

U.S. Army Corps of Engineers, Honolulu District and Sacramento District
Formerly Used Defense Sites Program



PROPOSED PLAN FOR AREA N MUNITIONS RESPONSE SITE

Former Waikoloa Maneuver Area, Island of Hawaii, Hawaii
Formerly Used Defense Sites (FUDS) Project No. H09HI035908

July 2015

INTRODUCTION

This **Proposed Plan** is presented by the U.S. Army Corps of Engineers (the Corps) to allow the public the opportunity to review and comment on the **Preferred Alternative** for Area N, a **Munitions Response Site** located within the former Waikoloa Maneuver Area. Area N is also known as Project 08.

Area N is located on the northwest side of the Big Island of Hawaii, in the County of Hawaii, approximately 30 miles north of Kailua-Kona in the South Kohala District. The northwest corner of Area N begins at the intersection of Queen Kaahumanu Highway and Kawaihae Rd. Figure 1 shows the location of Area N within the former Waikoloa Maneuver Area.

Figure 1: Area N Site Location



Dates to Remember:

PLEASE MARK YOUR CALENDAR

PUBLIC COMMENT PERIOD:

July 15, 2015 – August 14, 2015

The Corps will accept verbal and written comments on the Proposed Plan during the public comment period. All comments should be sent to:

USACE Honolulu District
Attn: Walter Nagai
Building 230
Fort Shafter, Hawaii
96858-5440 (808) 835-4089

PUBLIC MEETING:

July 15, 2015 at 6:00 pm

A public meeting will be held at Waimea Elementary School, 1225 Mamalahoe Hwy, Kamuela, HI 96743 to explain the Proposed Plan and the alternatives presented in the Feasibility Report. Verbal and written comments will be accepted at the meeting.

FOR MORE INFORMATION:

Project documents are available for review in the information repository located at the Thelma Parker Memorial Library, 67-1209 Mamalahoe Hwy, Kamuela, HI 96743.

Although there are numerous munitions response sites within the former Waikoloa Maneuver Area, this Proposed Plan provides the rationale for the

Preferred Alternative for Area N. This Proposed Plan will present a summary of background information for Area N; describe the remedial alternatives evaluated in the **Feasibility Study**; identify the Preferred Alternative presented for public comment; and provide information on the public participation process for the selection of the final remedy for Area N.

This Proposed Plan contains terms (in bold letters) used for environmental remediation and the overall **Military Munitions Response Program**. These terms are described in the Glossary found at the end of this document.

The Corps is the executing agent for the FUDS Program, which is responsible for environmental restoration of real property that was owned by, leased to, or otherwise possessed by the United States and under the jurisdiction of the Secretary that was transferred from Department of Defense control prior to October 17, 1986. In executing the FUDS program, the Corps carries out response actions to address releases of hazardous substances and **Munitions and Explosives of Concern** or **Munitions Constituents** contamination. The Corps conducts environmental response activities at FUDS on behalf of the Department of Defense.

The Corps is the lead agency for investigating, reporting, deciding and implementing remedial action at Area N. Representatives from the Hawaii Department of Health, the lead regulatory agency for this project, reviewed the Remedial Investigation Report and the Feasibility Study Report and agreed with its conclusions and recommendations.

A **Remedial Investigation** was conducted in 2014 to determine the nature and extent of potential Munitions and Explosives of Concern and Munitions Constituents within Area N. The Remedial Investigation determined that there was an explosive hazard present within Area N; therefore, a Feasibility Study was conducted to evaluate remedial alternatives to address potential Munitions and Explosives of Concern remaining at Area N resulting from former military use. The Feasibility Study presented four alternatives: 1) No Further Action; 2) Land Use Controls; 3) Surface Munition Removal Only with Land Use Controls; and 4) Focused Solutions by Area Type. This Proposed Plan provides brief descriptions of these four alternatives and discusses the rationale for supporting the Preferred Alternative: Focused Solutions by Area Type.

PUBLIC INVOLVEMENT PROCESS

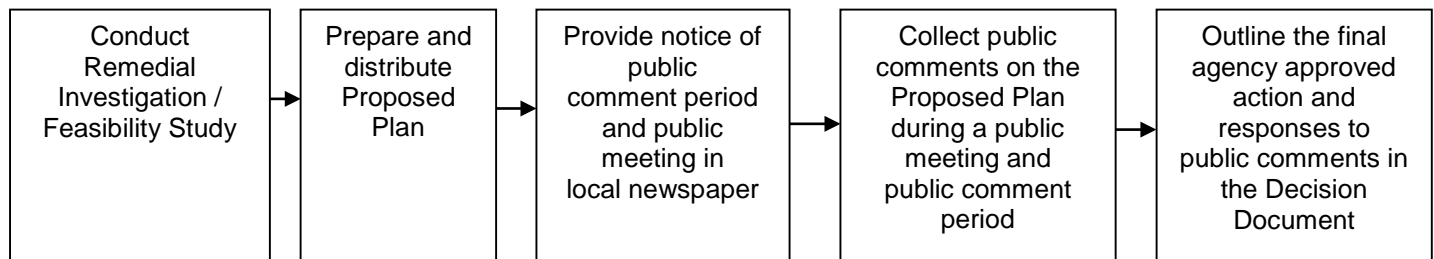
The Corps is required under the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)** to issue this Proposed Plan and seek public comment and participation under Section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan. This Proposed Plan summarizes information that can be found in greater detail in the Feasibility Study (United States Army Corps of Engineers, 2014) and other documents contained in the Administrative Record file, located at the Thelma Parker Memorial Library, 67-1209 Mamalahoa Hwy, Kamuela, HI 96743.

