

CHAPTER 3

AFFECTED ENVIRONMENT

This chapter provides an overview of the baseline physical, biological, social, and economic conditions that occur within the region of influence (ROI) for the actions proposed under No Action and Alternatives 1, 2, 3, and 4. The potentially affected environmental and socioeconomic resources include land use and recreation, airspace, visual resources, air quality, noise, traffic and transportation, water resources, geology and soils, biological resources, cultural resources, hazardous materials and wastes, socioeconomics and environmental justice, public services and utilities, and wildfires. Only those environmental and socioeconomic conditions relevant to the impact analysis for the proposed project are presented.

This chapter is organized into sections for each resource area. As applicable, each section contains an introduction to the resource, a definition of the ROI, and background on how the resource is related to the proposed project activities. In addition, resource discussions review existing Army programs, where applicable. The remainder of each resource section is a discussion of the existing condition of the resource within the ROI.

As described in Chapters 1 and 2, the use of Mākua Valley by the Army dates back to the 1920s. The site has been used for many decades to train our troops as they fight by conducting ground maneuvers, live-fire exercises, and air exercises. Training activities have included squad, section, platoon, and company level live-fire training, ground maneuvers, aviation assault training, demolitions training, and sniper training.

From 1988 to September 1998, the Army used the CCAAC extensively before suspending training. During past annual training, the Army used

ammunitions and medium-heavy artillery, such as 40mm, 60mm, 81mm, and 105mm mortar live-fire. The actual number of training days over the 10-year period ranged from 153 to 259 days per year, with a 10-year annual average of 210 days. The number of live-fire days ranged from 37 to 100, with a 10-year annual average of 72 days. Prior to the voluntary suspension of training at MMR in September 1998, the 25th ID conducted 15 CALFEXs in fiscal year 1997 and 18 company live-fire exercises in fiscal year 1998.

With the suspension of training in 1998, the 25th ID tried to meet its live-fire training requirements using other military installations. Consequently, no CALFEXs were conducted at MMR during 1999, 2000, and 2001. In fiscal year 2002, 13 CALFEXs were conducted at MMR, and in fiscal year 2003 eight CALFEXs were conducted at MMR, pursuant to the Settlement Agreement; no CALFEXs were conducted at MMR in fiscal year 2004. These past and current training activities have contributed to the existing conditions described in Chapter 3, Affected Environment.

PTA was established as a multi-functional training facility in 1956 for the US Army Western Command and other Pacific Command units. The installation encompasses approximately 132,000 acres (53,419 hectares), with a central impact area of approximately 51,000 acres (20,638 hectares). Total acreage includes the recently acquired Ke'āmuku Maneuver Area, or Ke'āmuku Parcel. The primary mission of PTA is to operate and maintain a safe, modernized, major training area for USARHAW, US Army, Pacific, and other US Pacific Command military units. PTA assets are geared towards maneuver unit live-fire, maneuver training, and artillery live-fire. The largest live-fire range and training complex belonging to USARHAW is located on PTA.

The CALFEX/Twin Pu'u location was found to be the only operationally feasible PTA Alternative for consideration as a replacement range for the MMR. Although there are very challenging issues to overcome with respect to terrain, construction, and operation of a range in this area, the Twin Pu'u alternative has the least significant operational challenges. A comprehensive environmental analysis of the Twin Pu'u location is carried forwarded throughout the remainder of this the EIS.

Field Investigations

The Army has conducted the following site-specific environmental and cultural resource studies as a result of conditions stipulated in the MMR settlement agreements, and to address the major public concerns and issues expressed during the EIS scoping process (Section 1.7, Public Involvement):

- Air sampling during a prescribed burn and two CALFEXs;
- Terrestrial noise monitoring during three CALFEXs;
- Hydrophonic noise study and noise modeling;
- Hydrogeologic investigation;
- *Muliwai* sediment sampling;
- Marine resources study;
- Nearshore dive survey; and
- Cultural resources studies that include
 - A traditional cultural places survey,
 - Surface and subsurface archeological surveys of all areas within the CCAAC training area circumscribed by the south firebreak road,
 - Surface archaeological surveys of some portions of the SDZ areas, except for those areas outside the firebreak road, and
 - Subsurface archaeological surveys.

Data available for incorporation into the EIS from the above Army studies is discussed in the related resource sections listed in Table 3.1-1.

Table 3.1-1
Summary of Sections Providing Discussions Pertaining to Army Field Investigations

Field Investigations	Discussion of the Results of the Investigations	Discussion of the Associated Impacts
Air studies	Section 3.4	Section 4.4
Noise studies*	Sections 3.5 and 4.9	Sections 4.5 and 4.9
Water studies	Section 3.7	Section 4.7
Soil studies	Section 3.8	Section 4.8
<i>Muliwai</i> sediment studies	Sections 3.7 and 3.11	Section 4.7
Marine resources study	Section 3.7	Section 4.7
Near shore dive survey	Section 3.11	Section 4.11
Cultural resources surveys	Section 3.10	Section 4.10

*Study

With past and current use of MMR for military training with live ammunition, a variety of ordnance and ammunition have been deposited throughout MMR. Chemical compounds from these munitions may have entered the environment through a number of processes, such as emission of particles and gases into the air, percolation into the groundwater, runoff

into surface water, runoff and erosion of contaminated solid particles into surface water, and transport to nearby *muliwai* by streams flowing from MMR. Possible compounds released by these munitions include metals, explosives, and byproducts of explosives.

One site known to be a likely source of chemical contamination is the open burn/open detonation (OB/OD) area (Figure 2-3), an inactive RCRA treatment facility that is in delayed closure status from the Hawai'i Department of Health (HDOH), Solid and Hazardous Waste Branch. The area is approximately 4 acres (1.6 hectares) and lies downslope of the access road. Army, Air Force, Navy, and Marine Corps personnel used this area to burn and detonate a variety of materials from the 1960s into the 1990s. The quantities of ordnance detonated at the OB/OD area per year are discussed in the ammunition subsection of Section 3.11, Hazardous Materials and Waste, of this EIS.

An overview of the field investigations is provided below. Sampling protocols reflect many of the public comments and concerns attained during the public scoping period.

Air Sampling

Prescribed burn operations and military training exercises have the general potential to release air pollutants to the atmosphere. Materials released into the air during prescribed burns, ordnance and explosives (OE) firing, or detonation represent the primary source of particulate-borne and gaseous emissions at MMR. The primary objectives of the air sampling and monitoring program at MMR included the following (USACE 2002b):

- Survey the range for air quality effects that occur during both a prescribed burn operation and a typical CALFEX;
- Identify the presence or absence of airborne pollutants of interest at representative potential on-site and off-site exposure locations, including upwind and downwind locations;
- Evaluate any airborne pollutants relative to applicable regulatory standards, including federal, state, and local air quality goals and objectives; and
- Estimate the impacts of prescribed burn operations and of conducting military training activities on human health and the environment.

