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# CRS Report for Congress



# Vieques and Culebra Islands: An Analysis of Cleanup Status and Costs

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## Summary

For decades, the U.S. Navy conducted ship-to-shore bombing exercises and other live-fire training activities on Vieques Island and Culebra Island, located off the coast of Puerto Rico. In response to concerns about risks to public safety, human health, and the environment, Congress directed the Navy to close its training facilities on Vieques Island in 2003 and to relocate them elsewhere. The Navy has begun to investigate the presence of munitions and related contamination on Vieques to determine the cleanup actions that will be necessary to protect human health and the environment, and has begun the surface removal of munitions in some areas. In 1974, Congress had enacted legislation that required the Navy to cease its training operations on Culebra Island, in response to similar public concerns. The Army Corps of Engineers has removed some munitions on Culebra to address safety hazards in publicly accessible areas, but has not begun a comprehensive cleanup of the island. The Environmental Protection Agency (EPA) and the Puerto Rico Environmental Quality Board are responsible for overseeing these actions.

There has been rising public interest in the degree to which the Department of Defense (DOD) will be required to clean up both islands. The scope of the cleanup will depend on the type and extent of contamination found, and whether a pathway of human exposure exists. The National Defense Authorization Act for FY2002 (P.L. 107-107) prohibits public access within the Live Impact Area of the former bombing range on Vieques. Public access also may be limited in other areas due to the presence of munitions hazards. Since denying public access is intended to reduce safety threats, DOD may be allowed to remove fewer munitions than would be required otherwise. However, if contamination has leached from munitions and migrated to present a pathway of exposure, removal of more munitions may be required to protect human health. Possible pathways include the consumption of contaminated groundwater and contaminated fish or shellfish.

At the request of the Governor of Puerto Rico, Sila M. Calderon, EPA listed Vieques on the National Priorities List (NPL) of the nation's most hazardous waste sites on February 11, 2005. Listing a site on the NPL does not affect the stringency of the cleanup that is required or increase the availability of funding for the Navy to perform the cleanup. Rather, it identifies Vieques as a site that warrants further investigation to determine actions that are necessary to protect human health and the environment. The Governor also requested that EPA list Culebra on the NPL along with Vieques. However, EPA "elected to take no action" on its final listing decision for Culebra at that time, and reports that the Commonwealth of Puerto Rico and the Army are negotiating a Memorandum of Agreement to govern the cleanup. Regardless of the site listing decision, the degree of cleanup on either island will depend on threats to human health and the environment and the types of remediation that will be deemed necessary to address these threats. Whatever actions are required, the progress of cleanup will depend on the availability of federal funding to pay for the remediation. This report will be updated annually to track the status of cleanup on both islands.

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**The information provided in this report was originally prepared at the request of Representative Jose Serrano. It has been released in this format for general distribution to interested Members and Committees of Congress and their staff.**

# Vieques and Culebra Islands: An Analysis of Cleanup Status and Costs

## Introduction

There have been longstanding concerns about risks to human health, the environment, and public safety from decades of live-fire training exercises conducted by the U.S. Navy on Vieques Island and Culebra Island, located off the coast of Puerto Rico. In response to these concerns, Congress directed the Navy to relocate its training facilities on both islands elsewhere. The Navy ceased its operations on Vieques in 2003,[1] and on Culebra years earlier in 1975.[2] There has been rising public interest in the degree of cleanup that the Navy will be required to perform on Vieques Island, and in the pace and extent of cleanup that has been underway on Culebra Island. Federal studies of Vieques Island have not identified present risks to human health from munitions-related contamination.[3] However, these findings have been controversial to residents who report health problems that they attribute to such contamination. The possibility of future risks has yet to be examined fully, as much remains unknown about the extent to which contamination is present.

Although the Navy has begun the surface removal of munitions on Vieques, the cleanup is mostly in the early stages of investigating areas that the Navy previously occupied to determine the degree of contamination and threat of human exposure. Once these investigations are complete, the Navy will assess the degree of cleanup that will be required, and will select remedial actions to achieve that degree of cleanup, subject to approval by the Environmental Protection Agency (EPA) and the Puerto Rico Environmental Quality Board. Thus far, the Army Corps of Engineers has removed a limited number of munitions in publicly accessible areas on Culebra to avoid safety hazards, but has not initiated a comprehensive cleanup of the former bombardment areas. The Puerto Rico Environmental Quality Board is overseeing the cleanup of Culebra.

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[1] In the 1940's, the federal government acquired lands on western and eastern Vieques for use by the Navy, and required the residents in these areas to relocate to the central portion of the island, where 9,300 people now live. For a discussion of the closure of Navy operations on Vieques, see CRS Report RS20458, *Vieques, Puerto Rico Naval Training Range: Background and Issues for Congress*, by Ronald O'Rourke.

[2] In 1901, the federal government placed Culebra Island under the control of the Navy to conduct training exercises, and required the residential population to relocate to areas outside of the bombardment zone. A civilian population of 1,700 now resides in the areas to which people were relocated when the Navy assumed control of the island.

[3] In this report, the term "munitions" includes unexploded ordnance (UXO), detonated munitions, and munitions constituents, the latter of which includes substances contained in munitions that can leach into the soil, surface water, and groundwater.

At the request of the Governor of Puerto Rico, Sila M. Calderon, EPA listed Vieques Island on the National Priorities List (NPL) of the nation's most hazardous waste sites on February 11, 2005.[4] Listing Vieques on the NPL does not affect the stringency of the cleanup that is required or increase the availability of funding. Rather, it identifies Vieques as a site that warrants further investigation to determine actions necessary to protect human health and the environment. The Governor also requested that EPA list Culebra on the NPL along with Vieques. However, EPA has "elected to take no action" on its final listing decision for Culebra, and reports that the Commonwealth of Puerto Rico and the U.S. Army are negotiating a Memorandum of Agreement to govern the cleanup of Culebra.

Regardless of the site listing decision, the degree of the cleanup on both islands will depend on threats to human health, safety, and the environment and the types of remediation that will be deemed necessary to address these threats. Whatever actions are required, the progress of cleanup will depend on the availability of federal funding to pay for the remediation. The cleanup of Culebra is further complicated by the legal issue of whether the Reserve Forces Facilities Authorization Act of 1974 (P.L. 93-166) prohibits federal expenditure for the decontamination of the island.

This report provides information on the listing of Vieques on the NPL, examines the implications of the site listing for environmental cleanup, indicates the status and estimated costs of cleaning up munitions and other environmental contamination on Vieques, and discusses cleanup actions and costs at nearby Culebra Island.

