

N3172B_003250
NASD VIEQUES, PR
SSIC 5000-33a

**FINAL RECORD OF DECISION SOLID WASTE MANAGEMENT UNIT 6 (SWMU
6) FORMER MANGROVE DISPOSAL SITE, ATLANTIC FLEET WEAPONS
TRAINING AREA, FORMER NAVAL AMMUNITION SUPPORT DETACHMENT
VIEQUES PUERTO RICO (ENGLISH VERSION)**

07/01/2018
NAVFAC ATLANTIC

Approved for public release: distribution unlimited.



Atlantic
Norfolk, Virginia

Final

**Record of Decision
Solid Waste Management Unit 6,
Former Mangrove Disposal Site
(English Version)**

Atlantic Fleet Weapons Training Area – Vieques
Former Naval Ammunition Support Detachment
Vieques, Puerto Rico

July 2018



Record of Decision

Solid Waste Management Unit 6, Former Mangrove Disposal Site

Atlantic Fleet Weapons Training Area – Vieques
Former Naval Ammunition Support Detachment
Vieques, Puerto Rico
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1 Declaration

1.1 Site Name and Location

This Record of Decision (ROD¹) documents the decision to select the “no action” remedy for Solid Waste Management Unit (SWMU) 6, the former Mangrove Disposal Site, located at the former Naval Ammunition Support Detachment (NASD) in Vieques, Puerto Rico. SWMU 6 is approximately 0.6 acre and is the site of a former disposal area for general solid waste during the 1960s and 1970s. The former NASD is part of the Atlantic Fleet Weapons Training Area – Vieques (also known as AFWTA-Vieques), which was placed on the National Priorities List (NPL) on February 11, 2005 (Comprehensive Environmental Response, Compensation, and Liability Information System [CERCLIS] National Superfund database identification number: PRN000204694). SWMU 6 is also known as Operable Unit (OU) 8 in the CERCLIS database.

1.2 Statement of Basis and Purpose

The selection of the “no action” remedy was performed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). In 2007, the United States Department of the Navy (Navy), Naval Facilities Engineering Command (NAVFAC) Atlantic, United States Environmental Protection Agency (EPA) Region 2, Puerto Rico Environmental Quality Board (PREQB), and the Department of the Interior (DOI) entered into a Federal Facilities Agreement (FFA), which includes the former NASD, as a result of the NPL listing and pursuant to CERCLA. The FFA establishes the procedural framework and schedule for implementing the CERCLA response actions for Vieques. The Navy is the lead agency and responsible for ensuring appropriate CERCLA response actions are implemented, as necessary, to protect public health, welfare, and the environment.

This remedial decision is being jointly selected by the Navy and EPA, with concurrence of DOI and PREQB, the latter of which has consulted with the Puerto Rico Department of Natural and Environmental Resources (PRDNER). This decision is based on information contained in the Administrative Record file for this Operable Unit. Information not specifically summarized in this ROD or its references, but contained in the Administrative Record, has been considered and is relevant to the remedial decision for SWMU 6. Thus, this ROD is based upon and relies on the Administrative Record file for SWMU 6 in making this decision. This ROD was prepared in accordance with EPA ROD guidance, specifically *A Guide¹ to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents* (specifically, Section 8.0: Documenting a No Action Decision, Interim Action, and Contingency Remedy Decisions) (EPA, 1999) and *Toolkit² for Preparing CERCLA Records of Decision* (EPA, 2011). The result is a ROD format that is conducive for the general public to read and understand the information upon which the decision for SWMU 6 was made, including providing links to the technical details presented in the Administrative Record for this Operable Unit. Documentation associated with the listed activities is available in the Administrative Record and provides detailed information used to support the remedial decision for SWMU 6. The relevant information is also accessible by the hyperlinks in this document.

¹ This acronym, and all the others used in this document, can be found in alphabetical order in Section 4.

1.3 Scope and Role of Response Action

Based on the results of environmental investigations and the removal action conducted at SWMU 6, no unacceptable risks to human health or the environment remain at SWMU 6. SWMU 6 is one of 16 sites within the former NASD having been or currently being evaluated in accordance with CERCLA under the Navy's Installation Restoration Program (IRP). The Site Management Plan (SMP) for Vieques further details the investigation history and the schedule for CERCLA investigations/remediation activities at the former NASD and is updated annually. The no action remedy selected in this ROD is intended to be the final determination for SWMU 6, and it neither includes nor affects any other sites at the former NASD under the CERCLA process. The final determinations for the other 15 IRP sites within the former NASD have been documented in past decision documents (i.e., SWMU 6 is the last IRP site within the former NASD).

1.4 Description of Selected Remedy

Based on the removal action conducted at SWMU 6, current site conditions, future anticipated land and resource uses, and the results of environmental investigations, including human health and ecological risk assessments and a post-removal lagoon ecosystem evaluation, it has been determined that no remedial action is necessary for SWMU 6. There is no unacceptable risk to human health or ecological receptors attributable to past releases that would warrant further CERCLA response action; the removal action conducted at the site produced conditions that are acceptable for unlimited use and unrestricted exposure. Therefore, the no action alternative is selected for this site.