Air pollutants consist of particulate-borne and gaseous emissions, so the principal strategy of the air sampling and monitoring proposed for MMR was to assess the following activity-specific emission parameters:

- The potential for air pollutants to be generated during controlled or prescribed burns;
- The potential for air pollutants to be generated from firing or detonating ordnance and explosives (both complete and incomplete combustion) during a CALFEX;
- The potential for air pollutants to be generated during logistical support activities (e.g., helicopter transport) during a CALFEX;
- The potential for on-site and off-site migration of air pollutants resulting from ordnance and explosives firing or detonation or logistical support activities during a CALFEX; and
- The potential for adverse human health impacts from these air pollutants, if detected, during a CALFEX.

The air sampling program at MMR is complete and results are summarized in Section 3.4, Air Quality. A copy of the sampling report is included in Appendix G-6.

Noise Monitoring

The Army monitored and recorded noise levels at three MMR locations (on-site, beach site, and Silva Ranch) during CALFEXs on May 22, 2002, January 31, 2003, and April 10, 2003. Background noise data were collected on April 8, 2003. The highest noise levels (L_{eq} , peak noise, and L_{max}) were recorded at the on-range site, followed by the beach site, and the lowest levels were recorded at Silva Ranch, the closest residence to MMR. High background levels (L_{eq} and L_{min}) were observed at the beach site due to the surf and at Silva Ranch due to the highway traffic. Low background levels (L_{min}) were recorded at the on-range site on January 29, 2003, as compared to January 31, 2003, because of less helicopter activity and taxiing during the periods of rain on January 29, 2003. The highest noise sources (peak and L_{max}) were recorded at the beach site due to low altitude helicopter passes. Additional details of this monitoring are discussed in Section 3.5, Noise. A copy of the noise monitoring report is included in Appendix G-4.

Hydrophonic Noise Study and Noise Modeling

The Oceanwide Science Institute (Dr. Marc Lammers and Dr. Whitlow Au) will conduct a hydrophonic noise study to measure surface and underwater noise during future live-fire training. This study will record the impulse noise generated by training activities occurring during that exercise. Noise levels will be collected at one terrestrial location on Mākua Beach, as well as at two representative off-shore marine locations. For the marine locations, sound will be measured above and below the water

surface using calibrated hydrophones within the spinner dolphin habitat off Mākua Beach (see Figure 3.9-1).

Noise data will be collected at the following locations:

- **Terrestrial Location 1:** Off-range on Mākua Beach across Farrington Highway and just west of MMR;
- **Marine Location 1:** The Oceanwide Science Institute will select this off-shore location as the best estimate of where spinner dolphins approach closest to the beach head near Mākua Valley. Previous spinner dolphin research performed at Mākua Beach also will be considered in selecting this location (Lammers 2003a; Lammers et al. 2000); and
- **Marine Location 2:** This off-shore location will be at the approximate outer edge of the typical dolphin swimming area near Mākua Valley.

To provide a preliminary estimate of the anticipated noise levels at the three monitoring locations, the Army has conducted noise modeling. A copy of the noise modeling report is included in Appendix G-5.

Hydrogeologic Investigation (Soil, Surface Water, and Groundwater)

The Army's current hydrogeologic (soil, surface water, groundwater) investigation and environmental sampling program at MMR has evaluated the potential for contaminants to migrate beyond the boundaries of MMR.

The potential for contamination from past training exercises and from the OB/OD area to migrate from the surface water to the groundwater pathway was considered in the 1994 Halliburton NUS study (Halliburton NUS Corporation 1994). Groundwater samples collected from monitoring well SP-7 were analyzed for energetics, semivolatile organic compounds, nitrates, nitrites, and total metals. None of the samples had detectable concentrations of energetics or semivolatile organic compounds. The nitrate and nitrite concentrations in the samples were below risk-based health criteria and drinking water standards. Detectable levels of barium, chromium, lead, mercury, and nickel were also below risk-based health criteria and drinking water standards (Halliburton NUS Corporation 1994). The study concluded that the basal aquifer at MMR was not contaminated.

To confirm this conclusion, the Army has conducted a more detailed investigation with the following objectives:

- Assess potential sources, types, and degree of potential contamination within the OB/OD area and other areas of MMR, including the CCAAC;
- Evaluate whether contamination from the OB/OD area or the range complex has migrated, is currently migrating, or has the potential to migrate off-site;
- Acquire data to be used to evaluate potential pathways of exposure;
- Refine the hydrogeological model for MMR; and
- Evaluate the potential for soil erosion and subsequent discharge of soil particles during heavy rains from the MMR site.

The investigation involved the following components:

- Collect four sets of soil samples from the streambeds at varying depths;
- Collect two sets of soil samples at varying depths from the OB/OD area and one set from the junk car pit. Collect unsaturated pore water samples from boreholes in the OB/OD area and junk car pit;
- Rehabilitate the monitoring well SP-7, installed for the 1994 investigation, and collect groundwater samples;
- Install and collect groundwater samples from nine wells in Mākua Valley;
- Collect 123 shallow soil samples from throughout Mākua Valley;
- Collect background soil samples from six off-site locations and 10 soil samples for background metals concentrations; and
- Collect six rounds of groundwater samples from 10 monitoring wells.

Samples were analyzed for semivolatile organic compounds, metals, cyanide, sulfides, energetics, nitrates, and nitrites. Discussion of the preliminary results of water samples can be found in Section 3.7, Water Resources, and the soil sampling results are discussed in Section 3.8, Geology and Soils. A copy of the sampling report can be found in Appendix G-1.

Muliwai Sediment Sampling

Muliwai are brackish water pools near the mouths of streams created by seasonal barriers of sand or sediment. Because metals and explosives contaminants in the surface soil and surface water may be carried by surface water runoff to the *muliwai* west of Farrington Highway, the

Army sampled the ponds' sediment to determine if the ponds have been affected by migration of contaminants from the reservation. The primary objectives of the *muliwai* sediment sampling program at MMR included the following:

- Determine if explosives, metals, benzene, chlorinated pesticides, nitroglycerine, dioxins, cyanide, semi-volatile organics, or chlorinated herbicides are present in subaqueous sediments; and
- Evaluate whether contamination from the OB/OD area or the range complex has migrated or is currently migrating off-site.

Discussion of the sediment sampling results can be found in Sections 3.7, Water Resources, and 3.11, Hazardous Materials and Waste. A copy of the *muliwai* sediment sampling report is included in Appendix G-3.

