

DECISION LOGIC FOR THE FORMER MAUI BOMBING TARGET - KANAHENA POINT MUNITIONS RESPONSE SITE

Formerly Used Defense Site
Remedial Investigation/Feasibility Study

Ms. Lori Wong
US Army Corps of Engineers, Honolulu District

Ms. Cynthia Liu, P.E.
Engineering/Remediation Resources Group, Inc.



U.S. ARMY



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REACHING THE GOAL

- Determining the Appropriate Actions
- Minimizing Long-term Management
- Reaching No DoD Action Indicated



KEY DECISION POINTS

- Identifying Stakeholders
Decision-makers
- Understanding the Site
Conditions and Uses
- Determining the Source of Contamination
- Identifying Exposure Pathways
(receptors, munition distribution, current and future land use)
- Defining RAOs
- Selecting Remedies for NDAI and UU/UE



PROJECT DELIVERY TEAM MEMBERS

Who are the key stakeholders and decision-makers? What are their goals?

- Lead Agencies
 - USACE Honolulu District Geographical District
 - US Army Engineering and Support Center, Huntsville
- Regulators
 - Hawaii Department of Health
- Resource Agencies
 - Hawaii Department of Land and Natural Resources



PROJECT INFORMATION AND SITE DESCRIPTION

What are the current and future land uses?

- Kanahena Point is a FUDS Munitions Response Site (MRS)
- Located on the southwest shore of Maui, Hawaii
- MRS is within the Ahihi-Kinohi'o Natural Area Reserve boundaries

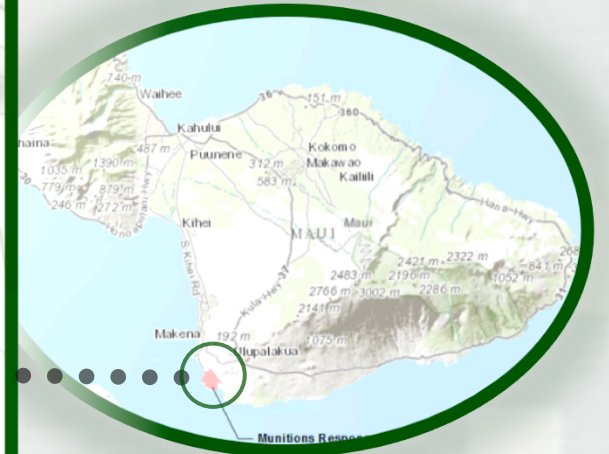
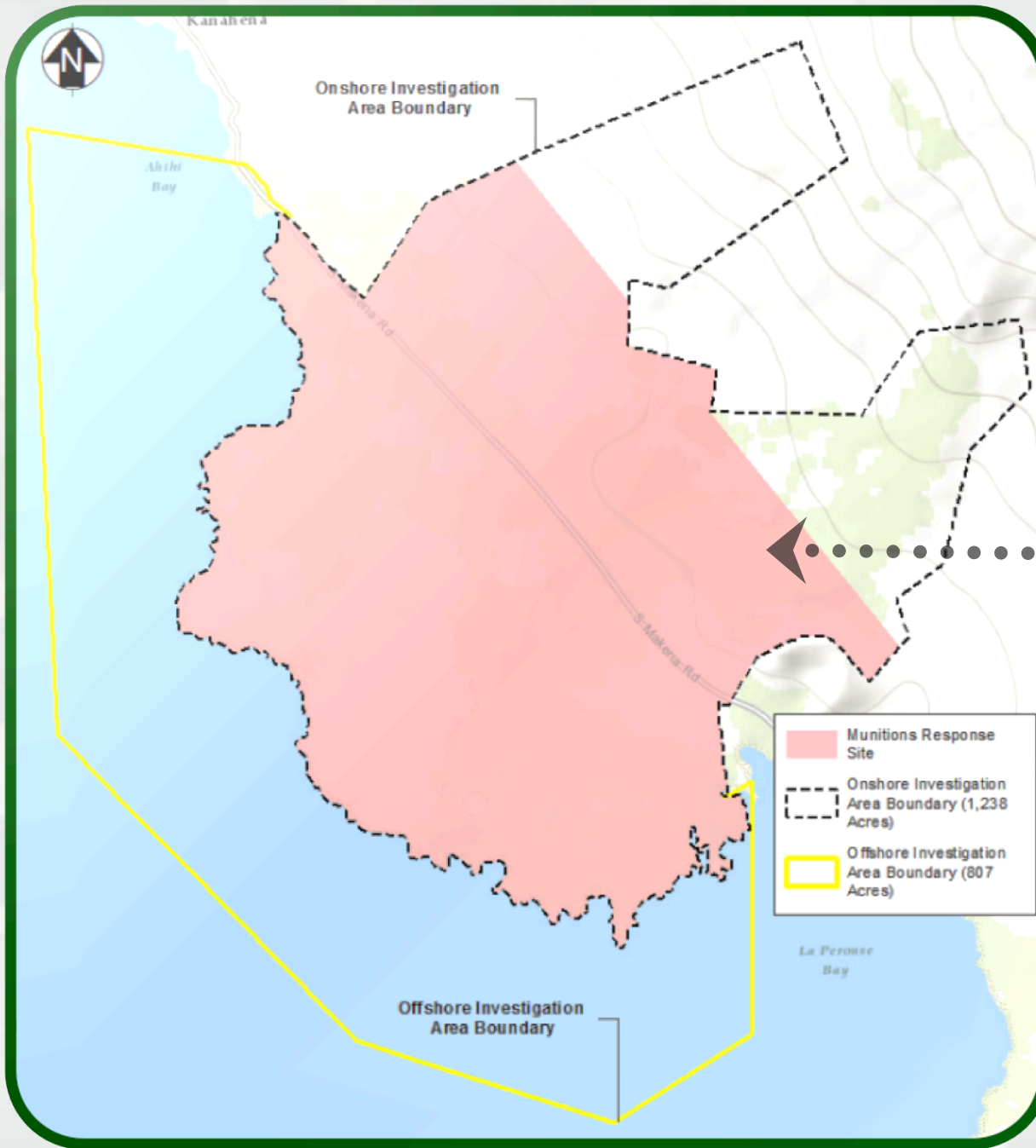





