U.S. Army Corps of Engineers Proposed Plan
Former Pacific Jungle Combat Training Center

FUDS Project Number H09HI027401
Contract: W912DY-10-D-0053, Task Order: 0002
Oahu, Hawaii January 2016

*Text shown in **boldface font** are defined in the Glossary of Terms found at the end of this document.*

Mark Your Calendar!

The USACE is soliciting public review and comment on all the alternatives identified for the site. Public comments are considered before any action is selected and approved.

Public Meeting

Date: January 11, 2016
Time: 6:00 PM
Place: Queen Liliuokalani Children's Center
53-516 Kamehameha Highway, Hauula, Hawaii 96717

Representatives from the USACE and the State of Hawaii Department of Health will be present at the meeting to explain this Proposed Plan, listen to concerns raised, answer questions, and accept public comments.

Public Comment Period

Written comments will be accepted throughout a public comment period from January 11, 2016 through February 11, 2016. Please submit written comments to the USACE:

Kevin Pien– Project Manager
USACE – Honolulu District
Building 252, Room 103
Ft. Shafter, HI 96858
Kevin.C.Pien@usace.army.mil

This **Proposed Plan** is being presented by the United States Army Corps of Engineers (USACE)[1] to allow the public to review and comment on the preferred remedial alternative to address the potential remaining **munitions and explosives of concern (MEC)** at the **munitions response site (MRS)** known as the former Pacific Jungle Combat Training Center (PJCTC), **Formerly Used Defense Sites (FUDS)** Project No. H09HI027401. This Proposed Plan provides basic background information on the project site, identifies the **Preferred Alternatives** for remedial action at Kahana and Punaluu Valleys (which is Complete Removal of MEC from Target Area for Kahana Valley and Removal of MEC from Accessible Target and High Anomaly Density Areas and **land use controls [LUCs]** for Punaluu Valley), explains why these alternatives are preferred, and describes the other alternatives that were considered. The proposed remedial actions are designed to protect the public from explosive hazards associated with MEC located within the boundaries of the property.

The FUDS program addresses the potential explosives safety, health, and environmental issues resulting from past munitions use at former defense sites under the Department of Defense (DoD) *Military Munitions Response Program*, established by the U.S. Congress under the *Defense Environmental Restoration Program*. The FUDS program only applies to properties that were transferred from DoD control before October 17, 1986. The Army is the executive agent for the FUDS program, and USACE is the program's **Lead Agency** with the State of Hawaii Department of Health (HDOH) as the support agency. In fulfilling its obligations under FUDS, the first priority of USACE is the protection of human health, safety, and the environment

The former PJCTC is located on the northeast coast of the Island of Oahu, Hawaii and consists of several non-contiguous parcels within Kahana Valley and Punaluu Valley (Figure 1 on the following page). Kahana Valley was designated a state park in 1960 and is currently under the purview of the State of Hawaii and managed by the State Department of Land and Natural Resources (DLNR). Punaluu Valley is owned by several private landowners.

A **Remedial Investigation (RI)** Report completed for the entire FUDS project site documents the nature and extent of MEC, **munitions debris (MD),** and **munitions constituent (MC)** concentrations so that the former PJCTC could be adequately characterized for the purpose of developing and evaluating effective remedial alternatives in the **Feasibility Study (FS)**.

[1] A list of acronyms and abbreviations are found at the end of this document.

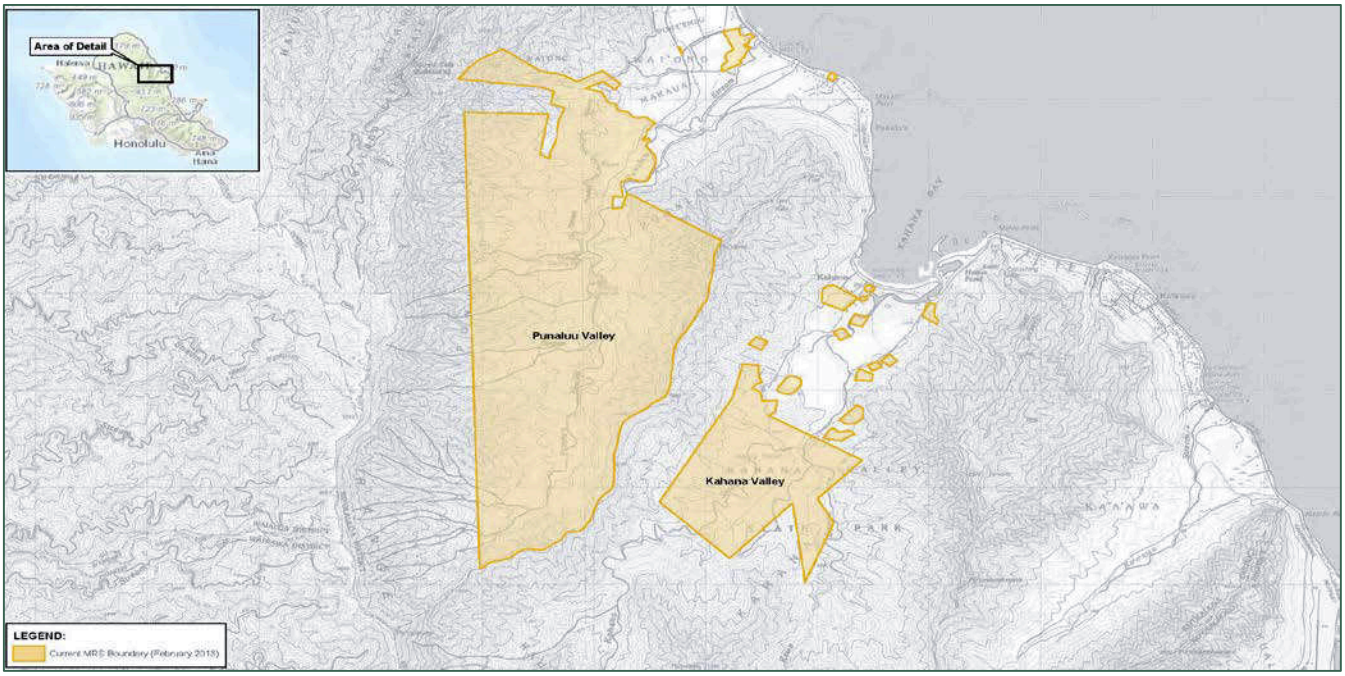

Figure 1: Site Location

The RI Report recommended that the PJCTC MRS be divided into two distinct areas based on topographical features (refer to Figure 1), land use, land ownership, and investigation findings. The two areas are:

- Kahana Valley
- Punaluu Valley

Kahana Valley was subdivided further into two sections:

- Kahana Valley – Main – Approximately 480 acres, this subdivision includes all of the Kahana parcels within the MRS boundary except for the target area in the rear of the valley.
- Kahana Valley – Bunkers – This subdivision is located in the southwest corner of the valley and encompasses approximately 10 acres and is partially contained within the FUDS boundary. Approximately 5.85 acres is outside of the FUDS boundary.

The RI Report concluded the potential for exposure to MEC exists in both the Kahana and Punaluu Valleys. A FS for each valley was conducted and the remedial alternatives were presented in the FS Report (USACE, 2015b).

The HDOH Office of Hazard Evaluation and Emergency Response has reviewed the RI Report and FS Report and agreed with the conclusions and recommendations in those documents.

1.0 PROJECT SITE BACKGROUND

Prior to World War II, Kahana and Punaluu Valleys were primarily used for agricultural activities. Taro, rice, and sugar cane were cultivated at the mouths of each valley. The interior portions of the valleys were heavily vegetated and relatively unused.

The Army initially leased 485.25 acres in Kahana Valley from Hui of Kahana in November 1944, retroactive to May 1943. Between 1943 and 1947, the Army acquired an additional 1,781.52 acres in the neighboring Punaluu Valley from various landowners through leases, licenses, and permits. The total MRS acreage was later revised to 2,545 acres (USACE, 2004). The properties were established as a unit jungle combat training center beginning in September 1943. The training center was used to teach basic and advanced jungle warfare as well as instructor training.

Training was divided among three training areas known as the Blue, Red, and Green Courses. Basic jungle warfare training was conducted at the Blue and Red Courses while advanced jungle warfare training and the Instructor Jungle Training School were conducted on the Green Course. Live ammunition was reportedly

Project Related Documents

After coordination with HDOH and considering all public comments, USACE will select a final remedy for the former PTC. The public is encouraged to review supporting technical documents and community outreach material available in the **Administrative Record File** and digitally on the project website:

www.poh.usace.army.mil/Missions/Environmental/FUDS.aspx

The documents are also available in hardcopy at the Administrative Record File repositories located at:

Kahuku Public Library
56-490 Kamehameha Hwy
Kahuku, HI 96731

Kaneohe Public Library
45-829 Kamehameha Hwy
Kaneohe, HI 96744

Ahupuaa O Kahana State Park
52-222 Kamehameha Hwy
Kaaawa, HI 96730

USACE- Honolulu District
Building 252, Room 103
Fort Shafter, Hawaii 96858

The selected remedy will be announced in a local newspaper notice and in the final decision document.

utilized during jungle warfare training scenarios. The Army reportedly constructed Japanese villages and pillboxes for training purposes. Temporary barracks, a mess hall, a bakery, and shower facilities were also erected though no longer exist. Advanced training on the Green Course was discontinued in May 1944 to focus on basic jungle warfare training.