Marine Resources Study

The Army conducted a marine resources study to determine whether marine resources near Mākua Beach and in the Mākua *muliwai* are contaminated with constituents primarily associated with proposed training activities at MMR. This study also evaluated the potential that activities at MMR contribute to any contamination detected in the marine resources, and evaluated whether the proposed training activities at MMR pose a human health risk to area residents that rely on marine resources for subsistence.

The objectives of the marine resources sampling program were as follows:

- To determine if constituents primarily associated with military training are present in samples of selected species of fish and *limu* collected near Mākua Beach and in the Mākua *muliwai*; and
- To evaluate the potential that activities at MMR contribute to any contamination detected in the fish and *limu* samples and to evaluate whether the proposed training activities at MMR would pose a health risk to area residents who rely on marine resources for subsistence.

A copy of the marine resources study report is included in Appendix G-8.

Near Shore Dive Survey

The Army's 7th Dive Detachment conducted and videotaped a 12-diver, 3-day-long near shore dive survey off of Mākua Beach that included all locations where metal globules were suspected to be on the ocean floor. The planned dive followed a 4,921-foot (1,500-meter) transect that ran

parallel to the beach at a distance of 492 feet (150 meters) off shore, and five 984-foot (300-meter) transects that were spaced equidistant along the 4,921-foot (1,500-meter) transect and were oriented perpendicular to Mākua Beach. The survey results are discussed in Section 3.11, Hazardous Materials and Waste.

Cultural Resources Studies

Cultural resource studies include conducting a Traditional Cultural Places Survey as defined by federal law, that follows the State of Hawai‘i Office of Environmental Quality Control’s Guidance for Assessing Cultural Impacts (November 19, 1977). In addition, studies include (1) surface and subsurface archeological surveys of all areas within the CCAAC training area circumscribed by the south firebreak road; and (2) surface archaeological surveys of all the SDZ areas identified in the SEA, and limited areas located outside the firebreak road. There will be no archaeological surveys of areas suspected of containing Improved Conventional Munitions without the appropriate waiver from Headquarters, Department of the Army (HQDA). The results of the cultural studies are discussed in Section 3.10, Cultural Resources.

Prescribed Burn

To conduct UXO clearance necessary to support cultural resources surveys addressing areas that had not been adequately cleared during prescribed burns at MMR in October and November 2002, the Army conducted a prescribed burn on July 22, 2003, during which, changes in wind speed and direction caused the fire to spread out of control. Approximately 2,100 acres (850 hectares) in the northern portion of MMR were burned, in addition to an estimated 15 to 20 acres (6 to 8 hectares) of the state’s Kuaokalā Forest Reserve and 10 acres (4 hectares) of state-owned property in the vicinity of Mākua Beach. The fire was under control by July 24. (The fire boundary is shown on Figure 2-1) Following the fire, biological and cultural resource assessments were conducted to assess the damage to these resources (see Sections 4.9, Biological Resources, and 4.10, Cultural Resources).

3.1 LAND USE AND RECREATION

3.1.1 Introduction/Region of Influence Mākua Military Reservation

This section describes land and recreational uses on and around MMR. The ROI for land and recreational uses includes all lands within and adjacent to MMR, as well as any recreational facilities directly or indirectly linked to the area, such as trails and coastal waters.

The State of Hawai‘i Land Use law under Hawai‘i Revised Statutes, Section 205, places all land under one of four land use districts: urban, agricultural, conservation, and rural. The State Land Use Commission administers the land use law, and the Hawai‘i DLNR administers the law in regard to land placed in the conservation districts. Specific land use planning and land use designations are done by county and city governments; on O‘ahu, planning is carried out by the City and County of Honolulu.

O‘ahu is divided into eight planning areas, each of which has a development plan that is administered by the Department of Planning and Permitting and is adopted by city council ordinance. MMR falls under the Wai‘anae Sustainable Communities Plan of the General Plan for the City and County of Honolulu (City and County of Honolulu 2000b). The General Plan is, by design, a very general document and one of its purposes is to establish a coherent set of broad guidelines that can be used in developing plans, programs, and legislation for guiding O‘ahu’s future. Development Plans, according to the City Charter, are relatively detailed guidelines for the physical development of the island. They are intermediate means of implementing the objectives and policies of the General Plan in the various parts of the island. The development plans provide for land use and public facilities planning and indicate the sequence in which development will occur. They must implement and accomplish the objectives and policies of the General Plan. Appendix A (Section A.2) contains more information regarding land use policies of the State of Hawai‘i and the City and County of Honolulu.

Although it does not provide parcel-specific detail, the conceptual Wai‘anae Sustainable Communities Plan is intended to guide population and land use growth in conjunction with the general plan over a 20-year planning period. It is one of eight community-oriented development plans intended to help guide public policy, investment, and decision-making through the 2020 planning horizon. Each of these plans addresses one of eight geographic planning regions on O‘ahu and responds to specific conditions and community values of each region.

The Wai‘anae Sustainable Communities Plan identifies long-range use policy, which includes preserving MMR as agriculture/open space and preservation. Nevertheless, the plan recognizes the importance of MMR to the overall military mission and economy of the region; therefore, it recognizes the continued military use of these lands for the foreseeable future.

Although the proposed federal activities are not required to conform to state plans and policies, related land use documents as they are used in the impact analysis are included in Appendix A. Federal regulations and plans that may be applicable to land use are also included in this appendix. Federal agencies are required by the CZMA of 1972 (16 USC 1451 et seq.) to conduct their planning, management, development, and regulatory activities in a manner consistent with the state coastal management programs. The State of Hawai‘i manages coastal resources under the authority of the Coastal Zone Management (CZM) law (Chapter 205A, Hawai‘i Revised Statutes), which establishes objectives and policies with regard to recreation, historic resources, scenic and open space, coastal ecosystems, economic uses, coastal hazards, and development.

The Hawai‘i Coastal Zone Management Program (HCZMP) is the state’s policy guide for the use, protection, and development of land and ocean resources within Hawai‘i’s coastal zone. The HCZMP incorporates objectives and policies of the CZM and other state regulations, plans, and review processes for activities within the coastal zone. A general discussion of the compatibility of the Proposed Action with the objectives and policies of the CZM is presented in this section; however, the Army will coordinate separately with the State of Hawai‘i to meet CZM consistency requirements. The Army will separately submit a CZM consistency determination to the State Department of Business, Economic Development, and Tourism (DBEDT), because state officials often request that NEPA compliance be completed prior to submittal of CZM consistency documentation.

Comments received during the scoping process by the public regarding land use issues included the following:

- Land maintenance;
- Recognizing and respecting Hawaiians’ private property;
- Fair designation and establishment of training boundaries; and
- Traditional native and cultural use of the land.