## Vieques Island

The Navy expects to be required to conduct some remediation on the western end of Vieques, but the eastern lands are likely to contain the most severe hazards, and therefore represent the greatest need for cleanup, as this area was the location of the former bombing range. Although the Navy transferred some of the western lands to the Municipality of Vieques and the Puerto Rico Conservation Trust, the U.S. government has maintained ownership of all the eastern lands on Vieques. The Department of the Interior is required to administer them as a National Wildlife Refuge and a Wilderness Area, with public access prohibited in the Wilderness Area. The Department of the Interior may limit public access to some extent in the National Wildlife Refuge, due to the presence of munitions hazards or the need to protect sensitive wildlife populations and their habitat. As limiting public access would reduce the possibility of human exposure to health and safety hazards, the Navy may be permitted to remove fewer munitions and clean up related contamination to a less stringent degree than would otherwise be required for less restrictive land uses, such as tourism or residential development.

**NPL Site Listing.** The areas of Vieques listed on the NPL encompass the western side of the island where the Navy stored and disposed of munitions at the former Naval Ammunition and Support Detachment (NASD), and the eastern side where the Navy conducted live-fire training exercises in the Eastern Maneuver Area (EMA) and the Atlantic Fleet Weapons Training Facility (AFWTF), including the

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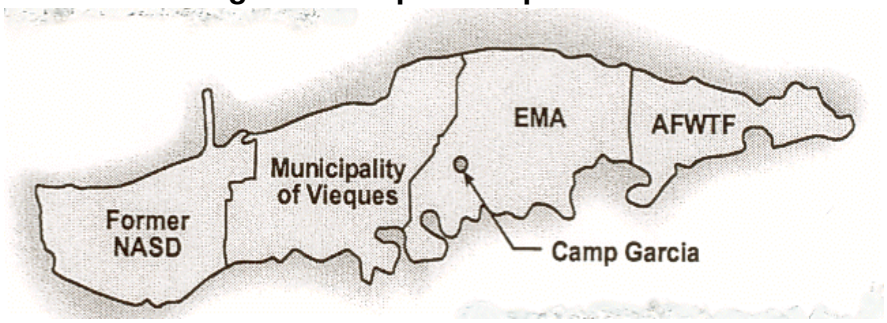
[4] 70 *Federal Register* 7182.

former bombing range. EPA listed these areas jointly on the NPL as one site, naming it the "Atlantic Fleet Weapons Training Area." Each listed area is identified in the map below.

**Figure 1. Map of Vieques Island**




**Source**: Environmental Protection Agency.

The final site listing does not include Culebra Island, where the Navy also had conducted live-fire training exercises through 1975. EPA "elected to take no action" on its final listing decision for Culebra at that time, citing legal issues as to whether Vieques and Culebra could be treated as one facility for listing purposes.[5] At the time of the site listing, the Commonwealth of Puerto Rico and the Army had begun negotiating a Memorandum of Agreement to govern the degree of cleanup on Culebra that would protect human health and the environment. EPA reported that the ".... terms or progress of such agreement may determine the point at which it may be appropriate to withdraw the [original] proposal to list the Culebra areas."[6]

As noted earlier, EPA listed Vieques on the NPL in response to a request by the Governor of Puerto Rico, Sila M. Calderon, submitted in June 2003.[7] The Governor had asked EPA to list Vieques and Culebra as a single site. Residents have expressed ongoing concern about the pace and degree of the cleanup that is being done on Culebra, and advocated including it in the site listing along with Vieques. EPA issued a proposal for the site listing on August 13, 2004.[8] The proposal was open for

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[5] 70 *Federal Register* 7186.

[6] 70 *Federal Register* 7185.

[7] The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) allows the governor of each state or U.S. territory to designate one site for inclusion in the NPL (42 U.S.C. 9605(a)(8)(B)). This authority had not been used in Puerto Rico prior to the governor's request to list Vieques and Culebra on the NPL. EPA primarily adds sites to the NPL based on the Hazard Ranking System (HRS), which assesses potential threats to human health and the environment. A site listed at the request of a governor is not subject to scoring under the HRS to determine eligibility for listing. However, an HRS assessment may be useful in informing the cleanup process. For further information on the HRS, refer to EPA's website at [http://www.epa.gov/superfund/programs/npl_hrs/hrsint.htm].

[8] 69 *Federal Register* 50115.

public comment through October 12, 2004.[9] EPA proposed two options for listing Vieques and Culebra on the NPL. The first option would have involved listing both islands as a single site, as the Governor had requested. The second option would have been to list the two islands as *separate* sites. Under the second option, EPA stated that it would "go forward with a final rule listing Vieques and postpone the final listing decision of Culebra to allow the completion of a Memorandum of Agreement [for the cleanup] between Puerto Rico and [the] Army."[10]

According to EPA, Puerto Rico and the Army agreed to this second option for the site listing. Consequently, EPA did not make a final decision on the listing of Culebra when it finalized the listing of Vieques in February 2005. In its original proposal, EPA had acknowledged the possibility of deciding not to list Culebra as an NPL site under this second option, and instead, allow the cleanup to be determined by a Memorandum of Agreement. Although the agreement itself would not be subject to public comment, the cleanup actions necessary to fulfill it would be open to comment prior to being finalized. To date, EPA has not announced a final decision as to whether Culebra will be listed on the NPL in the future.

The Navy will be responsible for performing the cleanup of Vieques in accordance with requirements specified in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).[11] EPA and the Puerto Rico Environmental Quality Board are responsible for overseeing and approving specific cleanup actions. Prior to the site listing, the Navy had begun a cleanup investigation in western Vieques under CERCLA, and will continue this investigation to fully identify the type and extent of contamination. The Navy also had been performing a cleanup investigation in the eastern areas, but with authorities under the Resource Conservation and Recovery Act (RCRA).[12] Now that both areas of Vieques are listed jointly as one NPL site, the remediation of the eastern areas also will be performed in accordance with CERCLA, as both areas will be treated as a single cleanup site.

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[9] Listing a site on the NPL is subject to standard federal rulemaking procedures, involving formal notice of the proposed listing in the *Federal Register*, receipt and consideration of public comment, and notice of final listing in the *Federal Register*.

[10] 69 *Federal Register* 50115.

[11] CERCLA established the Superfund program to address the release or threatened release of hazardous substances in the United States, and requires contamination to be cleaned up to a level that is protective of human health and the environment. CERCLA is codified at 42 U.S.C. 9601 et seq. Compliance with CERCLA also entails meeting requirements specified in the National Contingency Plan (NCP), which are the federal regulations that EPA promulgated to implement the statute's requirements, codified at 40 C.F.R. Part 300. For additional discussion, see CRS Report RL31154, *Superfund: A Summary of the Law*, by (name redacted).

[12] 42 U.S.C. 6901 et seq. RCRA specifies requirements for storing and disposing of solid and hazardous waste, and requires corrective action to clean up environmental contamination that occurs as a result of storage and disposal practices. For additional discussion, see CRS Report RL30798, *Environmental Laws: Summaries of Statutes Administered by the Environmental Protection Agency*, "Solid Waste Disposal Act/Resource Conservation and Recovery Act," by (name redacted) and (name redacted).

