from its DERP inventory. A regulator also requested that the Air Force reopen the RIP milestone at one site.
++ DLA does not have MRSs at BRAC locations.

Cost-to-Complete (CTC) Estimate

The remaining CTC estimate for DERP sites as of the end of FY 2022 is $45.34 billion. This includes $38.78 billion in installation project funding allocated to individual sites and $6.56 billion in program management and other support costs that cannot be attributed to individual sites.

DoD expects this estimate to increase as regulatory agencies promulgate standards for Chemicals of Emerging Concern, including PFAS. The Department will plan and program for these requirements as it completes initial assessments and gathers more information about the required extent of the cleanup, which may cause DoD to readdress previously made decisions. Additional information about DoD's efforts related to PFAS can be found at www.defense.gov/pfas.

BRAC Inventory and Status by BRAC Round

In response to Government Accountability Office-22-105207, "Base Realignment and Closure: DoD Should Provide Congress More Complete and Transparent Information," Table 3 summarizes, by BRAC round, the total number of BRAC sites, when BRAC sites are projected to achieve the site closeout (SC) milestone,[3] the number of sites that are projected to remain in the long-term management (LTM) phase in perpetuity, and the estimated cost associated with LTM of these sites in perpetuity.

Table 3: BRAC Inventory and Status by BRAC Round

BRAC Round	Total Number of Sites	Final SC Date*	Number of Sites Projected to Remain in LTM in Perpetuity+	Estimated Cost Associated with LTM in Perpetuity ($000)**
1988	1,810	September 2089	71	229,339
1991	2,006	September 2081	249	400,741
1993	2,027	September 2083	166	189,973
1995	2,542	September 2080	404	344,836
2005	439	September 2070	47	52,314
BRAC Total	**8,824**	**September 2089**	**937**	**1,217,203**

* The final SC date is the date the last site is projected to achieve the SC milestone; it does not include sites projected to remain in LTM in perpetuity.
+ Sites that cannot achieve unlimited use and unrestricted exposure (UU/UE) will remain in the LTM phase in perpetuity.
** The estimated cost for LTM in perpetuity is based on a finite period of 30 years.

III. ENVIRONMENTAL CONSERVATION AND PLANNING

The Department understands that the protection of historic, culturally, and biologically significant resources and cooperation with Indigenous populations are integral to mission support and readiness. The Department manages its natural and cultural resources and complies with existing laws (e.g., Endangered Species Act (ESA), Sikes Act, National Historic Preservation Act) to enable continued access to testing and training lands and ensure the long-term sustainability of the Nation's natural and cultural heritage. DoD has also implemented consultation policies to better work with Tribal Nations, especially through its Native American Lands Environmental Mitigation Program (NALEMP).

Cultural Resources

As stewards of the Nation's largest inventory of Federally managed historic properties, DoD strives to maintain, promote, and interpret the cultural resources it manages, both to support the DoD mission and to preserve the country's military heritage for future generations.

In FY 2022, the DoD Legacy Resource Management Program (Legacy Program) established a partnership with the National Preservation Institute (NPI) to address compliance for and conservation of cultural resources on military lands. NPI is a leading organization in cultural heritage stewardship and is dedicated to offering professional training as well as consultation services. DoD anticipates this partnership will enhance the Department's efforts to routinely survey properties and assets for historic status eligibility.

[3] SC is the stage at which DoD has completed active management and monitoring at an environmental restoration site, and no additional environmental restoration funds will be expended at the site. SC occurs when environmental restoration goals have been achieved that allow UU/UE of the property (e.g., no further LTM, including land use controls, is required).

In FY 2022, DoD also head-started Partners in Preservation (PiP), with support from the Legacy Program, to connect experts in and across Federal agencies and other organizations. PiP will help facilitate DoD's management of its cultural resources. The FY 2022 Legacy Program funding has helped PiP's initial networking and relationship building efforts.

Natural Resources

DoD's Natural Resources Program plays a critical role in managing habitats on approximately 25 million acres of DoD owned and operated land, air, and water resources. DoD established the Recovery and Sustainment Partnership (RASP) initiative in collaboration with the Department of the Interior (DOI) in 2018 to better address mission and readiness impacts related to the ESA and listed species management requirements on military installations and ranges.

In FY 2022, RASP continued to build on its previous efforts and focused on improving the conservation status of over 40 listed species on DoD lands. Working collaboratively with the U.S. Fish and Wildlife Service (USFWS) under the RASP allows DoD to better address mission and readiness impacts from the ESA and proactively manage the listed species on its installations and ranges.