Pōhakuloa Training Area

PTA is in the north-central portion of the Island of Hawai‘i, just to the west of the plateau formed by Mauna Loa and Mauna Kea volcanoes. Access to PTA is from Saddle Road, which connects the towns of Hilo to the east and Waimea to the north. Land uses at PTA include the cantonment area, BAAF, maneuver training areas, drop zones, live-fire training ranges, artillery firing points, an ordnance impact area, and areas unsuitable for maneuver. The cantonment area consists of 566 acres (229 hectares) with 154 buildings, mostly Quonset huts. BAAF has a 3,969-foot (1,210-meter) runway and offers helicopter access and, until recently, limited C-130 access. Land suitable for field maneuvers consists of approximately 79,661 acres (22,930 hectares), and the ordnance impact area is approximately 51,000 acres (20,639 hectares).

3.1.2 Land Use and Ownership Mākua Military Reservation

MMR, located in northwestern O‘ahu, is approximately 38 miles (61 kilometers) from Honolulu, in the Mākua and Kahanahāiki valleys (see Figures 1-1 and 2-1). It is bordered to the west by the Pacific Ocean and to the north, east, and south by the Wai‘anae Mountains. Most of MMR’s 4,190 acres (1,696 hectares) is ceded land owned by the federal government (3,236 acres [1,310 hectares]) and land leased by the State of Hawai‘i to the Army (782 acres [317 hectares]) (State of Hawai‘i 1964). The Army also owns 170 acres (69 hectares) in fee simple and holds 1.64 acres (0.66 hectares) by license (Figure 3.1-1).

Ceded lands are those that were originally controlled by the Kingdom of Hawai‘i and that were transferred to the US in 1898 when the Republic of Hawai‘i was annexed as a territory. When Hawai‘i became a state in 1959, the US retained ownership of the ceded lands it needed for military and public purposes and conveyed the remaining ceded lands to the State of Hawai‘i. More than 70 percent of the Army’s real estate in Hawai‘i consists of ceded land. Included in lands the state leases to the Army is land at Mākua Beach (discussed below in Section 3.1.3).

MMR has 1,034 acres (459.7 hectares) of maneuver and training land, which includes SDZs and the 457-acre (185-hectare) CCAAC. MMR offers the largest combined-arms maneuver live-fire training range available in the state (Nakata Planning Group, LLC 2002a).

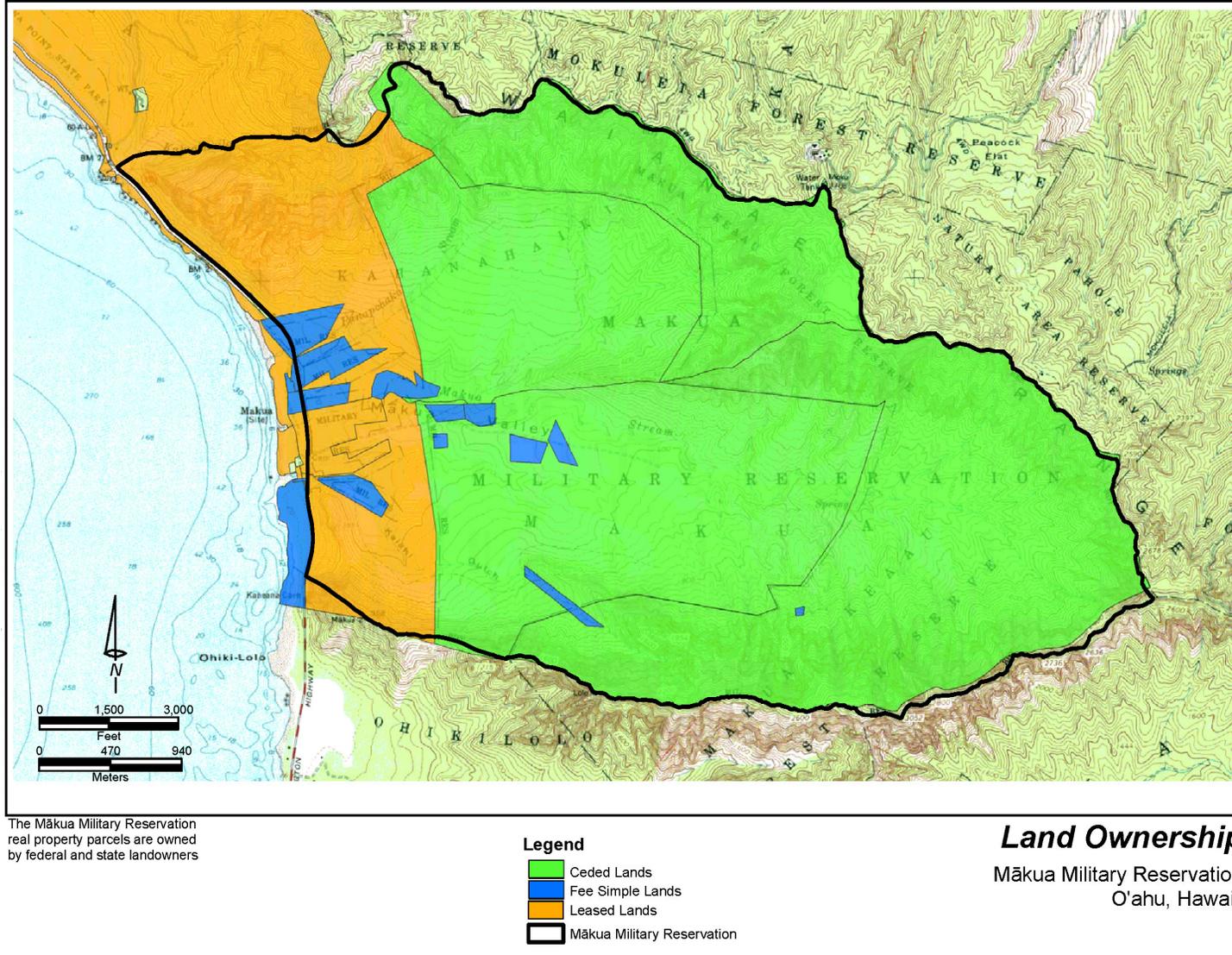


Figure 3.1-1 Land Ownership, MMR

SDZs are designed for each military range and training event, in accordance with DA PAM 385-64, *Ammunition and Explosives Safety Standards*. SDZs ensure proper buffer zones to the range and ordnance impact area and help prevent accidental injury or external exposure to live-fire training. In addition, prior to training, specific firing points are designated for the firing of most munitions, including claymore mines and artillery. Mortars are fired from changing locations, so prior to each training event, the company provides the range office with the training scenario in accordance with AR 210-6 and the MMR SOPs. The MMR Range Office builds an SDZ to fit the training scenario and gives the unit a safety card. The safety card specifies the right and left firing limits for mortars and the minimum and maximum range for firing to ensure that the mortar falls within the ordnance impact area.