Following presentation of the Proposed Plan at the public meeting, verbal and written comments will be received at the meeting and written comments will be accepted during the public comment period. All comments received will be carefully considered and documented before an alternative is chosen. The location, date and time of the public meeting and the address are presented on the first page of this document.

The Proposed Plan, Remedial Investigation Report and the Feasibility Study Report are a part of the Area N **Administrative Record** file that contains all of the site documents used in making environmental clean-up decisions. The Administrative Record file is found in the site information repository located at the Thelma Parker Memorial Library, 67-1209 Mamalahoa Hwy, Kamuela, HI 96743.

The final decision on the appropriate alternative for Area N will be presented in a **Decision Document**. The Corps' responses to public comments on this Proposed Plan will appear in the "Responsiveness Summary" section of the Decision Document. The flow chart shown below in Figure 2, summarizes the various steps in the development and approval process for the Area N Decision Document.

Figure 2: Area N Decision Document Process



SITE BACKGROUND

SITE HISTORY

Area N is located within the former Waikoloa Maneuver Area, as illustrated in Figure 1. The former Waikoloa Maneuver Area (also known as Camp Tarawa) was acquired by the U.S. Navy in 1943 through a licensing agreement with Richard Smart of the Parker Ranch for use of 91,000 acres as a World War II Era Military Training Camp. Approximately 467 acres of the former Waikoloa Maneuver Area was used for tents and Quonset huts. Most of the remaining acreage was used for maneuvers and military training exercises. Additional acreage was acquired and the former Waikoloa Maneuver Area was expanded to 123,000 acres.

In September 1946, the original 91,000 acres of the former Waikoloa Maneuver Area were transferred back to the Parker Ranch. The remaining acreage was transferred at later dates, with use in some areas until 1953.

SITE DESCRIPTION

Area N covers 1,585 acres of the former Waikoloa Maneuver Area. Munitions found within Area N indicate it was used as a live-fire range within the maneuver area. The Area is comprised of the Hapuna Golf Course and the residential community surrounding the Golf Course. The Munitions Response Site is bordered to the west by Queen Kaahumanu Hwy, and Kawaihae Road to the north.

Area N is comprised of soils derived from basaltic lava flows. Surface soil within the project area is dry and/or stony and subject to windblown conditions, which leave a thin veneer of silt loam as a topsoil. Bedrock is encountered at 47 inches below ground surface. A site map is shown in Figure 3.

PREVIOUS INVESTIGATIONS AND MUNITIONS REMOVAL ACTIONS

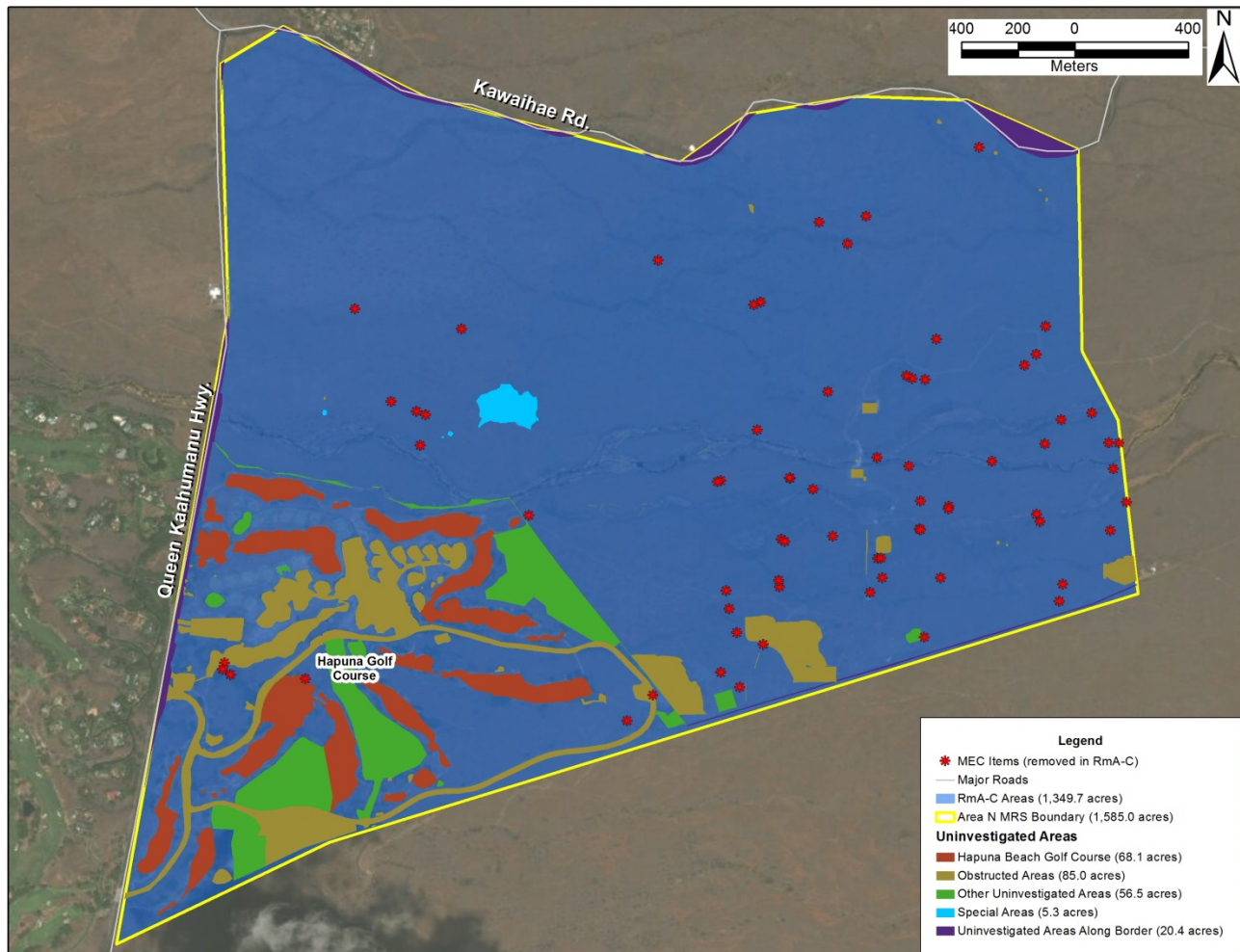
A number of investigations have been performed within the former Waikoloa Maneuver Area. This section summarizes those investigations which have occurred within the boundaries of Area N. While other investigations provide additional background information and framework for the site, they are excluded from this summary (additional information is included in the Remedial Investigation and the Administrative Record file).