The Navy, Department of the Interior, EPA, and the Puerto Rico Environmental Quality Board will enter a federal facility agreement governing the entire site to determine the specific cleanup actions that will be necessary to protect human health and the environment. The Navy expects that its ongoing cleanup investigation of the eastern areas will continue under RCRA, until the federal facility agreement is finalized and specific actions to comply with CERCLA are agreed upon. Whereas requirements under CERCLA may differ procedurally from RCRA, the stringency of the cleanup essentially will be the same, as cleanup performed under each statute is very similar. Whether EPA lists Culebra on the NPL at a later date or withdraws the listing proposal, the Army will continue its cleanup of Culebra in accordance with CERCLA, which will govern the Memorandum of Agreement for the cleanup.

**Implications of the Site Listing for Environmental Cleanup.** The NPL primarily serves informational purposes to identify sites that appear to warrant further investigation to determine whether removal or remediation of contamination is necessary to protect human health and the environment. As noted above, the Navy already had begun cleanup investigations on Vieques prior to the site listing, and these investigations will continue to identify the type and extent of contamination that is in need of remediation.

However, the listing of Vieques does not necessitate a certain degree of cleanup. Rather, the degree of cleanup will be determined by the potential risk of human exposure to potentially hazardous substances and the remedies selected to prevent exposure from occurring. The degree of cleanup on Vieques will be uncertain until a federal facility agreement is finalized to specify the remedial actions that the Navy will be required to perform. The listing of Vieques also does not guarantee a certain amount of funding to perform the cleanup. Rather, the Navy reports that it allocates cleanup funding according to human health risks. The allocation of funding for Vieques would depend on the risks identified in site investigations, and how those risks compare to other contaminated Navy sites across the country.

Although the site listing does not guarantee a certain degree of cleanup or funding level, it does offer certain advantages, such as the potential for an expedited cleanup through greater coordination among the Navy, Department of the Interior, EPA, and the Puerto Rico Environmental Quality Board. A comprehensive federal facility agreement among these parties for the cleanup will likely be more efficient than entering separate agreements for each contaminated area of the island. Putting a single agreement in place also might help to avoid potential confusion as to which requirements are applicable to the cleanup of each area.

Although Culebra was not included in the final site listing, the Memorandum of Agreement being negotiated for the cleanup of that island may offer similar opportunities for increased coordination. On the other hand, if Culebra had been included in the site listing as the Governor requested, the federal facility agreement for Vieques would have included the contaminated areas of Culebra as well, resulting in a comprehensive cleanup plan for both islands.

The listing of Vieques also offers the potential for the Navy to gain the approval of cleanup actions more quickly in the eastern areas of the island, as the cleanup now will be done under CERCLA rather than RCRA. CERCLA generally entails fewer

administrative procedures for the approval of cleanup actions. For example, RCRA typically requires permits to be obtained prior to the implementation of specific actions, whereas CERCLA does not. With fewer administrative procedures to follow, the Navy may be able to accomplish the cleanup of Vieques more quickly, as long as sufficient funding is made available.

Although the Navy will not be subject to RCRA's permitting procedures under CERCLA, the Navy will still be subject to federal regulations for the selection of cleanup actions.[13] These regulations require the opportunity for community involvement prior to final selection, for which a Record of Decision (ROD) is made publicly available. Regardless of differences in procedure, performing the cleanup under CERCLA will not alter the stringency of the cleanup relative to RCRA, as the cleanup requirements under both statutes are very similar.

The site listing also offers at least one other potential advantage from the standpoint of community involvement, as the Navy is authorized to provide a *centralized* public forum through which residents could obtain comprehensive information on cleanup of the entire island. Prior to the site listing, the Navy had established a Technical Review Committee to inform citizens about the status of cleanup on western Vieques, but a similar forum was not established for the eastern areas being investigated under RCRA.

At the request of the community, the Navy converted the Technical Review Committee into a Restoration Advisory Board (RAB) in FY2004. The RAB holds meetings on a quarterly basis to inform the public about the status of the cleanup and provide citizens with the opportunity to express concerns about proposed actions in person to federal and state officials. As Vieques is now listed as a single site, residents should be able to receive information about the cleanup of both the western and eastern portions of the island through the RAB as one centralized forum.

Related to the issue of community involvement, the listing of Vieques on the NPL also makes grant funds available for technical assistance to help citizens interpret and review information on cleanup actions being considered. CERCLA authorizes EPA to award up to a total of $50,000 in grants for technical assistance to communities located adjacent to an NPL site.[14] In March 2004, EPA awarded a technical assistance grant in the amount of $20,000 to community groups to help citizens understand the cleanup investigation on eastern Vieques that was being done under RCRA.[15] EPA reported that it was able to award this grant with discretionary funds of the Office of the Administrator.[16] Now that Vieques is listed on the NPL, up to $50,000 in grants are available under CERCLA for technical assistance. This amount would be in addition to the $20,000 grant that EPA has already awarded under the RCRA investigation of the eastern areas of the island.

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[13] 40 CFR 300.430.

[14] 42 U.S.C. 9617(e).

[15] See EPA's website: [http://www.epa.gov/region02/news/2004/04040.htm].

[16] Information obtained from EPA Region 2 officials by telephone on July 28, 2004.

Technical assistance grants authorized under CERCLA are available *only* to communities that live next to an NPL site. Consequently, the residents of Culebra Island are not eligible for these grants, as EPA did not include that island in the site listing. On the other hand, if EPA were to list Culebra Island as a separate site at a later date, the residents would be eligible to receive up to $50,000 in grants that would be in addition to those awarded to the residents of Vieques. If EPA had listed both islands as one site, as the Governor requested, the amount would have been limited to a total of $50,000 for residents of both islands combined.

From the standpoint of the opportunity to bring citizen suits, there is a possible disadvantage to performing the cleanup under CERCLA, rather than RCRA, regardless of the listing status of Vieques or Culebra. Although EPA and the Puerto Rico Environmental Quality Board are responsible for overseeing the cleanup, the right of citizens to sue is a means by which the community can take enforcement action against DOD if they believe that the Department is not conducting the cleanup in accordance with statutory and regulatory requirements.

CERCLA and RCRA differ in at least one substantial way, with regard to the time frame within which citizens have the right to sue. The citizen suit provision in CERCLA cannot be invoked in most "challenges to removal and remedial action,"[17] until the removal or remedial action is *completed*.[18] Cleanup actions taken under RCRA have no such timing restriction.[19] Citizens may sue under RCRA at any point during the cleanup process, as opposed to *after* the completion of the action in question under CERCLA.

**Source of Cleanup Funds.** Regardless of the site listing, the Navy is liable for paying the costs to clean up Vieques.[20] However, the payment of these costs is subject to appropriations by Congress, which would come out of the Navy's Defense Environmental Restoration Account (DERA).[21] Historically, Congress has funded this account in the annual appropriations bill for the Department of Defense. As a result of a subcommittee reorganization early in the 109th Congress, the House will

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[17] 42 U.S.C. 9659.