MMR facilities include an administration and classroom building, a battery shop, an observation tower, a 60,000-gallon (227,125-liter) elevated water tank, a chlorinator shed, and two 300,000-gallon (1,135,624-liter) dip tanks for firefighting (Nakata Planning Group, LLC 2002b). Training land uses are described in Chapter 2. Most training on MMR is designed to take place on the CCAAC within the firebreak road. The CCAAC supports most small arms weapon systems integral to the 25th ID, including limited air-to-ground helicopter gunnery; no ground-to-air gunnery is permitted. Mock objectives within the firebreak road are used for maneuver exercises. High-explosive ammunition is aimed to land within the confines of firebreak roads.

State Land Use District designations are Urban, Agriculture, Conservation, or Rural (Hawai'i Administrative Rules, Title 13, Chapter 5). Conservation District subzone designations, regulated by the DLNR, are Protective, Limited, Resource, General, and Special. DLNR manages land uses and activities based on the environmental sensitivity of these subzones. MMR is within the Limited, Resource, and Protective Subzones (Figure 3.1-2). Land use in the Wai'anae Mountains along a portion of the north, south, and eastern boundary of MMR is in the Conservation District Resource subzone. Land use immediately within and adjacent to MMR's eastern boundary is within the Conservation District Protective subzone. Conservation District subzone objectives are described in Table 3.1-2.

