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FINAL RESTORATION ADVISORY BOARD MEETING MINUTES NUMBER 48 HELD ON 9 FEBRUARY 2016 AT THE VIEQUES MULTIPLE USE CENTER (ENGLISH VERSION)

VIEQUES ISLAND PUERTO RICO

02/09/2016

CH2M HILL

Vieques Investigation and Cleanup
Navy Facilities Engineering Command (NAVFAC) Atlantic

RESTORATION ADVISORY BOARD (RAB)
Meeting Number 48
6:00 p.m. – 8:00 p.m., February 9, 2016, Vieques Multiple Use Center, Vieques, PR

MEETING MINUTES (Final)

Attendees:

Dan Waddill - Ex-Officio RAB Member, NAVFAC Atlantic	Miriam Aldebol -- Community Member
Daniel Hood – Ex-Officio RAB member, NAVFAC Atlantic	J. Hines – Community Member
Madeline Rivera – NAVFAC Atlantic	Gabriel Rivera – Community Member
Daniel Rodríguez – Ex-Officio RAB Member, USEPA Region 2	Armando Torres – Community Member
Ramón Torres – USEPA Region 2	Abigail González – Community Member
Mike Barandiarán – Ex-Officio RAB member, USFWS	Julio Rosa – Community Member
Luther Landrum – Community RAB Member	June Landrum -- Community Member
Stacie Notine – Community RAB Member	Douglas McHoul – Community Member
Daniel Vargas – USAE	Ivelisse Avila – Community Member
Brett Doerr – CH2M	Mayat Mair – Community Member
Daniel G. Concepción – CH2M	John Gentile -- Community Member
Maria Danois-CH2M	Arnaud Earhart – Community Member
Héctor Olivieri – Community Member	Marie Rivera – Community member
Ana M. Fabián – Community Member	Elba Sánchez – Community Member
Damair- Community Member	Kathy Gannett – Community Member

These minutes represent a summary of the meeting presentations, comments, questions, and action items and are not a verbatim transcript of the meeting.

Topics Discussed:

Opening and Introductions	
Maria Danois (CH2M/Facilitator)	Meeting began at 6:00 p.m. Participants were welcomed to the interactive poster presentations regarding the Vieques Cleanup Program.
Dan Waddill (Navy Program Manager) Daniel Hood (Navy Project Manager Madeline Rivera (Navy Site Manager) Brett Doerr (CH2M Project Manager) Mike Barandiarán (Vieques Wildlife Refuge Manager, USFWS) Ramón Torres (USEPA Region 2) Daniel Rodríguez (USEPA Region 2)	Greeted the participants, discussed the information on each of the posters, and answered questions posed by RAB and community members. The topics discussed and a summary of the conversations with the RAB and community members are provided in these minutes. Representatives of the Navy and regulatory agencies were available during and after the meeting to respond to questions. Attached to these minutes are representations of the posters presented at the RAB meeting.
Status of Vieques Installation Restoration Sites	
Daniel Hood	Daniel Summarized the investigation status and the upcoming work at the Installation Restoration Program (IRP) sites located on west and east Vieques. He presented the CERCLA timeline for each of the active IRP sites: AOC E, SWMU 1, SWMU 6 and SWMU 20. Each of the timelines included projected timeframes for each of the CERCLA stages to be completed at these sites. A map showing the locations of the sites was included. The presentation also included photographs from the sites, including site features and data collection.
Status of Vieques Munitions Response Sites	
Daniel Hood	Similar to the IRP presentation, Daniel summarized the Munitions Response Program (MRP) investigation and cleanup status and upcoming work on west and east Vieques. Photographs showing soil, groundwater, surface water, and sediment sampling and munitions cleanup work were included on the poster. Daniel also provided information to local outfitters regarding restricted areas necessary to ensure the safety of the public during munitions removal operations at Península Carenero.
Community Feedback	Mayat Mair, Arnaud Erhart, and John Gentile (local outfitters) expressed their concern about offshore restrictions (exclusion zone) near Peninsula Carenero (specifically Ensenada Honda) that could affect charter boat businesses operating in that area. They stated that Ensenada Honda is a very large area, comprising approximately 4 square miles, therefore closing the entire area may be unnecessary. They also stated that under weather events this is the only bay where they can safely anchor their boats. They also suggested that the Navy inform the local marinas and issue a Notice to Mariners for those boaters that do not receive the information through DNER, the US

	Coast Guard or other local agencies. They also suggested that the Navy could call them or use an email list to inform of the specific areas where the Navy would be working on a particular day. • Daniel Hood responded that the Navy issued a broad exclusion zone so that the public is aware of the area that may be affected by the munitions removal work as it progresses along the peninsula during the next several months and that the reason the exclusion zone is necessary to ensure boat operators are safe while munitions removal takes place on the peninsula in order to make the area safe for potential future public use. He also said that at any one time, the cleanup work will be taking place in a certain location along the peninsula so the Navy can provide more frequent information on the specific exclusion area associated with the current location of cleanup work, which will be a smaller area within Ensenada Honda. He also stated that the Navy may communicate with the local marinas and issue a Notice to Mariners to communicate the exclusion zone information to boaters, including boaters not familiar with the area.
Open Detonation for Removing Munitions on Vieques	
Dan Waddill	Dan summarized the open detonation process used during munitions cleanup. Over 95,000 munition items have been safely addressed over the last 10 years in Vieques and data from more than 1,400 samples taken during 150 controlled detonation events and 5 significant brush fires have shown no explosives, lead, or mercury were ever detected in any air sample and that there has never been an exceedance of any air quality health standard, including particulate matter. Dan also explained why a detonation chamber is not used on Vieques, primarily because use of detonation chambers versus open detonation would significantly increase the risk to UXO workers by having to unnecessarily manipulate munitions and that open detonation has been shown to be protective of human health and the environment.
Underwater and Beaches Investigation Status Update	
Brett Doerr	Brett summarized the underwater and beaches investigation status and explained the significance of the Beach Dynamics Study for helping to understand the behavior of the beaches and munitions that may be present on the beaches and in the near-shore areas, and in the planning of upcoming underwater cleanup work. He mentioned that the Navy had initially performed munitions cleanup on several beaches and found that over time metallic objects (detected with metal detectors) returned to the beaches, either from washing up from the ocean or becoming detectable due to beach erosion. Therefore, it was realized that a study of the beaches and nearshore areas would be critical to help plan future investigations and cleanup of these areas. The update included timelines summarizing the progress and upcoming activities for UXO 16 (underwater areas) and the various beaches. A map of Vieques showing the location of beaches and underwater areas under investigation was presented. The map was complemented with pictures showing activities related to the Beach Dynamics Study, the UXO 16 Wide Area Assessment, and Expanded Site Inspection offshore of SWMU 4.
Community Feedback	• Julio Rosa (Community Member) stated that he would like to see the beaches cleaned first and opened to the public to allow tourism and asked that the Navy keep this priority under consideration.

	– Dan Waddill responded that the Navy originally focused on removing munitions from land areas with the highest explosive risk. Now the Navy is moving into other areas, including the beaches. In addition, investigations such as the Beach Dynamics Study, Wide Area Assessment and Expanded Site Inspection are helping characterize the beaches and underwater areas for further investigation and cleanup. – Ramón Torres (USEPA) agreed that the cleanup is a lengthy process and is based on a risk management approach. • Hector Olivieri (Community Member) asked if there was a map with the expected projected path and approximate location of UXOs based on where the munitions had been fired from. He also asked whether the Navy has found helicopters or aircraft in the underwater sites, because he has heard of diving tours to these sites. – Brett discussed the historical sunken ship records search the Navy conducted and that he was unaware of any sunken helicopters or aircraft. Brett emphasized that if Hector or anyone has additional information about sunken vessels, including helicopters or aircraft, they should provide that information to the Navy. He also emphasized that because munitions may be associated with sunken vessels, that unless there is public record that sunken vessels are safe to dive on, the public should avoid those areas and promptly report this kind of information to the Navy following the three 3Rs (Recognize, Retreat, Report) procedure. • Ana M. Fabián (Community Member) asked whether there was a record of the work that CH2M did during the 1980s and 1990s at the Naval Activity Puerto Rico installation (Roosevelt Roads) concerning munitions. – Brett stated that he will provide information about how to access NAPR public records via email.
Key Areas Where Accelerated Cleanup is Taking Place to Foster Public Access	
Madeline Rivera	Madeline summarized the status of various sites under expedited cleanup to enable USFWS to implement their land use plan, including areas designated for access to the public. She highlighted the cleanup progress on: SMWU 4, Peninsula Carenero, UXO 15 (Puerto Ferro peninsula), and UXO18 (Cayo la Chiva). The presentation included a map with the locations of the sites under accelerated cleanup and the CERCLA progress timelines for each of these sites.
Community Feedback	• A community member commented that they were able to access more areas of UXO 15, Ensenada Honda, and Punta Carenero during former naval exercises than they are currently allowed to access. – Madeline Rivera responded that investigation and cleanup work being conducted under CERCLA is being overseen by the USEPA and Commonwealth agencies and that Congress determined how the land will be used. Thus access restrictions are dictated by law that the Navy must comply with.
Regulatory Agencies Update	
US Fish and Wildlife Service	
Mike Barandiarán	Mike provided information on several topics: – USFWS agrees that the beaches are a top priority. DNER and USFWS will co-manage the beaches and cayos, which are under DNER jurisdiction. The USFWS