[18] 42 U.S.C. 9613(h). See, *Clinton County Commissioner v. U.S. EPA*, 116 F.3d1018 (3rd. Cir. 1997).

[19] 42 U.S.C. 6972.

[20] The Navy accepted liability for the cleanup of lands transferred to the Department of the Interior in western Vieques in a Memorandum of Agreement dated April 27, 2001, and in eastern Vieques in a Memorandum of Agreement dated April 30, 2003. The liability for cleanup when land is transferred from a federal agency to a non-federal entity is specified in Section 120(h) of CERCLA, which applies to the transfer of lands on western Vieques from the Navy to the Municipality of Vieques and the Puerto Rico Conservation Trust.

[21] DOD's budget contains five Defense Environmental Restoration Accounts: Army, Navy, Air Force, Defense-Wide, and Formerly Used Defense Sites (FUDS). FUDS sites are military properties that were previously owned or used by DOD and decommissioned prior to the first rounds of base closings in 1988. Cleanup costs at sites closed with authorities provided in the Defense Base Closure Act are funded out of the Base Realignment and Closure (BRAC) Account.

appropriate funding for this account in the annual appropriations bill for Military Quality of Life and Veterans Affairs and Related Agencies, beginning in FY2006. As in past years, the Senate will continue funding the Navy's environmental restoration account in the annual appropriations bill for the Department of Defense.

Congress traditionally has not allocated funding for the Defense Environmental Restoration Accounts among the contaminated sites for which the Department of Defense is liable. Rather, the Department has the discretion to determine the allocations of funding for each site, taking into consideration the availability of annual appropriations and the competing cleanup needs of its contaminated sites across the country. Accordingly, the Navy will determine the annual funding allocation for the cleanup of Vieques based on how much Congress appropriates to its environmental restoration account and the cleanup priorities that it establishes among the sites under its jurisdiction.[22]

Although Congress has left the allocation of cleanup funding to the Navy's discretion, the House Appropriations Committee included language in its report on the Department of Defense Appropriations Act for FY2005 (H.R. 4613, H.Rept. 108-553) directing the Department of Defense to consult with the National Oceanic and Atmospheric Administration (NOAA) in the cleanup of Vieques. The House Appropriations Committee also included language in its report on the Interior and Related Agencies Appropriations Act for FY2005 (H.R. 4568, H.Rept. 108-542), directing the Fish and Wildlife Service to consult with NOAA in fulfilling its responsibilities in managing lands on Vieques transferred from the Navy. In addition to this report language, the conference agreement on the Consolidated Appropriations Act for FY2005 (H.R. 4818, H.Rept. 108-792) provided $1 million in earmarked funds for NOAA to assist the Department of Defense, Department of the Interior, and EPA in carrying out their respective responsibilities in the cleanup of Vieques.

Munitions are suspected to be present in underwater areas surrounding Vieques, and NOAA has expertise in examining the effects of contamination on underwater environments. As discussed later in this report, residents of Vieques have expressed concern about possible health risks from consuming contaminated fish and shellfish. The agencies involved will examine this and other potential pathways of human exposure to determine what cleanup actions are necessary.

**Total Estimated Costs to Clean Up Vieques.** As indicated in **Table 1**, the Navy reports that it had expended a total of $17.8 million through the end of FY2004 on investigating contamination and initiating the surface removal of munitions in certain areas of Vieques. The majority of this funding was spent in western Vieques, as the Navy has been pursuing cleanup there longer than in the east where live-fire training did not cease until 2003. As of March 2005, the Navy estimated that a total of $112.6 million would be needed from FY2005 into the future to complete cleanup in both the western and eastern areas of the island. The Navy

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[22] As of the end of FY2004, the Navy estimated that $3.5 billion would be needed to complete cleanup of contaminated lands within its jurisdiction. Department of Defense, *Defense Environmental Programs Annual Report to Congress for FY2004*, April 2005. Appendix K, p. K-7-1.

based its estimate on what it knew about the extent of contamination at that time and on its assumptions as to what actions would be required to address risks to human health, safety, and the environment. (A breakout of the future cost estimates for western and eastern Vieques by fiscal year is provided later in this report.)

The March cost estimate of $112.6 million is substantially higher than the Navy's initial estimate of $30 million to complete the cleanup of Vieques, which it reported in FY2003.[23] According to the Navy, the substantially higher cost estimate is the result of a more in-depth examination of potentially necessary cleanup actions, performed subsequent to the closure of the eastern training areas in 2003 and the listing of Vieques on the NPL in February 2005.

## Table 1. Status and Costs of Cleaning Up Munitions and Environmental Contamination on Vieques Island

| Area of Island | Date of Closure | Cleanup Status [a] as of June 2005 | Costs Through FY2004 | Costs FY2005 to Completion [b] |
|---|---|---|---|---|
| Western Vieques: Naval Ammunition Support Detachment | 2001 | Remedial Investigation [c] | $11,310,000 | $13,567,000 |
| Eastern Vieques: Eastern Maneuver Area/ Atlantic Fleet Weapons Training Facility | 2003 | Remedial Investigation [c] | $6,458,000 | $99,066,000 |
| **Vieques Island Total** | | | **$17,768,000** | **$112,633,000** |

**Source**: Prepared by the Congressional Research Service using information from the Department of Defense. The Navy's Office of Legislative Affairs provided its most recent estimates of the costs for the cleanup of Vieques Island to CRS in a written communication dated March 11, 2005.

[a] The environmental cleanup process involves several stages leading up to actual cleanup: Site Inspection to determine the presence of hazardous substances; Remedial Investigation and Feasibility Study (RI/FS) to determine the nature and extent of contamination, and to examine the feasibility of cleanup remedies; Record of Decision (ROD) to finalize the selection of a cleanup remedy and explain what this action entails; and Remedial Design and Remedial Action (RD/RA) to prepare and implement the selected cleanup remedy. After construction of the remedy is complete, operating and maintaining it may be necessary for several years. Long-term monitoring also may be needed to ensure the effectiveness of the remedy to protect human health and the environment.

[b] Navy estimates of future cleanup costs are preliminary, and are based on assumptions of the type and extent of contamination that is present and on the remedial actions that will be necessary to protect human health, safety, and the environment. Actual costs could differ, depending on the outcome of the site investigations and the final selection of remedial actions, which are subject to approval by the Environmental Protection Agency and the Puerto Rico Environmental Quality Board.

[c] The Navy has begun preliminary removal of munitions at the surface in certain areas, while investigations are underway to fully identify contaminated areas.

[23] Department of Defense, *Defense Environmental Restoration Program Annual Report to Congress for FY2003*, April 2004. Appendix A, p. A-149.

The actions upon which the Navy based its more recent estimate are subject to approval by EPA and the Puerto Rico Environmental Quality Board. Consequently, actual cleanup costs could be higher than estimated if more extensive actions than the Navy has planned are required. Actual costs also could be higher than estimated if the site investigations identify a greater extent of contamination in need of remediation than previously thought. On the other hand, actual costs could be lower than estimated if more cost-effective munitions detection and removal technologies become available.