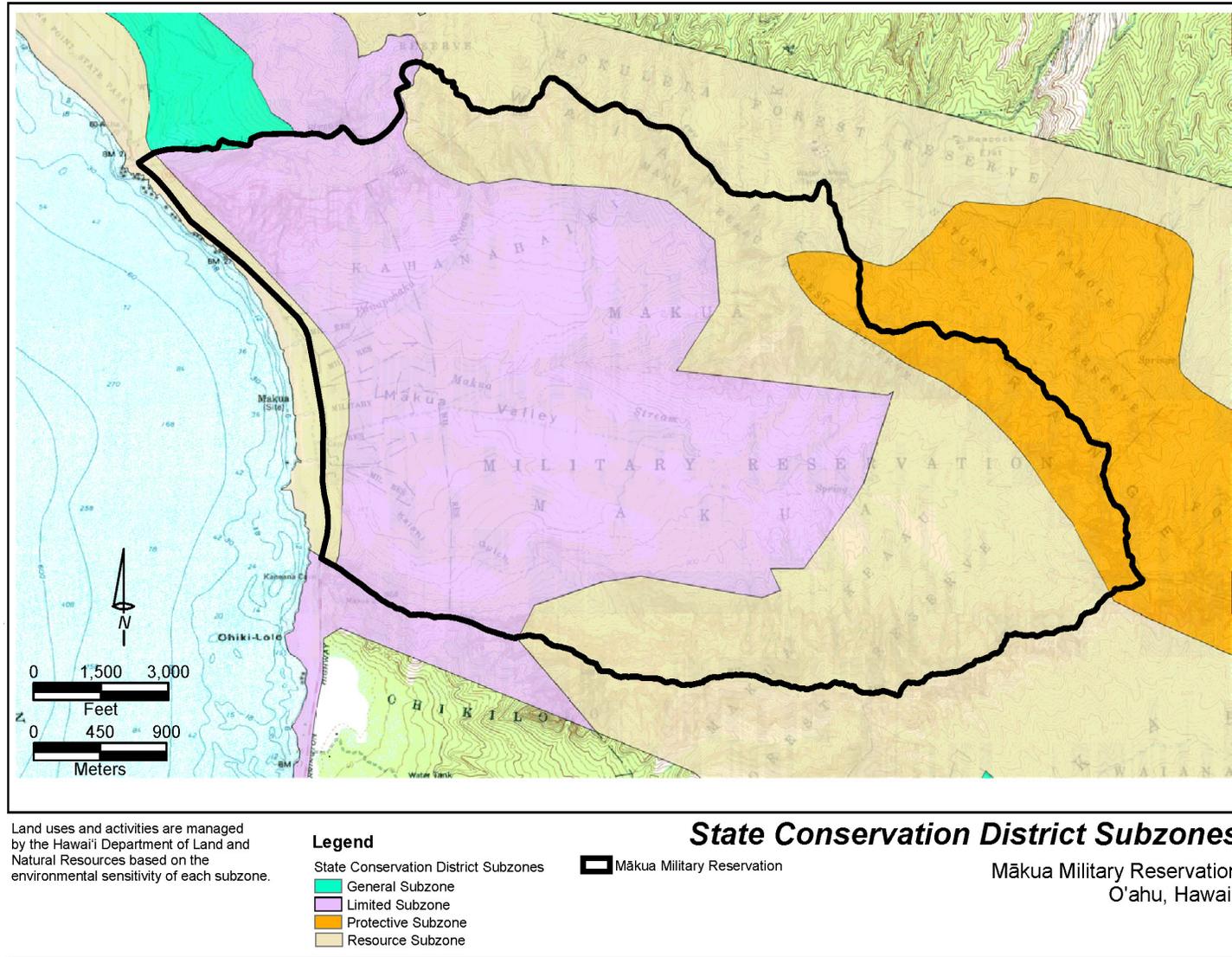


Figure 3.1-2 State Conservation District Subzones, MMR

**Table 3.1-2
Conservation District Subzones**

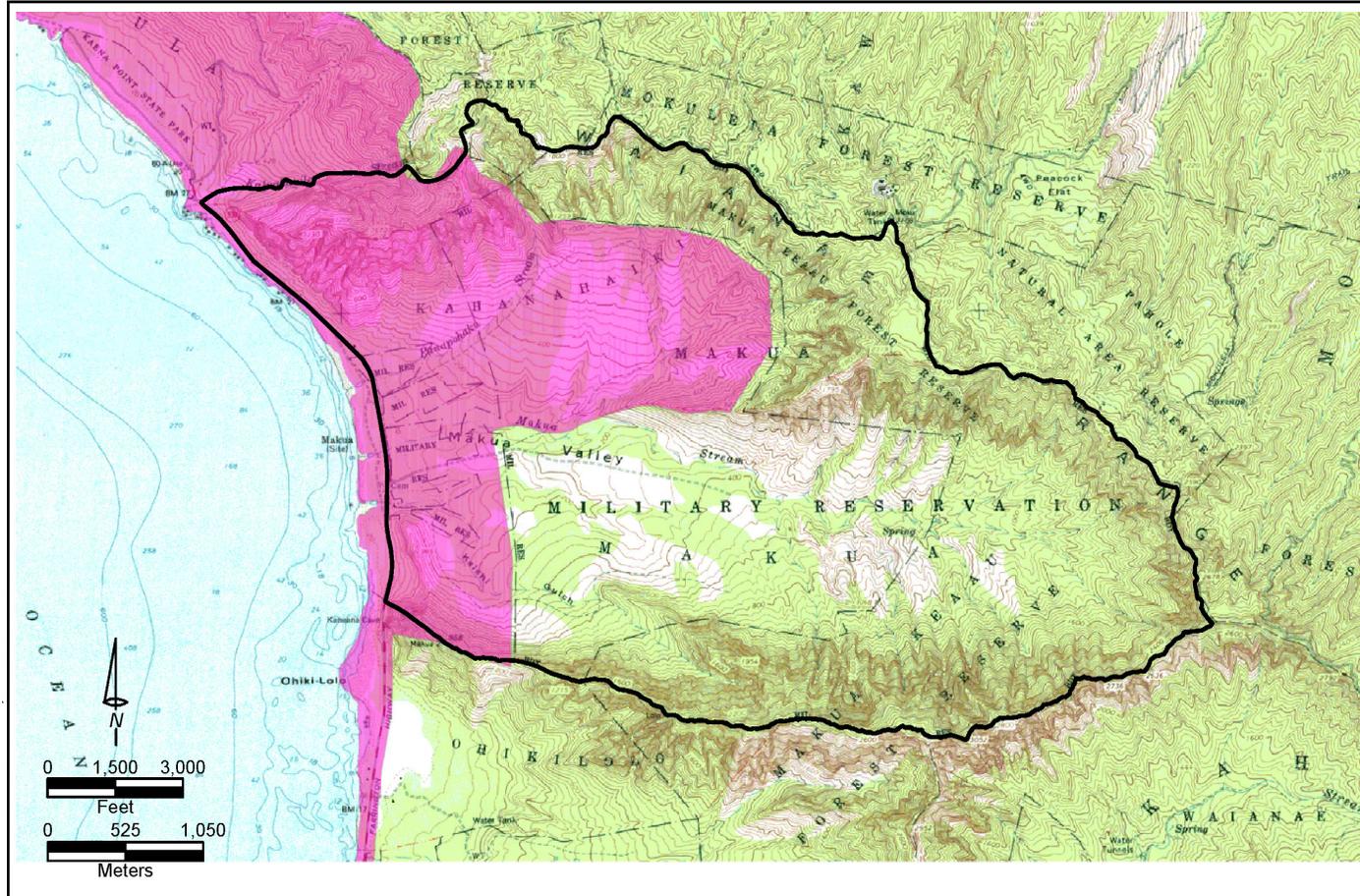
Area of MMR	Conservation District Subzone	Subzone Objective
Central valley area	Limited	Limit uses where natural conditions suggest constraints on human activities.
Shoreline and upper elevation areas	Resource	Develop, with proper management, areas to ensure sustained use of the area's natural resources.
Ridge area	Protective	Protect valuable resources in designated areas, such as restricted watersheds, marine, plant, and wildlife sanctuaries, significant historic, archaeological, geological, and volcanological features and sites, and other unique areas.

Source: Hawai'i Administrative Rules, Title 13, Chapter 5

The Wai'anae Sustainable Communities Plan land use map designates MMR as preservation (City and County of Honolulu 2000b). Section 3.12.2 of the Wai'anae Sustainable Communities Plan includes the following General Policies Pertaining to Military Lands:

- 3.1.2.1. Long-Range Use Policy: Preservation. "The City's overall long-range land use policy for the military lands at Lualualei and at Mākua Valley is that these lands should be preserved as agricultural/open space and mountain preservation areas" (City and County of Honolulu 2000a).
- 3.1.2.2. Recognition of Military Use. "The importance of US military uses of lands at Lualualei and Mākua Valley is recognized both in terms of the overall mission of the military and the importance of the military to the economy to the State of Hawai'i and the City and County of Honolulu. The current Wai'anae Sustainable Communities Plan, which looks ahead to the Year 2020, therefore, recognizes the continued use of these lands for military purposes for the foreseeable future."
- 3.1.2.3. Cooperative Programs. The City is committed to working with the Army and Navy to organize and implement programs for the protection and preservation of important cultural and natural resources found on the military lands of the Wai'anae District.

The Special Management Area (SMA) includes the western portion of MMR that abuts the shoreline (Figure 3.1-3). The SMA designation indicates a designated area that is regulated by the County of Honolulu for more intensive management. At MMR, the SMA boundary varies from



The Special Management Area includes 1,510 acres (612 hectares) at the Mākua Military Reservation.

- Legend**
- Special Management Area
 - Mākua Military Reservation

Special Management Area

Mākua Military Reservation
O'ahu, Hawai'i

Figure 3.1-3 Special Management Area, MMR

about 3,500 to 10,000 feet (1,067 to 3,048 meters) from the shoreline (Figure 3.1-3) (Hawai‘i Administrative Rules, Title 13, Chapter 5). The coastline of MMR is within the 40-foot (12-meter) shoreline setback. Chapter 25 of the Honolulu Revised Ordinances requires permits for activities in the SMAs. As a federal agency, the US Army and its use of MMR are not governed by state and local government policies and regulations, such as State Land Use District designations and SMA designations. However, most, if not all, projects are planned to be compatible with local plans and ordinances.