1.5 Statutory Determination

The no action alternative for SWMU 6 meets the statutory requirements of CERCLA Section 121 and is protective of human health and the environment, complies with Federal and Commonwealth regulations that are applicable or relevant and appropriate, and allows for unlimited use and unrestricted exposure to site media. A statutory 5-year review is not required for SWMU 6 because no hazardous substances are remaining at SWMU 6 at unacceptable levels.

1.6 Navy Authorizing Signature for the Record of Decision for SWMU 6,
Atlantic Fleet Weapons Training Area – Vieques

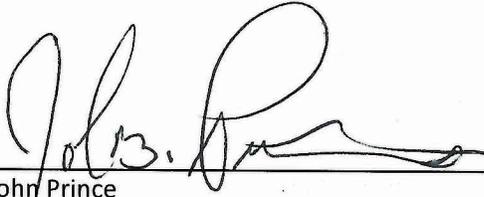


J. R. Cirvello
Environmental Business Line Manager
Naval Facilities Engineering Command, Atlantic



Date

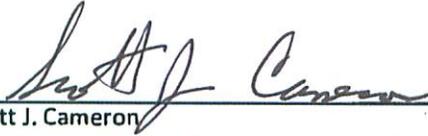
1.7 EPA Authorizing Signature for the Record of Decision for SWMU 6, Atlantic Fleet Weapons Training Area – Vieques



John Prince
Acting Director, Emergency and Remedial Response Division
Environmental Protection Agency, Region 2

July 10, 2018
Date

1.8 DOI Concurrence Signature for the Record of Decision for SWMU 6,
Atlantic Fleet Weapons Training Area – Vieques

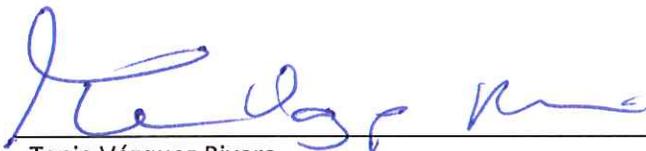


Scott J. Cameron
Principal Deputy Assistant Secretary - Policy, Management and Budget
Exercising the Authority of the Assistant Secretary for Policy,
Management and Budget

7/5/18

Date

1.9 PREQB Concurrence Signature for the Record of Decision for SWMU 6,
Atlantic Fleet Weapons Training Area – Vieques



Tania Vázquez Rivera
Chairwoman
Puerto Rico Environmental Quality Board

7/14/2017
Date

2 Decision Summary

2.1 Site Description and History

Vieques is approximately 7 miles southeast of the eastern tip of the main island of Puerto Rico (**Figure 1**). Aside from mainland Puerto Rico, Vieques is the largest island in the Commonwealth of Puerto Rico, encompassing 33,088 acres (51 square miles).

The Navy purchased large portions of Vieques in the early 1940s to conduct activities related to military training. Operations within the former NASD (located on the western one-third of Vieques) consisted mainly of ammunition loading and storage, vehicle and facility maintenance, and some training. **Figure 2** shows the location of SWMU 6 within the former NASD.

The Navy ceased facility-wide operations on the former NASD in April 2001, in accordance with the Presidential Directive to the Secretary of Defense dated January 30, 2000, and the land was transferred to the DOI, to be managed by the United States Fish and Wildlife Service (USFWS) as a National Wildlife Refuge, and the Navy has had no military presence at the former NASD since. Currently, the Navy's involvement at the former NASD comprises environmental restoration program activities.

SWMU 6 is approximately 0.6 acre and located in the northwestern portion of the former NASD. During the 1960s and 1970s, SWMU 6 was used for the disposal of general solid waste generated from Navy operations within the former NASD. Waste discarded at the site included empty containers of lubricants, oil, solvents, and paints; glass; and rubble. No munitions or explosives of concern (MEC) were identified at the site; however, munitions-related items such as inert concrete-filled practice bombs, empty bomb dispensers, and empty shell casings were identified. This material, as well as the general solid waste and contaminated soil, was removed during a removal action in 2009.

As mentioned above, SWMU 6 is on United States property managed by DOI that has been designated part of the Vieques National Wildlife Refuge.