As a result of DoD's conservation and management efforts, DOI recognized the improved conservation status of multiple species listed under the ESA by reclassifying their protection status through de- and downlistings. Since 2018, RASP efforts have led to the de- and downlisting of numerous species including the downlisting of the Stephens' Kangaroo Rat in FY 2022. Additionally, USFWS and DoD are now working to improve conservation initiatives for 19 more listed species and 26 species-at-risk, which will address mission impacts on at least 150 DoD installations and ranges.

Native American Affairs

DoD recognizes Tribal nations, their sovereignty, and cultural traditions. Through its instructions and policies, DoD mandates consultation at varying levels of its organization, including installation commands. To support DoD's Native American Affairs, the Department facilitates Cultural Communications and Consultation Courses (CCCC) for military and DoD civilian personnel; conducts Native American outreach activities on behalf of the Office of the Secretary of Defense (OSD); and administers the NALEMP.

In FY 2022, DoD:

- Signed on to the 2021 Interagency Memorandum of Understanding on Protection of Tribal Treaty Rights and Reserved Rights;
- Delivered two CCCCs at Camp Ripley in Minnesota, and at Joint Base Pearl Harbor-Hickman in Hawaii;
- Hosted two listening sessions with the Wrangell Community Association in Wrangell, Alaska, and the Organized Village of Kake in Kake, Alaska;
- Hosted a webinar in collaboration with Arizona State University titled, "Federal Indian Law and the Federal Treaty and Trust Responsibility;"
- Initiated updates to DoD Instruction 4710.02, "DoD Interactions with Federally Recognized Tribes," to include language on consultation standards, tribal treaties, and communication best practices; and

- Provided financial support through the Legacy Program to index the Tribal Treaty Rights Database, an interagency effort led by the Department of Agriculture.

Native American Lands Environmental Mitigation Program

NALEMP addresses environmental effects of past DoD actions on Indian lands and on other locations where the Department, an Indian tribe, and the current landowner agree that such mitigation is appropriate. NALEMP-eligible sites are screened to determine priority for cleanup action based on health, safety, and environmental criteria. Typically impacts include hazardous materials, munitions debris, underground fuel storage tanks, unsafe buildings, lead-based paint and asbestos, and abandoned equipment. To date, over one-hundred sites in the lower 48 states and Alaska have been fully mitigated.

In FY 2022, NALEMP:

- Executed 13 Cooperative Agreements (CAs) with Indian tribes valued at $12.8 million;
- Executed FY 2020 and FY 2021 CA options valued at $2.5 million through FY 2022 plus-up funding;
- Entered into a Memorandum of Agreement and executed a CA with the Native Village of Ouzinkie in Alaska, which provided funding for the tribe to conduct site investigations and develop a Strategic Project Implementation Plan;
- Completed cleanup at 3 sites executed under FY 2020 CAs;
- Completed Step I or III site assessment reports for twenty reported potential impacts with eight tribes; and
- Approved 14 preproposals for the FY 2023 NALEMP projects and budgets. Tribes on the Short List are invited to partner with the DoD through 2-year CAs to address environmental effects.

Legacy Resource Management Program

Since 1990, the Legacy Program annually awards funds for natural and cultural resources and Native American Affairs projects that directly benefit DoD's mission and stewardship objectives. Project solicitation and selection are guided by defined priority topic areas, which can be modified to address DoD's existing or emerging resource management needs and challenges.

FY 2022 project investments focused on:

- Improving management and conservation of biodiversity, particularly DoD "mission priority species;"
- Improving techniques and approaches for resilient lands and ecosystem management;
- Improving wildland fire management and risk reduction;
- Improving consultation and coordination with Indian Tribal Governments and inclusion of Indigenous Knowledge in management programs;
- Improving management of cultural resources;
- Readiness and Range Sustainment;
- Climate adaptation, mitigation, and resilience;
- Incorporating new or emerging technologies;

- Improving data and information management; and
- Regulatory and management efficiencies.

FY 2022 Legacy Program funds were executed based on the priorities identified above and in conjunction with the Military Services. Key FY 2022 Legacy Program accomplishments include:

- Executing nine CAs, Interagency Agreements (IAA), and Military Interdepartmental Purchase Requests valued at $3.9 million;
- Administering, overseeing, and technically supporting 15 on-going, multiple year Legacy Program-funded projects;
- Executing six DoD installation-targeted, regional projects and partnerships under the DoD and U.S. Forest Service-International Programs Cooperation on Monarch Butterfly Conservation IAA;
- Providing $900,000 in funding to four DoD, technical initiatives: DoD Partners in Fight, DoD Partners in Amphibian and Reptile Conservation, the Avian Knowledge Network, and DoD PiP; and
- Providing $230,000 in funding to two national DoD collaborations: the National Public Lands Day partnership and the Cooperative Ecosystem Studies Units Network.