Pōhakuloa Training Area

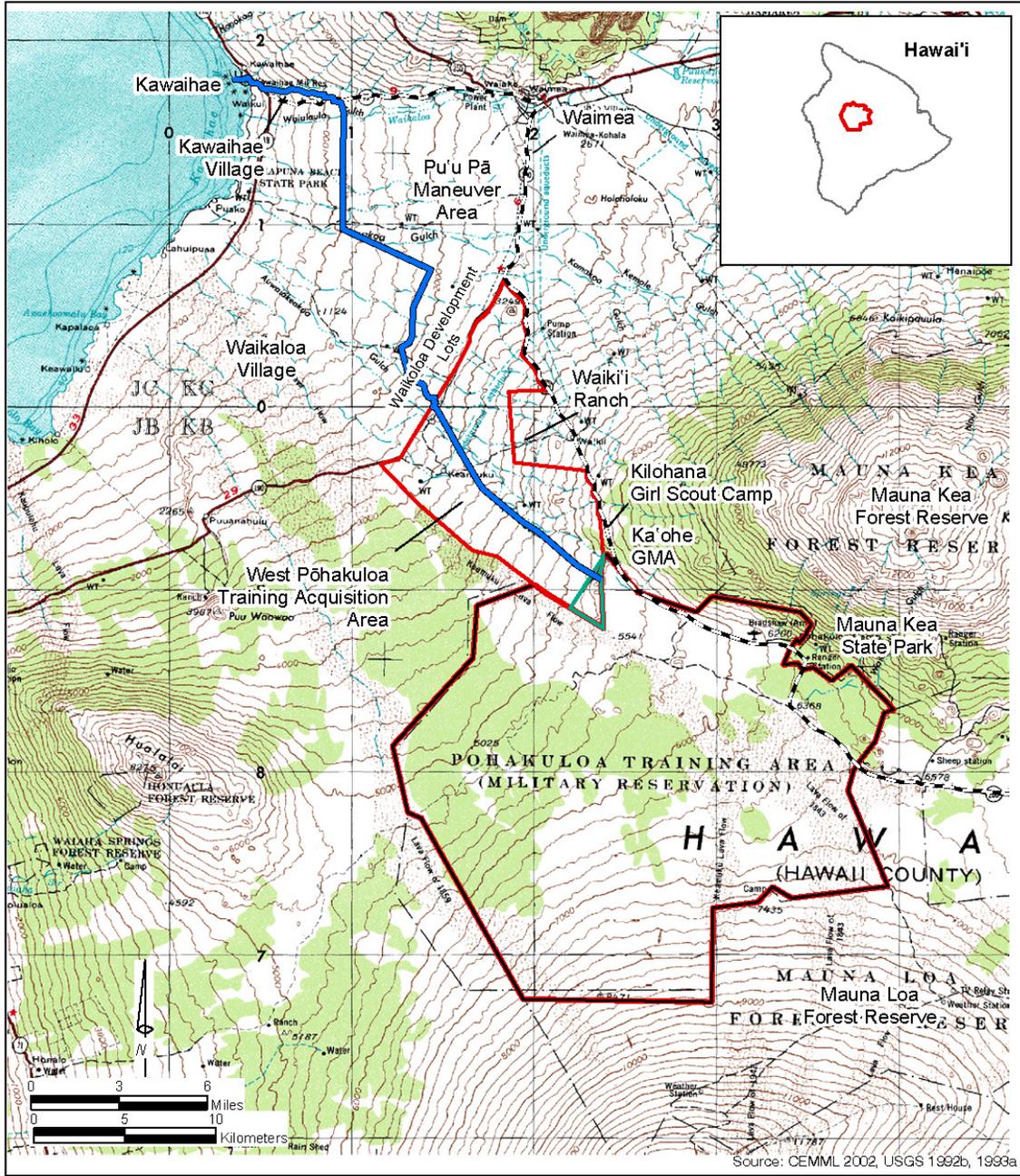
PTA’s designated land use is that of a military training installation and it is the largest live-fire range and training complex in Hawai‘i. Land uses at PTA (Figure 3.1-4) include the cantonment area, BAAF, maneuver training areas, drop zones, live-fire training ranges, artillery firing points, an impact area, and areas unsuitable for maneuver.

The cantonment area consists of 566 acres (229 hectares) with 154 buildings. The structures are mostly Quonset huts and include 11 dining facilities, two motor pools, rations warehouses, a bulk fuel facility, a chapel, a theater, a recreation club, and a medical facility.

BAAF has a 3,696-foot (1,127-meter) runway and offers helicopter access and limited C-130 access. Safety zones associated with BAAF extend 15,000 feet (4,572 meters) beyond each end of the runway and 1,500 feet (457 meters) to either side of the runway’s center line.

Land suitable for field maneuvers consists of approximately 79,661 acres (22,930 hectares). This total acreage does not include the MPRC, which has been temporarily closed for training. The impact area is approximately 51,000 acres (20,639 hectares). Two exceptions to the impact area are two M16 ranges oriented to the east and three small “duded areas” (where UXO accumulates) east of Redleg Road.

Recreation at PTA includes archery, biking, motor sports, and hunting on designated training areas, which the Army coordinates with the state. Table 3.1-3 displays land ownership for PTA.



Pōhakuloa Training Area is bordered on the north, east, and south by Mauna Kea and Mauna Loa Forest Reserves and on the west by privately owned grazing land. Pōhakuloa Training Area is 32 miles from Hilo (pop. 41,000) on the eastern coast of the island and 27 miles from Waimea (pop. 6,000) on the western plain.

- Legend**
- Pōhakuloa Training Area Boundary
 - 1010 Land Acquisition Area
 - P7 West Pōhakuloa Training Acquisition Area
 - P3/P4 Pōhakuloa to Kawaihae Trail
 - - - Main Road

Land Use at Pōhakuloa Training Area

Island of Hawai'i, Hawai'i

Figure 3.1-4 Land Use, PTA

**Table 3.1-3
Land Ownership for Pōhakuloa Training Area, Hawai‘i**

Unit Ownership	Reference	Expiration Date	Size*	
			acres	hectares
Ceded to Army	Governor’s Executive Order No. 1719		758	307
Ceded to Army	Presidential Executive Order No. 11167		84,057	34,017
State of Hawai‘i	Lease No. DA-94-626-ENG-80	16 Aug 2029	22,988	9,303
Parker Ranch	Acquired by purchase		24,988	409
Other	Acquired by purchase		16	7
Other	Acquired by donation		6	3
Other	Used under license		1	<1
Total Land			132,791	44,045

Sources: USARPAC and USARHAW real property offices.

*Size rounded to nearest acre or hectare.

3.1.3 Surrounding Land Use and Ownership Mākua Military Reservation

Land uses surrounding MMR include the Kuaokalā Forest Reserve, Mokulē‘ia Forest Reserve, Wai‘anae Kai Forest Preserve, Pāhole Natural Area Reserve, and the Mākua Kea‘au Forest Reserve (see Figure 2-2). State hunting areas are located along the MMR borders to the north, east, and south; conditions for hunting near MMR are presented in Table 3.1-4. Figure 3.1-3 illustrates the Special Management Area.

**Table 3.1-4
Hunting Near Mākua Military Reservation**

	Game Mammals	Game Birds
Game to be taken	Wild pigs and wild goats	Ring-neck pheasant, green pheasant, California valley quail, Japanese quail, Gambel’s quail, Erckel’s francolin, gray francolin, black francolin, chukar partridge, barred dove (small dove), and spotted dove (large dove)
Permitted hunting methods	Rifles, shotguns, handguns, knives (Units B and E only), spears, and bows and arrows. Dogs permitted but must be kept under physical restraint and control except when actually hunting	Shotguns and bows and arrows

**Table 3.1-4
Hunting Near Mākua Military Reservation**

	Game Mammals	Game Birds
Open-hunting periods	Hunting Units A and E: February through April, archery only; May through July, firearms; August through October, use of dogs Hunting Unit B: year-round	First Saturday in November through Martin Luther King, Jr., Day or the third Sunday in January, whichever occurs later. There are additional special bird seasons for increased takes for the barred dove and spotted dove
Open-hunting days	Daily	Saturdays, Sundays, and state holidays
Special conditions and restrictions	Access through military lands, subject to military activities	Hunting on private lands requires permission of the landowner. The special dove seasons are limited to private lands
Hunters	Persons who have the appropriate hunting license, tags, permits, or permit tags on their person and who have signed in at a hunter checking station	

Source: DLNR 1999a, 1999b

The western boundary of MMR is adjacent to Mākua Beach, which is the southern portion of Ka‘ena Point State Park. The Army owns approximately 11 acres (4.4 hectares) of shoreline along Mākua Beach that it has leased back to the state for management in the beach park (Lanctot 2003). Mākua Beach is a long, curving sandy beach used for diving, pole fishing, limited body surfing, and swimming (Clark 1977). Facilities at Mākua Beach are limited to portable toilets.