In March 1945, the center became known as Unit Combat Training Centers. One month later, it was re-designated as Pacific Combat Training Center to de-emphasize jungle warfare. Over 241,000 men received basic, advance, or instructor training at the center.

Postwar plans called for closing the majority of the center except for the Green Course in Punaluu Valley, which was to be retained to fulfill the Army's postwar training requirements. The Army re-opened Punaluu Valley on 01 April 1946 to provide emergency shelter for area residents displaced by a tsunami. Tents were erected for sleeping quarters, to render medical treatment, and to feed approximate 1,700 individuals. De-dudding efforts were conducted in Punaluu Valley in 1949.

Parcels in Kahana Valley were returned to previous landowners in August 1946. The leases, licenses, and permits for parcels in Punaluu Valley terminated between April 1945 and November 1950 and were reverted back to previous owners (USACE, 2015a).

1.1 PREVIOUS INVESTIGATIONS

An Inventory Project Report was prepared in 1993 identifying 2.36-inch rockets and 105-millimeter (mm) armor piercing (AP) projectiles as munitions historically detected in Kahana Valley, and 75-mm AP or high explosive (HE) projectiles and 81-mm mortars as munitions historically detected in Punaluu Valley (Wil Chee Planning, 1993).

In 2008, 11.91 miles of transects were inspected during a Site Inspection. Small arms ammunitions debris and four gun emplacements were found in Kahana Valley. One unexpended smoke grenade (MEC) and one gun emplacement were found in Punaluu Valley (Parsons, 2008).

Surface soil was also collected from three areas impacted by munitions. Surface water and sediment samples were collected from the Kahana and Punaluu Streams. The samples were analyzed for metals and explosive compounds. No explosives were detected in soil samples collected from any of the impacted areas or in the surface water or sediment samples. Metals (antimony, copper, lead, and zinc) were detected in the surface soil and sediment samples and were identified as contaminants of potential concern (Parsons, 2008).

In 2012, hunters identified a 2.36-inch HE anti-tank rocket and a 0.25-pound block of trinitrotoluene (TNT) with a copper blasting cap near the gauging station in

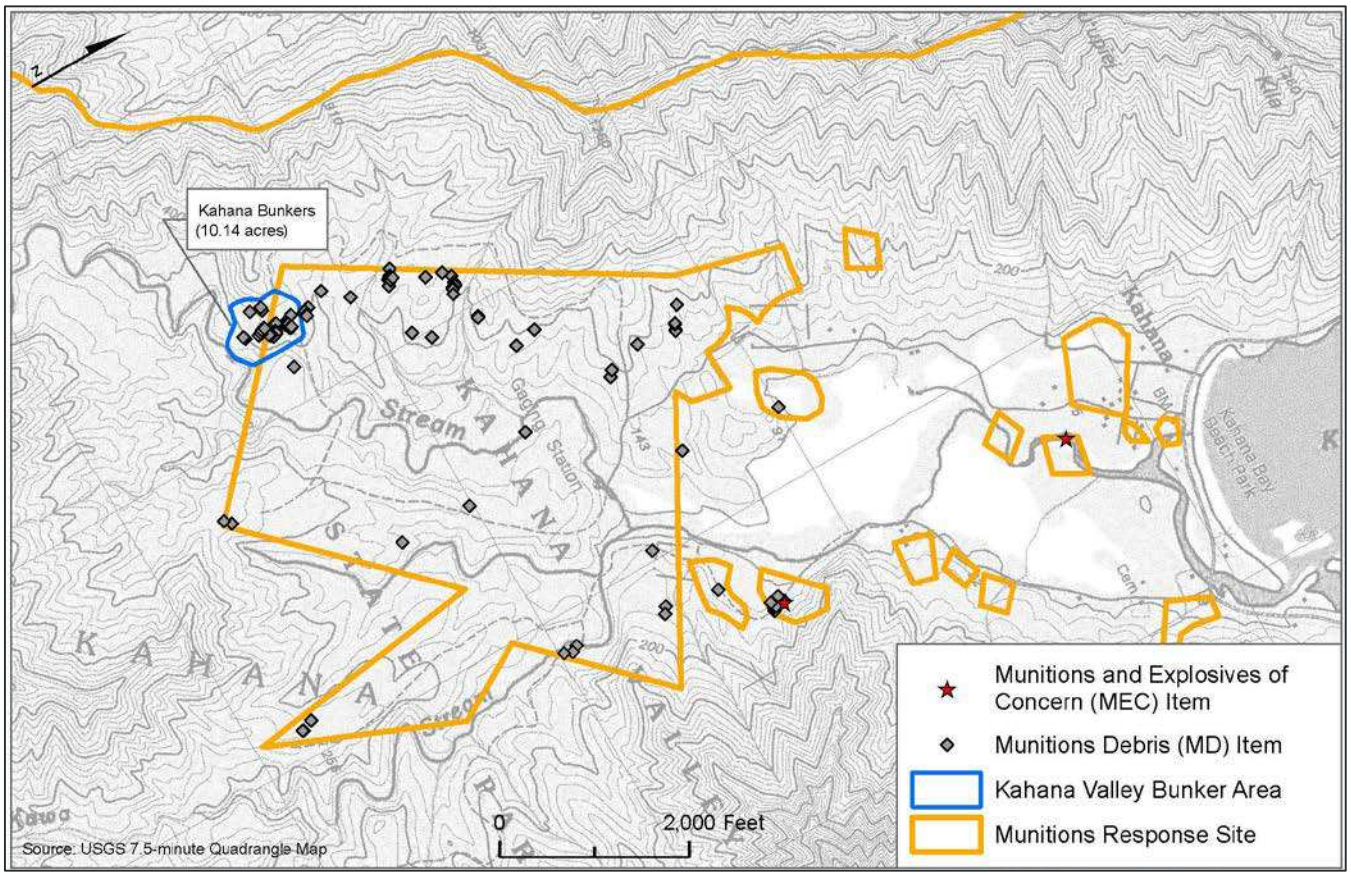

Figure 2 – Kahana Valley Findings

Punaluu Valley. The U.S. Army Explosive Ordnance Disposal team disposed of the items in-place (Honolulu Police Department, 2012).

Approximately 12.15 miles (4.83 acres) of land-based transects and 1.87 acres of grids and 0.56 miles of underwater transects in Kahana Valley – Main were investigated during the 2014 RI. Two MEC items (point detonating [PD] fuze, slap flare) and 63 MD items were found (USACE, 2015a).

In Kahana Valley – Bunkers, 0.44 miles (0.18 acres) of transects and 0.90 acres of grids were investigated. Fifty-seven MD items were found. No MEC was found in the bunker area (USACE, 2015a).

MEC and MD findings in Kahana Valley is presented on Figure 2.

Approximately 20.42 miles (8.12 acres) of transects and 8.74 acres of grids were investigated in Punaluu Valley. Thirty MEC items (2.36-inch rockets; rifle grenades; hand grenade; 60-mm and 81-mm mortars; fuzes; TNT; slap flares) and 114 MD items were found (USACE, 2015a). Figure 3 presents the Punaluu Valley MEC and MD findings.

In total, forty surface soil samples (15 in Kahana and 25 in Punaluu) were collected from areas where MEC and/or MD were discovered or where items were demolished. Metals were detected in all soil samples and explosives were detected in nine. However, all of the concentrations were less than the HDOH Tier 1 environmental action levels (USACE, 2015a).