**Western Vieques.** In April 2001, the Navy transferred 8,100 acres on the western side of Vieques Island to the Municipality of Vieques, the Puerto Rico Conservation Trust, and the Department of the Interior. This land was the location of the former Naval Ammunition Support Detachment (NASD). The National Defense Authorization Act for FY2001 required the Navy to close this facility and to transfer the property to the above entities.[24] Of the 8,100 acres, the Navy transferred 3,100 acres to the Department of the Interior for management as a National Wildlife Refuge. The Municipality of Vieques and the Puerto Rico Conservation Trust are managing the remaining 5,000 acres for conservation purposes. Although the Navy has begun the surface removal of munitions in certain areas, it still is investigating the extent of contamination to determine what actions may be required to protect human health and the environment.

***Status of Cleanup Investigation.*** The NASD primarily served as an ammunition storage and disposal facility. Munitions and contamination from other hazardous substances are suspected to be present as a result of these operations, and may require remediation. As of the end of FY2004, the Navy had identified 17 potentially contaminated sites on the former NASD, including a 200-acre site where military munitions were discarded.[25] Ammunition was disposed on-site using "open burn/open detonation" practices.[26] Sites where these practices have occurred typically require the cleanup of surface and subsurface soils. The Navy is performing the cleanup investigation according to requirements specified in CERCLA. Prior to the listing of Vieques on the NPL, the Puerto Rico Environmental Quality Board was the lead agency responsible for oversight. Now that Vieques is listed, EPA will take the lead with the Board's continued participation in the oversight.[27]

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[24] P.L. 106-398, Sec. 1502 and 1508.

[25] Department of Defense, *Defense Environmental Programs Annual Report to Congress Fiscal Year 2004*, April 2005, Appendix J, p. J-146.

[26] Open burn/open detonation operations are used to destroy excess, obsolete, or unserviceable munitions. Open burning involves the destruction of a munition by an external heat source, and open detonation destroys the munition with an external explosive charge. These operations are conducted either on the surface of the land or in pits. Environmental concerns about these practices have led to the use of burn trays and blast boxes to help contain contaminants and emissions. The Department of Defense is using open burn/open detonation practices less frequently at installations located near populated areas across the country, due to potential environmental and safety hazards.

[27] Both EPA and the state or territory in which a contaminated site is located play a role in overseeing and approving cleanup actions. EPA typically takes the lead in overseeing (continued...)

As of March 2005, the Navy had assumed that "no further action" would need to be taken (i.e., no actual cleanup required) at 9 of the 17 total sites that it had investigated, subject to approval by EPA and the Puerto Rico Environmental Quality Board.[28] The Navy reports that investigations also were complete at 5 of the 8 remaining sites, which indicate "low levels of contamination and no unacceptable risk identified outside waste sites."[29] Investigation of the 3 other sites was planned for 2005, including the removal of some munitions. The Navy also has planned to begin the surface removal of munitions in open burn/open detonation areas.

***Cleanup Cost Estimates for Western Vieques.*** As indicated in **Table 2**, the Navy had allocated $11.3 million through FY2004 for the investigation of contamination at the above sites on the former NASD.[30] The Navy has estimated that an additional $13.6 million would be needed to complete the cleanup from FY2005 into the future, including long-term operation and monitoring.[31] The Navy's cost estimate is based on the type and extent of contamination known at the time and the remedies it assumed would be adequate to prevent human exposure. The removal of munitions would be complete in FY2007, with the cleanup in later years focusing on remediation of contamination from other hazardous substances.

## Table 2. Navy Planning Estimates of Costs to Clean Up Western Vieques Island by Fiscal Year

| Fiscal Year | Hazardous Substances Cleanup | Munitions Cleanup | Total Cleanup of Western Vieques |
|---|---|---|---|
| Cumulative through FY2004 | $6,185,000 | $5,125,000 | $11,310,000 |
| *FY2005* | *$4,354,000* | *$1,450,000* | *$5,804,000* |
| *FY2006* | *$1,131,000* | *$4,000,000* | *$5,131,000* |
| *FY2007* | *$226,000* | *$1,538,000* | *$1,764,000* |
| *FY2008* | *$226,000* | *$0* | *$226,000* |
| *FY2009* | *$226,000* | *$0* | *$226,000* |
| *FY2010 and future years* | *$416,000* | *$0* | *$416,000* |
| FY2005 to completion | $6,579,000 | $6,988,000 | $13,567,000 |
| **Total** | **$12,764,000** | **$12,113,000** | **$24,877,000** |

**Source**: Prepared by the Congressional Research Service with information in a written communication from the U.S. Navy, Office of Legislative Affairs, dated March 11, 2005.

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[27] (...continued)
cleanup of sites listed on the NPL, and states typically take the lead in overseeing cleanup of those sites not listed on the NPL.

[28] Information provided in a written communication to CRS from the U.S. Navy, Office of Legislative Affairs, dated March 11, 2005.

[29] Ibid.

[30] Ibid.

[31] Ibid.

**Eastern Vieques.** In April 2003, the Navy transferred 14,669 acres on the eastern side of Vieques Island to the Department of the Interior.[32] The majority of this land was the site of the former Eastern Maneuver Area. The remaining land in the most eastern portion was the site of the former Atlantic Fleet Weapons Training Facility, which included the bombing range. In response to long-standing public concerns about safety, health, and environmental hazards arising from weapons training operations on Vieques, Congress included provisions in the National Defense Authorization Act for FY2002 that required the Navy to close its installations on the eastern end of the island, and to transfer its jurisdiction over these lands to the Department of the Interior.[33]

The act stipulated that the Department of the Interior must "administer" the 900 acres on the eastern tip of the island as a Wilderness Area. This acreage is the site of the Live Impact Area of the former bombing range. The law prohibits public access in this area indefinitely to prevent human exposure to safety hazards. The act requires the Department of the Interior to administer the remaining 13,769 acres of land on eastern Vieques as a National Wildlife Refuge. While the act does not prohibit public access within the refuge, the Department of the Interior may restrict access in certain areas due to the presence of munitions hazards outside of the Live Impact Area,[34] or the need to protect sensitive wildlife populations and their habitat.

The former Eastern Maneuver Area and the Atlantic Fleet Weapons Training Facility as a whole represent the greatest cleanup challenge on Vieques Island, due to the overall size of the land area and the likelihood of severe contamination on the bombing range. The Navy has begun a comprehensive investigation of contamination in these areas, and has begun the surface removal of munitions in certain areas. EPA and the Puerto Rico Environmental Quality Board are responsible for overseeing and approving these actions.

***Status of Cleanup Investigation.*** As discussed earlier, the Navy began a cleanup investigation in certain areas of eastern Vieques in accordance with RCRA, prior to the NPL site listing. EPA issued a RCRA Consent Order requiring the

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[32] The Navy transferred 14,573 acres on eastern Vieques to the Department of the Interior through a Memorandum of Agreement on April 30, 2003. The Navy transferred 96 additional acres prior to this agreement on April 29, 2003, for a total acreage of 14,669.