The Mākua Beach Park access gates are closed to the public during the week and open to the public during the weekends from 3:00 PM Friday to 6:00 AM Monday (Quinn 2003). Roadside parking for Mākua Beach at the north and south ends of the beach, and beach patrons walk onto and use the beach on weekdays. Use of Mākua Beach during the week (i.e., at times other than when the access gates are open) is considered authorized use of the beach by the State of Hawai‘i (Quinn 2003).

Other than helicopter approaches over Mākua Beach to MMR, the Army does not use the beach to conduct training. As called for in lease agreements between the Army and the State of Hawai‘i, the Army provides beach access to leased and state-owned lands for DLNR employees and members of the public.

Ka'ena Point State Park covers 778.6 acres (315 hectares), and park facilities include coastline with picnicking opportunities and shore fishing (DLNR 2004b). Much of the fishing is done in the northern part of the park, near Ka'ena Point itself. There is a large sandy beach at Keawa'ula Bay (also known as Yokohama Bay) in the southern half of the main section of the park with board surfing and bodysurfing and swimming during calm conditions in the summer. This beach is at the end of Farrington Highway and is adjacent to the northwest point of MMR. The park is approximately one mile north of Mākua Beach and one and a half miles northwest of the MMR training area.

Hiking near MMR is limited to the Kuaokalā Trail and the Mokulē'ia Fire Break Road, which are on DLNR land. The Kuaokalā Trail can be accessed from Ka'ena Point and traverses the northern ridges of MMR above Mākua Valley. In the past, the Army has applied for permits to access this trail via the Ka'ena Point Satellite Tracking Station Road. The permit is issued by the State DLNR.

Access to the Mokulē'ia Firebreak Road is possible from the Keālia Trail and the Peacock Flats Trail. These trails, accessed from Farrington Highway on the North Shore, are used mainly by mountain bikers and some hikers traveling up Mokulē'ia Road to the Mākua Valley Lookout. Mountain bikers use the trails extensively; from three to ten dozen riders use the trail on weekends and up to half a dozen use the trail on weekdays. The Mokulē'ia Firebreak Road is also accessed from Ka'ena Point, and allows four-wheel drive or bicycle access to Peacock Flats campground, hunting areas, and Keālia and Mokulē'ia Trails. Hikers must obtain permits from the State DLNR and check in with the permit at the Ka'ena Point Tracking Station security guard station. This access point is not commonly used. The Mokulē'ia Firebreak Road follows the Mākua Rim above the Mākua Valley, along the east. Forest reserve and natural area reserve trails in the areas adjacent to MMR have been closed in the past due to wildfires, including those caused by prescribed burns that escaped control. An example is the extended closure in September 2003 of the forest and natural reserves in the northwest area of O'ahu due to wildfires in July and August; an MMR prescribed burn that escaped control on July 22, 2003, contributed to these wildfires. The Hawai'i DLNR closed all state forest reserves and public hunting areas, including those at Wai'anae Kai, Kuaokalā, Mokulē'ia, Wai'anae Kai Forest Reserves (DLNR 2003).

The Kuaokalā Access Road and Trail proposed for troop marches extends south from DMR, along agricultural fields, and up the paved road to a point on the ridge crest along the northern ridgeline of MMR. A bicycle lane is planned along the highway corridor (City and County of Honolulu 2000b). There is a cemetery and a memorial to the late Israel

Kamakawiwo‘ole west of Farrington Highway. Forest reserve lands north, east, and south of MMR are owned by the state. Other lands south of MMR are owned by the City and County of Honolulu, and Alpha Kai Corporation.

Pōhakuloa Training Area

Lands surrounding PTA are generally within the state-designated Conservation District (US Army and USACE 2004). Land uses in the areas include cattle grazing, game management, forest reserves, and undeveloped land. Land to the northwest of PTA is agricultural, primarily for cattle grazing, and also provides limited hunting opportunities for big game species and game birds. Land to the north of PTA includes the Kaohe Game Management Area, Mauna Kea State Park, Mauna Kea Forest Reserve, and the Mauna Kea National Natural Landmark. Land to the east and south is included in the Mauna Loa Forest Reserve.

PTA Trail would include approximately 132 acres (53.4 hectares) of land northwest and west of PTA to Kawaihae Harbor. Land uses within the proposed military vehicle trail corridor include cattle grazing, agriculture, periodic military training, open space, utility easements, a portion of a former military vehicle trail, and Kawaihae Harbor. PTA Trail land is mostly agriculture, with urban areas at and near Kawaihae Harbor. The southern portion of the proposed military vehicle trail is designated as Other Agricultural Land (State of Hawai‘i 2002a). The trail alignment near Kawaihae Harbor is included in the SMA (County of Hawai‘i 2001). There is also a shoreline setback along the harbor property. The southern portion of the PTA Trail crosses the Parker Ranch-managed hunting area, which is located within the Ke‘āmuku Parcel.

Land uses surrounding the proposed military vehicle trail include cattle grazing, residential (Waikoloa Village and Kawaihae Village), Pu‘ukohā Heiau National Historic Site, agriculture, agricultural subdivision, open space, and periodic military training.

The Ke‘āmuku Parcel (*West PTA Acquisition Area*) was acquired in July 2006, lies at the western foot of Mauna Kea, consists of approximately 23,000 acres. It was previously leased four to six times a year by the Army or other military entities for maneuver training (US Army and USACE 2004). The Māmalahoa Highway forms the northwestern boundary, and Saddle Road forms most of the eastern boundary. Saddle Road Junction, where these roads connect, forms the northern boundary.

Land uses surrounding the Ke‘āmuku Parcel include cattle grazing, military training, agriculture, residential lots, and open space. PTA is to

the south-southeast of the area, and the Pu‘u Pā Military Maneuver Area is adjacent to the northern tip, west of Māmalahoa Highway. The remaining surrounding lands are used for recreation and ranching or are undeveloped.

UXO hazards along the Saddle Road corridor (extending approximately 164 feet [50 meters] from the road) need to be cleared to a safe depth to support the heaviest track and wheeled vehicle that will use the area. According to the USACE, the overall ordnance and explosives hazard level for the Ke‘āmuku Parcel is low (Earth Tech 2002). The institutional controls for these low-risk areas include community awareness outreach programs, educational media, and pre-coordinated construction support.