	Comprehensive Conservation Plan describes intended uses for the sites. The timeline for implementation at the beach areas depends on the results of the beach and underwater studies being conducted. – USFWS anticipates that UXO 15 will be open relatively soon, but investigations are still ongoing there. The cleanup work on SWMU 4 that will allow public access is close to being completed. – Playa Grande Lagoon is currently undergoing a natural closure process (natural processes are responsible for the closure, not people); the natural channel is blocked and the secondary channel does not maintain enough flow to avoid sedimentation at the entrance. To prevent sand sedimentation, maintenance dredging could allow water flow from the ocean. However, this would be a high cost maintenance operation requiring permitting from DNER, US Army Corps of Engineers and the municipality of Vieques.
Community Feedback	• Julio Rosa (Community Member) suggested that Playa Grande Lagoon dredging be performed by contractors using sand dredging permits and under the supervision of the Municipality of Vieques like it was done in the past. – Mike Barandiarán replied that USFWS will begin talks with DNER, US Army Corps of Engineers and the Municipality of Vieques to suggest that they negotiate granting sand dredging permits to contractors for a moderate fee so that the dredging maintenance operation may be done more economically and under the supervision of the municipality of Vieques.
US Environmental Protection Agency	
Ramón Torres	Ramón stated that munitions cleanup activities require interaction among multiple regulatory and governmental agencies. Exclusion zones are delineated when a munitions response action is to be performed. Exclusion zones are enforced by the Navy, and civilians not involved in the cleanup operation cannot be in the area due to safety reasons.
Adjournment	
All Presenters	Presenters thanked all the participants for coming. The meeting was adjourned at approximately 8:20 p.m. The next meeting will be held in May 2016.

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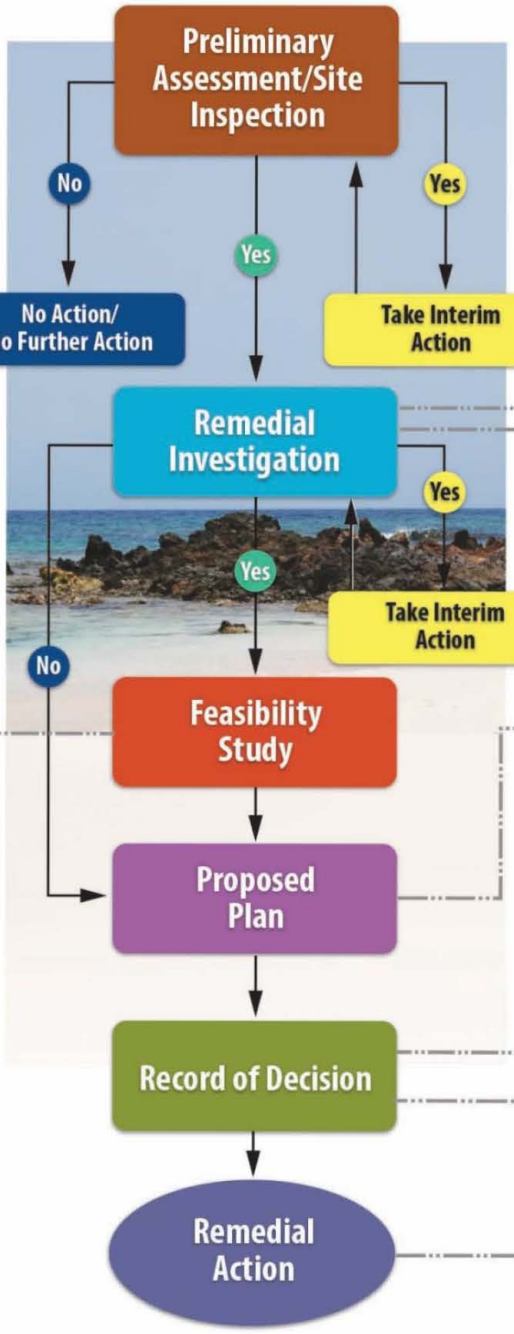
STATUS OF VIEQUES CLEANUP PROGRAM SITES UNDER CERCLA



No Action/No Further Action Decision Document

Location	Site Name
Former NASD	SWMU 5
Former NASD	SWMU 10
Former NASD	SWMU 14
Former NASD	SWMU 15
Former NASD	AOC B
Former NASD	AOC C
Former NASD	AOC F
Former NASD	AOC K
Former NASD	AOC L
Former VNTR	SWMU 2
Former VNTR	SWMU 4
Former VNTR	SWMU 5
Former VNTR	SWMU 6
Former VNTR	SWMU 7
Former VNTR	SWMU 8
Former VNTR	SWMU 10
Former VNTR	SWMU 12
Former VNTR	AOC A
Former VNTR	AOC F
Former VNTR	AOC G
Former VNTR	PI 5
Former VNTR	PI 6
Former VNTR	PI 7
Former VNTR	PI 8
Former VNTR	PI 10
Former VNTR	PI 11
Former VNTR	PI 14
Former VNTR	PI 20
Former VNTR	PI 21 (UXO 17)
Former VNTR	PAOC I
Former VNTR	PAOC J
Former VNTR	PAOC K
Former VNTR	PAOC L
Former VNTR	PAOC M
Former VNTR	PAOC N
Former VNTR	PAOC O
Former VNTR	PAOC P
Former VNTR	PAOC Q
Former VNTR	PAOC R
Former VNTR	PAOC S
Former VNTR	PAOC T
Former VNTR	PAOC U
Former VNTR	PAOC V
Former VNTR	PAOC W
Former VNTR	PAOC X
Former VNTR	PAOC FF

Feasibility Study

Location	Site Name
Former NASD	SWMU 4
Former VNTR	UXO 18

Remedial Investigation Interim Action

Location	Site Name
Former VNTR	UXO 4
Former VNTR	UXO 9
Former VNTR	UXO 10
Former VNTR	UXO 13
Former VNTR	UXO 15
Former VNTR	UXO 16
Former VNTR	UXO 17

Remedial Investigation

Location	Site Name
Former VNTR	SWMU 20
Former VNTR	UXO 2
Former VNTR	UXO 3
Former VNTR	UXO 5
Former VNTR	UXO 6
Former VNTR	UXO 7
Former VNTR	UXO 8
Former VNTR	UXO 11
Former VNTR	UXO 12
Former VNTR	UXO 14

Proposed Plan

Location	Site Name
Former NASD	SWMU 6

No Action/No Further Action Record of Decision

Location	Site Name
Former NASD	SWMU 7
Former NASD	AOC H
Former NASD	AOC J
Former NASD	AOC R
Former NASD	AOC I

Action Record of Decision

Location	Site Name
Former NASD	AOC E
Former VNTR	SMWU 1
Former VNTR	UXO 1

Remedial Action

Location	Site Name
Former VNTR	SMWU 1
Former NASD	AOC E

Legend:

