



You are invited to the Navy's next
Restoration Advisory Board Meeting
Wednesday, December 8th
at 7:00 p.m.

Presentation Topic: 2021 Look Back & 2022 Look Ahead
at Navy's Environmental Program

Q&A Topic: Munitions at Former NSTI

Held Virtually on Microsoft Teams

(Closed Captioning Available)

For Restoration Advisory Board meeting details,
Click the Meeting Materials tabs at

<https://www.bracpmo.navy.mil/nsti>

To receive only electronic copies of future mailings and be added to the Navy's
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Coordinator

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Para más información, favor de contactar su proveedor de
alojamiento

Postage

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SEE INSIDE FOR INFORMATION ABOUT NAVY MUNITIONS AT FORMER NAVAL STATION TREASURE ISLAND

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Former Naval Station Treasure Island San Francisco, California Munitions Fact Sheet

December 2021



Introduction

The Department of the Navy has developed this fact sheet to provide an update on cleanup at Site 12 and to communicate information on expanded munitions response site (MRS) boundaries in the Westside and Bayside SWDAs (Solid Waste Disposal Areas) to account for recently discovered munitions buried several feet below the surface. All munitions were found in areas of the SWDAs that were inaccessible to the public at the time of discovery.

Key Information to Know

- As cleanup work progressed between 2007 and 2017, munitions were found in the Westside and Bayside SWDAs.
- Based upon these findings, portions of the SWDAs were defined as Munition Response Sites.
- An MRS is an area requiring safety precautions for soil excavation within the Westside and Bayside SWDAs.
- Over the past nine months, the Navy screened excavated soil at Westside SWDA and encountered additional munitions. This led the Navy to conduct additional historical research and adjust the boundaries of the Munition Response Sites.
- To date, the Navy has encountered 303 munitions-related items. Of these, approximately 90% were determined to have no explosives. The remaining items were safely detonated per approved procedures.
- No munitions have been recovered outside of the SWDAs, and there is no evidence to indicate munitions were disposed or transported elsewhere on the island.
- Residential dig restrictions are in place as a safety precaution to prevent contact with potential contamination remaining in soil at Site 12 and also prevents contact with any munitions.

What are Munitions?

Military Munitions are ammunition products and components produced for, or used by, the military for national defense and security. *Ammunition* is the material that is either fired, scattered, dropped, or detonated from a weapon or weapon system. Common examples include projectiles of various sizes, hand grenades, and mortar rounds (see image below).

These types of larger munitions are the focus of the investigations at Former Naval Station Treasure Island (NSTI) and described in this fact sheet. Small arms munition, such as a bullet and gunpowder in a casing, have less explosive hazard and are not included in the munition items count.

Types of Munitions



Hand Grenade



Mortar Round



Bullets



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Most munitions include a fuze or primer that triggers the explosives in a munition. When a munitions item is located during fieldwork, the Navy inspects it to assess if any explosive component remains. Most recovered munitions at former NSTI are empty cartridge casings (no explosive component left) associated with anti-aircraft guns (40mm as shown in Photograph 1) used on Naval vessels during World War II (WWII).

Material Documented as Safe (MDAS) is a munitions item that has been assessed and documented as not containing explosives.

Munitions and Explosives of Concern (MEC) is a term used to describe discarded or used military munitions that could potentially contain explosive material and pose an explosive hazard.



Photograph 1: 40mm Rounds

History of Munitions Storage & Disposal at Former Naval Station Treasure Island

Storage of munitions is common on military bases, including, for a short time, at former NSTI. Munitions storage at former NSTI was associated with activities in support of WWII. From 1942 to 1944, the Navy constructed 21 ammunition bunkers at the north end of NSTI within Site 12. An ammunition bunker is designed to securely store explosive items and contain any internal explosions. From 1944 to 1946, the Ammunition Facility at NSTI was used for loading and unloading munitions to or from ships.