Engineering Evaluation / Cost Analysis

An Engineering Evaluation/Cost Analysis evaluated the former Waikoloa Maneuver Area in three phases. Area N was evaluated in Phase II, where the boundaries of Area N were created based on land uses and estimated explosive hazard present.

During the fieldwork for the Engineering Evaluation/Cost Analysis, three munition items were found that did not fully explode when fired, and still contained an explosive hazard. As a result of the encountered explosive hazard, the land use, and the full public access to Area N, the Phase II Hazard Evaluation determined that Area N had a moderate explosive hazard.

Figure 3: Site Map



Area N Munitions Removal Actions

Based on the recommendations of the Engineering Evaluation/Cost Analysis, three removal actions have been performed within Area N. The removal actions were performed to immediately address the need to protect the public from the munitions present within Area N that contained an explosive hazard. These munitions were used by soldiers during historical training, but did not fully explode. Remaining munitions could still contain explosive materials, causing a serious hazard to people who encounter them.

The munitions removal actions were conducted in the accessible areas of Area N between 2008 through 2012. Munitions were removed from the surface and in the subsurface soil on 1,349.4 acres of the 1,585 acre Munitions Response Site. No munitions were found in the upper northwest section of Area N. The extent of Munitions and Explosives of Concern was found to have been more concentrated towards the south and east boundaries of Area N.

Area N did not receive full coverage by the completed removal actions, some portions of the Munitions Response Site were left uninvestigated. The uninvestigated areas included: areas where landowners did not grant permission to access their property, areas obstructed by roads and structures, the heavily reworked soil of the Hapuna Golf Course fairways, a location of an aircraft crash, and a location along the north side of Area N where the boundary has not been accurately established. The uninvestigated areas are scattered primarily throughout the southwestern portions of Area N.

Remedial Investigation

The purpose of a Remedial Investigation is to determine what contamination may be present at a site, at what locations, and in what amounts. This is known as characterizing the nature and extent of contamination. During the Remedial Investigation of Area N, the contamination resulting from military use was evaluated. The Remedial Investigation evaluated existing data from the three munitions removal actions, the results from 2009 soil sampling, and 2012 groundwater sampling to characterize the site for presence of Munitions and Explosives of Concern and Munitions Constituents. The data from these previous investigations was used to evaluate the types of munitions items that *could* potentially be present within Area N and to provide a recommendation about the extent of the potential explosive hazard remaining within Area N.

The Remedial Investigation Report recommended that Area N be managed as two assessment areas for munitions within the Feasibility Study: the Removal Action Areas and the Uninvestigated Areas. The Removal Action Areas were defined as those portions of Area N that had undergone a surface and subsurface munitions removal action. The Uninvestigated Areas were defined as those portions of the Munitions Response Site that had not received a munitions removal action. For Munitions Constituents, the Remedial Investigation Report concluded that there was no unacceptable risk to humans or the environment at Area N from the military use of the land.

CURRENT AND FUTURE LAND USE

According to the South Kohala Community Development Plan, the land uses within the Kawaihae Area, which includes areas within Area N, are classified as Medium Density Urban (within the golf course community), Urban Expansion (to the north and west of the golf course community), industrial (a small area along the southern Munitions Response Site border), and Extensive Agriculture (to the east and southeast).

The rural area of the Munitions Response Site is owned by the Queen Emma Foundation. The developed area in the southwest of the Munitions Response Site is owned by various private owners. The current population of the community that surrounds the Hapuna Golf Course is approximately 400 people. The Hapuna Golf Course attracts residents and tourists. The northern and eastern areas of the Munitions Response Site are zoned for agricultural use (ranching). For future land use, the Community Development Plan predicts expansion of residential development within Area N.

CONTAMINATION SOURCES

The potential sources of contamination are munitions that may remain within Area N as a result of former military use of the site. The types of munitions documented as used on the site include: 81-mm mortars (High Explosive [HE] and White Phosphorus [WP]); 60-mm mortars (HE and illumination); 75-mm projectiles (HE); 37-mm projectiles (HE and armor piercing); 4.2-inch mortars; rifle grenades; MK II hand grenades (HE); 2.36-inch rockets; and M-17A1 Signal Flares.

CONTAMINATED MEDIA

Media that may be potentially contaminated with munitions are the surface soil and subsurface soil within Area N. The Remedial Investigation determined that there is no evidence that groundwater contamination is present. No surface water or sediment is present in Area N, other than at the man-made ponds at the Golf Course.

SCOPE AND ROLE OF RESPONSE ACTION

The proposed remedial strategy to address any potentially remaining Munitions and Explosives of Concern within Area N reflects the community interest and the Corps' desire to effectively reduce the potential for munitions-related accidents. Area N is fully accessible to the public. Exposure areas include residential lots, the greens and fairways of the Hapuna Golf Course, and agricultural areas with thick vegetation. The pathways for exposure to an explosive hazard within the Munitions Response

Site are surface and subsurface activities from residents, recreational users (golf course), visitors, and commercial and industrial workers.