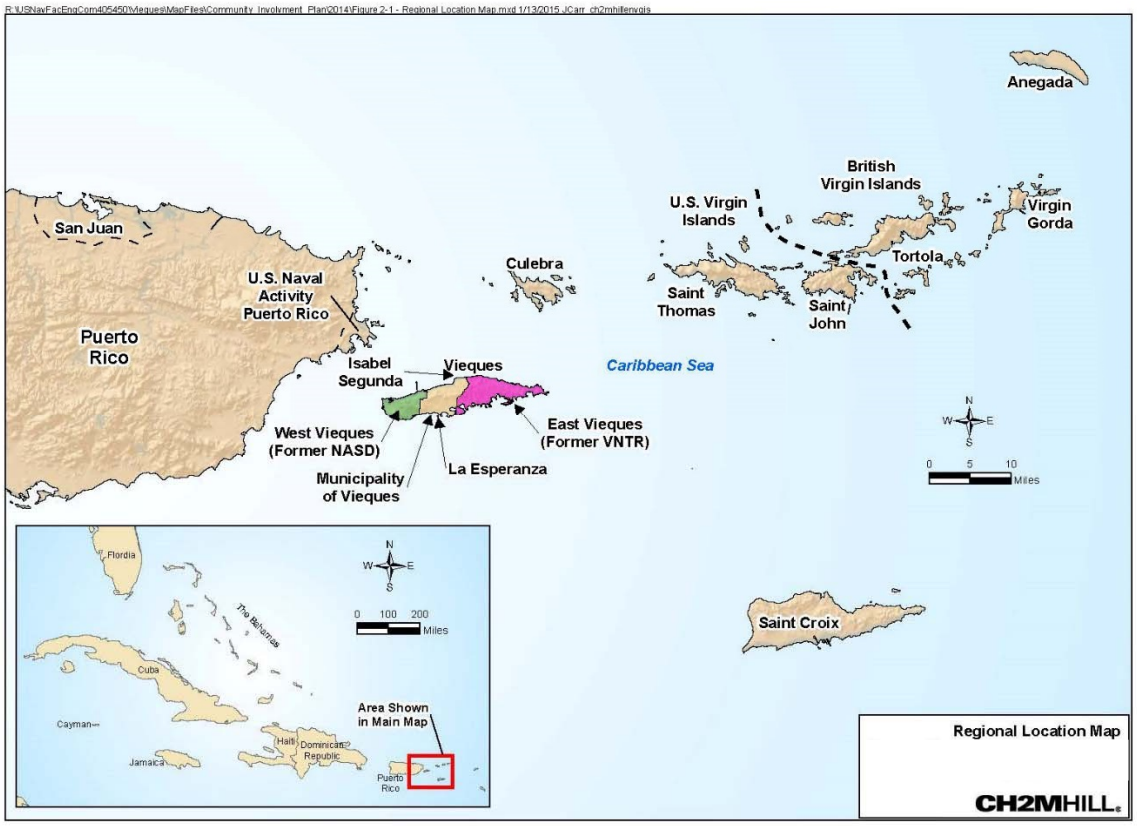
- **No** — No contamination warranting additional study or action identified.
- **Yes** — Contamination and/or risk warranting further investigation or action identified.
- **Yes** — Significant contamination and imminent/ substantial risk identified.

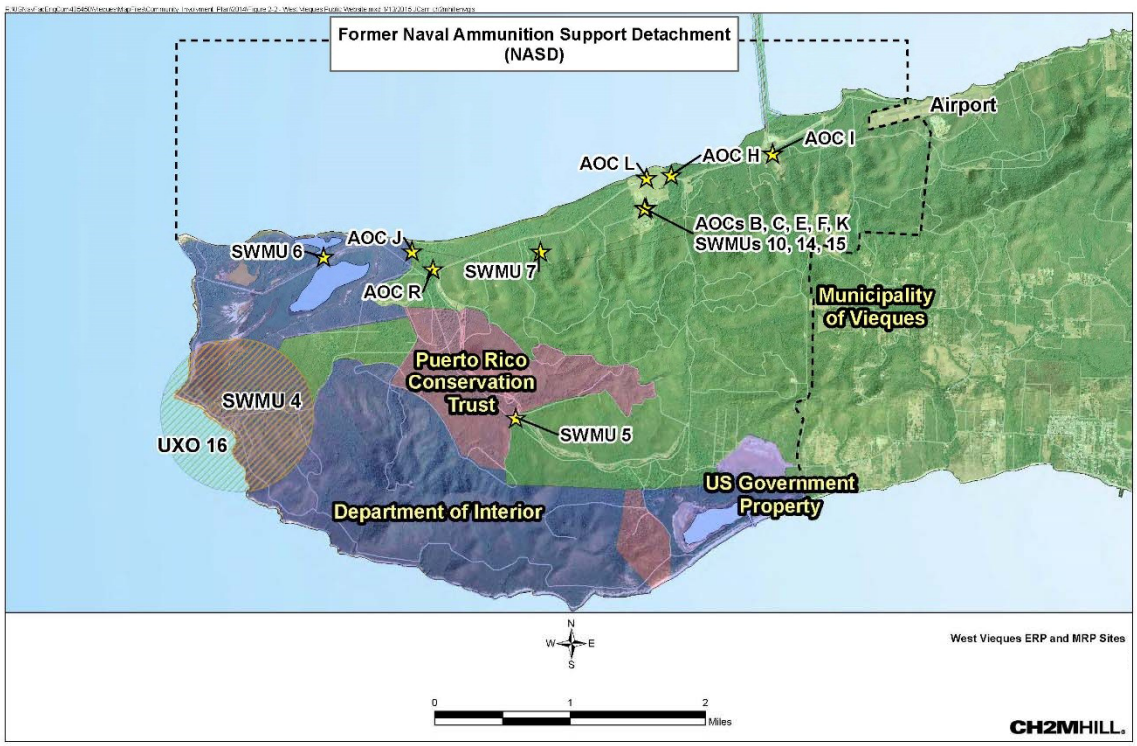
73 Total sites --- 51 completed sites (70% of sites completed) as of end of January 2016

Note: Formal public input solicited during **Proposed Plan** and **Interim Action** steps of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) process.

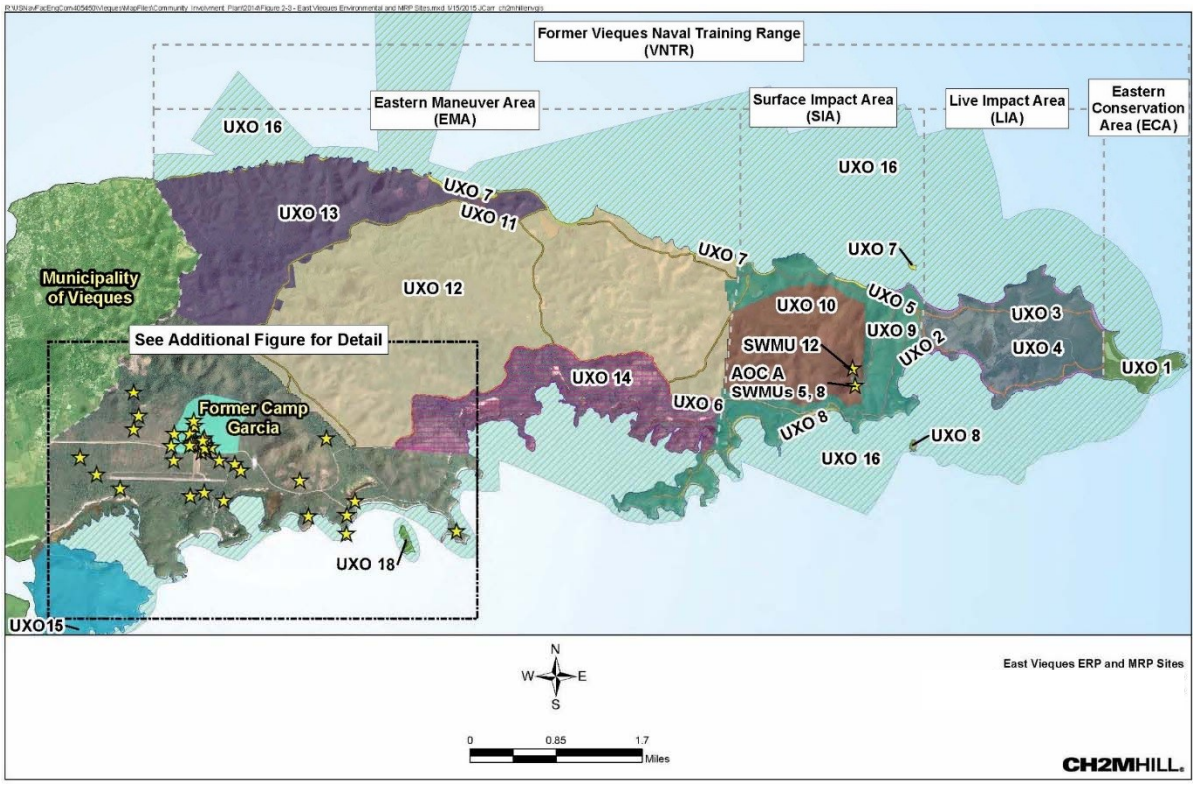
EN0220151002GNV CERCLA-Process_FLOW-Chart