[33] Section 1049 of the National Defense Authorization Act for FY2002 (P.L. 107-107) authorized the Secretary of the Navy to close its training installations on Vieques Island if equivalent or superior training facilities were available elsewhere. On Jan. 10, 2003, the Secretary of the Navy signed a letter of certification to Congress confirming that alternative training sites had been identified and that training operations would cease on Vieques Island by May 1, 2003.

[34] The Live Impact Area of the former bombing range served as the target area for offshore live-fire training exercises. While the majority of munitions landed within its perimeter, some may have landed off-target in surrounding areas, including beaches and underwater areas. Land-based maneuvers were also conducted in various portions of eastern Vieques, which involved live-fire training. The extent to which munitions may be present outside of the Live Impact Area is unknown at this time, and will not be determined until the cleanup investigation is complete.

investigation in January 2000. The Navy reports that the investigation and cleanup under RCRA will continue until a federal facility agreement is in place, which specifies the actions that will be necessary to conduct the cleanup under CERCLA. However, the stringency of the cleanup likely will be similar, as the requirements upon which cleanup decisions are based are comparable to those in RCRA.

Under the RCRA Consent Order, the Navy has completed the first phase of investigating environmental contamination at 12 waste storage and disposal sites. Of these sites, 8 are located within the Eastern Maneuver Area, and 4 are located within the Atlantic Fleet Weapons Training Facility. The collective land area of the 12 sites covered under the Consent Order encompasses 80 acres, a relatively small portion of the 14,669 acres that the Navy formerly occupied in eastern Vieques. The order does not include the investigation of the former bombing range, as the range was still in use when EPA issued the order in 2000.

In addition to the 12 sites noted above, the Navy expected to begin investigation of 8 other sites in eastern Vieques in 2005.[35] The Navy identified these sites in an archive records search, which revealed past activities that may have resulted in contamination. The Navy also identified 23 other "areas of concern" where contamination may be present based on examination of aerial photographs. The Navy expects to begin investigation of these sites "in the future," with the time frame not determined as of March 2005. The investigation of the presence of munitions and related contamination on the former bombing range will be based on the findings of a Preliminary Range Assessment that the Navy completed in April 2003.

***Degree of Cleanup.*** There has been significant public interest in the extent to which munitions and related contamination will be cleaned up on the eastern end of Vieques Island. The scope of the cleanup will depend on public safety hazards posed by the presence of munitions and whether a pathway of human exposure to munitions-related contamination exists. The Live Impact Area of the former bombing range that is to be administered as a Wilderness Area is likely the most contaminated portion of the island. As the National Defense Authorization Act for FY2002 prohibits public access on this land, a pathway of exposure through human contact with soil or surface water presumably would not be present if this prohibition is enforced. Consequently, cleanup may be less extensive than if the land were designated for uses that would involve human presence.

However, if the cleanup investigation were to reveal that contamination has migrated off-range and presented a pathway of exposure, the Navy could be subject to more stringent cleanup actions. Similarly, the Department of the Interior could limit public access to lands outside of the Live Impact Area that are to be administered as a National Wildlife Refuge, if munitions hazards are present. If access to these lands were restricted, the Navy could be subject to less stringent cleanup requirements there as well, unless contamination were to migrate to areas where people are present.

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[35] Information provided in a written communication to CRS from the U.S. Navy, Office of Legislative Affairs, dated March 11, 2005.

***Potential Pathways of Exposure.*** As noted above, the prohibition on public access in the Wilderness Area, and the possibility of limited access in the National Wildlife Refuge, would significantly reduce exposure to contamination from contact with soil or surface water. However, there are other possible pathways of exposure if contamination were to migrate outside of these areas. At this juncture, a pathway of exposure to inhabited areas in the central portion of the island from the migration of contamination through groundwater appears unlikely. The groundwater has not been used as a primary drinking source since 1978 because of high saline levels. The majority of residents receive their drinking water through a public water supply that is piped in from the Puerto Rico mainland.[36] A few public and private groundwater wells still exist on the island and are occasionally used when the public water supply is interrupted.

The Agency for Toxic Substances and Disease Registry (ATSDR) released a public health assessment of public drinking water supplies and groundwater on Vieques Island in October 2001.[37] The agency concluded that the public water supply was safe to drink. It also concluded that water from wells used when the mainland supply is interrupted is safe to drink, with the exception of one private well that contains water most likely contaminated from agricultural pollution.[38] While it appears that contamination from the former bombing range had not migrated to drinking water wells at the time of the ATSDR's assessment, EPA or the Puerto Rico Environmental Quality Board could require the Navy to take actions that would prevent migration in the future.

Another possible pathway of exposure is the consumption of contaminated fish and shellfish. Contamination could migrate into the ocean from storm water runoff from the beaches on the former bombing range or could leach into the ocean from underwater munitions, possibly contaminating fish and shellfish populations. The consumption of contaminated fish and shellfish could pose a risk to human health, depending on the type and concentration of contaminants and extent of exposure. The ATSDR released a public health assessment for the consumption of fish and shellfish around Vieques Island in June 2003.[39] The agency conducted a survey indicating that nearly half of the residents on Vieques consume fish one or two times each week.

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[36] As a result of the salt water intrusion into the groundwater, an underground pipeline was built in 1977 from the Puerto Rico mainland. Most residents receive their drinking water from this pipeline. This water is stored in above-ground tanks prior to distribution.

[37] Agency for Toxic Substances and Disease Registry. *Public Health Assessment: Drinking Water Supplies and Groundwater Pathway Evaluation, Isla De Vieques Bombing Range, Vieques, Puerto Rico*. October 16, 2001. The full text of the assessment is available on the agency's website at [http://www.atsdr.cdc.gov/HAC/PHA/vieques/vie_toc.html].

[38] The ATSDR reports that a public health hazard advisory has been issued for this well, and that residents have been personally informed that the water from this well is not safe to drink.

[39] Agency for Toxic Substances and Disease Registry. *Public Health Assessment: Fish and Shellfish Evaluation, Isla De Vieques Bombing Range, Vieques, Puerto Rico*. June 27, 2003. The full text of the assessment is available on the agency's website at [http://www.atsdr.cdc.gov/HAC/PHA/viequesfish/viequespr-toc.html].

Heavy metals in fish and shellfish were detected, but the agency concluded that the concentrations were too low to harm human health.

These findings have been controversial among local residents who have attributed various symptoms that they have experienced to the consumption of contaminated fish. There appear to be no reports of data to confirm that the consumption of contaminated fish poses a health threat at this time. However, EPA or the Puerto Rico Environmental Quality Board could require the Navy to take cleanup actions that would prevent migration of contamination into the ocean, based on the possibility that the concentration of contaminants in fish and shellfish could rise to harmful levels in the future if migration were to occur.