FIGURE 1
Regional Location Map

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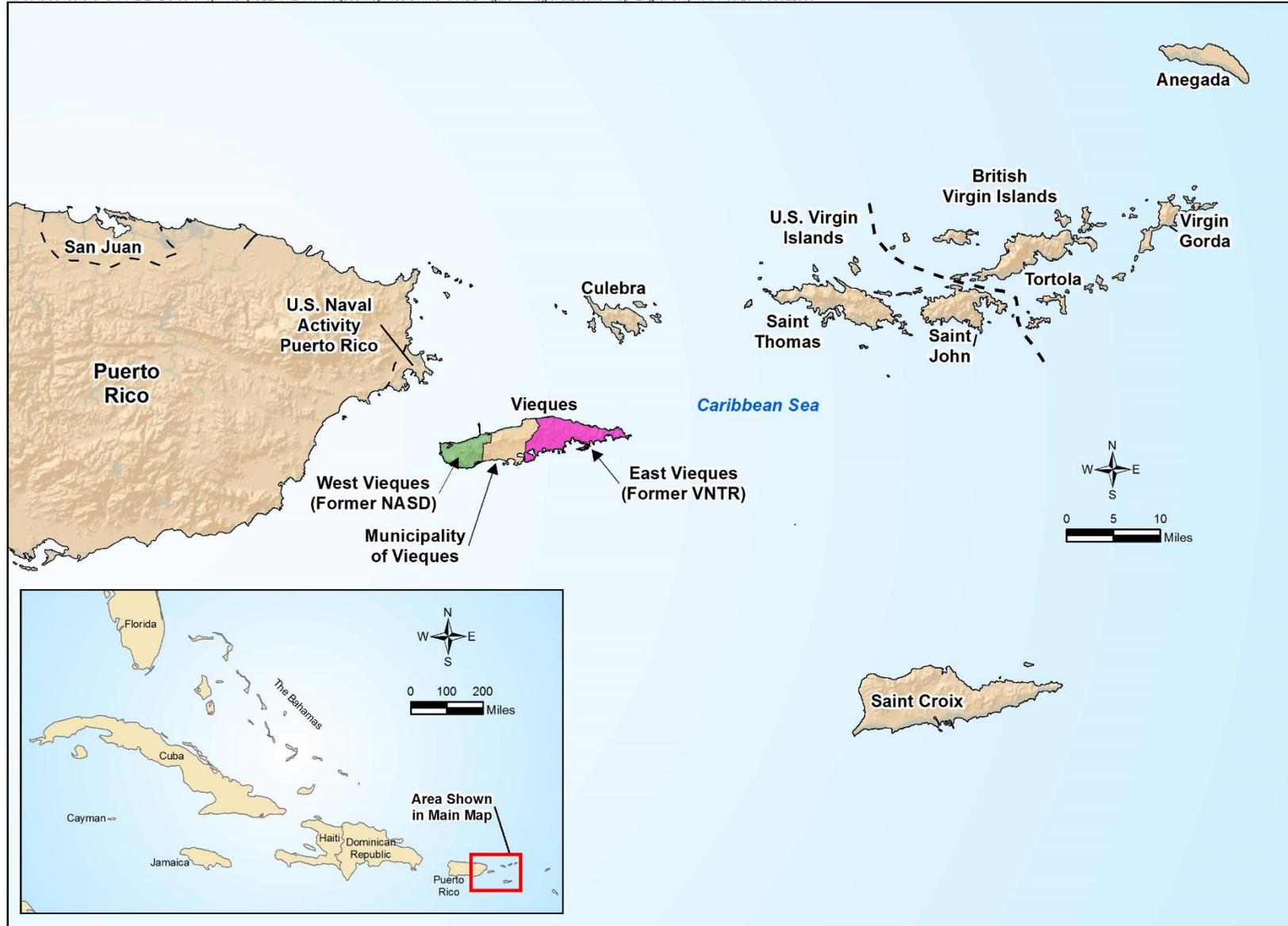
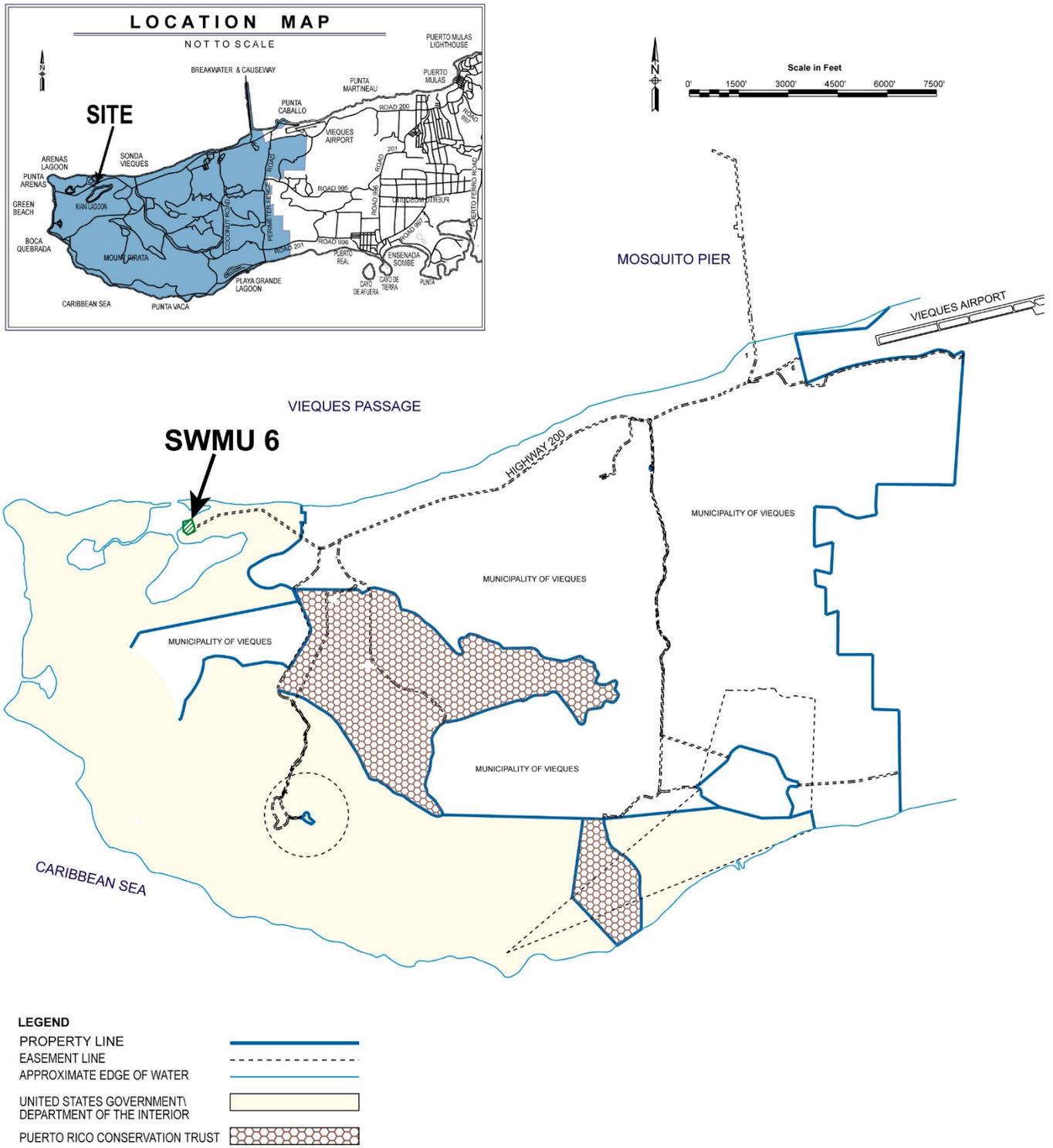