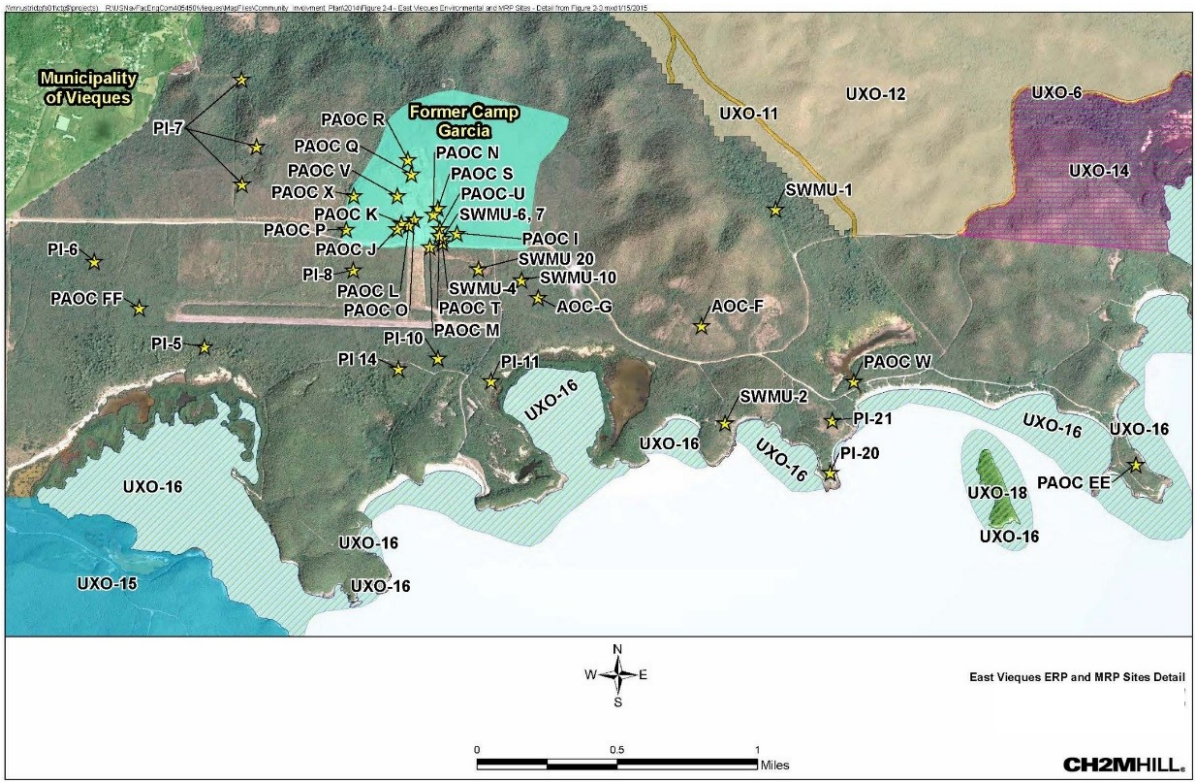
GENERAL LOCATION OF VIEQUES AND LOCATION OF WEST VIEQUES ENVIRONMENTAL RESTORATION PROGRAM AND MUNITIONS RESPONSE PROGRAM SITES





LOCATION OF EAST VIEQUES ENVIRONMENTAL RESTORATION PROGRAM AND MUNITIONS RESPONSE PROGRAM SITES





THE CERCLA PROCESS: A ROADMAP FOR SITE CLEANUP

CERCLA, commonly known as Superfund, is the Comprehensive Environmental Response, Compensation, and Liability Act of 1980. One of the key provisions of the Superfund law is a defined process to clean up contaminated sites. The Navy is performing the clean up on Vieques in accordance with CERCLA.

The Navy's Vieques cleanup is organized into two primary programs: the Munitions Response Program (MRP) and the Environmental Restoration Program (ERP). The MRP addresses leftover munitions in order to reduce explosive hazards. The ERP focuses on addressing potential environmental contaminants (non-munitions related) attributed to past Navy activities that may pose an unacceptable risk to human and/or environmental health.

The CERCLA process is described below. The flow chart shows how Vieques environmental and munitions sites are progressing in the cleanup process. Below is a description of each of the CERCLA steps applicable to Vieques clean up.

Preliminary Assessment/Site Inspection (PA/SI) - A preliminary evaluation/investigation (PA/SI) determines if there has been a release of hazardous waste or materials causing contamination that warrants further study or cleanup.

Remedial Investigation/Feasibility Study (RI/FS) - A Remedial Investigation (RI) determines the nature and extent of contamination and associated human health and ecological risks. If cleanup is determined to be warranted, the Feasibility Study (FS) evaluates cleanup approaches that may be selected.

Proposed Plan - The preferred cleanup approach, based on the evaluation of various alternatives identified in the Feasibility Study, is documented in the Proposed Remedial Action Plan (PRAP). It describes all remedial alternatives that were evaluated and explains the nine criteria used to conduct the evaluation and comparison of the alternatives. It is provided to the public for formal comment prior to selecting the remedy.

Record of Decision (ROD) - The Record of Decision (ROD) documents the selection of the remedy following consideration of public comments received on the PRAP. It also serves as legal certification that the remedy was selected in accordance with the requirements of CERCLA and the National Contingency Plan (NCP).

Remedy Implementation - Preparation and implementation of the remedy documented in the Record of Decision.

Status of Vieques Installation Restoration Sites
Estado Actual de los Sitios de Restauración de la Instalación en Vieques

NAVFAC Naval Facilities Engineering Command

www.navfac.navy.mil/vieques
www.facebook.com/ViequesRestoration

Preliminary Assessment/ Site Inspection (PA/SI)	Evaluación Preliminar/Investigación del Sitio (PA/SI, por sus siglas en inglés)	Remedial Investigation (RI)	Investigación para la Remediación (RI, por sus siglas en inglés)	Feasibility Study (FS)	Estudio de Viabilidad (FS, por sus siglas en inglés)	Proposed Plan (Public Participation) (PRAP)	Plan Propuesto (PRAP, por sus siglas en inglés) (Participación pública)	Record of Decision (ROD)	Récord de Decisión (ROD, por sus siglas en inglés)	Remedial Action (RA)	Acción para la Remediación (RA, por sus siglas en inglés)

AOC E Progress Timeline

2016
- Long-term monitoring groundwater sampling and Annual Status Report (Jan., Nov. 2016)

2017
- Long-term monitoring groundwater sampling and Annual Status Report (2017)

2018
- Remedial Action Completion Report (2017)

Itinerario de Progreso para AOC E

2016
- Muestreo para monitoreo de aguas subterráneas a largo plazo e Informe de Estado Anual (ene., nov. 2016)

2017
- Muestreo para monitoreo de aguas subterráneas a largo plazo e Informe de Estado Anual (2017)

2018
- Informe de Finalización de la Acción Correctiva (2017)

SWMU 1 Progress Timeline

2016
- ROD Explanation of Significant Differences (May 2016)
- Long-term monitoring groundwater sampling and Annual Status Report (Jan., Nov. 2016)

2017
- Remedial Action Operation & Maintenance, Land Use Controls, and Long Term Monitoring Work Plan (Oct. 2016)

2018
- Remedial Action Completion Report (Dec. 2016)
- Long-term monitoring groundwater sampling and Annual Status Report (2017)

2019
- Long-term monitoring groundwater sampling and Annual Status Report (2018)

2020
- First Five-Year Review (2018)
- Long-term monitoring groundwater sampling and Annual Status Report (2019)

2021
- Long-term monitoring groundwater sampling and Annual Status Report (2020)

Itinerario de Progreso para SWMU 1

2016
- ROD Explicación de Diferencias Significativas (mayo 2016)
- Muestreo para monitoreo de aguas subterráneas a largo plazo e Informe de Estado Anual (ene., nov. 2016)