2.0 PROJECT SITE CHARACTERISTICS

2.1 PHYSICAL CHARACTERISTICS

The PJCTC is located along the northeastern slope of the Koolau Range and the coastal plain of Oahu. Kahana and Punaluu Valleys are mostly undeveloped, rugged, and densely forested land with mixed residential, agricultural, and recreational uses towards the front of each valley. As shown on Figure 1, the majority of the PJCTC MRS occupies inland areas deep within the two valleys, more than half of a mile from

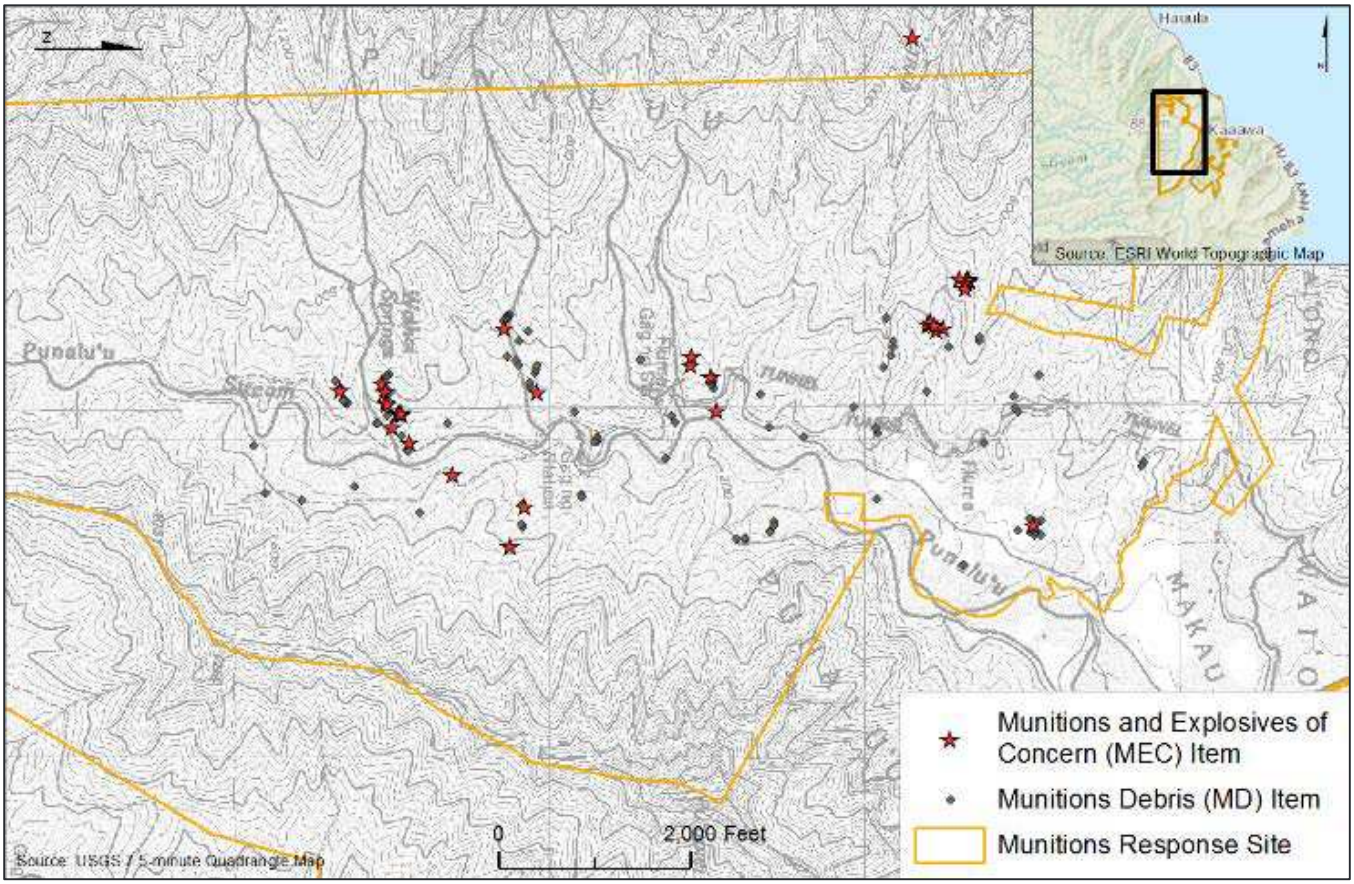

Figure 3: Punaluu Valley Findings

the entrance to the valleys. The topography of each valley is relatively flat to gently sloping in the lower portions of the valleys, with shallow to deep gulches and moderate to steep slopes farther into the valleys. Elevations range from near sea level to approximately 2,000 feet above sea level in the mountainous interior regions. The average annual rainfall ranges from 69 inches per year to 235 inches per year (USACE, 2015a).

Most of the valleys are dominated by introduced plant species; however, four federally listed as endangered plants species (Ma‘oli‘oli, pendant kihi fern, and two haha species), were identified as being present within the PJCTC. A portion of Designated Critical Habitat for Oahu, Unit 20, designated for two Cyanea species, has boundaries within the higher elevations of Punaluu Valley (USACE, 2015a). No threatened or endangered plant species were observed during the 2014 RI.

Five federally listed as endangered animal species were identified as on-site. The animal species include Koloa, ‘Alae`ula, ‘Alae Ke‘oke‘o, Oahu ‘Elepaio, and honu. No threatened or endangered animal species were observed during the RI. However, two migratory shorebirds, the Pacific Golden-Plover and the Black-crowned Night–Heron were observed in the PJCTC. While neither are threatened nor endangered species, they are protected by federal law under the Migratory Bird Treaty Act and by state law under Hawaii Administrative Rules Title 13 Chapter 124 (USACE, 2015a).

Multiple archaeological features and areas of cultural significance are located within the PJCTC (Cultural Surveys, 2015).

2.2 LAND USE

Kahana Valley

The Kahana Valley parcels are owned by the State of Hawaii and managed by the DNLR, Division of State Parks. The Kahana Valley parcels are located in the Ahupua‘a ‘O Kahana State Park. The park was established as a “living park” with the primary purpose to nurture and foster native Hawaiian cultural traditions and the cultural landscape of rural windward Oahu.

Thirty-one families live within the ahupua'a of Kahana. They assist with interpretive programs that share the Hawaiian values and lifestyle. Additionally, there are public hiking trails, campsites, hunting areas, and an agricultural field contained within the park and FUDS property boundary. A popular hiking trail, the Nakoa Trail, roughly encircles the perimeter of the largest parcel in Kahana Valley and intersects the Kahana Valley – Bunkers area. Permits are required to access the campsites and hunting areas.

In addition to public access, DLNR workers and occupational workers perform maintenance to trails and utility infrastructure within the valley. There are no known plans for future development that deviate from the current usage.

Punaluu Valley

The Punaluu Valley parcels are primarily owned by Kamehameha Schools. Kamehameha Schools leases land for agricultural purposes. Several of the smaller parcels are owned by private landowners.

The interior portion of Punaluu Valley is part of the Hauula Forest Reserve and is uninhabited and densely vegetated with no access roads or trails beyond the valley's midway point with the exception of a few sparse unmarked hunting trails. Residential dwellings are located at the mouth of the valley; however, the majority of the land is being used for agricultural purposes. Hunting is allowed in the valley though access is generally restricted to valley residents, guests, and landowner and lessee personnel. Future projects and programs focus on economic and agricultural development, educational programs, cultural support, and environmental management.

2.3 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Response actions under the Military Munitions Response Program must identify and attain or formally waive **applicable or relevant and appropriate requirements (ARARs)** under federal and state laws. The three ARARs identified for this project are provided in Table 1 (following page). All response actions must meet the requirements set forth in these regulations or provide grounds for a waiver.

2.4 NATURE AND EXTENT OF CONTAMINATION

MEC Characteristics and Distribution

Cumulatively, from all previous investigations and incident responses, 37 MEC items and 237 MD items, including small arms ammunitions debris, were found within the PJCTC at the locations designated by the red stars on Figures 2 and 3. All of the MEC items were located less than one foot below ground surface.

Kahana Valley

In total, two MEC items and 122 MD items, including small arms ammunitions debris, have been found in Kahana Valley during previous investigations. Both MEC items, a slap flare and a PD fuze, were found in Kahana Valley – Main. The slap flare does not pose a high explosive or fragmentation hazard, however projection and incendiary hazards exist. The PD fuze was found in Kahana Stream and was classified as discarded military munitions (DMM). DMM generally indicates that the item was intentionally discarded rather than being fired. The location of the fuze item is not considered a target area.

Although no MEC items were found in the Kahana Valley – Bunkers, 24 expended 2.36-inch rocket motors (which are non-explosive and classified as MD) were found in and around a bunker complex. The presence and concentration of MD is an indicator of the potential presence of MEC and that MEC may be more likely found in this area. The bunker complex is a probable target area.

Punaluu Valley

A total of 35 MEC items and 115 MD items, including small arms ammunition debris, have been found in Punaluu Valley.

Munitions contamination was concentrated in five areas: three target areas and two areas likely used for general training or maneuver activities. The most accessible target area, used for 2.36-inch rockets, is located in an active agricultural field. The other two target areas, used for rifle grenades and 2.36-inch rockets, and 60-mm and 81-mm mortars, are located in areas more difficult to access. The two general training/maneuver areas (herein also referred to as 'high anomaly density areas') are also relatively difficult to access but were contaminated with MEC.