—Typical onshore terrain



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PROJECT SITE BOUNDARIES



-  Munitions Response Site
-  Onshore Investigation Area Boundary (1,238 Acres)
-  Offshore Investigation Area Boundary (807 Acres)



PROJECT INFORMATION and SITE HISTORY

*What was/is the site used for? What are the munitions of concern?
How were they deposited?*

- Maui Bombing Target Kanahena Point was used as a practice site for military exercises for a short period from early 1940 thru 1946
- Munitions used general small arms up to .50-caliber machine gun ammunition, practice bombs, and naval projectiles
- Area was designated as the Ahihi-Kinohiwa Natural Area Reserve by the State of Hawaii in 1973



PROJECT INFORMATION

PREVIOUS RESPONSE ACTIONS

What previous information was available?

- 1996 Inventory Project Report (INPR) / 2004 Supplemental INPR
 - Established initial site boundary and confirmed use as bombing target and mining drill area
 - Site survey reported presence of a 6-inch naval projectile, a mechanical time fuze, and projectile fragments
- 2008 Site Inspection
 - Completed qualitative site reconnaissance (21.4 miles traversed)
 - Munitions and explosives of concern found were a .50-caliber round and two 155-mm shrapnel projectiles
 - Munitions debris found were .50-caliber machine gun bullets and casings, projectile parts and fragments, fuze parts, lead shrapnel, and mortar fins



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REMEDIAL INVESTIGATION

*What are the targets of interest? How are we defining background?
What is the target area diameter? What is the anticipated depth of contamination?*

- The goal of the field investigation was to collect sufficient data to characterize the nature and extent of munitions and explosives of concern (MEC) and munitions constituents (MC) and assess the potential threat posed to human health, safety, and the environment