FIGURE 2
SWMU 6 Site Location Map



SOURCE:
VIEQUES NASD SURVEY LAND TRANSFER & DISPOSAL OVERALL LOCATION SURVEY
PREPARED BY GLENN & SADLER AND LUIS BERRIOS MONTES & ASSOCIATES

2.3 Summary of Previous Investigations

Several environmental investigations and one removal action were conducted at SWMU 6, beginning in 1984. Initial environmental investigations determined that debris at SWMU 6 warranted removal. A Non-Time Critical-Removal Action conducted in 2009 removed the waste debris, and thereafter the site conditions changed to a tidally influenced lagoon. As a result, post-removal environmental sampling was performed to determine if sediment within the lagoon warranted remedial action. **Table 1** summarizes the purpose, scope, and results of environmental investigations and the removal action completed to date. The documentation associated with the environmental investigations and removal action are accessible by the hyperlinks in this document.

TABLE 1
Previous Investigations

Previous Investigation*	Administrative Record Number	Investigation Activities
Initial Assessment Study (NEESA, 1984)	000032	The Initial Assessment Study ³ (IAS) was conducted to identify and assess sites posing a potential threat to human health or the environment because of contamination from past hazardous waste operations and included a historical records search and site visit to SWMU 6 (at that time referred to as Site 2) in 1984.
Confirmation Study (ESE, 1986)	000035	Based on the information gathered during the IAS, a Confirmation Study ⁴ (CS) was conducted in 1986 during which sampling was performed at SWMU 6 to verify whether hazardous concentrations of contaminants were present.
Environmental Baseline Survey (PMC, 2000)	002007	An Environmental Baseline Survey ⁵ (EBS) was conducted in 2000 to disclose available and relevant information regarding the environmental condition of the Navy property. The information was used as a basis for determining the environmental suitability of the property for transfer.
Expanded Preliminary Assessment/Site Investigation Vol I and Vol II (CH2M, 2000)	002021 002022	The Expanded Preliminary Assessment/Site Investigation ⁶ (PA/SI) was conducted in 2000 to determine whether a release of hazardous materials had occurred at 10 sites on the former NASD. Activities within SWMU 6 included a geophysical survey and collection of soil, groundwater, surface water, and sediment samples. Results of the Expanded PA/SI demonstrated an RI was warranted.
Remedial Investigation (CH2M, 2007)	002600	A Remedial Investigation ⁷ (RI) was conducted to assess the nature and extent of environmental media contamination and to assess potential risks to human health and environment at SWMU 6. Based on the RI Report, it was concluded that the contaminant concentrations did not pose an unacceptable risk to human health or ecological receptors. However, the Navy and regulatory agencies concurred that there was uncertainty associated with this conclusion because soil samples were collected adjacent to the debris rather than directly through the debris as a result of safety concerns. The agencies also concurred that the debris at SWMU 6 posed an unacceptable uncertainty regarding a potential future source of contamination and, therefore, warranted removal.
Non-Time-Critical Removal Action (Shaw, 2010)	303205	A Non-Time-Critical Removal Action ⁸ was conducted in 2009 to remove the waste debris and contaminated soil within SWMU 6. Approximately 1,423 tons of soil and debris were removed from an area of 27,500 square feet, with an average excavation depth of 1 to 2 feet, followed by confirmation sampling and site restoration activities (i.e., mangrove planting).