Table 1: Applicable or Relevant and Appropriate Requirements

Requirement/Citation	Description	Applicability to Site
Detonation 40 CFR § 264.601 (RCRA, Subpart X)	Requires miscellaneous units for the management of hazardous waste, such as open burning/open detonation units, to be located, designed, constructed, operated, maintained, and closed in a manner that will ensure protection of human health and the environment.	MEC recovered during a remedial action and/or accidentally discovered during implementation of LUCs may need to be detonated or burned before offsite disposal. Permits are not required for onsite response actions conducted under **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)**. Only the substantive requirements of Subpart X are considered ARARs.
Endangered Species Act 16 USC § 1538(a)(1)(B)	Prohibits the "taking" of any federally listed threatened or endangered species of fish or wildlife. In addition, federal agencies must ensure that their actions will not jeopardize the continued existence of any listed species or result in the destruction or adverse modification of the designated critical habitat of a listed species.	Multiple endangered species are located within Kahana and Punaluu Valleys. Federally listed endangered plant and animal species identified in the valleys include: 1. Plant species: Ma'oli'oli (*Schiedea kaalae*), pendant kihi fern (*Adenophorus periens*), haha (*Cyanea grimesiana*), and haha (*Cyanea humboldtiana*) 2. Animal species: Koloa (*Anas wyvilliana)*, `Alae`ula (*Gallinula chloropus sandvicensis*), `Alae Ke`oke`o (*Fulica alai*), Oahu `Elepaio (*Chasiempis sandwichensis ibidis*), and honu (*Chelonia mydas*). Formal consultation is not an ARAR because it is an administrative requirement.
Migratory Bird Treaty Act 16 USC § 703(a)	Prohibits the take of migratory birds native to the United States or its territories.	Two migratory shorebirds, the Pacific Golden-Plover or Kolea *(Pluvialis fulva*) and the Black-crowned Night–Heron or `Auku`u (*Nycticorax nycticorax hoactli*) were observed in the MRS during the RI. Only substantive requirements are considered ARARs.

MC Assessment

Surface soil samples were collected and analyzed for MCs (i.e. MEC-related metals and explosive compounds). Concentrations of MCs were below the HDOH Tier 1 environmental action levels and do not pose an unacceptable risk to human or ecological health. Thus, MC exposure pathways to human and ecological receptors were considered negligible.

3.0 SCOPE AND ROLE OF RESPONSE ACTION

The proposed remedial action is designed to reduce munitions-related hazards within the PJCTC through a combination of MEC removal and land use controls.

The proposed remedial actions protect the public and environment from the hazards related to MEC suspected to be present at the PJCTC.

4.0 SUMMARY OF PROJECT SITE HAZARDS AND RISKS

Site hazards and risks were evaluated in terms of an exposure model that consists of a source of contamination (MEC), a receptor (recreational and occupational users), and interaction at the exposure point (disturbing a MEC item). The RI Report evaluated the possible hazards associated with MEC. Based on the evaluation, the Kahana Valley – Bunkers and Punaluu Valley are potential sources of MEC with exposure pathways to receptors.

5.0 REMEDIAL ACTION OBJECTIVES

Remedial action objectives (RAOs) are goals specific to a type of media for protecting human health and the environment. For PJCTC, the RAOs are as follows:

Kahana Valley – reduce exposure of residents, recreational users (i.e., campers, hikers, hunters), and occupational workers (i.e., trail and utility maintenance) to explosive hazards associated with munitions items varying in size from fuzes to 2.36-inch rockets present in surface and subsurface soil to a depth of 1 foot below ground surface within the boundaries of the Kahana Valley to acceptable hazard levels.

Punaluu Valley – reduce exposure of residents, recreational users (i.e., hikers and hunters), agricultural workers, and occupational workers (i.e., road and utility workers) to explosive hazards associated with munitions items varying in size from fuzes to 81-mm mortars present in surface and subsurface soil to a depth of 1 foot below ground surface within the boundaries of the Punaluu Valley to acceptable hazard levels.

Acceptable hazard levels will be defined such that exposure to MEC can be considered an "unlikely" or a "negligible" hazard to the public based on supporting data.

6.0 REMEDIAL ALTERNATIVES

The remedial alternatives for the PJCTC are designed to reduce the overall hazards associated with MEC potentially present on site. The alternatives for each valley are described in the following sections in terms of their objectives and anticipated implementation measures. General assumptions for each alternative are provided in sections 7.1 and 8.1. Additional details related to the cost estimates are included in the FS Report (USACE, 2015b).

6.1 EVALUATION OF ALTERNATIVES

The rationale for selecting the Preferred Alternative for each valley was based on nine criteria used to 1) evaluate each alternative and 2) compare alternatives to one another in a detailed analysis. The nine criteria fall into three groups: threshold criteria, primary balancing criteria, and modifying criteria. Threshold criteria are requirements that each alternative must meet to be eligible for selection. Primary balancing criteria are used to weigh major tradeoffs among alternatives. Modifying criteria (which include State/Support Agency Acceptance and Community Acceptance) may be considered to the extent that information is available during the FS, but they can be fully considered only after public comment is received on the Proposed Plan. In the final balancing of tradeoffs between alternatives upon which the final remedy selection is based, modifying criteria are of equal importance to the balancing criteria. The evaluation of alternatives is described in sections 7.2 and 8.2. A comparative analysis of the alternatives for each criteria is provided in sections 7.3 and 8.3.

7.0 KAHANA VALLEY

7.1 SUMMARY OF REMEDIAL ALTERNATIVES

Alternative 1 – No Action

Under Alternative 1, no response action would be taken at Kahana Valley. Potential MEC would be left in place as-is, without implementing any LUCs or remedial actions. The No Action alternative is not considered an effective response action that meets the requirements of CERCLA because it does not address the explosive hazard posed to humans or the environment by potential MEC at the site. No cost is assumed for this alternative. The No Action alternative does not adequately meet the RAOs and is used solely to provide a baseline for comparison with other alternatives, as required by the National Contingency Plan (NCP) under 40 Code of Federal Regulations (CFR) 300.430(e)(6).

Alternative 2 – Land Use Controls

Alternative 2 implements LUCs as the primary means for reducing exposure to explosive hazards. LUCs meet the RAOs by restricting public access to the site and/or by reducing the probability of a human encounter with MEC and the potential for unintentional MEC detonation, which may result in injury or death to humans and/or damage to ecological and cultural resources. Generally, LUCs will include a combination of administrative mechanisms, engineering controls, and educational controls. The LUCs alternative includes ongoing long-term management of administrative, engineering, and educational controls.

In addition to implementing LUCs, five-year reviews are a requirement for alternatives not allowing for unlimited use/unrestricted exposure (UU/UE) in accordance with 40 CFR 300.430(f)(4)(ii). Under this option, five-year reviews would be required because MEC remains on the site above levels that allow for UU/UE.

The LUCs implemented as Alternative 2 would include:

Administrative Mechanisms: The State of Hawaii issues leases and right-of-entry permits to entities living and/or working in Kahana Valley. Special conditions would be appended to the lease agreements or right-of-entry permits to inform the parties of the potential hazards related to the munitions items on the site. These conditions could include informational material regarding the presence of munitions debris, safety precautions, and necessary procedures, as well as define areas unavailable for use and direct users away from potentially MEC-contaminated sites.

Engineering Controls: Public access within Kahana Valley would be restricted to designated areas marked with warning signs notifying the public to stay within the designated areas because of the potential presence of an explosive hazard. Enforcement of this restriction would be carried out by DLNR staff. DLNR is authorized to enforce State laws and rules involving State-owned lands.

Educational Controls: Safety and awareness training of DLNR and occupational workers would be implemented. Community outreach would focus on educating the public of access restrictions as well as the presence and dangers of MEC. Visitor education would include installation of educational signs at key locations such as publically accessible trailheads. A large educational sign, similar to those found in national parks, could be installed at a community information board designated by the DLNR. The sign would summarize key safety and access limitation information.

Alternative 3 – Complete Removal of MEC from Target Area

Alternative 3 includes the complete removal of surface and subsurface MEC from the identified target area known as the Kahana Valley – Bunkers (approximately 10.58 acres) using visual and analog methods. Treatment includes demilitarization of MEC by detonation in-place or, if deemed acceptable-to-move, at a consolidation point, and disposal of MD in 55-gallon drums at a recycling facility.

In addition, to further reduce the risk of an unintentional detonation of MEC in the interim period prior to completion of the removal action, Alternative 3 includes the establishment of prominent signage warning the public of the potential presence of explosive hazards and educating the public on potential hazards associated with munitions and the appropriate response to incidental discovery of munition items.

Following implementation of Alternative 3, the potential explosive hazards associated with the site would be eliminated because of the lack of an exposure pathway to MEC, resulting in a UU/UE condition.

7.2 EVALUATION SUMMARY – KAHANA VALLEY

The following remedial alternatives were selected and evaluated against the threshold and primary balancing evaluation criteria:

- Alternative 1: No Action
- Alternative 2: Land Use Controls
- Alternative 3: Complete Removal of MEC from Target Area

Threshold Criteria

Overall Protectiveness of Human Health and the Environment

Overall protection of human health and the environment is a threshold criterion. Protection is not measured by degree; rather, each alternative is considered as either protective or not protective. Alternatives 2 and 3 are protective. Alternative 1 is not protective.

Compliance with Applicable or Relevant and Appropriate Requirements

Compliance with ARARs is a threshold criterion. An alternative must either comply with ARARs or provide grounds for a waiver. Alternatives 2 and 3 comply with ARARs. Alternative 1 does not include any response action, thus ARARs are not applicable.