SUMMARY OF SITE RISKS

Based on the findings of the Area N Remedial Investigation Report, the following summary of site risk is presented:

- **Munitions and Explosives of Concern:** The munitions found within Area N include projectiles, mortars, rockets, rifle grenades, and hand grenades. A total of 71 unexploded ordnance items and over 40,000 pounds (lbs) of munitions debris were removed from the Munitions Response Site during the removal actions. The munitions were found in a scattered pattern that increased in the southeastern areas of Area N. No munitions were found in the northwestern areas of the Munitions Response Site. Munitions were found to a depth of 34 inches below ground surface (bgs) within Waikoloa Maneuver Area. The potential exists for similar munitions to be present within Area N. No discarded military munitions or chemical warfare materiel were found.
- **Munitions Constituents:** Samples were collected to determine if metals or explosives had leached to soil from munitions previously present, and if present, whether the metals or explosives were in concentrations above the Hawaii Department of Health's screening levels. Samples were collected from areas where munitions were found. The samples were evaluated for explosives and metals found in the munitions. The aquifer beneath Area N was evaluated with groundwater sampling. The analysis determined no explosives were present in the soil. The concentrations of metals detected did not pose unacceptable risk to human health or ecological receptors. The Remedial Investigation Report recommended that munitions constituents do not need to be evaluated further within Area N. Consequently, munitions constituents are not addressed in this Proposed Plan.

As a result of the Remedial Investigation, it has been determined that an unacceptable explosive hazard exists within Area N. Significant portions of Area N have undergone munitions removal actions and the explosive hazard from MEC has been significantly reduced in those areas. However, due to limitations of current technology, the high iron content of the soil and the irregular interface between the relatively young lava and the overlying soil, there is no way of totally eliminating unacceptable risk with a munitions removal action. There is still a residual risk that an explosive hazard remains within the portions of Area N which have received munitions removal as well as the portions of Area N which have not undergone a removal action. The risks of receptor exposure to an explosive hazard in the Munitions Response Site is dependent upon the use of the site and anticipated depth of intrusive activity within a specific area. Those portions of the Munitions Response Site that have undergone a previous removal action would pose less risk than those areas that have not been cleared or investigated. To more efficiently address the explosive hazard at Area N from remaining munitions, the site has been divided into assessment areas as follows:

Removal Action Areas: The Removal Action Areas encompass 1,349.7 acres of the Munitions Response Site. This acreage has undergone munitions removal actions. The potential of receptor exposure to an explosive hazard has been reduced in these portions of the Munitions Response Site, but has not been eliminated.

Uninvestigated Areas: The Uninvestigated Areas of the Munitions Response Site encompasses 235.3 acres. Within the Uninvestigated Areas, the same types of munitions that were found in the Removal Actions Areas of the Munitions Response Site may be present. These munitions may be present in surface and subsurface soils to a depth of 34 inches below ground surface (bgs). The Uninvestigated Areas of the Munitions Response Site include the following locations: areas obstructed by roads and structures; the Hapuna Golf Course fairways and greens; areas where landowners did not grant permission to access their property; a location along the north side of Area N where the boundary has not been accurately established; the location of an aircraft crash; and an archaeological site. For the Feasibility Study, the Uninvestigated Areas of the Munitions Response Site were grouped and evaluated based upon land use and the depth of intrusive activity anticipated as follows.

- **Obstructed Areas:** A large portion of the Uninvestigated Areas, 153.1 acres, is composed of obstructed areas. The obstructed areas are covered by pavement, structures, and water features. Within the obstructed areas, the potential for intrusive activity is low and therefore, the probability of human receptors encountering munitions is low.
- **Hapuna Golf Course Areas (Hapuna Golf Course Fairways and Greens):** The Hapuna Golf Course is comprised of imported soil that has been heavily reworked. Since munitions have been found in the vicinity of these areas, the probability for a receptor encounter with an explosive hazard on the surface exists. Within the Golf Course areas, the potential for intrusive activity is low and therefore, the probability of human receptors encountering subsurface munitions is low.
- **Special Areas (Aircraft Crash Site and Archaeological Site):** The aircraft crash site and archaeological site includes 5.3 acres. The aircraft crash site contains an extremely high level of metallic debris. Intrusive activity is not anticipated at the aircraft crash site or archaeological site. There is a probability of receptors encountering munitions on the surface within this portion of the uninvestigated area.
- The uninvestigated portions along the northern border of Area N and the portions of the Munitions Response Site where right-of-entry was not obtained during previous munitions removal actions encompass 76.9 acres. Within this acreage, residential and industrial intrusive activity is anticipated to a depth of 3 feet. There is a high probability of receptors encountering an explosive hazard with the surface and subsurface soil.

As a result of site risk documented in the Remedial Investigation, a remedial action objective was developed and remedial alternatives for Area N were evaluated in the Feasibility Study.

REMEDIAL ACTION OBJECTIVE

To address the munitions hazards that remains within Area N, a Remedial Action Objective has been established. The Remedial Action Objective for Area N is to reduce the explosive hazard to human health and the environment due to the presence of munitions that may remain within the Munitions Response Site (i.e., projectiles, mortars, rockets, rifle grenades and hand grenades) such that future exposures of receptors (residents, site visitors, construction workers) to the explosive hazard can be determined as negligible.

SUMMARY OF REMEDIAL ALTERNATIVES

The following remedial alternatives were evaluated for Area N:

ALTERNATIVE 1 – NO ACTION

“No Action” involves no active response or controls to locate, remove, dispose of or limit the exposure to any munitions present within the site. The Corps would assume no responsibility for public awareness or education concerning the potential for the presence of munitions within the site. This alternative is used in the evaluation of other alternatives to provide a baseline for comparison.