TABLE 1
Previous Investigations

Previous Investigation*	Administrative Record Number	Investigation Activities
Post-Removal Supplemental Confirmatory Sampling (CH2M, 2010)	000002	Post-Removal Supplemental Confirmatory Sampling ⁹ of soil, surface water, and sediment was performed in 2011 to characterize the site conditions after completion of the removal action. Information gathered during the sampling was used to demonstrate the need for biota (fish and blue crab) sampling that was subsequently conducted in 2012. The data collected during these sampling efforts were used to revise the Human Health Risk Assessment (HHRA) and Ecological Risk Assessment (ERA). The results of the risk assessments demonstrated that only polychlorinated biphenyls (PCBs), lead, and zinc in sediment potentially warranted remedial action.
Feasibility Study (CH2M, 2013)	000036	Based on the post-removal supplemental confirmatory sampling and associated risk assessments described above, a Feasibility Study ¹⁰ (FS) was conducted to evaluate potential remedial alternatives to address sediment, in accordance with EPA guidance. Six alternatives were developed and screened against feasibility evaluation criteria, as defined in the NCP. Based on the potential need to perform a remedial action, a Supplemental RI was performed to refine the lateral and vertical extent of sediment contamination. It is noted here that information gathered during the Supplemental RI (see below) demonstrated that a remedial action is ultimately not necessary to be protective of human health and the environment at SWMU 6, and this determination is the basis for the selection of the no action remedy.
Supplemental Remedial Investigation (CH2M, 2016)	003148	In 2014, a Supplemental RI ¹¹ was performed at SWMU 6 to determine if sediment within the lagoon warranted remedial action and, if so, the area and volume of sediment that would need to be addressed. To help make this determination, sediment preliminary remediation goals (PRGs) for PCBs, lead, and zinc were used for comparison to the sediment data collected during the Supplemental RI. A secondary goal of the Supplemental RI was to perform a lagoon ecosystem evaluation to assess ecosystem conditions that had developed since the 2009 removal action. The results of the study demonstrated there were no PCBs above the PRG and that there is no unacceptable ecological risk, indicating remedial action is not warranted.

* Documentation associated with the listed activities is available in the Administrative Record file and provides detailed information used to support the selection of a no action remedy for SWMU 6. The relevant referenced information is also accessible by the hyperlinks in this document.

The removal action and supplemental environmental investigations demonstrated that there are no chemicals above the preliminary remediation goals (PRGs), there are no unacceptable risks to human health and the environment, and that a remedial action is not necessary for sediment within SWMU 6. The following subsections provide the results from these environmental investigations. Detailed results from the environmental investigations and removal action are also accessible via the hyperlinks in this document (if access is available to this document electronically).

2.4 Nature and Extent of Contamination

As noted previously, the 2009 removal action was performed, and as a consequence approximately 1,423 tons of debris and contaminated soil were removed. In 2011 and 2012, post-removal soil, sediment, surface water, and biota samples were collected to evaluate post-removal conditions. While several semi-volatile organic compounds, metals, and pesticides/polychlorinated biphenyls (PCBs) were detected in various samples, the post-removal HHRA and ERA indicated that only PCBs, lead, and zinc present in sediment warranted further consideration. Therefore, an FS was prepared in 2013 to evaluate potential remedial alternatives associated with PCBs, lead, and zinc in sediment. Following completion of the FS, additional sediment samples were collected in 2014 during the Supplemental RI to determine current conditions and refine the lateral and vertical contamination potentially warranting remediation. These data, collected across the areal extent of the lagoon, represent the most current conditions and the most robust horizontal and vertical distribution of these constituents in sediment. The results of the characterization demonstrated there were no PCBs above the PRG and that there is no unacceptable ecological risk (see **Table 2**), indicating remedial action is not warranted.

2.5 Current and Potential Future Land and Resource Uses

The former NASD occupied approximately 8,000 acres, most of which are undeveloped. Military operations ceased on the former NASD in April 2001, and the land containing SWMU 6 was transferred to the DOI as part of the Vieques National Wildlife Refuge. While this ROD allows for unlimited use of SWMU 6, USFWS has no planned uses or activities for SWMU 6 other than to maintain the road that passes through the area. USFWS does allow recreational activities, such as kayaking and fishing, in Laguna el Pobre to the north, Laguna Kiani to the south, and the channel that connects them that is adjacent to the western side of SWMU 6.

2.6 Summary of Site Risks

Figure 4 presents a graphical representation of the **Conceptual Site Model**¹² (CSM) for SWMU 6. The figure includes the human and ecological receptors that were considered in the post-removal HHRA and ERA.

A summary of the post-removal HHRA and ERA results for SWMU 6 is included in the following subsections. The complete post-removal HHRA and ERA are provided in the FS Report and the human health and ecological risk evaluations conducted during the Supplemental RI are provided in the RI Report Addendum (CH2M, 2016), both of which are available in the Administrative Record file.

FIGURE 4
SWMU 6 Conceptual Site Model



EN0225161108GNV Fig4_ES-3 Conceptual Site Model_FRAPal 2/25/16 dcd

2.6.1 Human Health Risk Assessment

As mentioned above, a post-removal HHRA was conducted to evaluate potential human health risks associated with exposure to constituents detected in soil, sediment, surface water, and biota that were collected in 2011 and 2012 at SWMU 6. Maximum detected concentrations of constituents were compared to EPA risk-based regional screening levels (RSLs), and constituents of potential concern (COPCs) were identified based on exceedances of these screening levels. Human health risks were evaluated for these COPCs for human receptors who may be exposed to environmental media at SWMU 6.

Fish and blue crab consumers may have direct contact with sediment and surface water at SWMU 6, and these exposure pathways were quantified under a recreational user/trespasser/visitor exposure scenario. The exposure frequency and duration assumed for potential recreational users/trespassers/visitors can be used as conservative estimates for sediment and surface water exposures by potential fish or blue crab consumers because the lagoon would not support subsistence fishing/crabbing. At most, the lagoon could support recreational fishing and crabbing. Therefore, the exposure to sediment and surface water by a fisherman would be comparable to those by a recreational user.