MUNITIONS DEBRIS



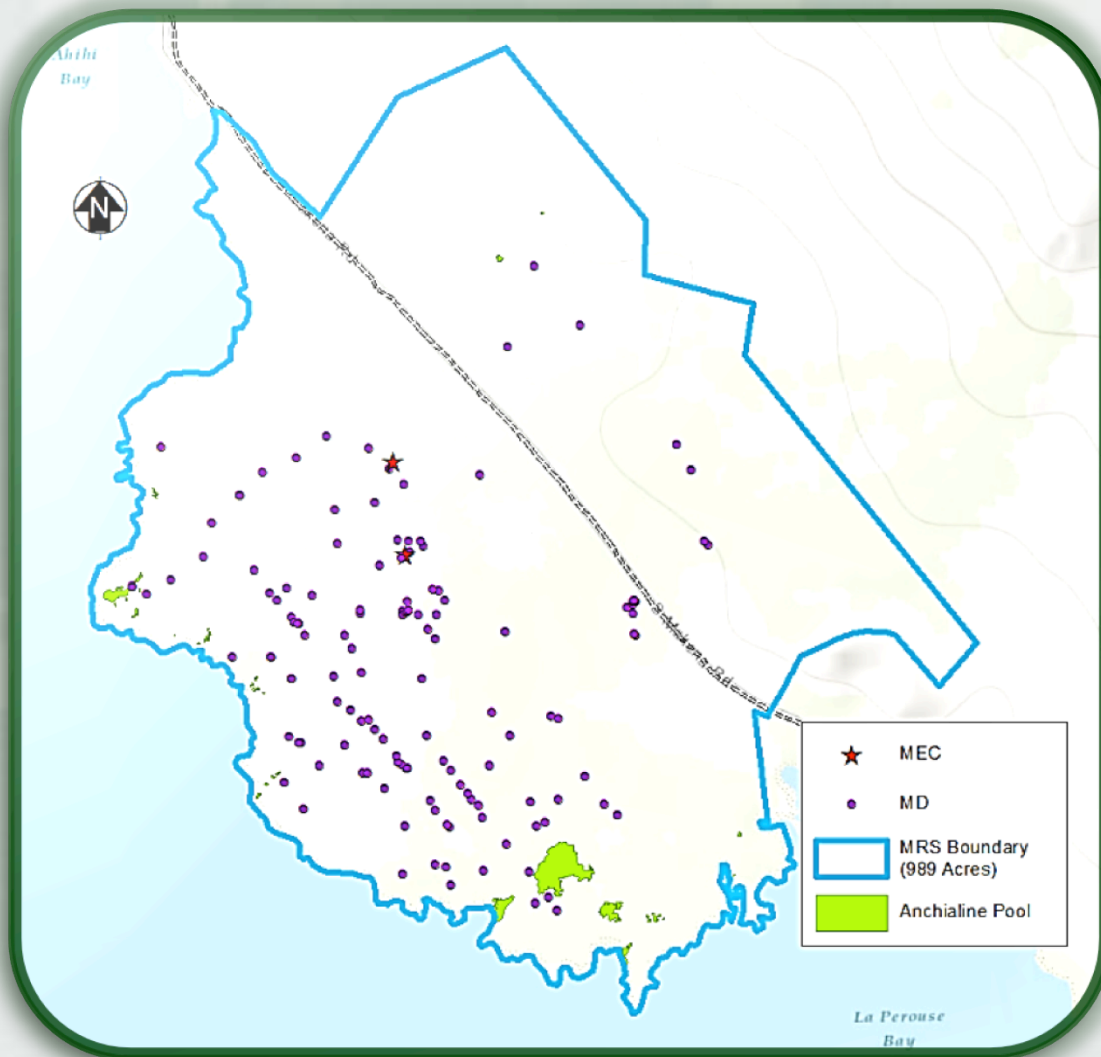
SITE TERRAIN



ANCHIALINE PONDS



MEC/MD FINDINGS



SUMMARY OF INVESTIGATIONS

What are the risks and hazards associated with the contamination?