***Cleanup Cost Estimates for Eastern Vieques.*** Thus far, the Navy has expended some funds on investigating the presence of munitions and other hazardous substances on former training areas in eastern Vieques and on the removal of munitions from the surface in certain high risk areas. The Navy also has calculated a preliminary estimate of the costs to complete the cleanup. As indicated in **Table 3**, the Navy reports that it had expended a total of $6.5 million on cleanup in eastern Vieques through FY2004, and estimates that an additional $99.1 million would be needed from FY2005 into the future to complete the cleanup.

## Table 3. Navy Planning Estimates of Costs to Clean Up Eastern Vieques Island by Fiscal Year

| Fiscal Year | Hazardous Substances Cleanup | Munitions Cleanup | Total Cleanup of Eastern Vieques |
|---|---|---|---|
| Cumulative through FY2004 | $4,024,000 | $2,434,000 | $6,458,000 |
| *FY2005* | *$159,000* | *$8,000,000* | *$8,159,000* |
| *FY2006* | *$2,437,000* | *$20,000,000* | *$22,437,000* |
| *FY2007* | *$2,368,000* | *$20,000,000* | *$22,368,000* |
| *FY2008* | *$2,247,000* | *$20,000,000* | *$22,247,000* |
| *FY2009* | *$2,000,000* | *$16,000,000* | *$18,000,000* |
| *FY2010 and future years* | *$5,855,000* | *$0* | *$5,855,000* |
| FY2005 to completion | $15,066,000 | $84,000,000 | $99,066,000 |
| **Total** | **$19,090,000** | **$86,434,000** | **$105,524,000** |

**Source**: Prepared by the Congressional Research Service using information provided in a written communication to CRS from the U.S. Navy, Office of Legislative Affairs, dated March 11, 2005.

The Navy's future cost estimate of $99.1 million may require further calculation as more is learned from the site investigations to identify the areas where munitions are present, and as final decisions are made regarding the extent to which munitions must be removed and related contamination remediated. Actual costs could be higher than estimated if more munitions are identified than the Navy has assumed are present, or if final cleanup decisions differ from the Navy's present assumptions. Costs also could rise if contamination were to migrate off the former bombing range and present a pathway of human exposure, possibly requiring the clearance of

additional munitions to eliminate the source of the contamination. On the other hand, costs to clean up munitions could be lower than estimated if more cost-effective detection and removal technologies become available.

Another factor that could have a significant impact on cleanup costs is whether the land continues to be administered as a National Wildlife Refuge and a Wilderness Area by the Department of the Interior, as required by current law. Some stakeholders advocate the transfer of these lands to private property developers. If Congress were to amend the law to allow the property to be transferred to a private entity for a land use with a greater potential for human exposure, the cleanup could be more costly. For example, if the land were used for tourism or residential development, the degree to which the contamination would need to be remediated could be more stringent and therefore more costly.

***Actions Planned for FY2005 and FY2006.*** With the funding identified in **Table 3**, the Navy has planned to conduct specific actions in eastern Vieques to investigate the presence of munitions and remove munitions in certain areas.

Actions planned for FY2005 with enacted appropriations include:

- completion of the Range Assessment (as noted earlier, a Preliminary Assessment was completed in 2003);
- completion of surface removal of munitions on beaches;
- completion of surface removal of munitions on approximately 200 acres within the Live Impact Area of the former bombing range;
- completion of surface removal of munitions and targets in the 20-acre 40 mm Mortar Range; and
- the repair of roads damaged from Tropical Storm Jean to gain safe access to contaminated areas for future cleanup activities.[40]

Actions planned for FY2006, subject to appropriations, include:

- continuation of site inspections to identify munitions;
- continuation of surface removal of munitions at various sites within the Live Impact Area;
- continuation of surface removal of munitions at high risk ranges outside the Live Impact Area;
- initiation of *subsurface* removal of munitions at certain beaches; and
- continuation of mapping of areas where munitions have been cleared from the surface.[41]

To date, the Navy has not finalized actions planned for FY2007 and in future years, as the negotiation of the federal facility agreement was still underway. The Navy stated that in the future "... cleanup/munitions clearance efforts will continue and be specified on the basis of [human health, safety, and environmental] risk and

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[40] Ibid.

[41] Ibid.

priorities determined in partnership with EPA, DOI [Department of the Interior], PREQB [Puerto Rico Environmental Quality Board], and the community."[42]

**Comparison to Cleanup Costs on Kaho'olawe Island.** Numerous press articles have stated that the roughly $400 million[43] in cleanup costs of the Navy's former bombing range on Kaho'olawe Island[44] in Hawaii is an indicator of the "true" costs facing the Navy at Vieques. The Navy began a comprehensive cleanup of the island in 1993 and transferred control of access to the State of Hawaii in November 2003 upon completion of the cleanup. The Memorandum of Agreement for the transfer of Kaho'olawe from the Navy to the State of Hawaii specified that munitions would have to be cleared to a level that would allow public access. The agreement stipulated that all munitions would be cleared from 100% of the surface, and that 25% of the land would be restored to the point that it would be safe for multiple uses, one of which is human habitation.[45] There has been some disagreement as to whether the Navy met these standards in cleaning up the island.

There are no munitions clearance levels stipulated in the Memorandum of Agreement for the transfer of land on Vieques Island from the Navy to the Department of the Interior. As discussed earlier, the National Defense Authorization Act for FY2002 prohibits public access in the former Live Impact Area that is to be managed as a Wilderness Area. The act does not specify the extent to which the public may have access to other lands in eastern Vieques that the Department of the Interior is to manage as a National Wildlife Refuge. From a safety standpoint, neither of these land uses would necessitate the clearance of munitions at Vieques to address explosive hazards, which are similar to clearance levels at Kaho'olawe Island. Consequently, the extent and costs of removing munitions may be lower at Vieques. However, if contamination on the former bombing range on Vieques were to migrate and present a pathway of exposure, a more extensive and costlier cleanup than the Navy has assumed may be required.

## Culebra Island

Culebra Island is located nine miles north of Vieques Island, and was once part of a comprehensive training range complex for the Navy along with Vieques. President Roosevelt placed Culebra Island under the control of the Navy in 1901, and

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[42] Information provided in a written communication to CRS from the U.S. Navy, Office of Legislative Affairs, dated March 11, 2005.

[43] Congress appropriated a total of $460.5 million for the cleanup of Kaho'olawe Island from FY1993 through FY2004. Beginning in FY1995, Congress appropriated funds for this purpose under a new line-item account, the Kaho'olawe Island Conveyance, Remediation, and Environmental Restoration Trust Fund, to set aside dedicated funds for the cleanup.

[44] Kaho'olawe Island is located six miles southwest of Maui and covers 28,000 acres. The Navy used the uninhabited island as a bombing range for training exercises from 1941 through 1990. See the Navy's website for additional background information at [http://www.hawaii.navy.mil/Environmental/Environmental_Index.htm].