Photograph 2: Example of an ammunition bunker

Following the surrender of Japan in 1945, NSTI became a major disembarkation point for returning marines and sailors. It is likely this led to disposal of WWII-era munitions in the SWDAs at NSTI. The Ammunition Facility was decommissioned in 1946 and munitions operations at NSTI ceased. Decommissioning involved the relocation of munitions to other facilities for future use and, by 1948, all ammunition bunkers were documented as converted to other storage uses.



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Previous Westside SWDA Munition Cleanup Actions

Based on the Navy's historical research and investigations conducted to date, waste from NSTI operations and activities were primarily discarded in SWDAs. Areas of munitions disposal are specifically identified as Munition Response Sites within the Navy cleanup program.

During previous Navy investigations, a primary objective was removing chemical contamination and debris by excavation. This work at Westside SWDA was first conducted in 1999 as a Time Critical Removal Action (TCRA) for lead in soil. No munitions items were recovered during this action.

Between 2007 and 2014, additional excavation work at Westside SWDA continued as Phase I of a Non-Time Critical Removal Action (NTCRA). Rubbish (trash) and contaminated soil was removed in one large area of approximately 2 acres. Nineteen MDAS items were found, which led the Navy to determine that there was potential for finding additional munition items.

Munitions experts established an MRS, followed strict safety protocols, excavated, and screened soil from the MRS for MEC. Three additional munitions items were found in 2014 as Phase I excavation work was completed. A total of 22 munitions items were recovered during Phase I activities. All were determined to have no explosive hazard (in other words, the items were MDAS or inert).

Phase II of the NTCRA involved demolition of buildings in order to continue excavation activities. No munitions items were recovered during this action.

From 2015 to 2017, Phase III NTCRA excavation activities were conducted at Westside SWDA. Four MEC items and 135 MDAS items were recovered at

Westside SWDA, almost all in a single 60 x 60-foot area that was excavated to a depth of around 16 feet below ground surface.

Previous Bayside SWDA Munition Cleanup Actions

During the Phase III NTCRA excavation activities, one MEC item and 33 MDAS items were recovered at Bayside SWDA. As a result, explosive safety protocols and dig restrictions were implemented for soil disturbing activities at Bayside SWDA, along with the establishment of a second MRS. These items were found in areas of deep rubbish burial, at depths between 7 and 11 feet below ground surface.

Approximately 80% of the Bayside MRS has been excavated to an average depth of around 7 feet.

Conclusions from the Previous Munitions Cleanup Actions

Most of the recovered munition items, approximately 90%, did not contain any explosives or pose a hazard. **Futhermore, no munitions have been recovered outside of the SWDAs, and there is no evidence to indicate munitions were disposed or transported elsewhere on the island.**

While it is not expected that munitions will be found in shallow soil or outside of the SWDAs, residential dig restrictions are in place as a safety precaution for contamination remaining in soil at Site 12.



Photograph 4: Recovered 40mm Projectile from the former NSTI MRS



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Current Phase IV NTCRA Fieldwork

During Phase IV of the NTCRA, which began in 2021, Navy munitions contractors have continued to screen soil stockpiles excavated during the earlier Phase III NTCRA at Westside SWDA. To date, an additional 27 MEC and 81 MDAS items have been recovered.

The specifics of each individual munition item found are documented and will be available on the Base Realignment and Closure (BRAC) website when the post-construction summary report (PCSR) is finalized at the end of 2022. The PCSRs for the previous three phases of work at Westside SWDA can be found in the Navy's [Administrative Record on the "Documents" page of the BRAC website](#) (full website address on page 10). The work plan, including safety procedures for the current fieldwork, is available on the BRAC website under the ["Treasure Island Residents"](#) tab. Periodic updates on former NSTI environmental projects are provided during Restoration Advisory Board meetings.