Health risks are based on an estimate of the potential cancer risk, which is expressed as a probability (such as one additional incidence of cancer in a population of one million, or 1 in 1×10^6), and the potential non-cancer hazard, the latter of which is expressed as a hazard index (HI). Contaminants of concern (COCs) were not identified for soil, sediment, or surface water because recreational users/trespassers/site visitors risk estimates for site-related chemicals did not exceed target levels for cancer risk and non-cancer hazard, as defined by EPA.

Based on the results of the HHRA, PCBs were the only contaminants identified as potentially warranting remedial action (pending further evaluation, as discussed below) under a human consumption of fish and blue crab exposure scenario. It should be noted that the calculated risk was based on an ingestion frequency of two meals per week comprising fish and blue crab from SWMU 6. However, based on observations made during the biota sampling event in 2012, it was apparent that the ingestion frequency of two meals per week was conservative and protective of human health for the lagoon as a result of the very small population of edible-size fish and blue crab that the lagoon can support.

A sediment PRG of 1 milligram per kilogram (mg/kg) was determined for total PCBs based on levels identified as protective at multiple sites across the country, and a Supplemental RI was subsequently implemented in 2014 to determine the horizontal and vertical extent of PCB concentrations above the PRG. The sediment delineation study included collection of 128 surface and subsurface sediment samples across the lagoon. **Figure 5** shows the distribution of Supplemental RI samples and relevant historical samples; at most locations, samples were collected from multiple depths. As shown in **Table 2**, all total PCB concentrations were below the PRG.

TABLE 2
SWMU 6 Sediment Concentrations Relative to Preliminary Remediation Goals

Chemical	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	95% UCL of Mean	PRG	Frequency of PRG Exceedance by Max	Frequency of PRG Exceedance by 95% UCL of Mean
PCBs (mg/kg)							
Total PCBs	22 / 128	0.0161	0.406	N/A	1.0	0 / 128	N/A
Inorganics (mg/kg)							
Lead	127 / 128	0.84	731	122	218	12 / 128	0 / 128
Zinc	118 / 128	2.98	1,110	198	410	10 / 128	0 / 128
UCL – upper confidence limit							