[45] Memorandum of Agreement between the Navy and the State of Hawaii, May 6, 1994, Article VI.

the Navy conducted training exercises on the island and its surrounding waters through 1975. In response to concern about public safety hazards posed by live-fire training on Culebra, Congress included provisions in Section 204 of the Reserve Forces Facilities Authorization Act of 1974, which directed the Navy to cease its operations on and around the island and to relocate them elsewhere.[46] In accordance with this act, the Navy turned the land over to the General Services Administration in 1975 for conveyance to non-federal entities for conservation and public recreational purposes. The U.S. government retained a portion of the land, which is currently managed as a National Wildlife Refuge by the Department of the Interior.

**Legal Issues Regarding the Use of Federal Funds for Cleanup.** For safety purposes, public access was to be limited in areas of the transferred land where munitions were present. Section 204(c) of the 1974 Act addresses the expenditure of federal funds for environmental cleanup on the island:

> Notwithstanding any other provision of law, the present bombardment area on the island of Culebra shall not be utilized for any purpose that would require decontamination at the expense of the United States. Any lands sold, transferred, or otherwise disposed of by the United States as a result of the relocation of the operations referred to in subsection (a) [ship-to-shore and other gun fire and bombing operations of the U.S. Navy] may be sold, transferred, or otherwise disposed of only for public park or public recreational purposes.[47]

Several legal issues are raised by the above provision. The threshold issue is whether it bars federal expenditures or *land uses* — that is, whether it prohibits any decontamination expenditures by the United States on Culebra or, read more literally, prohibits land uses that would require decontamination expenditures by the United States. The two readings are quite different. The first blocks any federal expenditure for cleanup, while the second contemplates the possibility of federal expenditure for this purpose in certain circumstances (as the result of pre-1974 activities, or post-1974 activities, improperly allowed or carried out in open violation of the act).

If this initial issue is resolved in favor of prohibiting all payments by the United States for cleanup after 1974, a second issue arises. What is the effect of CERCLA's enactment in 1980, and subsequent amendments in 1986 that clarified the applicability of CERCLA to federal facilities? The broad cleanup authorities in CERCLA, on their face, recognize no exception for Culebra. Thus, one must ascertain whether CERCLA by implication amends the 1974 law to repeal its expenditure-barring language, or whether the 1974 prohibition remains in effect as an exception to CERCLA.

If the 1974 language is construed merely as a land use prohibition, there would not be a conflict with CERCLA, which would allow the federal government to pay for cleanup actions if the land *is* being used for purposes that would require remediation to protect human health and the environment.

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[46] P.L. 93-166, Section 204.

[47] P.L. 93-166, Section 204(c).

**Status of Cleanup.** To protect public safety, the Army Corps of Engineers has paid for the limited surface removal of munitions on Culebra Island in publicly accessible areas since 1995. These areas include beaches and campgrounds where munitions have been found in the soil or have washed up on the beach. The Corps has conducted these removal actions with authorities provided under CERCLA to address immediate threats, which establishes a precedent for the use of federal funds to pay for at least some cleanup of the island. The Corps has performed these actions, as it is responsible for cleaning up Formerly Used Defense Sites (FUDS). These sites are lands formerly owned or leased by the Department of Defense that were decommissioned before the first large round of base closings in 1988. The Corps included the former bombardment areas on Culebra in the FUDS program, as these areas were decommissioned in 1975.

**Estimates of Cleanup Costs.** Through the end of FY2004, the Corps reports that it had spent $4.8 million on the removal of munitions on Culebra Island.[48] The funding for these activities came from the Defense Environmental Restoration Account for FUDS sites. The Corps allocated this funding based on the availability of annual appropriations and the competing cleanup needs of other FUDS sites across the country.[49] At this time, CRS is not aware of any court decisions regarding whether the 1974 Act prohibits the expenditure of additional federal funds in the future for the cleanup of Culebra Island. As discussed earlier regarding the listing of Vieques on the NPL, the Army and the Commonwealth of Puerto Rico are negotiating a Memorandum of Agreement for the cleanup of Culebra Island. Actions agreed to in this memorandum presumably would necessitate an expenditure of funds in the future.

As of the end of FY2004, the Army had planned to spend $2.3 million in FY2005 and $1.8 million in FY2006 for the investigation and removal of munitions in certain areas of Culebra Island.[50] The Army estimated that an additional $30.1 million would be needed from FY2007 into the future to complete the cleanup, including the remediation of other hazardous substances.[51] However, the estimated future costs are preliminary and are based on the Army's assumptions regarding the presence of munitions and other hazardous substances and the remediation that would be required to address human health, safety, and environmental risks. The Army may revise this estimate if final cleanup decisions differ from present assumptions, or if the site investigations reveal that more munitions or other contamination are present.

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[48] Department of Defense, *Defense Environmental Programs Report to Congress for FY2004*, April 2005, Appendix K, pp. K-2-18, Appendix L, pp. L-1-103.

[49] As of the end of FY2004, the Department of Defense estimated that a total of $15.8 billion would be necessary to complete cleanup at FUDS sites, of which $12.2 billion would be for the cleanup of munitions. Department of Defense, *Defense Environmental Programs Annual Report to Congress for FY2004*, April 2005, Appendix K, p. K-6-1.

[50] Department of Defense, *Defense Environmental Programs Annual Report to Congress for FY2004*, April 2005, Appendix L, pp. L-1-103.

[51] Ibid.

## Conclusion

The listing of Vieques on the NPL offers certain advantages in terms of the potential for an expedited cleanup through increased coordination among the parties involved, the opportunity for heightened community involvement through participation in Restoration Advisory Board forums to learn about cleanup efforts, and the possibility of technical assistance grants to help residents understand cleanup documents open to public comment. However, the site listing does not guarantee a certain degree of cleanup or a particular amount of funding. Regardless of the site listing, the cleanup of both Vieques and Culebra will be subject to the same requirements under CERCLA.

The extent of the cleanup on both islands will depend on threats to human health, safety, and the environment, and the types of remediation that will be deemed necessary to address these threats. The pace of the cleanup will depend on the extent to which the site investigations reveal *immediate* threats that require time-critical removal actions. Otherwise, long-term remedial actions may be used to address *potential* threats of exposure. Depending on the remedy selected and the quantity of contamination, long-term remediation can take several years or even decades in some cases, making for a lengthy cleanup.

Whatever actions are required, the progress of cleanup will depend on the availability of federal funds to pay for the remediation. The Defense Environmental Restoration Accounts are currently the only source of funding for cleanup on Vieques and Culebra. How much would be available under these accounts is limited by congressional appropriations and the competing needs of other sites across the country. The availability of federal funding for cleanup at Culebra is further complicated by the legal issue of whether the Reserve Forces Facilities Authorization Act of 1974 prohibits federal expenditure for decontamination of the island. The Army and the Commonwealth of Puerto Rico agreed to negotiate a Memorandum of Agreement to specify the actions that will be necessary to clean up Culebra, the implementation of which presumes an expenditure of some funds in the future.