IV. ENVIRONMENTAL COMPLIANCE

The Department provides resources through its Compliance Program to comply with applicable requirements, such as Federal, State, and local environmental laws, regulations, and ordinances, for installations located in the United States. In addition, the Compliance Program includes applicable environmental compliance, remediation, and planning requirements for installations located outside of the United States.

Under the 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. The program also includes projects to upgrade wastewater treatment facilities and install air pollution controls to meet new regulatory standards.

DoD is committed to maintaining compliance with all applicable environmental laws and regulations. In FY 2022, DoD reduced the number of new enforcement actions (EAs) it received by over 10 percent. The over 10 percent reduction is attributed to EA reductions across laws such as the Clean Air Act, Clean Water Act, Resources Conservation and Recovery Act, and Safe Drinking Water Act.

Additionally, in FY 2022, the Department maintained Clean Water Act compliance rate of over 93 percent and a drinking water compliance rate of nearly 95 percent at regulated DoD Public Water Systems.

V. CLIMATE RESILIENCE

The Office of the Under Secretary of Defense for Acquisition and Sustainment has the primary responsibility for climate change adaptation and resilience. The Office of the Assistant Secretary of Defense for Energy, Installations, and Environment (OASD(EI&E)) is responsible for the primary climate change adaptation and resilience policy and guidance, oversight, and risk management activities across the Department, among other roles. In September 2021, the Department released the 2021 DoD Climate Adaptation Plan (CAP) to integrate climate change adaptation and climate resilience across agency programs, management of real property, public lands and waters, and financial services.

In FY 2022, OSD and the Miliary Services released the CAP 2022 Progress Report, Army Climate Strategy, DON Climate Action 2030, and Air Force Climate Action Plan. Each of these documents include strategic outcomes, objectives, and progress against the objectives established in the CAP. All Department Plans, Progress Reports, and Strategies are available at https://www.defense.gov/spotlights/tackling-the-climate-crisis/.

VI. ENVIRONMENTAL TECHNOLOGY PROGRAM

OSD oversees the Military Departments' and Defense-Wide environmental technology programs. OASD(EI&E) manages the Strategic Environmental Research and Development Program (SERDP) and the Environmental Security Technology Certification Program (ESTCP). The mission of the environmental technology programs is to address high-priority environmental challenges. The DoD Components' environmental technology investments focus on unique Military Service requirements and complement other Defense-wide investments. SERDP, ESTCP, and the DoD Components work together to coordinate and leverage these investments.

SERDP Progress in Achieving Objectives and Goals

SERDP is DoD's environmental and resilience science and technology program. DoD plans and executes SERDP with the Department of Energy and the U.S. Environmental Protection Agency (EPA). In FY 2022, SERDP:

- Continued to support over $150.0 million in research and development (R&D) projects focused on PFAS detection and remediation technology development. The PFAS R&D projects will help DoD address the Department's PFAS releases;
- Developed a draft analytical method 1633 to analyze 40 PFAS compounds in media other than drinking water. The EPA published the draft method in August 2021 and is conducting a multi-laboratory validation study to enable the publication of the final method;
- Conducted PFAS-free firefighting formulation tests to develop training methodologies for using PFAS-free formulations for firefighting; and
- Developed the DoD Regional Sea Level (DRSL) database, providing authoritative sea level scenarios for time horizons (2035, 2065, and 2100) for select DoD sites worldwide. The DRSL is available on the National Oceanic and Atmospheric Administration's website at https://toolkit.climate.gov/tool/department-defense-regional-sea-level-drsl-database.

ESTCP Progress in Achieving Objectives and Goals

ESTCP is the DoD's environmental, resilience, and installation energy and water technology demonstration and validation program. Through ESTCP, DoD promotes the transfer of innovative technologies with established proof of concept studies to the field and/or production use. ESTCP demonstrations collect cost and performance data to employ innovative technologies.

In FY 2022, ESTCP:

- Supported 75 projects to demonstrate environmental PFAS treatment, monitoring, and assessment technologies;
- Demonstrated a cybersecurity device which results in a 5 to 10 times lower cost than competing solutions and secures information flow from energy and water systems. The device will allow users to securely monitor building energy performance;
- Transitioned an efficient dehumidification system that improves indoor air quality and reduces operations and maintenance costs;
- Continued demonstrating commercially available and developmental PFAS-free firefighting foam performance to inform Military Specification development; and
- Successfully demonstrated two systems for the detection, localization, and classification of underwater unexploded ordnance at the Sequim Bay, Washington test site.