2017
- Plan de Trabajo para la Operación y Mantenimiento de la Acción de Remediación, Controles de Uso de Terreno y Monitoreo a Largo Plazo (octubre 2016)

2018
- Informe de Finalización de la Acción de Remediación (diciembre 2016)
- Muestreo para monitoreo de aguas subterráneas a largo plazo e Informe de Estado Anual (2017)

2019
- Muestreo para monitoreo de aguas subterráneas a largo plazo e Informe de Estado Anual (2018)

2020
- Primera Revisión de Cinco Años (2018)
- Muestreo para monitoreo de aguas subterráneas a largo plazo e Informe de Estado Anual (2019)

2021
- Muestreo para monitoreo de aguas subterráneas a largo plazo e Informe de Estado Anual (2020)

Site Work at AOC E (Trabajo Realizado en el Sitio AOC E)

Site overview- former vehicle maintenance area (Vista del Sitio - antigua área de mantenimiento de vehículos)

Soil and Groundwater Treatment Pilot Study (Estudio Piloto para Tratamiento de Suelo y Aguas Subterráneas)

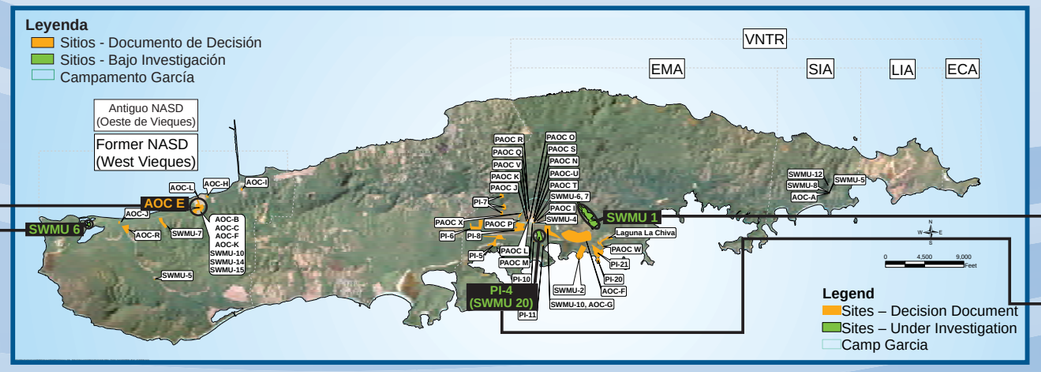
Well placement (Localización de los pozos)

Site Work at SWMU 6 (Trabajo Realizado en SWMU 6)

A vibrant lagoon ecology has become established (Se ha establecido una ecología vibrante en la laguna)

Biological Sampling (Muestreo Biológico)

Sediment Sampling (Muestro de Sedimentos)



Site Work at SWMU 1 (Trabajo Realizado en SWMU 1)

Groundwater monitoring well at (Pozo de monitoreo de aguas subterráneas)

Using geophysics to determine landfill boundary (Utilizando geofísica para determinar los bordes del vertedero)

Land use control features (Características del control de uso del terrenoo)

Site Work at SWMU 20 (Trabajo Realizado en SWMU 20)

Monitoring Well Installation (Instalación de Pozo de Monitoreo)

Groundwater Sample Locations (Localizaciones de muestreo de aguas subterráneas)

Progress Timeline para SWMU 6

2016
- Remedial Investigation Addendum (Jan. 2016)

2017
- Proposed Plan (Oct. 2016)

2018
- Record of Decision (2017)

SWMU 6 Itinerario de Progreso

2016
- Anejo de la Investigación para la Remediación (enero 2016)

2017
- Plan Propuesto (octubre 2016)

2018
- Récord de Decisión (2017)

SWMU 20 Progress Timeline

2016
- Remedial Investigation Report (Jun. 2016)
- Groundwater Pilot Study Sampling and Analysis Plan (Aug. 2016)
- Pilot Study fieldwork (Aug. 2016 - Apr. 2017)

2017

2018
- Feasibility Study report (2018)

2019
- Proposed Plan (2019)

2020
- Record of Decision (2019)
- Remedial Action Operation & Maintenance, Land Use Controls, and Long Term Monitoring Work Plan (2020)

2021
- Remedial Action Fieldwork (2020)
- Remedial Action Completion Report (2021)

Itinerario de Progreso para SWMU 20

2016
- Informe de la Investigación para la Remediación (junio 2016)
- Plan de Muestreo y Análisis (SAP, por sus siglas en inglés) para el Estudio Piloto de Aguas Subterráneas (agosto 2016)
- Trabajo de campo para el Estudio Piloto (agosto 2016 - abril 2017)

2017

2018
- Informe delel Estudio de Viabilidad (2018)

2019
- Plan Propuesto (2019)

2020
- Récord de Decisión (2019)
- Plan de Trabajo para la Operación y Mantenimiento de la Acción de Remediación, Controles de Uso de Terreno y Monitoreo a Largo Plazo (2020)

2021
- Trabajo de campo para la Acción de Remediación (2020)
- Informe de Finalización de la Acción de Remediación (2021)

Underwater & Beaches Investigation Status Update

Estado Actual de las Investigaciones Debajo del Agua y en las Playas

NAVFAC Naval Facilities Engineering Command

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Preliminary Assessment/ Site Inspection (PA/SI)	Evaluación del Sitio Preliminar/Investigación de Sitio (PA/SI, por sus siglas en inglés)	Remedial Investigation (RI)	Investigación para la Remediación (RI, por sus siglas en inglés)	Feasibility Study (FS)	Estudio de Viabilidad (FS, por sus siglas en inglés)	Proposed Plan (Public Participation) (PRAP)	Plan Propuesto (PRAP, por sus siglas en inglés) (Participación Pública)	Record of Decision (ROD)	Récord de Decisión (ROD, por sus siglas en inglés)	Remedial Action (RA)	Acción de Remediación (RA, por sus siglas en inglés)

UXO 16 Off SWMU 4 Timeline

2016
- Remedial Investigation (July -August 2016)
- Remedial Investigation Report (2017)

2018
- Feasibility Study Report (2018)
- Proposed Remedial Action Plan (2019)

2020
- Record of Decision (2020)

Itinerario Para UXO 16 Fuera de la Costa de SWMU 4

2016
- Investigación de Remediación (julio- agosto 2016)
- Informe para la Investigación de Remediación (2017)

2018
- Informe para el Estudio de Viabilidad (2018)
- Plan Propuesto para la Acción de Remediación (2019)

2020
- Récord de Decisión (2020)

Beaches (UXOs 2, 7, 8) Timeline

2016
- Beach dynamics fieldwork (January – December 2016)
- Remedial Investigation Sampling and Analysis Plan (2017)
- Remedial Investigation field work (2017)
- Remedial Investigation Report (2018)

2018
- Feasibility Study (2019)
- Proposed Remedial Action Plan (2020)

2020
- Record of Decision (2021)

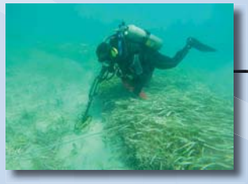
Itinerario para las Playas (UXOs 2, 7 y 8)

2016
- Trabajo de campo para estudio de la dinámica de las playas (septiembre - diciembre 2016)
- Plan de Muestreo y Análisis para la Investigación para la Remediación (2017)
- Trabajo de campo de la Investigación para la Remediación (2017)

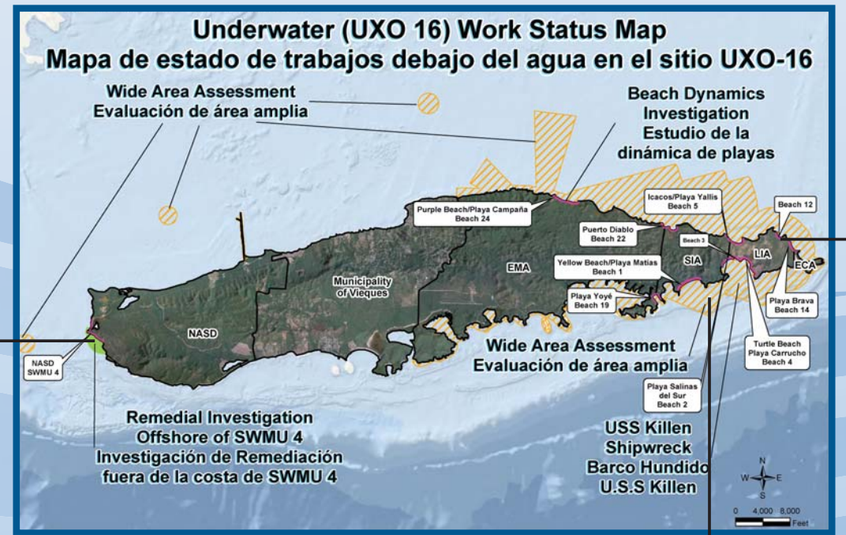
2018
- Informe para la Investigación para la Remediación (2018)
- Estudio de Viabilidad (2019)