Balancing Criteria

Long-Term Effectiveness and Permanence

The long-term effectiveness and permanence of Alternative 3 is rated the highest with a rating of excellent because it would remove surface and subsurface MEC from the identified target area, thereby permanently eliminating explosive hazards to the public and environment from MEC in the area of the site with the greatest potential volume of MEC. Interim signage is also included to provide reduction in the probability for human interaction with explosive hazards associated with MEC prior to completion of the remedial action. Alternative 2 is only rated good

because MEC are not removed from the site, and the long-term effectiveness and permanence of LUCs is dependent on the monitoring and maintenance of the administrative mechanisms and engineering controls. Alternative 1 is rated poor because it does not achieve a reduction in risk to humans from explosive hazards at the site through MEC removal or other means.

Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment

Alternative 3 is rated highest with a rating of excellent because it would remove surface and subsurface MEC from the identified target area and permanently remove the mobility, toxicity, and volume of MEC through on site demolition. Alternatives 1 and 2 were rated poor because they do not include a treatment component that would reduce the mobility, toxicity, and volume of MEC.

Short-Term Effectiveness

Alternative 3 is rated very good because it can be completed within a reasonable timeframe and does not endanger the public or trained workers complying with the federal standards for munitions response. However, it would take longer to implement than Alternative 2 and would include environmental impacts, specifically clearance of 10.58 acres of vegetation. Alternative 2 is rated lower than Alternative 3 with a rating of good for short-term effectiveness because it does not achieve the RAOs in a reasonable timeframe. LUCs, however, could be implemented within 6 months and worker and public exposure to explosive hazards would not be increased during implementation. There would be no environmental effects during implementation. Alternative 1 is rated poor for short-term effectiveness because, by undertaking no response action, explosive hazards to the public would remain from MEC potentially present at the site.

Implementability

Alternatives 1 and 2 were rated excellent for implementability because they would be easy to implement, are technically feasible, are conventional and commonplace, and the technical expertise, labor, equipment, and materials would be readily available. Alternative 3 was rated good because it would be moderately easy to implement, is technically feasible, is conventional and commonplace, and the technical expertise, labor, equipment, and materials would be readily available. However, because of the remoteness of the removal area and the ruggedness of the terrain, additional logistical preparation, coordination, and time would be required to implement the alternative.

Cost

Alternative 1 requires no action; therefore, no costs are associated with this alternative and it is rated excellent. Alternative 2 is rated very good, with the least total cost of $541,075. Alternative 3 is rated good, with a total cost of $1,057,589.

Modifying Criteria

State/Support Agency Acceptance

HDOH and USACE support the selection of Alternative 3 Complete Removal of MEC from Target Area as the Preferred Alternative. HDOH is not supportive of Alternative 2 because it is insufficient to protect visitors who may be on trails that directly intersect an identified target area or occupational workers.

Community Acceptance

Community acceptance of the Preferred Alternative will be evaluated after the public comment period ends and will be described in the **Decision Document** for PJCTC.

7.3 SELECTION SUMMARY – KAHANA VALLEY

Table 2 summarizes the comparison of each remedial alternative to the seven CERCLA criteria evaluated. The ranking categories used in the discussion of the alternatives are (1) protective or not protective, and meets ARARs or does not meet ARARS, for the two threshold criteria; and (2) excellent, very good, good, poor, and not acceptable for the five balancing criteria.

Alternative 3, Complete Removal of MEC from Target Area, received the highest rating with an overall rating of very good. This alternative, when compared against the other two alternatives, presents the best alternative for achieving overall protection of human health and the environment in compliance with ARARs. Alternative 3 would permanently reduce the mobility, toxicity, and volume of MEC within the identified target area; thereby, significantly reducing the potential for a human encounter with MEC and associated unintentional detonation within Kahana Valley. Given the historical site use of the remaining areas for maneuvers only and the dense vegetation and steep and rugged terrain (rendering most areas difficult to access), the potential for a human encounter with MEC is considered extremely low. Short-term effectiveness

Table 2: Summary Comparison of Remedial Alternatives with CERCLA Criteria – Kahana Valley

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	Implement-ability	Cost	Overall Rating
	Threshold Criteria		*Balancing Criteria*					
Alternative 1: No Action	Not Protective	N/A	P	P	P	E	E	NA
Alternative 2: LUCs	Protective	Complies	G	P	G	E	VG	G
Alternative 3: Removal of MEC and MD in Highly Accessible Areas and LUCs	Protective	Complies	E	E	VG	G	G	VG

Notes:
ARARs = applicable or relevant and appropriate requirements
E = excellent
G = good
NA = not acceptable
N/A = not applicable
P = poor
VG = very good

was rated very good because remedial activities would not increase exposure of workers or the community during implementation and could be completed within 6 weeks. However, environmental impacts would occur, specifically vegetation clearance of 10.58 acres. Costs for implementation are good. Following completion of remedial activities, the Kahana Valley section would be eligible for a UU/UE determination.

Alternative 2, LUCs, received an overall rating of good. While the alternative is easier and less costly to implement than Alternative 3 and would not have any environmental impacts, it does not reduce the mobility, toxicity, or volume of MEC at the site and long-term effectiveness is dependent on the LUCs being effectively administered. However, Alternative 2 would reduce the probability of a human encounter with MEC and the potential for an unintended MEC detonation, which could result in injury or death to humans through site access and use restrictions and public education.

Alternative 1, No Action, is the least costly and easiest alternative to implement; however, it is not protective of the public or environment therefore, it is not eligible as selection as the preferred alternative.

7.4 PREFERRED ALTERNATIVE – KAHANA VALLEY

In accordance with the comparative analysis of identified alternatives, Alternative 3 Complete Removal of MEC from Target Area is the Preferred Alternative for remedial action at Kahana Valley. The proposed removal area is shown on Figure 3. Alternative 3 would meet the RAOs, eliminate the hazards posed by MEC in the target area by conducting surface and subsurface MEC removal, significantly reduces the exposure pathway, and is cost-effective. It should be noted, however, that the Preferred Alternative may change in response to public comments or new information.

Based on the information currently available, Alternative 3 meets the threshold criteria and provides the best balance of tradeoffs among the other alternatives for the balancing and modifying criteria. The Preferred Alternative meets the statutory requirements of CERCLA§121(b), which include protectiveness of human health and the environment, compliance with ARARs, cost-effectiveness, uses permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable, and satisfies the preference for treatment as a principle element. The Preferred Alternative is implementable and is expected to be highly effective in the long-term by eliminating potential MEC hazards with minimal impact to the environment. No adverse impacts to Kahana Valley are anticipated with implementation of this alternative.