Assessing Potential Hazards

When working in an area where munitions may be encountered (an MRS), the Navy follows strict safety protocols:

- All work is performed under an Explosive Safety Submission (ESS) Plan approved by Naval Ordnance Safety and Security Activity (NOSSA).
- When a munition is encountered, qualified safety professionals assess whether it poses an explosive hazard.
- Munition items which can be determined to present no explosive hazard are documented as MDAS and disposed of.
- Munition items which cannot be determined to be MDAS are treated as MEC.
- MEC items are detonated beneath sandbags using a small explosive charge to punch a hole in the item for safe disposal.
- Additional analysis is performed to ensure remaining fragments are not an explosive hazard.
- Inert fragments are safely disposed of as scrap metal.



Photograph 3: Munitions Screening at Westside SWDA



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Summary

To-date, a total of 303 munitions items (90% of which were MDAS) have been recovered within the SWDAs and disposed of during removal actions. More than three-quarters of the munition items were found deeper than 6 feet below ground surface at a single 60-foot by 60-foot location in Westside SWDA. Items found at Bayside SWDA (only 11% of total items found at Site 12 and only one of which was MEC) were in areas of deep rubbish burial between 7 and 11 feet below ground surface.

Munitions Items Found at Former NSTI			
	Total	MDAS	MEC
Westside SWDA	269	238 (88.5%)	31 (11.5%)
Bayside SWDA	34	33 (97.1%)	1 (2.9%)

Notes: % - percent out of total number of munition items found in the specific SWDA

MEC – munitions item determined to have an explosive hazard

MDAS – munitions item determined to no longer have an explosive charge or hazard

SWDA – Solid Waste Disposal Area

The majority, approximately 90%, of discarded munitions items recovered were confirmed to not pose a hazard because they did not contain explosives. The shallowest depth of an item that was assumed to have explosives was a cartridge casing found buried at a depth of around 2 to 3 feet below ground surface. However, the explosive component (i.e., primer) of this munition item could not be verified as live or inactive. This munition item was located within the fenced in area of Westside SWDA and posed no risk to public safety.

No munitions have been recovered outside of the SWDAs and there has been no evidence to indicate munitions were disposed or transported elsewhere on the island.

The Navy has conducted historical research and field investigations (i.e., soil borings and trenching) across Site 12 to identify areas that may have been used for debris disposal. Based on a review of this information, the proposed MRS boundaries for Westside SWDA and Bayside SWDA were expanded beyond locations where munitions items have been recovered to include additional adjacent areas. These areas include historical aerial photographic evidence of debris disposal during the operation of the Ammunition Facility and disembarkation activities (See adjacent munitions table). The majority of these areas have already been excavated, most typically to a depth of 4 feet below ground surface.

The new MRS boundaries will require safety precautions for any future soil excavation within the identified portions of Westside SWDA and Bayside SWDA. The proposed MRS boundaries encompass the previous boundaries in addition to the newly expanded areas that include areas of historical debris disposal.



Photograph 5: Recovered Projectile Fuze (MEC)



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Explosives Safety

Explosive safety is a high priority of the Navy. Explosive safety measures for a specific site are established in an Explosive Safety Submission (ESS), which is reviewed and approved by the Navy explosive safety experts. The ESS is designed to provide the maximum possible protection to people and property.

A trained and qualified unexploded ordnance (UXO) Safety Officer (UXOSO) is assigned during excavation work within any Munition Response Sites. Their sole responsibility is to establish and ensure compliance with site-specific explosive safety requirements.

Prior to the start of fieldwork, an Exclusion Zone is placed around the MRS, work areas are fenced, and personnel entry is controlled. An Exclusion Zone is designed to prevent unauthorized entry of civilians for their own safety.