2020
- Plan propuesto para la Acción de Remediación (2020)
- Récord de Decisión (2021)

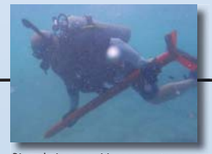
Expanded Site Inspection Offshore of SWMU 4
(Inspección Expandida del Sitio Fuera de la Costa de SWMU 4)



Divers searching the sea floor for munitions (Buzos buscando municiones en el fondo marino)



Beach Dynamics Investigation
(Estudio de dinámica de playas)



Diver placing a munitions surrogate on the ocean floor (Buzo colocando un sustituto de municiones en el fondo marino)

Remotely operated vehicle assisting with munitions surrogate tracking (vehículo operado remotamente ehículo operado remotamenteayudando con el rastreo de municiones sustitutas)

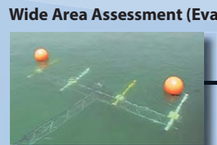
Survey team measuring monthly changes in beach conditions (Equipo de evaluación midiendo los cambios mensuales en las condiciones de la playa)

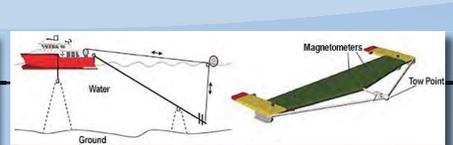
Survey team measuring monthly changes in nearshore seafloor conditions (Equipo de análisis midiendo cambios mensuales en las condiciones del fondo marino cerca de la costa)

Beach 14-Playa Brava September 2015 (Playa Brava en septiembre 2015)

Beach 14-Playa Brava October 2015 (Playa Brava en octubre 2015)

Wide Area Assessment (Evaluación de Área Amplia)





Examples of the type of metal detector equipment that may be used during the Wide Area Assessment (Ejemplos de tipos de equipo para detectar metales que pueden usarse en la Evaluación de Área Amplia)

UXO 16 (Island-wide) Timeline

2016
- Wide Area Assessment Fieldwork (February - September 2016)
- Wide Area Assessment Report (2017)
- Remedial Investigation Sampling and Analysis Plan (2017)

2018
- Remedial Investigation (2018-2019)

2020

Itinerario de UXO-16 (Alrededor de la Isla)

2016
- Trabajo de campo para la evaluación de área amplia (febrero- septiembre 2016)
- Informe para la evaluación de área amplia (2017)
- Plan de Muestreo y Análisis para la Investigación de Remediación (2017)

2018
- Investigación para la Remediación (2018-2019)

2020

Status of Vieques Munitions Response Sites

Estado Actual de los Sitios de Respuesta a Municiones en Vieques

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Incremental Sampling at UXO Sites (Muestreo Incremental en los Sitios UXO)

Collecting Incremental Soil Samples (Recolectando Muestras Incrementales de Suelo)

Incremental Sampler (Instrumento de Muestreo Incremental)

Collecting samples in Laguna Anones (Recolectando muestras en la Laguna Anones)

- Incremental sampling approach is designed to characterize large areas of former military training such as the VQ former range (El método de muestreo incremental está diseñado para caracterizar áreas amplias donde antiguamente se realizaban entrenamientos militares como en el antiguo campo de tiro en Vieques)
- Over 150 incremental soil samples collected at UXOs 1, 4, 9, 10, 12, 14, and 18 during their Remedial Investigations (Sobre 150 muestras incrementales de suelo fueron colectadas en los UXOs 1, 4, 9, 10, 12, 14, y 18 durante las Investigaciones para la Remediación)
- Each incremental soil sample is made up of about 100 sub-samples collected within an area of up to an acre (Cada muestra incremental de suelo está compuesta de cerca de 100 submuestras colectadas dentro de un área de hasta un acre)

Groundwater Monitoring Work at the VQ former range (Trabajo de Monitoreo de Aguas Subterráneas en el antiguo campo de tiro en Vieques)

Installing regional groundwater monitoring wells across the VNTR (Instalación de pozos de monitoreo de aguas subterráneas regionales en el VNTR)

Work at UXO 9/UXO 10 (Trabajo en UXO 9/ UXO 10)

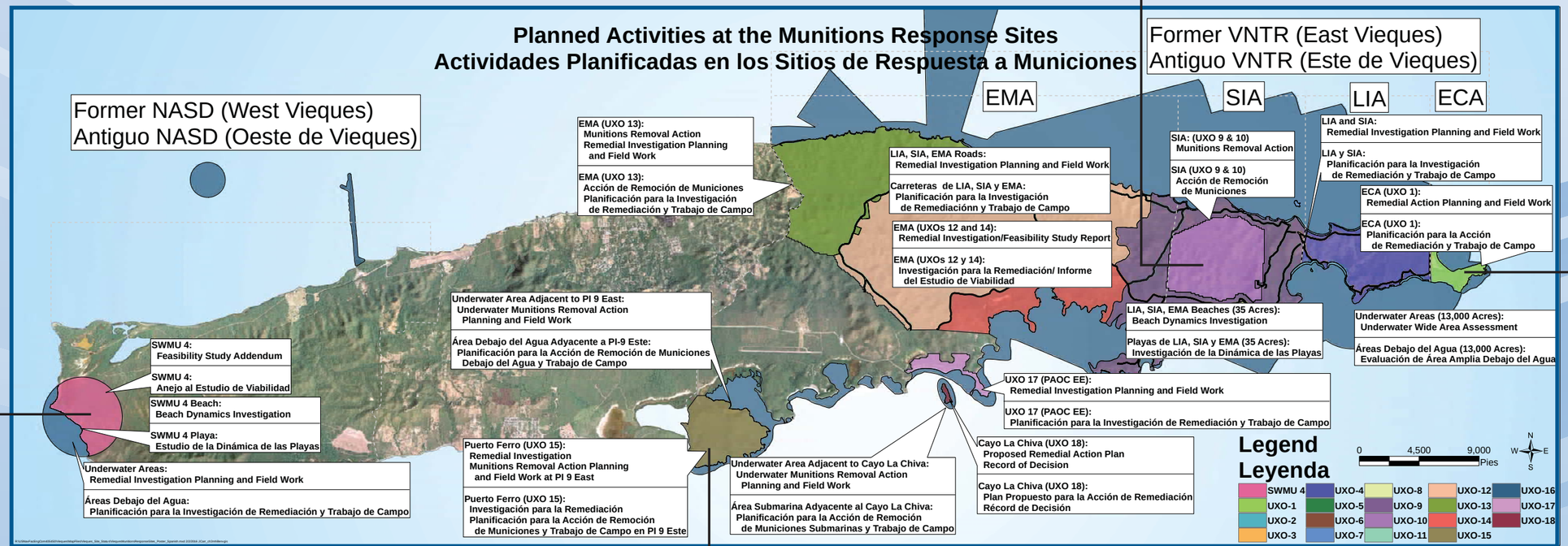
Surface munitions clearance in the SIA (UXO 9/UXO 10) (Remoción de municiones de la superficie en el SIA (UXO 9/UXO 10)

Munitions recovered from SIA surface clearance (Municiones recuperadas durante la remoción superficial del SIA)

UXO 1 Site Conditions (Condiciones del Sitio UXO 1)

Example of current conditions at the ECA (UXO 1) (Ejemplo de condiciones actuales en el ECA (UXO 1)

Planned Activities at the Munitions Response Sites
Actividades Planificadas en los Sitios de Respuesta a Municiones



Work at SWMU 4 (Trabajo en SWMU 4)

Subsurface munitions removal (Remoción de municiones bajo la superficie del suelo)

Using digital geophysical mapping (DGM) to find subsurface munitions (Utilizando cartografía geofísica digital (DGM, por sus siglas en inglés) para localizar municiones debajo del suelo)

Munitions and debris recovered (Escombros y municiones recuperados)

Remedial Investigation Work at UXO 15 (Trabajo de Investigación para la Remediación en UXO 15)

Debris pile (Pila de escombros)

Collecting samples following debris removal (Recolección de muestras luego de la remoción de escombros)

Clearing vegetation from berms in preparation for sampling (Removiendo vegetación en la berma en preparación para el muestreo)

Open Detonation for Removing Munitions on Vieques
Detonación Abierta para Remover Municiones en Vieques

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Why is open detonation used on Vieques?
¿Por qué se utiliza la detonación abierta en Vieques?