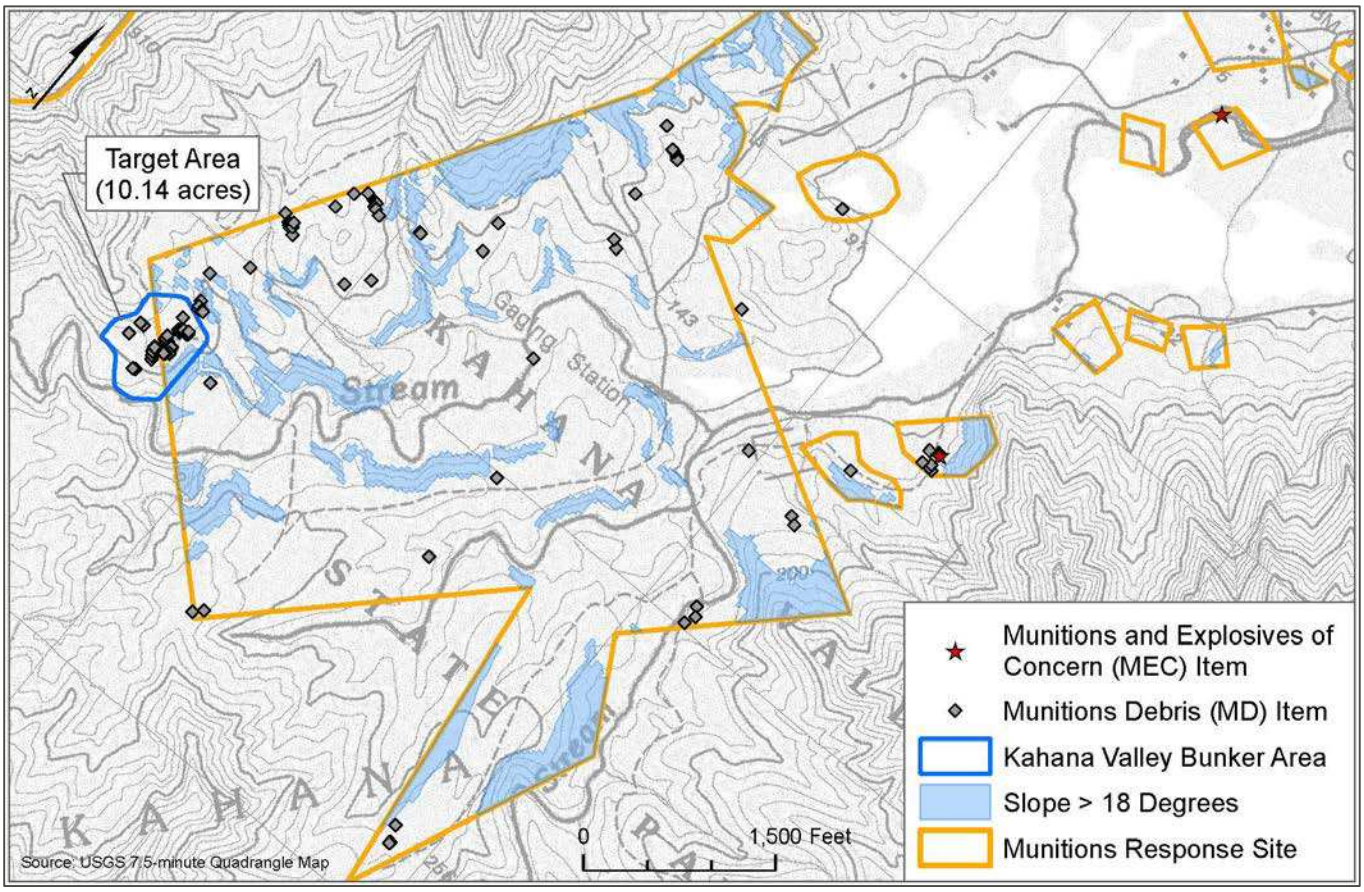

Figure 3 – Kahana Valley Preferred Alternative
Complete Removal of MEC from Target Area

8.0 PUNALUU VALLEY

8.1 SUMMARY OF REMEDIAL ALTERNATIVES

Alternative 1 – No Action

Under Alternative 1, no response action would be taken at Punaluu Valley. Potential MEC would be left in place as-is, without implementing any LUCs or remedial actions. The no-action alternative is not considered an effective response action that meets the requirements of CERCLA because it does not address the explosive hazard posed to humans or the environment by potential MEC at the site. No cost is assumed for this alternative. The No Action Alternative does not adequately meet the RAOs and is used solely to provide a baseline for comparison with other alternatives, as required by the NCP under 40 CFR 300.430(e)(6).

Alternative 2 – Land Use Controls

Alternative 2 implements LUCs as the primary means for reducing exposure to explosive hazards. LUCs meet the RAOs by restricting public access to the site and/or by reducing the probability of a human encounter with MEC and the potential for unintentional MEC detonation, which may result in injury or death to humans and/or damage to ecological and cultural resources. Generally, LUCs will include a combination of administrative mechanisms, engineering controls, and educational controls. The LUCs alternative includes ongoing long-term management of administrative, engineering, and educational controls.

In addition to implementing LUCs, five-year reviews are a requirement for alternatives not allowing for UU/UE in accordance with 40 CFR 300.430(f)(4)(ii). Under this option, five-year reviews would be required because MEC remains on the site above levels that allow for UU/UE.

The LUCs implemented as Alternative 2 would include:

Administrative Mechanisms: Private landowners may issue leases, hunting permits, and right-of-entry permits to entities working in or using portions of Punaluu Valley. Special conditions would be appended to the lease agreements or permits to inform the parties of the potential hazards related to the munitions items on the site. These conditions could include informational material regarding the presence of munitions debris, safety precautions, and necessary procedures, as well as define areas unavailable for use and direct users away from potentially MEC-contaminated sites.

Engineering Controls: Public access within Punaluu Valley is restricted by private landowners. Engineering controls that may be implemented under this alternative consist of installing warning signs in publicly accessible areas (i.e., hiking trails and hunting areas) and along utility corridors notifying the public and agricultural/occupational personnel of the potential presence of an explosive hazard. Private landowners shall enforce this restriction on their property to the extent that ownership of the land.

Educational Controls: Safety and awareness training of private landowners and occupational workers would be implemented. Training would include information on recognizing the types of MEC items that may be present in Punaluu Valley and response actions if a MEC item is found. Community outreach would focus on educating the users of access restrictions as well as the presence and dangers of MEC.

This alternative does not eliminate access to areas with potential explosive hazards and therefore, the hazard level would not be significantly reduced from the baseline condition.

Alternative 3 – Removal of MEC from Accessible Target Areas and High Anomaly Density Areas and LUCs

Alternative 3 includes a limited removal of surface and subsurface MEC and MD over approximately 18.83 acres in relatively accessible areas close to the front of the valley using visual and analog methods. The limited removal would be performed in two identified target areas, including the target area within the active agricultural fields, and one high anomaly density areas near the front of the valley. The remaining target area and high anomaly density area toward the rear of the valley are relatively inaccessible and are not included in this alternative. The removals would be limited to areas with less than 18-degree slope for safety reasons. Alternative 3 would permanently remove explosive hazards from MEC in two target areas and one high anomaly density area, which are all currently accessible. In addition, Alternative 3 would include LUCs to further reduce the probability of a human encounter with MEC and the potential for unintentional MEC detonation, which may result in injury or death to humans and/or damage to ecological and cultural resources. Alternative 3 would include the same LUCs specified for Alternative 2.

Because this alternative does not achieve UU/UE, five-year reviews will be considered in the alternative evaluation, although these costs are not part of the alternative.

Alternative 4 – Complete Removal of MEC from Target Areas and High Anomaly Density Areas

Under Alternative 4, a complete removal of surface and subsurface MEC and MD would be performed over approximately 38.87 acres using visual and analog methods. The remedial action would be performed in the three identified target areas and the two identified high anomaly density areas. The removal action would be conducted in areas with less than an 18-degree slope for safety reasons.

Alternative 4 would permanently remove explosive hazards from MEC in the areas of Punaluu Valley with the highest density of anomalies as identified in the 2014 RI and with the greatest potential volume of MEC that pose a risk to the public. Although other areas of high anomaly density areas may exist, they do not pose a safety or explosive hazard to the public because they are only associated with a high concentration of small arms ammunition debris finds and are not considered target or maneuver areas. This alternative would result in UU/UE.

8.2 SELECTION SUMMARY – PUNALUU VALLEY

The following remedial alternatives were selected and evaluated against the threshold and primary balancing evaluation criteria:

- Alternative 1: No Action
- Alternative 2: Land Use Controls
- Alternative 3: Removal of MEC from Accessible Target Areas and High Anomaly Density Areas and LUCs

- Alternative 4: Complete Removal of MEC from Target Areas and High Anomaly Density Areas

Threshold Criteria

Overall Protectiveness of Human Health and the Environment

Overall protection of human health and the environment is a threshold criterion. Protection is not measured by degree; rather, each alternative is considered as either protective or not protective. Alternatives 2, 3, and 4 are protective. Alternative 1 is not protective.

Compliance with Applicable or Relevant and Appropriate Requirements

Compliance with ARARs is a threshold criterion. An alternative must either comply with ARARs or provide grounds for a waiver. Alternatives 2, 3, and 4 comply with ARARs. Alternative 1 does not include any response action, thus ARARs are not applicable.

Balancing Criteria

Long-Term Effectiveness and Permanence

The long-term effectiveness and permanence of Alternative 4 is rated the highest with a rating of excellent because it would remove surface and subsurface MEC from the identified target areas and high anomaly density areas, thereby permanently reducing explosive hazards to the public and environment from these areas (i.e., 38.87 acres). Alternative 3 is rated very good because it would significantly reduce the risk of a human encounter with MEC and associated unintentional detonation by removing surface and subsurface MEC from the identified target and anomaly areas in the accessible areas of the site. It also provides additional risk reduction from residual MEC in areas outside of the identified target areas through implementation of LUCs; although the effectiveness and permanence of LUCs is dependent on monitoring and maintenance of the administrative mechanisms and engineering controls. Alternative 2 was rated good because, while it does not include removal of MEC from Punaluu Valley, LUCs would reduce the probability of a human encounter with MEC and associated unintentional detonation through site access and use restrictions and by educating the public on the potential presence of MEC, MEC safety, and MEC response. Alternative 1 is rated poor because it would not achieve a reduction in risk to humans from explosive hazards at the site through MEC removal or any other means.

Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment

Alternative 4 is rated highest with a rating of excellent because it would remove surface and subsurface MEC from 38.87 acres, thereby significantly reducing the mobility, toxicity, and volume of MEC in Punaluu Valley. Alternative 3 is rated very good because it would remove surface and subsurface MEC from the accessible areas of the site (18.83 acres). Alternatives 1 and 2 were rated poor because they do not include a treatment component that would reduce the mobility, toxicity, and volume of MEC.

Short-Term Effectiveness

Alternative 3 was rated very good because, while worker and public exposure are not increased during implementation, the field activities are limited to areas that are currently more accessible and vegetation clearance would be performed over only 18.83 acres, less than half of the area required under Alternative 4. Alternative 4 was rated good, substantially lower than Alternative 3, because it requires significantly more vegetation clearance and access road construction that will likely impact sensitive natural and cultural resources. Alternative 2 is rated good for short-term effectiveness because while worker and public exposure would not be increased during implementation and there are no environmental effects during implementation, the LUCs would not achieve the RAOs in a reasonable timeframe. Alternative 1 is rated poor for short-term effectiveness because, by undertaking no response action, explosive hazards to the public would remain from MEC potentially present at the site.