The “No Action” alternative assumes continued use of the site in its present state. If the potential exposure hazards associated with the site are compatible with current and future developments in the area, then “No Action” may be warranted. No action would be taken to reduce the known Munitions and Explosives of Concern hazard.

The No Action alternative would not inform future land owners or users of the hazard present onsite.

ALTERNATIVE 2 – LAND USE CONTROLS

Land Use Controls (LUCs) are physical, legal, administrative and other mechanisms restricting access and property use. They also use public awareness to inform land owners and users of hazards present. Land Use Controls are coordinated with landowners, regulatory agencies, and local authorities. For FUDS sites,

where a land use restriction is part of restoration activities, the Land Use Controls must be clearly defined, designed, and planned, and coordinated with the state and county.

Physical Land Use Controls appropriate for Area N would primarily consist of educational awareness programs, signage and fencing would not be considered, because the areas that have not undergone munition removal are scattered throughout Area N, primarily in developed areas, Land Use Control Implementation Plan would be prepared with input from the public institutions that would have authority to implement the program. The Land Use Control Implementation Plan would provide specific details focused on public awareness of the hazards present. The proposed educational controls include the following:

- An annual letter and fact sheets notifying residents, employers and site workers (golf course, utility, commercial, agricultural) of the potential explosive hazard present in the area, along with steps to take if potential munitions are found.
- An education program in local schools.
- Community awareness meetings (speakers, informational videos, informational pamphlets).
- Provide landowner notification with information on former use as live-fire maneuver area.
- Recommend restrictions on digging in areas where munitions are not removed to the depths site users dig.

Some of the Land Use Controls mentioned above would require the cooperation of the County and Community to implement. The County and schools have shown a willingness to participate in LUC programs.

ALTERNATIVE 3 –SURFACE REMOVAL AND LAND USE CONTROLS

This alternative will include a surface munitions removal from 150.3 acres within Area N. The acreage, which is located within the Uninvestigated Area of the Munitions Response Site, includes: areas not covered by pavement, structures or water features; areas where Right-of-Entry was not obtained during previous removal actions; the greens and fairways of the Hapuna Golf Course; and the uninvestigated area along the northern border of the Munitions Response Site. In addition to surface removal, this alternative includes the educational elements of Alternative 2. Under this alternative, the Corps would:

- Remove all munitions located on the surface, partially buried and visible. Items would be found by visual detection supported by the handheld metal detectors in areas of vegetation accumulation.
- Revisit all areas uninvestigated in previous munition removals.
- Not remove munitions in the subsurface or under structures, roads or water features.
- Remove all identifiable munitions items found on the site surface and those that are partially buried.
- Destroy munitions items that may present an explosive hazard by approved explosive demo methods. After confirming no explosive hazard remains, the resulting debris would be sent to a smelter to remove any resemblance to a munition and then sent to a metals recycler.

ALTERNATIVE 4 – FOCUSED SOLUTIONS BY AREA TYPE

This alternative will include focused solutions by area type within the entire acreage of Area N. The focused solution options include a combination of Land Use Controls (primarily focused on educational awareness) and a combination of surface and surface/subsurface munition removal actions. The solution chosen is based primarily on land use and anticipated intrusive activity within each area type. Area N was divided into the following areas:

- **Proposed Munitions Removal Areas** – The proposed Munitions Removal Areas include those areas uninvestigated in previous munitions removal actions. These areas include residential parcels along the Golf Course and industrial parcels to the south, the areas where Right-of-Entry were not granted during the previous munition removals, and the areas along the northern Munitions Response Site boundary that did not undergo munitions removal due to a boundary

issue. The uninvestigated areas along the northern boundary are related to the crude boundary initially drawn for Area N and munitions removal actions following Kawaihae Road.

- **Special Areas (Archaeological Sites and a known Aircraft Crash Site)** – These areas include archaeological features avoided in the previous munitions removals and the aircraft crash site. The aircraft site is heavily littered with metallic debris.
- **Obstructed Areas** – These are areas identified in the previously completed Munitions and Explosives of Concern removals as inaccessible. These include areas obstructed by structures, roads or water features.
- **Golf Course Areas (Hapuna Golf Course Fairways and Greens)** – Areas with imported soil that has been heavily reworked. However, munitions have been found in the vicinity of these areas.
- **Areas Which Have Previously Undergone Munitions Removal** - The munitions detected have been removed from these areas. The potential for encountering an explosive hazard has been reduced; however based on current technology the risk of exposure to an unacceptable hazard has not been eliminated.

For this alternative the Corps will:

- Revisit all areas where Right-of-Entry was refused in previous munitions removal actions. If the areas are refused access again, acreage remains in the “No Right-of-Entry status” and will proceed to the USACE procedures to handle Right-of-Entry refusal. Land Use Controls focused on educational awareness will become the remedy for these areas.
- In areas identified for Surface Removal, remove all identifiable munitions items found on the site surface and those partially buried. Items would be found by visual detection and supported by hand-held metal detectors in areas of vegetation accumulation.
- In areas identified for Surface/Subsurface Removal, remove all munitions items detected under the ground surface. A handheld metal detector would be used for detection in the subsurface.
- Not remove munitions in the subsurface under existing structures, roads or water features.
- Destroy munitions items that may present an explosive hazard by approved explosive demo methods. After confirming no explosive hazard remains, the resulting debris would be sent off-island to a metals recycler.

Although not considered part of the alternatives, Five Year Reviews are required by the National Contingency Plan when a remedial action is selected that results in hazards remaining at the site above levels that allow for unlimited use and unrestricted exposure, 40 CFR 300.430(f)(4) (ii), and their purpose is to ensure the remedy implemented continues to minimize explosives safety risks and remains protective of human health, safety, and the environment.