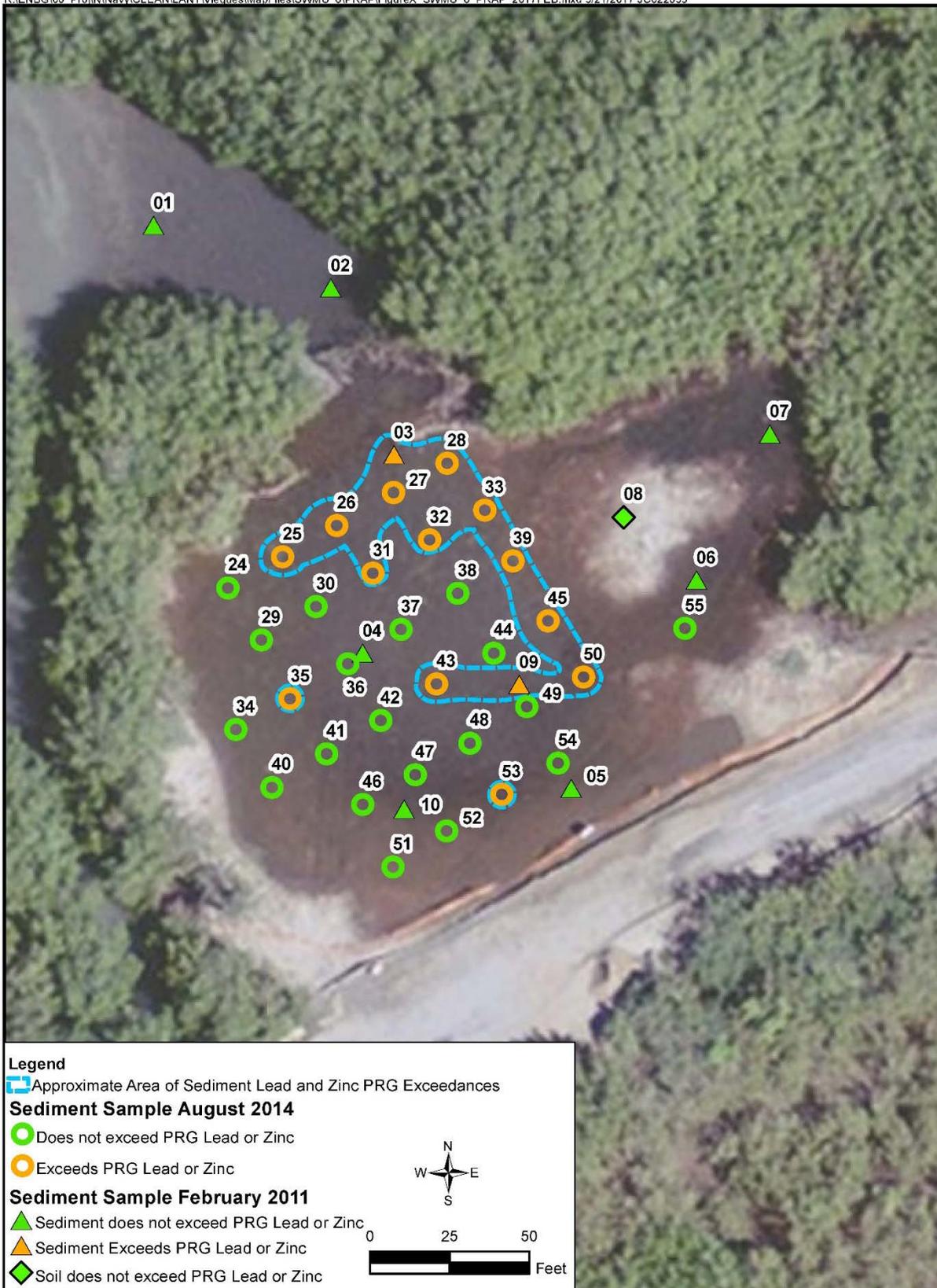
2.6.2 Ecological Risk Assessment

A post-removal ERA was conducted to evaluate potential risks to terrestrial and aquatic receptors that are exposed to contaminants detected in soil, sediment, and surface water collected at SWMU 6 in 2011. The risk assessment used established ecological effects values to assess risks from direct exposure by organisms as well as via the food chain. Based on the results of the ERA, lead and zinc were the only contaminants identified potentially warranting remedial action (pending further evaluation, as discussed below) based on potential risk to the benthic community.

Sediment PRGs for lead (218 mg/kg) and zinc (410 mg/kg) were developed, and the Supplemental RI characterized the horizontal and vertical extent of lead and zinc. As shown in **Figure 5**, the number of sediment samples that contained lead and/or zinc at concentrations above the PRG represented only a small portion of the lagoon (approximately 1/10th the total area, or about 0.07 acre). The distribution of these exceedances does not suggest widespread contamination within the lagoon or a localized hotspot, nor has contamination been transported into adjoining lagoon waters. Additionally, mean (versus maximum) concentrations are more representative of exposure to communities of benthic organisms which are widely distributed across the lagoon. As shown in **Table 2**, mean lead and zinc concentrations were below respective PRGs (i.e., neither of the two mean hazard quotients [HQs] exceeded 1), indicating negligible risk to the benthic community as a whole. Further, the lagoon ecosystem evaluation demonstrated increasing biological diversity and productivity, and overall continuing successful maturation of the habitat. As the lagoon sediment accumulates more total organic carbon, such as from leaf litter deposited by growing mangroves, it is expected that sulfides in the sediment will increase and further reduce or eliminate the bioavailability of remaining lead and zinc. Therefore, no unacceptable ecological risk was determined for SWMU 6.

FIGURE 5
 Area of Sediment Lead and Zinc Concentrations above PRGs

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2.7 No Action Determination

The Navy, EPA, and DOI, in consultation with PREQB, which has consulted with PRDNER, have determined that no action is required for SWMU 6. The determination meets the statutory requirements of CERCLA for protection of human health and the environment. The findings of environmental investigations conducted following removal of debris and contaminated soil, including an evaluation of the lagoon ecosystem conditions, support the conclusion that there are no unacceptable risks associated with unlimited use and unrestricted exposure at SWMU 6. Under this alternative, no additional response action will be performed at SWMU 6, and no restrictions on land use or exposure are necessary.

2.8 Community Participation

The Navy, in consultation with the EPA, PREQB, and USFWS, established a community relations program for the Vieques Environmental Restoration Program in 2001. The program promotes communication regarding site investigations and remediation activities between the stakeholder agencies (Navy, EPA, USFWS, PREQB, and PRDNER) and the public. The community relations program resulted in the creation of a Restoration Advisory Board (RAB) in 2004 to encourage community involvement. RAB meetings are held approximately every three months and are open to the public for participation. A summary of the community participation efforts by the stakeholder agencies for this action are discussed in the next section.

3 Responsiveness Summary

A Responsiveness Summary is a concise summary of substantive comments received from the public during the public comment period and the associated responses. The Responsiveness Summary was prepared in accordance with guidance in *Community Relations in Superfund: A Handbook* (EPA, 1992) after the public comment period ended on December 23, 2016.

3.1 Overview

The Proposed Plan presented to the public identified that no further action is necessary for SWMU 6 to protect human health and the environment.

3.2 Community Involvement Process

In accordance with Section 117(a) of CERCLA, the Navy provided the Proposed Plan for a public comment period starting October 10 and initially planned to end on November 23, 2016. A **public meeting**¹³ was held on November 16, 2016 at the Punta Mulas Lighthouse in Vieques, Puerto Rico to present information pertinent to the proposed no further action determination and to accept comments and questions regarding this determination. During the public meeting, comments or questions made to the Navy, EPA, USFWS, or PREQB were recorded by the court reporter. The transcript contains questions/comments posed (and the associated responses) regarding the Proposed Plan presented during the public meeting.

A petition was made during the meeting to extend the public comment period, and as a result, the comment period was extended to December 23, 2016.

The Proposed Plan, previous investigation, and removal action reports for SWMU 6 were available during the public comment period and are currently available in the Administrative Record. The Administrative Record for this decision is accessible to the public via:

<http://www.navfac.navy.mil/vieques>

3.3 Summary of the Public Comment Period

No community members expressed opposition to the proposed no action remedy for SWMU 6 during the public comment period. No comments or questions were received by the Navy, EPA, USFWS, PREQB, or PRDNER during the public comment period.