Specific explosive safety controls for the current Phase IV NTCRA Fieldwork include:

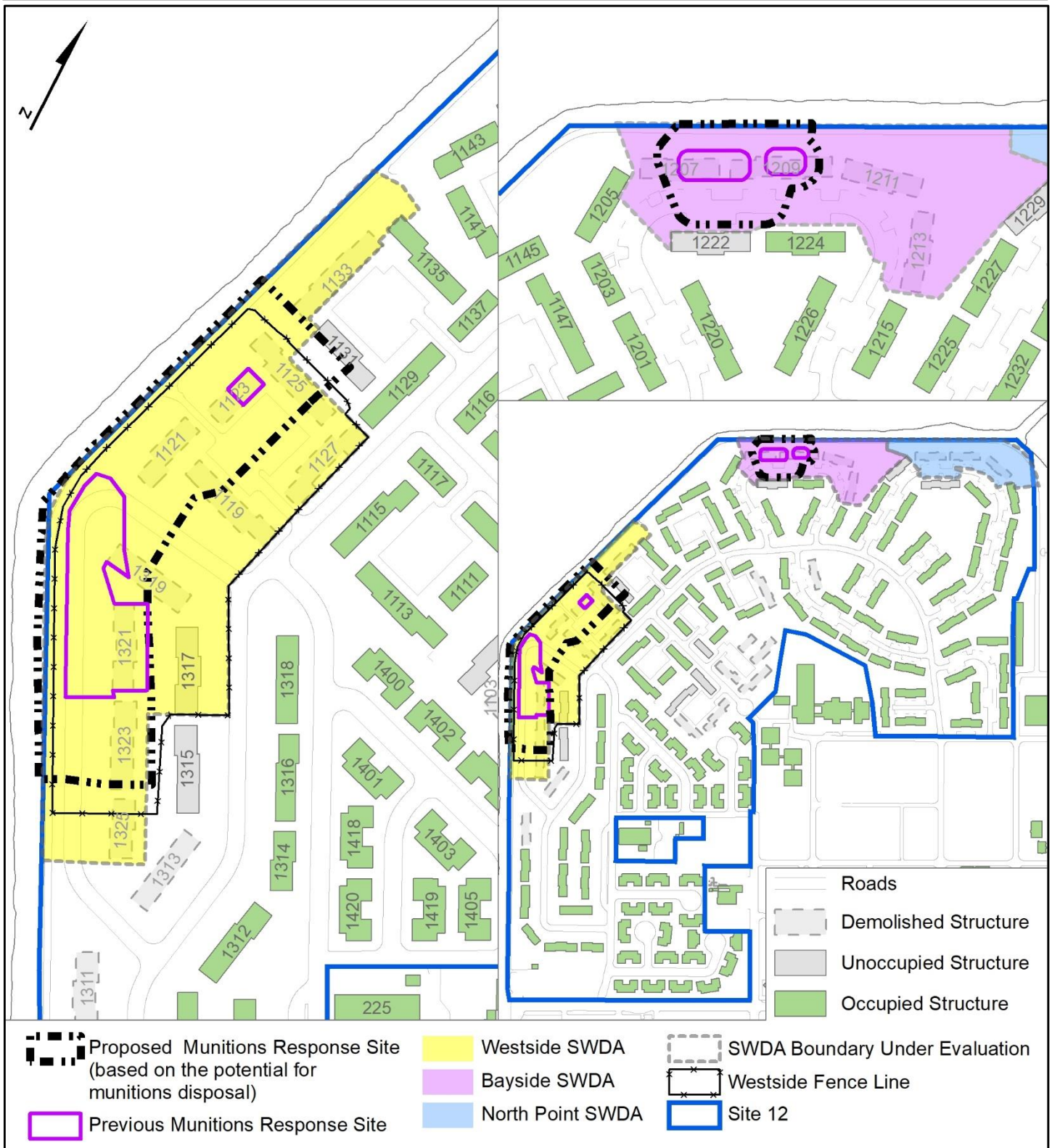
- Use of Engineering Controls that include specialized boxes to physically-obstruct potential explosives hazards. These metal shipping containers are situated between the work area and existing nearby residential structures (see photographs 6 and 7).
- Implementation of 360-degree boundaries -- or Exclusion Zones -- based on the maximum fragmentation distance (the farthest distance an explosive fragment could travel during detonation) of the largest anticipated munition item that may be encountered.
- Monitoring of Exclusion Zones by UXOSO personnel to ensure the community is protected during earthmoving activities.
- MEC is protected onsite beneath sandbags and detonated using a small explosive charge to punch a hole in the items to ensure they are safe for disposal and free of explosives.
- All methods, procedures, and safety protocols are under strict supervision by a UXOSO and Independent Third Party oversight.