The acreage and the proposed remedial action for each area type are presented in Table 1.

Table 1: Alternative 4 – Focused Solutions by Area Type

Acreage	Area	Solution
76.9	<p>Area N - Uninvestigated Areas Recommended for Munition Removal</p> <p>Includes the area along the northern border, areas where Right-of-Entry was not obtained in previous removal actions and assorted other areas.</p>	<p>Subsurface munitions removal, educational awareness, custom signage in developed areas, and standard signage in undeveloped areas.</p> <p>Note: For acreage where Right-of-Entry is not obtained, Land Use Controls in the form of educational awareness will apply and the acreage of subsurface removal will be reduced.</p>
5.3	<p>Area N - Uninvestigated Areas Special Areas</p> <p>Includes Aircraft Crash Site and Archaeological features avoided during previous removal actions.</p>	<p>Surface munitions removal, educational awareness programs.</p>
153.1	<p>Area N - Uninvestigated Areas to Remain as Uninvestigated Areas</p> <p>Areas covered by pavement, structures, and water features (“obstructed areas”). This also includes the Hapuna Golf Course, which is comprised of imported soil.</p>	<p>Educational awareness programs.</p>
1,349.7	<p>Area N - Munitions Removal Action Areas</p> <p>Areas that have already undergone munitions removal</p>	<p>Educational awareness programs.</p>
1,585.0	Total Munitions Response Site Acreage	

EVALUATION OF ALTERNATIVES

Seven criteria and two additional modifying criteria (nine total) were used to evaluate each of the munitions response alternatives, individually and against each other, to select a remedy. Evaluation by these nine criteria are required by the National Contingency Plan. This section profiles the relative performance of each alternative against the seven criteria, noting how it compares to the other options under consideration. The nine evaluation criteria are discussed below. The detailed “Comparative Screening of Response Alternatives” can be found in the Feasibility Study Report. Table 2 provides a summary of the evaluation criteria, which are also described below.

Table 2: Nine Criteria for Detailed Analysis of Alternatives

Group	Criteria
Threshold Criteria (requirements that each alternative must meet to be eligible for selection as the preferred alternative)	1. Overall Protection of Human Health and the Environment 2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)
Balancing Criteria (used to form the basis for comparison among alternatives that meet the threshold criteria)	3. Long-Term Effectiveness and Permanence 4. Reduction of Mobility, Toxicity, or Volume through Treatment 5. Short-Term Effectiveness 6. Implementability 7. Cost
Modifying Criteria (used to modify aspects of the preferred alternative when preparing the Decision Document)	8. State Acceptance 9. Community Acceptance

Overall Protection of Human Health and the Environment determines whether an alternative eliminates or sufficiently reduces and controls threats to humans and the environment.

Compliance with Applicable or Relevant and Appropriate Requirements determines if the alternatives meet the criteria, standards, or other requirements from the federal environmental statutes that have been determined to be applicable or relevant and appropriate to this site and the proposed alternatives, or whether a waiver is justified.

Long-Term Effectiveness and Permanence considers the ability of an alternative to protect humans and the environment over time.

Reduction of Toxicity, Mobility, or Volume through Treatment evaluates if an alternative reduces the harmful effects of contaminants, their ability to move in the environment, and the amount of contamination present.

Short-Term Effectiveness considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents and the environment during implementation.

Implementability considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.

Costs includes estimated capital and annual operations and maintenance costs, as well as present worth cost. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.

Modifying Criteria (State/Community Acceptance) The public comment period ensures the public has an opportunity to express opinions about the preferred alternatives. Their comments are considered when selecting the best alternative. In the final selection process, these modifying criteria (what state officials and the public

think about the alternative) are of equal importance as the balancing criteria. No evaluation or prediction of acceptability by the public or the state is evaluated until comments are received.

SUMMARY OF THE REMEDIAL ALTERNATIVES

A comparative summary of the remedial alternatives is presented in Table 3 for Area N:

- Alternative 1 does nothing and is therefore not protective, and has no long-term permanence. No ARARs would apply to this alternative. Nothing would be done within the Munitions Response Site; therefore, this alternative has no cost.
- Alternative 2 would be protective by reducing the explosive risk by informing the residents of the hazards of munitions and what to do if they are encountered. No ARARs would apply to this alternative. It balances the factors of long-term effectiveness and permanence with short-term effectiveness and implementability. The estimated cost to implement Alternative 2 is \$1,140,000 over a 30-year period, which is significantly lower than Alternatives 3 and 4.
- Alternative 3 is protective by reducing munitions hazards at the site on the surface and by informing the residents of the hazards of munitions and what to do if they are encountered. If consolidated demolition is required for munitions found with an explosive hazard, ARARs pertaining to consolidated shots (RCRA CFR Subpart X miscellaneous Units OB/OD) would apply. Alternative 3 balances the factors of long-term effectiveness and permanence with short-term effectiveness, implementability and reduction of toxicity, mobility and volume through munitions removal. This alternative reduces the source of munitions on the surface in exposed areas; however, it does not reduce munitions under pavement or structures, in areas where Right-of-Entry is refused or where residents refuse to evacuate. The estimated cost to implement Alternative 3 is \$3,394,000, which is slightly less than Alternative 4.
- Alternative 4 is protective by reducing munitions hazards at the site on the surface and in the subsurface and by informing the residents of the hazards of munitions and what to do if they are encountered. If consolidated demolition is required for munitions found with an explosive hazard, ARARs pertaining to consolidated shots (RCRA CFR Subpart X miscellaneous Units OB/OD) would apply. Alternative 4 balances the factors of long-term effectiveness and permanence with short-term effectiveness, implementability, reduction of toxicity, mobility and volume through munitions removal. This alternative reduces the source of munitions in the surface and subsurface in residential areas, as well as on the surface at the Golf Course and in areas where digging is not expected. It does not reduce munitions under pavement or structures, in areas where Right-of-Entry is refused or where residents refuse to evacuate. The estimated cost to implement Alternative 4 is \$4,461,000 over a 30-year period.