4 Acronyms

AFWTA	Atlantic Fleet Weapons Training Area
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
COC	contaminant of concern
COPC	constituent of potential concern
CS	Confirmation Study
CSM	Conceptual Site Model
DOI	Department of the Interior
EBS	Environmental Baseline Survey
EPA	Environmental Protection Agency
ERA	Ecological Risk Assessment
FFA	Federal Facilities Agreement
FS	Feasibility Study
HHRA	Human Health Risk Assessment
HI	hazard index
HQ	hazard quotient
IAS	Initial Assessment Study
IRP	Installation Restoration Program
mg/kg	milligram per kilogram
MEC	munitions and explosives of concern
MOV	Municipality of Vieques
NASD	Naval Ammunition Support Detachment
NAVFAC	Naval Facilities Engineering Command
Navy	Department of the Navy
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
OU	Operable Unit
PA/SI	Preliminary Assessment/Site Investigation
PCB	polychlorinated biphenyls
PRDNER	Puerto Rico Department of Natural and Environmental Resources
PREQB	Puerto Rico Environmental Quality Board
PRG	preliminary remediation goal

RAB	Restoration Advisory Board
RI	Remedial Investigation
ROD	Record of Decision
RSL	regional screening level
SMP	Site Management Plan
SWMU	Solid Waste Management Unit
UCL	upper confidence limit
USFWS	United States Fish and Wildlife Service



References

5 References

Item	Reference Phrase in ROD	Location in ROD	Identification of Referenced Document Available in the Administrative Record and/or Hyperlinked to this ROD
Ref. 1	Guide	Section 1.2	EPA. 1999. <i>A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents.</i>
Ref. 2	Toolkit	Section 1.2	EPA. 2011. <i>Toolkit for Preparing CERCLA Records of Decision.</i> September.
Ref. 3	Initial Assessment Study	Section 2.3	Naval Energy and Environmental Support Activity (NEESA). 1984. <i>Initial Assessment Study (IAS). Naval Station Roosevelt Roads, Puerto Rico.</i> September.
Ref. 4	Confirmation Study	Section 2.3	Environmental Science and Engineering, Inc. (ESE). 1986. <i>Confirmation study, U.S. Naval Station, Roosevelt Roads, Puerto Rico, and US Naval Ammunition Facility, Vieques.</i> May.
Ref. 5	Environmental Baseline Survey	Section 2.3	Program Management Company (PMC). 2000. <i>Final Report Environmental Baseline Survey, Naval Ammunition Support Detachment Vieques, Vieques Island, Puerto Rico.</i> October.
Ref. 6	Expanded Preliminary Assessment/Site Investigation	Section 2.3	CH2M HILL (CH2M). 2000. <i>Expanded Preliminary Assessment/Site Investigation, U.S. Naval Ammunition Storage Detachment, Vieques Island, Puerto Rico.</i> October.
Ref. 7	Remedial Investigation	Section 2.3	CH2M. 2007. <i>Remedial Investigation Report, Solid Waste Management Unit (SWMU) 6, Former Naval Ammunition Support Detachment, Vieques Island, Puerto Rico.</i> February.
Ref. 8	Non-Time-Critical Removal Action	Section 2.3	Shaw. 2010. <i>Completion Report, Removal Actions SWMU 6, SWMU 7, AOC J, and AOC R, Former Naval Ammunitions Support Detachment, Vieques, Puerto Rico.</i> March.
Ref. 9	Post-Removal Supplemental Confirmatory Sampling	Section 2.3	CH2M. 2010. <i>Post-Removal Supplemental Confirmatory Sampling and Analysis Plan Solid Waste Management Unit (SWMU) 6, Former Naval Ammunition Support Detachment Vieques, Puerto Rico.</i> December.
Ref. 10	Feasibility Study	Section 2.3	CH2M. 2013. <i>Feasibility Study Report, Solid Waste Management Unit (SWMU) 6, Atlantic Fleet Weapons Training Area – Vieques, Former Naval Ammunition Support Detachment, Former Naval Ammunition Support Detachment, Vieques, Puerto Rico.</i> January.

Item	Reference Phrase in ROD	Location in ROD	Identification of Referenced Document Available in the Administrative Record and/or Hyperlinked to this ROD
Ref. 11	Supplemental RI	Section 2.3	CH2M. 2016. <i>Remedial Investigation Report – Addendum, Solid Waste Management Unit (SWMU) 6, Atlantic Fleet Weapons Training Area—Vieques Former Naval Ammunition Support Detachment, Vieques, Puerto Rico</i> . January.
Ref. 12	Conceptual Site Model	Section 2.5	CH2M. 2013. <i>Feasibility Study Report, Solid Waste Management Unit (SWMU) 6, Atlantic Fleet Weapons Training Area – Vieques, Former Naval Ammunition Support Detachment, Former Naval Ammunition Support Detachment, Vieques, Puerto Rico</i> . January.
Ref. 13	public meeting	Section 3.2	Transcript of the Public Hearing for the Meeting of Proposed Plan for SWMU 6. Atlantic Fleet Weapons Training Area – Vieques, Former Ammunition Support Detachment, Vieques, Puerto Rico. November 16, 2016.