Open detonation is the safest method for the site workers to destroy unexploded munitions, and it is conducted in a manner that is protective of human health and the environment.

La detonación abierta es el método más seguro para que los trabajadores del sitio puedan destruir las municiones sin explotar, y se realiza de manera tal que protege la salud humana y el ambiente.

Safety for site workers

- For all types of munitions, the safest approach always involves the least amount of handling. In fact, some types of munitions cannot be moved safely at all. Open detonation is the safest method because it can be performed with little or no handling of munitions.
- The vast majority of explosive accidents occur after someone has picked up or moved an unexploded munition (please see references). In order to protect the safety of site workers, it is standard practice in the munitions cleanup industry to avoid the movement and handling of unexploded munitions as much as possible.
- During the past 10 years, site workers on Vieques have addressed approximately 95,000 unexploded munitions items. Given this large number of chances for an accident, it is essential for workers to use the safest possible approach.

Why not use a detonation chamber?

- Compared to open detonation, the use of a detonation chamber exposes site workers to additional danger because they must move unexploded munitions items to the chamber and handle the items as they setup the demolition within the chamber.
- Open detonations have been shown to be protective of human health and the environment.

Public health

- The environmental and health effects of open detonations have been studied by the US Department of Defense, the US Environmental Protection Agency, and governmental agencies overseas. The results demonstrate that open detonations can be conducted in a manner that is protective of human health and the environment (please see references).
- Over many years, the Navy has performed extensive air monitoring of the open detonations on Vieques, and the results (see graphs) demonstrate no adverse health effects for the populated areas of Vieques.

Air Monitoring Equipment
Estación de Monitoreo de Calidad de Aire

Air Monitoring

- 4 air monitoring stations near detonation locations and 2 air monitoring stations near community
- Over 1,400 air monitoring samples collected between 2005 and 2013
- Over 150 controlled detonation events
- 5 significant brush fires
- No explosives ever detected in any sample
- No lead or mercury ever detected in any sample
- No exceedances of any air quality health standard, including particulate matter (PM10)

Monitoreo del Aire

- 4 estaciones de monitoreo de aire cerca de los lugares donde ocurre la detonación y 2 estaciones de monitoreo de aire cerca de la comunidad
- Sobre 1,400 muestras de monitoreo de aire fueron recolectadas entre 2005 y 2013
- Sobre 150 eventos de detonación controlada
- 5 incendios espontáneos de vegetación significativos
- Nunca se ha detectado explosivos en las muestras
- Nunca se ha detectado plomo o mercurio en las muestras
- No se ha excedido ningún estándar de salud de calidad de aire, incluyendo material particulado (PM10)

References

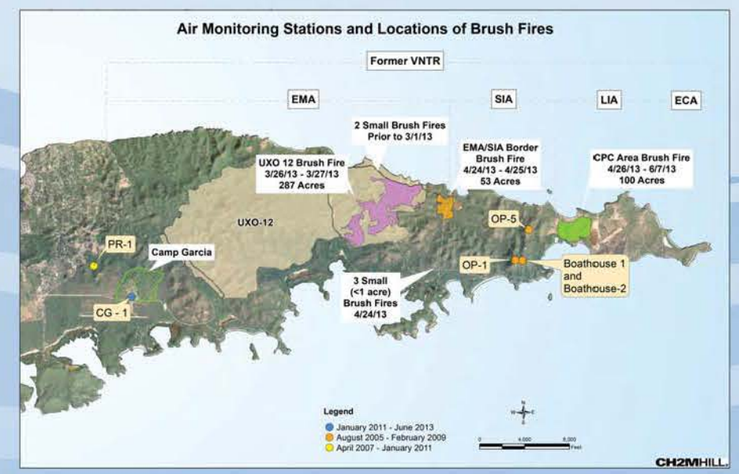
- Emission Factors for the Disposal of Energetic Materials by Open Burning and Open Detonation (OB/OD), US Environmental Protection Agency, EPA/600/R-98/103, 1998.
- SALW Ammunition Destruction – Environmental Releases from Open Burning (OB) and Open Detonation (OD) Events, South Eastern Europe Clearinghouse for the Control of Small Arms and Light Weapons, 2004.
- UXO Incident Report. United States Environmental Protection Agency, 2001

Workers setting donor charges on munitions items
Trabajadores configurando las cargas donantes en los artículos de munición

Munitions items prepped for controlled detonation
Artículos de munición preparados para la detonación controlada

Immediately after detonation
Inmediatamente después de la detonación

Several minutes after detonation showing rapid dispersion
Varios minutos después de la detonación se observa una dispersión rápida



Seguridad para los trabajadores del sitio

- Para todo tipo de municiones, la manera más segura siempre envuelve la menor cantidad de manipulación. De hecho, algunos tipos de municiones no pueden ser movidas de manera segura. La detonación abierta es el método más seguro debido a que se puede realizar con poca o ninguna manipulación de las municiones.
- La gran mayoría de los accidentes con explosivos ocurren después que alguien ha recogido o movido una munición sin explotar (por favor ver referencias). Para proteger la seguridad de los trabajadores del sitio, es práctica estándar en la industria de la limpieza de municiones que se evite lo más posible el movimiento o la manipulación de explosivos.
- Durante los pasados 10 años, los trabajadores de sitio en Vieques han atendido más de 95,000 artículos de municiones sin explotar. Dado este gran número de ocasiones para un accidente, es esencial que los trabajadores usen el método más seguro posible.

¿Por qué no utilizar una cámara de detonación abierta?

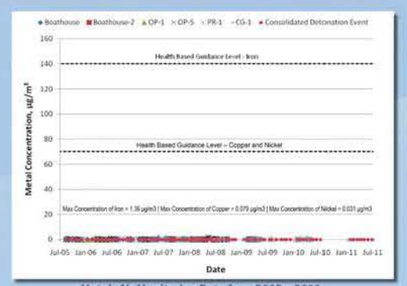
- Comparado con la detonación abierta, el uso de una cámara de detonación expone a los trabajadores del sitio a peligro adicional debido a que los trabajadores deben mover los artículos de municiones sin explotar hacia la cámara y manipular los artículos según se configura la demolición dentro de la cámara.
- Se ha demostrado que las detonaciones abiertas protegen la salud humana y del ambiente.

Salud pública

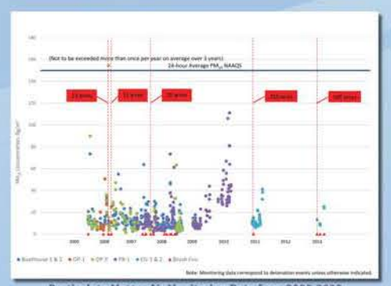
- Los efectos a la salud y al ambiente de las detonaciones abiertas han sido estudiados por el Departamento de Defensa, la Agencia de Protección Ambiental de los Estados Unidos, y agencias gubernamentales en el extranjero. Los resultados demuestran que las detonaciones abiertas pueden ser llevadas a cabo de una manera que proteja la salud humana y el ambiente (por favor vea referencias).
- A través de muchos años, la Marina ha realizado un extenso monitoreo de aire de las detonaciones abiertas en Vieques, y los resultados (ver gráficas) demuestran que no hay efectos adversos a la salud para las áreas pobladas en Vieques.