Although not considered part of an alternative, since none of the alternatives would remediate the site to allow for unlimited use/unrestricted exposure, Five Year Reviews will be conducted to monitor whether the chosen alternative remains protective of human health and the environment.

Table 3: Summary Comparison of Remedial Alternatives with CERCLA Criteria

Alternatives	Overall Protection of Human Health and the Environment	Compliance with ARARs	Long-Term Effectiveness and Permanence	Reduction of Mobility, Toxicity, or Volume through Treatment	Short-Term Effectiveness	Implementability	Cost
Alternative 1: No Action	Not Protective	N/A	P	P	P	E	E
Alternative 2: Land Use Controls for Entire Acreage of Area N	Protective	N/A	G	P	E	E	E
Alternative 3: Surface Munitions Removal for Uninvestigated areas and Unobstructed areas; Land Use Controls for entire acreage Area N	Protective	Complies	VG	VG	VG	E	VG
Alternative 4: Focused Solutions by Area Type (See Table 1)	Protective	Complies	E	E	VG	E	VG

Notes:

ARARs = applicable or relevant and appropriate requirements

E = excellent

G = good

N/A = not applicable

P = poor

VG = very good

PREFERRED ALTERNATIVE

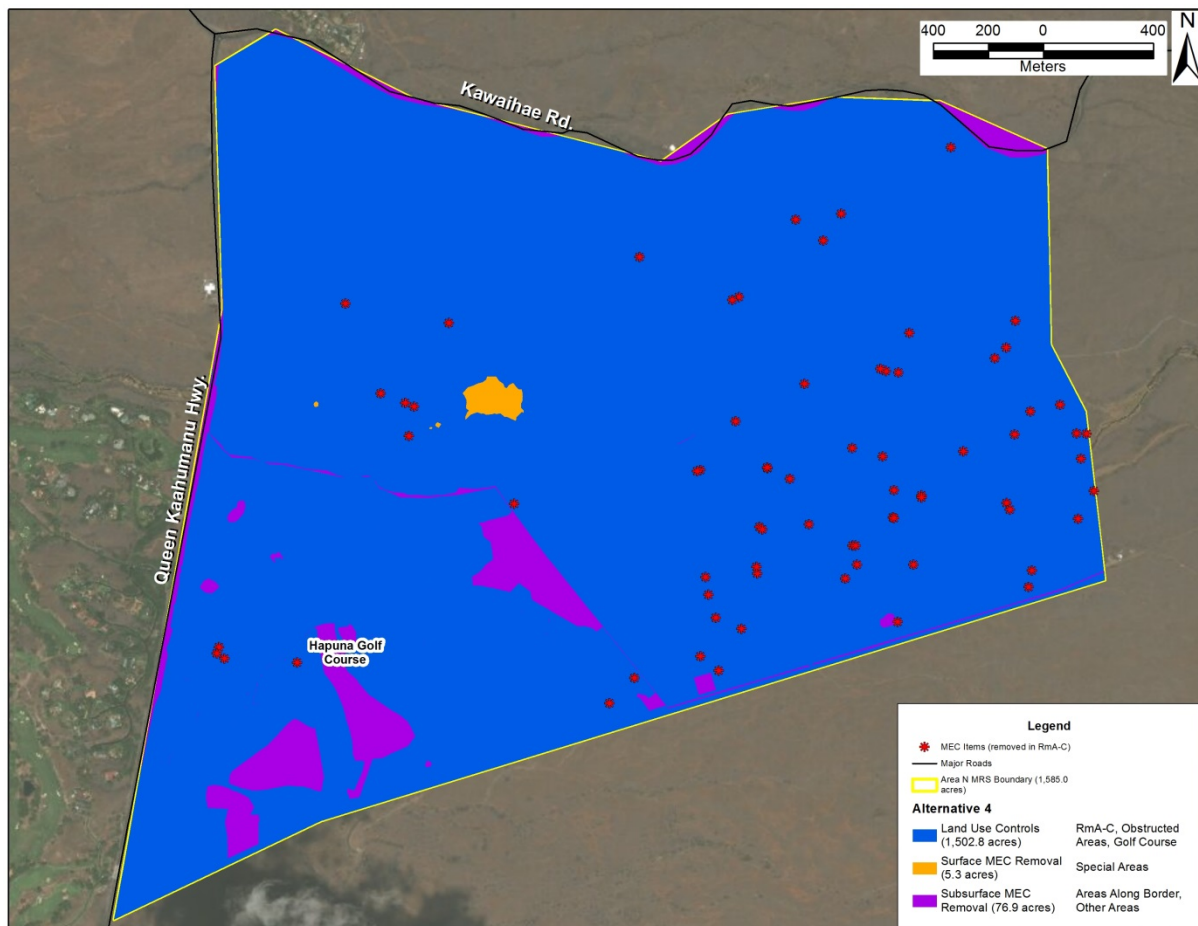
Based on evaluation against the above criteria, Alternative 4, Focused Solutions by Area Type, was determined to be most favorable and to best satisfy the remedial action objective for the site. The solutions for each area are shown on Figure 4.

Alternative 4 presents a remedy based on anticipated land uses and it focuses on the anticipated intrusive activity. The Corps, with concurrence from the Hawaii Department of Health, believes that this alternative would be protective of humans and the environment and would achieve the remedial action objective of minimizing risk from munitions to humans and the environment. The Corps may modify the Preferred Alternative in response to public comments or new information.