Implementability

Alternatives 1 and 2 were rated excellent for implementability because they would be easy to implement, are technically feasible, are conventional and commonplace, and the technical expertise, labor, equipment, and materials would be readily available. Alternative 3 was rated good because it is implementable, is technically feasible, is conventional and commonplace, and the technical expertise, labor, equipment, and materials would be readily available. However, because of the remoteness of the removal areas and the ruggedness of the terrain, additional logistical preparation, coordination, and time would be required to implement Alternative 3. Likewise, implementation of Alternative 4, which expands the areas to be remediated into significantly less accessible

areas, would require substantially more logistical preparation and coordination as compared to Alternative 3. Furthermore, the alternative would be implemented over an additional 20.04 acres and would require additional vegetation removal and time to complete, potentially impacting sensitive natural and cultural resources. Therefore, Alternative 4 was rated poor.

Cost

Alternative 1 requires no action; therefore, no costs are associated with this alternative and it is rated excellent. Alternative 2 is rated very good, with the least total cost of $282,832. Alternative 3, is rated good, with a total cost of $2,435,483. Alternative 4, is rated poor with a total cost of $3,401,580.

Modifying Criteria

State/Support Agency Acceptance

HDOH and USACE support the selection of Alternative 3 Removal of MEC from Accessible Target Areas and High Anomaly Density Areas and LUCs as the Preferred Alternative. HDOH is not supportive of Alternative 2 because it is insufficient to protect visitors who may be on trails or occupational workers. Alternative 4 is also not preferred because of the damage to the environment during implementation of the removal action for minimal reduction of risk.

Community Acceptance

Community acceptance of the Preferred Alternative will be evaluated after the public comment period ends and will be described in the Decision Document for PJCTC.

8.3 SELECTION SUMMARY – PUNALUU VALLEY

Table 3 summarizes the comparison of each remedial alternative to the seven CERCLA criteria evaluated. The ranking categories used in the discussion of the alternatives are (1) protective or not protective, and meets ARARs or does not meet ARARs, for the two threshold criteria; and (2) excellent, very good, good, poor, and not acceptable for the five balancing criteria.

Alternative 3, Removal of MEC from Accessible Target Areas and High Anomaly Density Areas and LUCs, received the highest rating with an overall rating of very good. This alternative, when compared against the other three alternatives, presents the best alternative for achieving overall protection of human health and the environment in compliance with ARARs. Alternative 3 would permanently reduce the mobility, toxicity, and volume of MEC within the identified accessible target areas and high anomaly density areas (i.e., 18.83 acres), thereby significantly reducing the potential for human encounter with MEC and associated unintentional detonation within Punaluu Valley. Although munitions items could potentially remain in place in other areas of Punaluu Valley under this alternative, specifically the target area in the back of the valley, the probability of a human encounter with MEC in the remaining areas is considered extremely low given the relative inaccessibility of the remaining areas (due to dense vegetation and ruggedness of terrain) and the lower anomaly densities in these areas. When compared against Alternative 4, Alternative 3 requires less time to implement, and results in less environmental impact (only 18.83 acres would be required). In addition, LUCs implemented under Alternative 3 would provide additional reduction in risk from residual MEC in other areas of the site.

Alternative 4, Complete Removal of MEC from Target Areas and High Anomaly Density Areas, received an overall rating of good. Short-term effectiveness was rated good because remedial activities would not increase exposure of workers or the community during implementation and could be completed within 21 weeks. However, significant environmental impacts would occur, specifically performing clearance of 38.87 acres of heavy vegetation with potentially sensitive natural and cultural resources. Furthermore, costs for implementation are high. Following completion of Alternative 4, the Punaluu Valley section would be eligible for a UU/UE determination.

Alternative 2, LUCs, received an overall rating of good. While the alternative is easier and cheaper to implement than Alternative 3 and would not have any environmental impacts, it would not reduce the mobility, toxicity, or volume of MEC at the site and long-term effectiveness would be dependent on the LUCs being effectively administered. Alternative 2 would, however, reduce the probability of a human encounter with MEC and the potential for an unintended MEC detonation, which could result in injury or death to humans through site access and use restrictions and public education.

Alternative 1, No Action, is the least costly and easiest to implement; however, it would not reduce risks posed to the public by explosive hazards through removal of MEC or other means; therefore, it received an overall rating of poor.

Table 3: Summary Comparison of Remedial Alternatives with CERCLA Criteria – Punaluu Valley

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	Implement-ability	Cost	Overall Rating
	Threshold Criteria		*Balancing Criteria*					
Alternative 1: No Action	Not Protective	N/A	P	P	P	E	E	NA
Alternative 2: LUCs	Protective	Complies	G	P	G	E	VG	G
Alternative 3: Removal of MEC from Accessible Target Areas and High Anomaly Density Areas and LUCs	Protective	Complies	VG	VG	VG	G	G	VG
Alternative 4: Complete Removal of MEC from Target Areas and High Anomaly Density Areas	Protective	Complies	E	E	G	P	P	G

Notes:
ARARs = applicable or relevant and appropriate requirements
E = excellent
G = good
NA = not acceptable
N/A = not applicable
P = poor
VG = very good

8.4 PREFERRED ALTERNATIVE – PUNALUU VALLEY

In accordance with the comparative analysis of identified alternatives, Alternative 3 Removal of MEC from Accessible Target Areas and High Anomaly Density Areas and LUCs is the Preferred Alternative for remedial action at Punaluu Valley. The proposed removal area is illustrated by purple forms on Figure 4. The target area in the back of the valley is relatively inaccessible due to dense vegetation and rugged terrain. Alternative 3 would meet the RAOs, significantly reduce the hazards posed by MEC in the accessible target and high density areas by conducting surface and subsurface MEC removal, with the most cost-effectiveness. The exposure pathway is significantly reduced. It should be noted, however, that the Preferred Alternative may change in response to public comments or new information.

Based on the information currently available, Alternative 3 meets the threshold criteria and provides the best balance of tradeoffs among the other alternatives for the balancing and modifying criteria. The Preferred Alternative meets the statutory requirements of CERCLA§121(b), which include protectiveness of human health and the environment, compliance with ARARs, cost-effectiveness, uses permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable, and satisfies the preference for treatment as a principle element. The Preferred Alternative is implementable and is expected to be highly effective in the long-term by reducing potential MEC hazards with minimal impact to the environment. No adverse impacts to Punaluu Valley are anticipated with implementation of this alternative.