- Type of munitions debris found indicates that the MRS was a multi-use impact area
- Majority of the MEC/MD were found south of Makena Alanui Road
- No MEC/MD were found in areas containing soil; munitions constituents are not suspected to be present
- No MEC/MD were found offshore



REMEDIAL ACTION OBJECTIVE

Who are the receptors? What are the exposure pathways for the current and future land use? What is an acceptable endpoint?

- Reduce occupational and recreational user exposure to explosive hazards associated with munitions items varying in size from mortars to ninety-pound 155-mm projectiles present on the surface of the lava or within the crevices of the lava
- Reduce risk to acceptable levels through reduction of public exposure to MEC hazards
- Acceptable risk is defined such that exposure to MEC is considered “unlikely” or a “negligible” hazard to the public based on supporting data.



EXPOSURE PATHWAY ANALYSIS

- Who are the receptors?
 - Recreational users, park rangers, and researchers
- How are they potentially exposed to munitions?
 - Recreational users encounter munitions along trails and pathways
 - Park rangers encountering munitions during site patrols on trails and pathways
 - Researchers encountering munitions on trails and pathways and areas surrounding anchialine ponds



DEVELOPMENT OF REMEDIAL ALTERNATIVES

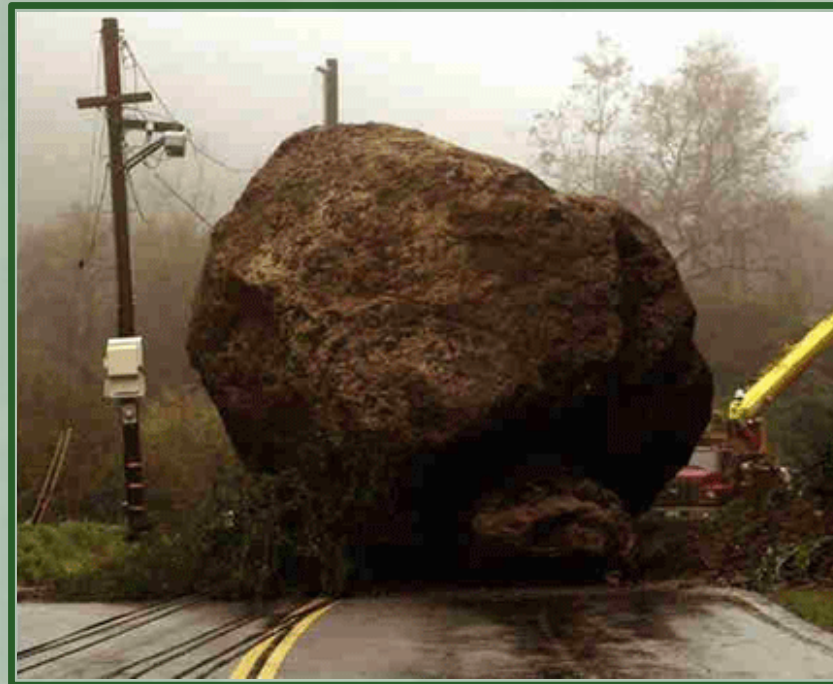
How do we define Unrestricted Use/Unlimited Exposure (UU/UE) for the current and anticipated future land use?

- Alternative 1
 - No Action
- Alternative 2
 - Land Use Controls
- Alternative 3
 - Limited Surface Removal with Educational Signage
- Alternative 4
 - Complete Surface Removal south of Makena Alanui Road



OPTIONS FOR ELIMINATING EXPOSURE PATHWAYS AT THIS SITE

- Restricting Land Uses
 - Permits
 - Area Closure
- Educational Awareness
 - Signage
 - Public Outreach
 - Training
- Restricting Access
 - Fencing
- Removing Hazards
 - Removal of munitions presenting a hazard in accessible areas