The Corps believes the Preferred Alternative meets the threshold criteria and provides the best balance of tradeoffs among the other alternatives with respect to the balancing and modifying criteria. The Preferred Alternative satisfies the following statutory requirements of CERCLA §121 (b):

1. Protects human health and the environment
2. Complies with Applicable or Relevant and Appropriate Requirements
3. Is cost-effective
4. Utilizes permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable
5. Satisfies the preference for treatment as a principal element (or justify not meeting the preference).

Figure 4: Preferred Alternative Solutions by Area Type



COMMUNITY PARTICIPATION

The Corps is requesting public comments on the Preferred Alternative presented in this Proposed Plan for Area N. Written and verbal comments will be accepted at a **public meeting scheduled for July 15, 2015, at 6:00 p.m. at Waimea Elementary School, 1225 Mamalahoa Hwy, Kamuela, HI 96743**. Written and verbal comments will also be accepted throughout the comment period, which ends **August 14, 2015**. All comments should be sent to Mr. Walter Nagai (contact information presented below).

The Proposed Plan is available in the Thelma Parker Memorial Library throughout the comment period, beginning **July 15, 2015** and ending **August 14, 2015**. Comments received during the public meeting and comment period will be considered in the final decision. This decision will be presented in a Decision Document. The Corps' responses to public comments will be documented in the "Responsiveness Summary" section of the Decision Document.

The *Remedial Investigation Report and Feasibility Study Report for Area N Waikoloa Maneuver Area* provide a comprehensive description of the site history, the details of the Remedial Investigation, the associated risk assessments and their conclusions. The Feasibility Study Report outlines and provides a comparative analysis of the possible alternatives. All of the reports, including this Proposed Plan and other project documents are available at the reference desk in the Thelma Parker Memorial Library located at 67-1209 Mamalahoa Hwy, Kamuela, HI 96743.

Contact information

General Information: <http://www.poh.usace.army.mil/Missions/Environmental/FUDS.aspx>

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Information Repository

Copies of the *Remedial Investigation Report, Feasibility Study Report, this Proposed Plan*, and other project documents that comprise the Administrative Record file for this site can be found at the following location. The documents will be available from **July 15, 2015 through August 14, 2015**:

Thelma Parker Memorial Library
67-1209 Mamalahoa Hwy.
Kamuela, HI 96743-8429
Telephone: 808-887-6067

REFERENCES

American Technologies, Inc. 2008. Final Site Specific Final Report. (Contract #: DACA87-03-D-0014, TO ZH01). October 2008.

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GLOSSARY OF TERMS

Administrative Record – The documents that form the basis for the selection of a response action compiled and maintained by the lead agency.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, otherwise known as Superfund) of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986.

Decision Document – The documentation of remedial response decisions at Formerly Used Defense Sites. Concurrence on the Decision Document by U.S. Environmental Protection Agency or the state regulatory agency is sought and the Army approves the document.

Feasibility Study – A study undertaken by the lead agency to develop and evaluate options for remedial action. The RI data are used to define the objectives of the response action, to develop remedial action alternatives, and to undertake an initial screening and detailed analysis of the alternatives. The term also refers to a report that describes the results of the study.

Formerly Used Defense Site – A facility or site which was under the jurisdiction of the Secretary of Defense and owned by, leased to, or otherwise possessed by the United States at the time of actions leading to contamination by hazardous substances, for which the Secretary of Defense shall carry out all response actions with respect to releases of hazardous substance from that facility or site. The FUDS program is limited to those real properties that were transferred from Department of Defense control prior to October 17, 1986.

Munitions Constituents – Any materials originating from unexploded ordnance unexploded ordnance, discarded military munitions, or other military munitions, including explosive and non-explosive materials, and emission, degradation or breakdown elements of such ordnance or munitions.

Munitions Debris – Remnants of munitions (e.g., fragments, penetrators, projectiles, shell casings, links, fins) remaining after munitions use, demilitarization or disposal.

Munitions and Explosives of Concern – Specific categories of military munitions that may pose unique explosives safety risks, specifically composed of (a) unexploded ordnance, (b) discarded military munitions, or (c) munitions constituents (e.g. TNT, RDX) present in high enough concentrations to pose an explosive hazard.

Munitions Response Site – Response actions, including investigation, removal actions and remedial actions to address the explosives safety, human health or environmental risks presented by unexploded ordnance, discarded military munitions, or munitions constituents.

Preferred Alternative – The alternative that, when compared to other alternatives, best meets the Comprehensive Environmental Response, Compensation, and Liability Act evaluation criteria and is proposed for implementation at a site.

Proposed Plan – A plan that identifies the preferred remedial alternative for a site and is made available to the public for comment.

Remedial Investigation - A process undertaken by the lead agency to determine the nature and extent of the problem presented by the release. The RI emphasizes data collection and site characterization, and is generally performed concurrently and in an interactive fashion with the feasibility study. The RI

includes sampling and monitoring, as necessary, and includes the gathering of sufficient information to determine the necessity for remedial action and to support the evaluation of remedial alternatives.

ACRONYMS AND ABBREVIATIONS

ARARs	Applicable or Relevant and Appropriate Requirements
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
Corps	United States Army Corps of Engineers
DoD	Department of Defense
FUDS	Formerly Used Defense Site
MEC	Munitions and Explosives of Concern



Remember the “R’s” of Explosives Safety:

Because of how the military used the site, munitions may remain on site. Munitions may be dangerous and may not be easily recognizable. Never touch, move or disturb something you think may be a munition. Remember the 3Rs of explosives safety.

Recognize - The item you found may be munitions, and munitions may be dangerous.

Retreat - Leave the area without touching or moving the object.

Report - Call 911 immediately.