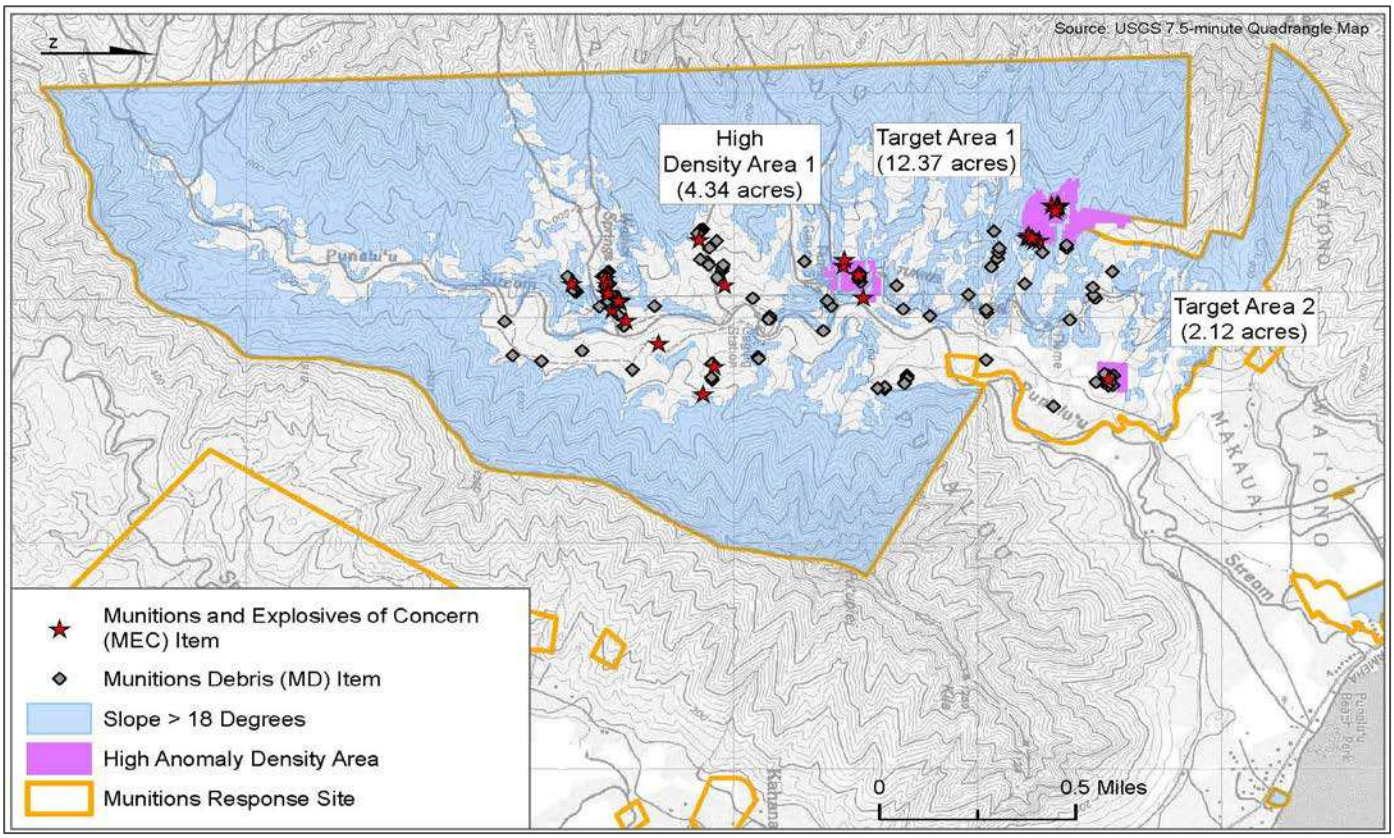

Figure 4 – Punaluu Valley Preferred Alternative
Removal of MEC from Accessible Target Areas and High Anomaly Density Areas and LUCs

REFERENCES

Code of Federal Regulations. Title 40 Protection of Environment, Part 300.

Cultural Surveys Hawaii, 2015. *Draft Archaeological Monitoring Report for Cultural Resources Support for a Remedial Investigation/Feasibility Study (RI/FS) for the Punalu'u Ordnance Clearance Project, Punalu'u and Kahana Ahupua'a, Ko'olauloa District, Island of O'ahu*. January.

Honolulu Police Department, 2012. *Bomb Incident Log.* August.

Parsons, 2008. *Final Site Inspection Report, Pacific Jungle Combat Training Center, Oahu, Hawaii.* December.

USACE, 2004. *Inventory Project Report Supplement*. November.

USACE, 2015a. *Draft-Final Remedial Investigation Report, Pacific Jungle Combat Training Center, Oahu, Hawaii*. Revision 2. July.

USACE, 2015b, *Draft-Final Feasibility Study Report, Pacific Jungle Combat Training Center, Oahu, Hawaii.* Revision 2. November.

United States Code (USC). Title 16, Conservation.

Wil Chee Planning, 1993. "*DERP-FUDS Inventory Project Report. Pacific Jungle Combat Training Center Kahana and Punaluu Valleys, Island of Oahu, Hawaii, Site No. H09HI027400*." December.

GLOSSARY OF TERMS

Administrative Record File – A compilation of all documents relied upon to select a remedial action pertaining to the investigation and remediation of the project site.

Applicable or Relevant and Appropriate Requirements (ARARs) – Applicable requirements means those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site. Only those state standards that are identified by a state in a timely manner and that are more stringent than federal requirements may be applicable.

Relevant and appropriate requirements means those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site. Only those state standards that are identified in a timely manner and are more stringent than federal requirements may be relevant and appropriate.

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

Decision Document – A report documenting the final action, approved by the regulatory agencies, that is required at CERCLA sites.

Feasibility Study (FS) – 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 (FUDS) – 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.

Land Use Controls (LUCs) – Physical, legal, or administrative mechanisms that restrict the use of, or limit access to, real property, to prevent or reduce risks to human health and the environment. Physical Mechanisms encompass a variety of engineered remedies to contain or reduce contamination and physical barriers to limit access to real property, such as fences or signs. The legal mechanisms used for LUCs are generally the same as those used for institutional controls as discussed in the NCP.

Lead Agency -- The agency that provides the On-scene Coordinator/Remedial Project Manager to plan and implement response actions under the NCP. EPA, the USCG, another federal agency, or a state (or political subdivision of a state) operating pursuant to a contract or cooperative agreement executed pursuant to section 104(d)(1) of CERCLA, or designated pursuant to a Superfund Memorandum of Agreement entered into pursuant to subpart F of the NCP or other agreements may be the lead agency for a response action. In the case of a release of a hazardous substance, pollutant, or contaminant, where the release is on, or the sole source of the release is from, any facility or vessel under the jurisdiction, custody, or control of Department of Defense (DOD) or Department of Energy (DOE), then DOD or DOE will be the lead agency. Where the release is on, or the sole source of the release is from, any facility or vessel under the jurisdiction, custody, or control of a federal agency other than EPA, the USCG, DOD, or DOE, then that agency will be the lead agency for remedial actions and removal actions other than emergencies. The federal agency maintains its lead agency responsibilities whether the remedy is selected by the

federal agency for non-NPL sites or by EPA and the federal agency or by EPA alone under CERCLA section 120.

Munitions Constituents (MC) – Any materials originating from unexploded ordnance, discarded military munitions, or other military munitions, including explosive and nonexplosive materials, as well as emission, degradation, or breakdown elements of such ordnance or munitions.

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

Munitions and Explosives of Concern (MEC) – This term, which distinguishes specific categories of military munitions that may pose unique explosives safety hazards, specifically composed of (a) unexploded ordnance; (b) discarded military munitions; or (c) explosive MC present in high enough concentrations to pose an explosive hazard.

Munitions Response Site (MRS) – A discrete location within a defense site that is known to require a munitions response (investigation, removal action, or remedial action).

Preferred Alternative – The alternative that, when compared to other potential alternatives, was determined to best meet the CERCLA 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 (RI) – 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

AP	armor piercing
ARAR	applicable or relevant and appropriate requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
DLNR	Department of Land and Natural Resources, State of Hawaii
DMM	discarded military munition
DoD	Department of Defense
FS	feasibility study
FUDS	Formerly Used Defense Sites
HDOH	Department of Health, State of Hawaii
HE	high explosive
LUC	land use control
MC	munitions constituent(s)
MD	munitions debris
MEC	munitions and explosives of concern
mm	millimeter
MRS	munitions response site
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
PD	point detonating
PJCTC	Pacific Jungle Combat Training Center
RAO	remedial action objective
RCRA	Resource Conservation and Recovery Act
RI	remedial investigation
TNT	trinitrotoluene
USACE	United States Army Corps of Engineers
USC	United States Code
UU/UE	unlimited use/unrestricted exposure

Follow the 3Rs

Recognize

Recognize when you may have encountered a munition.

Recognizing when you may have encountered a munition is the most important step in reducing the risk of injury or death. Munitions may be encountered on land or in the water. They may be easy or hard to identify.

To avoid risk of injury or death:

- Never move, touch, or disturb a munition or suspect munition.
- Be aware that munitions do not become safer with age, in fact, they may become more dangerous.
- Don't be tempted to take or keep a munition as a souvenir.

Munitions come in many sizes, shapes, and colors. Some may look like bullets or bombs while others look like pipes, small cans or even a car muffler. Whether whole or in parts, new or old, shiny or rusty, munitions can still explode.

Retreat

Do not touch, move, or disturb it; but carefully leave the area.

Avoid death or injury by recognizing that you may have encountered a munition and promptly retreating from the area.

If you encounter what you believe is a munition, do not touch, move, or disturb it. Instead, immediately and carefully leave the area by retracing your steps, leaving the same way you entered. Once safely away from the munition, mark the path (e.g., with a piece of clothing or global positioning system (GPS) coordinates) so response personnel can find the munition.

Report

Immediately notify the police.

Protect yourself, your family, your friends, and your community by immediately reporting munitions or suspected munitions to the police.

Help the police by providing as much information as possible about what you saw and where you saw it. This information will help the police and the military or civilian explosives ordnance disposal personnel find, evaluate, and address the situation.

If you believe you may have encountered a munition, call and report the following:

- The area where you encountered it.
- Its general description. Remember: do not approach, touch, move, or disturb it.
- When possible, provide:
  - Its estimated size
  - Its shape
  - Any visible markings, including coloring

CALL 911

Your input on the Proposed Plan for the Pacific Jungle Combat Training Center (H09HI027401) is important to the United States Army Corps of Engineers. Comments provided by the public are valuable in helping the United States Army Corps of Engineers select a final remedial alternative for the site.

You may use the space below to write your comments, then fold and mail. Comments must be post marked by February 11, 2016. If you have any questions about the comment period, please contact Mr. Kevin Pien by email at Kevin.C.Pien@usace.army.mil.

Name: _____

Address: _____

City: _____

State: _____ **Zip:** _____

----------fold----------

----------fold----------

PLACE STAMP HERE
The Post Office will not deliver mail without postage.

Kevin Pien
Project Manager
US Army Corps of Engineers, Honolulu District
Building 252, Room 103
Ft. Shafter, HI 96858