Photographs 6 and 7: Engineering Controls at Westside SWDA



Proposed MRS Boundaries at Site 12





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Timeline of Munitions Fieldwork

- **2007** – Phase I excavation begins in Westside SWDA
- **2009-2012** – First munitions discovered in Westside SWDA
- **2014** – Phase I excavation completed
- **2015** – Phase III excavation begins in Westside SWDA and Bayside SWDA; additional munitions recovered in Westside SWDA
- **2016** – First munitions discovered in Bayside SWDA
- **2017** – Phase III excavation completed
- **2021** – Phase IV project (in progress) to screen and dispose of materials excavated from Westside SWDA during Phase III; additional munitions recovered. Review of historical munitions disposal conducted.
- **Today** – Revision to MRS boundaries for Westside SWDA and Bayside SWDA for future assessments and controls soil disturbing activities

Glossary of Terms:

Explosive Safety Submission (ESS): The risk management process associated with explosives activities to ensure the minimum risk to personnel, equipment/buildings, and the environment. The ESS process includes conducting and documenting a comprehensive assessment of existing and/or future potential explosion sites.

Material Documented as Safe (MDAS): A munitions item that has been assessed and documented as not presenting an explosive hazard and for which the chain of custody has been established and maintained. This material is no longer considered to be an explosive hazard.

Maximum Fragmentation Distance: The maximum distance a piece of blasted fragment can travel at a velocity that does damage and/or potential harm to individuals.

Military Munitions: All ammunition products and components produced for, or used by, the military for national defense and security. The term includes explosives, pyrotechnics, rockets, bombs, warheads, mortar rounds, artillery ammunition, grenades, mines, torpedoes, depth charges, and components thereof.

Munitions and Explosives of Concern (MEC): A classification that includes those discarded or used military munitions that pose an explosive safety hazard. If an item cannot be fully inspected and documented as MDAS, it is treated as MEC as a safety precaution.

Munitions Response Site (MRS): A discrete location on a defense site that is known or suspected to contain MEC.

Naval Ordnance Safety and Security Activity (NOSSA): Organization responsible for providing munitions safety for the Navy, which provides technical policies, procedures and design criteria associated with weapons systems safety, and manages all programmatic policy requirements the Navy Explosives Safety Program.



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Three Rs of Explosive Safety

Safety measures such as dig restrictions are in place for Site 12. While it is not expected that munitions will be found in shallow soil or outside of the SWDAS, it is important to understand the 3Rs of Explosives Safety.

To protect yourself, your family, your friends, and your community, it is important to follow the 3Rs of Explosive Safety should you know or suspect you have come across a military munition:

Recognize: When you may have come across a munition, and that munitions are dangerous.

Retreat: Do not approach, touch, move or disturb a suspected munition. Carefully leave the area.

Report: Immediately report what you saw and where you saw it to local law enforcement – call 911.

For more information on Explosive Safety, visit the Department of Defense Munition Response website at:

<https://denix.osd.mil/uxo/>

Contact Information

The Navy appreciates the cooperation of residents during ongoing work in the Housing Area.

For general information, please contact:

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To be added to the Base Realignment and Closure (BRAC) website mailing list, please email Tahirih Linz, the Navy BRAC Environmental Coordinator at tahirih.p.linz.civ@us.navy.mil.

Visit the Former Naval Station Treasure Island BRAC website for Public Notices and Restoration Advisory Board meeting details: <https://www.bracpmo.navy.mil/nsti>. Use the tabs on the left-hand side to select "Meeting Material" or "Public Notices".

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