Referencias

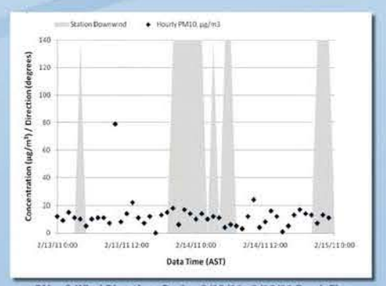
- Emission Factors for the Disposal of Energetic Materials by Open Burning and Open Detonation (OB/OD), US Environmental Protection Agency, EPA/600/R-98/103, 1998.
- SALW Ammunition Destruction – Environmental Releases from Open Burning (OB) and Open Detonation (OD) Events, South Eastern Europe Clearinghouse for the Control of Small Arms and Light Weapons, 2004.
- UXO Incident Report. United States Environmental Protection Agency, 2001.



Metals Air Monitoring Data from 2005 – 2011
Datos de Monitoreo de Aire desde el 2005-2011



Particulate Matter Air Monitoring Data from 2005-2013
Datos de Monitoreo de Particulado en el Aire desde el 2005-2013



PM_{10} & Wind Directions During 2/13/11 - 2/15/11 Brush Fire
PM_{10} & Direcciones del Viento Durante los Incendios Espontáneos del 2/13/11 - 2/15/11

Key Areas Where Accelerated Cleanup is Taking Place to Foster Public Access

Áreas Claves Donde Está Ocurriendo Limpieza Acelerada Para Fomentar el Acceso al Público

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Preliminary Assessment/ Site Inspection (PA/SI)	Evaluación Preliminar/ Investigación del Sitio (PA/SI, por sus siglas en inglés)	Remedial Investigation (RI)	Investigación para la Remediación (RI, por sus siglas en i nglés)	Feasibility Study (FS)	Estudio de Viabilidad (FS, por sus siglas en inglés)	Proposed Plan (Public Participation) (PRAP)	Plan Propuesto (PRAP, por sus siglas en inglés) (Participación Pública)	Record of Decision (ROD)	Record de Decisión (ROD, por sus siglas en inglés)	Remedial Action (RA)	Acción de Remediación (RA, por sus siglas en inglés)

SWMU 4 Progress Timeline

- 2016 — Non-time Critical (Interim) Removal Action (NTCRA) After Action Report (Oct. 2016)
- 2017 — Feasibility Study Addendum (2017)
- 2017 — Proposed Plan (2017)
- 2018 — Record of Decision (2018)
- 2019 — Remedial Action, Operation & Maintenance, Land Use Controls, and Long Term Monitoring Work Plan (2019)
- 2020 — Remedial Action Fieldwork (2019-2020)
- 2021 — Remedial Action Completion Report (2021)

Itinerario de Progreso para SWMU 4

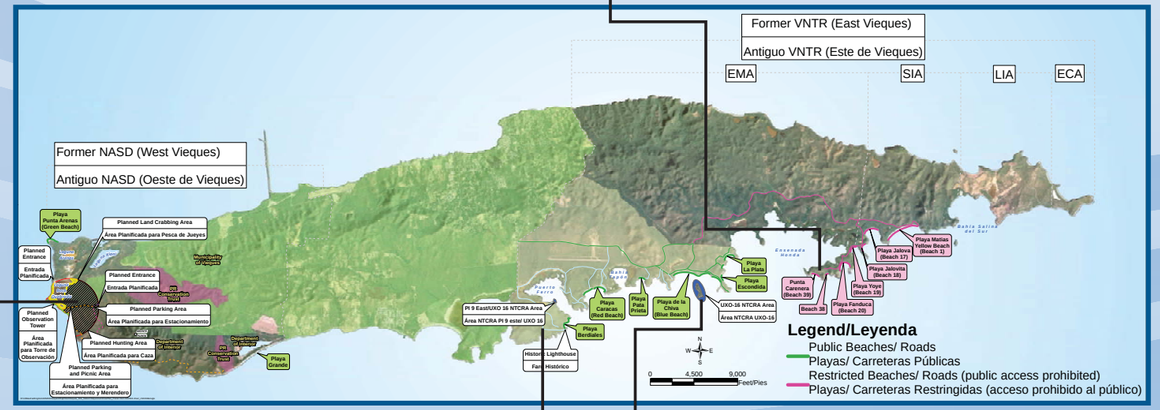
- 2016 — Informe Luego de la Acción para la Acción de Remoción de Tiempo No Crítico (Interina) (NTCRA, por sus siglas en inglés) (Oct. 2016)
- 2017 — Anejo al Estudio de Viabilidad (2017)
- 2017 — Plan Propuesto (2017)
- 2018 — Récord de Decisión (2018)
- 2019 — Plan de Trabajo para la Operación y Mantenimiento de la Acción de Remediación, Controles de Uso de Terreno y Monitoreo a Largo Plazo (2019)
- 2020 — Trabajo de campo para la Acción de Remediación (2019-2020)
- 2021 — Informe de Finalización de la Acción de Remediación (2021)

Península Carenero Progress Timeline

- 2016 — Non-time Critical (Interim) Removal Action field work along road to and along Península Carenero and associated beaches (2016)
- 2017 — NTCRA After Action Report (2017)

Itinerario de Progreso para Península Carenero

- 2016 — Trabajo de campo para la Acción de Remoción de Tiempo No Crítico (Interina) (NTCRA, por sus siglas en inglés) a lo largo de la carretera hacia y a lo largo de Península Carenero y playas asociadas (2016)
- 2017 — Informe Luego de la Acción NTCRA (2017)



UXO 15 Progress Timeline

- 2016 — USFWS opens access to the area around the historic lighthouse (Feb. 2015)
- 2017 — Remedial Investigation field work (February 2015-March 2016)
- 2017 — Remedial Investigation report (2017)
- 2018 — Non-time Critical (Interim) Removal Action (NTCRA) Work Plan for PI 9 East and Adjacent UXO 16 Encrusted Munitions (2017)
- 2018 — Feasibility Study report (2018)
- 2019 — Proposed Plan (2018)
- 2019 — Record of Decision (2019)
- 2020 — Remedial Action Operation & Maintenance, Land Use Controls, and Long Term Monitoring Work Plan (2020)
- 2021 — Remedial Action field work (2020-2021)
- 2021 — Remedial Action completion report (2021)

Itinerario de Progreso para UXO 15

- 2016 — El USFWS abre acceso al área alrededor del faro histórico (Feb. 2015)
- 2017 — Trabajo de campo para la Investigación para la Remediación (febrero 2015-marzo 2016)
- 2017 — Informe de la Investigación para la Remediación (2017)
- 2018 — Plan de Trabajo para la Acción de Remoción de Tiempo No Crítico (Interina) (NTCRA, por sus siglas en inglés) para PI-9 Este y las Municiones Incrustadas Adyacentes en UXO 16 (2017)
- 2018 — Informe para el Estudio de Viabilidad (2018)
- 2019 — Plan Propuesto (2018)
- 2019 — Récord de Decisión (2019)
- 2020 — Plan de Trabajo para la Operación y Mantenimiento de la Acción de Remediación, Controles de Uso de Terreno y Monitoreo a Largo Plazo (2020)
- 2021 — Trabajo de campo para la Acción de Remediación (2020-2021)
- 2021 — Informe de Finalización de la Acción de Remediación (2021)

UXO 18 Cayo La Chiva Progress Timeline

- 2016 — Feasibility Study Addendum (March 2016)
- 2016 — Proposed Plan (June 2016)
- 2017 — Record of Decision (2017)
- 2018 — Non-time Critical (Interim) Removal Action (NTCRA) Work Plan for 9 Munitions Items in UXO 16 Adjacent to UXO 18 (2017)
- 2018 — Remedial Action Operation & Maintenance, Land Use Controls, and Long Term Monitoring Work Plan (2018)
- 2019 — Remedial Action field work (2018)
- 2019 — Remedial Action completion report (2018)

Itinerario de Progreso para UXO 18 Cayo La Chiva

- 2016 — Anejo al Estudio de Viabilidad (marzo 2016)
- 2016 — Plan Propuesto (junio 2016)
- 2017 — Récord de Decisión (2017)
- 2018 — Plan de Trabajo para la Acción de Remoción de Tiempo No Crítico (Interina) (NTCRA, por sus siglas en inglés) para 9 Artículos de Municiones en UXO 16 Adyacentes a UXO 18 (2017)
- 2019 — Plan de Trabajo para la Operación y Mantenimiento de la Acción de Remediación, Controles de Uso de Terreno y Monitoreo a Largo Plazo (2018)
- Trabajo de campo para la Acción de Remediación (2018)
- Informe de Finalización de la Acción de Remediación (2018)