DEFINING UNLIMITED USE AND UNRESTRICTED EXPOSURE/SELECTING FINAL REMEDY

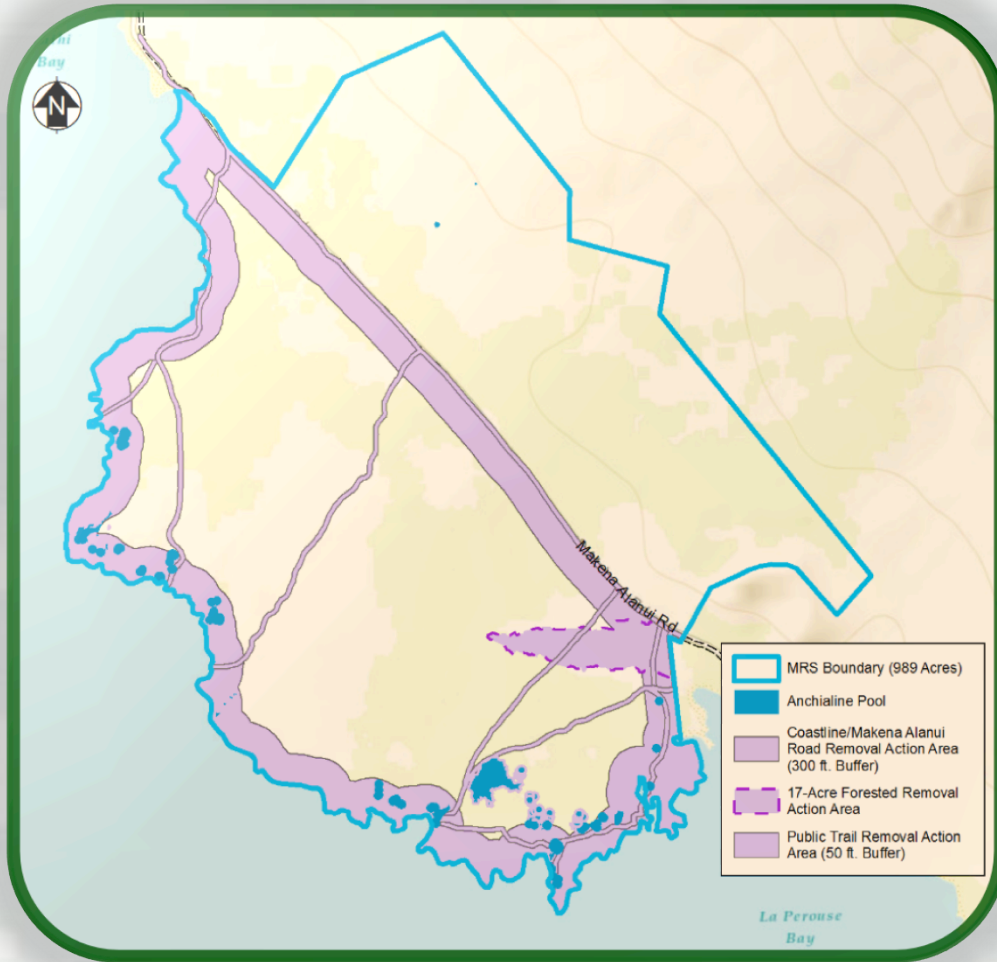
- No exposure to hazards or risks above acceptable levels
- Acceptable levels defined as minimal or negligible risk

FINAL SELECTED REMEDY

- Removal of MEC/MD from all accessible areas
- Accessible areas are limited to
 - Perimeter of the site
 - Trails
 - Areas Surrounding Anchialine Ponds
- Construction o prominent educational signage



SELECTED REMEDY



Limited Surface Removal and Educational Signage



NO DoD ACTION INDICATED

- The area was only used for a short period of time (between 1945 and 1946) as a multi-use impact area
- No MEC items were found during the remedial investigation; only three MEC items were found during the previous site investigation
- The MRS is within the boundaries of a state-owned natural area reserve with access restrictions; the land use is unlikely to change
- If MEC hazards remain at the site, they are inaccessible due to the extremely rugged terrain, especially in the central portion of the site away from the trails and roadway.
- After implementation of the selected remedy is complete, the site will achieve the designation of unlimited use/unrestricted exposure with no further action given that the likelihood of exposure is negligible
- If hazards associated with former DoD use are discovered in the future, DoD may re-evaluate the selected remedy



Questions?

