



DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND, PACIFIC REGION
HEADQUARTERS, UNITED STATES ARMY GARRISON, HAWAII
745 WRIGHT AVENUE, WHEELER ARMY AIRFIELD
SCHOFIELD BARRACKS, HAWAII 96857-5000

April 1, 2022

SUBJECT: Army Training Land Retention at Pōhakuloa Training Area Draft Environmental Impact Statement, Island of Hawaii, Hawaii TMKs: (3) 4-4-015:008, (3) 4-4-016:005, (3) 7-1-004:007, (3) 3-8-001:013 & (3) 3-8-001:022

Suzanne Case
Chairperson
Board of Land and Natural Resources
Via email: Suzanne.Case@Hawaii.gov

Dear Chairperson Case:

The U.S. Army hereby submits the Army Training Land Retention at Pōhakuloa Training Area Draft Environmental Impact Statement (EIS), Island of Hawaii to the Board of Land and Natural Resources as the accepting authority. In accordance with Hawaii Administrative Rules §11-200.1-5(e) (5), the Draft EIS document package has been simultaneously filed with the state Environmental Review Program for publication in its next issue of The Environmental Notice. The subject TMKs are in the state judicial districts of Hamakua and North Hilo.

This Draft EIS has been prepared in compliance with both the National Environmental Protection Act (NEPA), the Hawaii Environmental Impact Statement rules (Hawaii Revised Statutes §343), and Hawaii Administrative Rules §11-200.1. A Notice of Availability will be published in The Federal Register. The Army has set the public review period at 60 days, thus meeting the federal and state minimum 45-day comment period. The review period will begin on with the publication date of April 8, 2022 and end on June 7, 2022.

The DEIS consists of two volumes; an electronic link to access the volumes has been provided directly via email to: (1) the Board Chairperson, Suzanne.Case@hawaii.gov, (2) Chairperson's Executive Administrative Sara.D.Levins@hawaii.gov, (3) Land Division Administrator Russell.Y.Tsuji@hawaii.gov, and (4) Assistant Administrator, kevin.e.moore@hawaii.gov.

On April 8, the document will be publicly available electronically on both the U.S. Environmental Protection Agency's Environmental Impact Statement website (<https://www.epa.gov/nepa>) and the State of Hawaii's Environmental Review Program on-line library (<https://planning.hawaii.gov/erp/comments/>).

Please contact Daisy Pate, U.S. Army Garrison Hawaii's NEPA Coordinator, with any questions: daisy.b.pate.civ@army.mil or (808) 656-3093.

Sincerely,



Daniel Misigoy
Colonel, U.S. Army
Commanding

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G70, Attn: Jeff Overton

From: webmaster@hawaii.gov
To: [DBEDT OPSD Environmental Review Program](#)
Subject: New online submission for The Environmental Notice
Date: Friday, April 1, 2022 10:03:28 AM

Action Name

Army Training Land Retention at Pōhakuloa Training Area

Type of Document/Determination

Draft environmental impact statement (DEIS)

HRS §343-5(a) Trigger(s)

- (1) Propose the use of state or county lands or the use of state or county funds
- (2) Propose any use within any land classified as a conservation district

Judicial district

Hawai'i - multiple districts

Tax Map Key(s) (TMK(s))

(3) 4-4-015:008; (3) 4-4-016:005; (3) 7-1-004:007; (3) 3-8-001:013; (3) 3-8-001:022

Action type

Applicant

Other required permits and approvals

Numerous

Discretionary consent required

Use of State Land

Approving agency

State of Hawai'i, Department of Land and Natural Resources, Land Division

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[Map It](#)

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Action summary
<p>The Pōhakuloa Training Area (PTA) on Hawai'i Island encompasses approximately 132,000 acres of U.S. Government-owned and State-owned land. The U.S. Government leases approximately 23,000 acres at PTA from the State of Hawai'i. The 65-year lease expires on August 16, 2029. The Army proposes to retain up to 23,000 acres of State-owned land in support of continued military training. The retention will preserve maneuver area, provide austere environment training, enable access between major parcels of U.S. Government-owned land, retain infrastructure investments, allow for future modernization, and maximize use of the impact area. Loss of this land would impact the ability of the Army to meet training requirements and its mission of readiness. The Proposed Action is a real estate action that would enable continuation of ongoing activities. It does not include construction or changes in ongoing activities. A Notice of Availability for this action will be published in the Federal Register.</p>

Attached documents (signed agency letter & EA/EIS)

- [PTA-DEIS-Vol-II-220331_PUBLIC.pdf](#)
- [PTA-DEIS-Vol-I-220331_PUBLIC.pdf](#)

Shapefile

- The location map for this Draft EIS is the same as the location map for the associated EIS Preparation Notice.

Action location map

- [ATLRPTAEIS_ScopingOralComments.zip](#)
- [ATLRPTAEIS_StateOwnedLands.zip](#)

Authorized individual

Rachel Shaak

Authorization

- The above named authorized individual hereby certifies that he/she has the authority to make this submission.

ARMY TRAINING LAND RETENTION AT PŌHAKULOA TRAINING AREA

DRAFT ENVIRONMENTAL IMPACT STATEMENT VOLUME I: EIS DOCUMENT

PŌHAKULOA TRAINING AREA, ISLAND OF HAWAII, HAWAII



PREPARED FOR DIRECTORATE OF PUBLIC WORKS, U.S. ARMY GARRISON-HAWAII

PREPARED BY U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
UNDER CONTRACT W9128A19D0004

APRIL 2022

ARMY TRAINING LAND RETENTION AT PŌHAKULOA TRAINING AREA

DRAFT ENVIRONMENTAL IMPACT STATEMENT

VOLUME I: EIS DOCUMENT

PŌHAKULOA TRAINING AREA, ISLAND OF HAWAI'I, HAWAI'I



PREPARED FOR DIRECTORATE OF PUBLIC WORKS, U.S. ARMY GARRISON-HAWAII

**PREPARED BY U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
UNDER CONTRACT W9128A19D0004**

APRIL 2022

NOTE ABOUT USE OF HAWAIIAN DIACRITICAL MARKINGS:


This document honors the proper use and presentation of Hawaiian language including use of diacritical marks, the glottal stop and the macron (‘okina and kahakō). When Hawaiian words are used in a proper name of an agency or organization that does not utilize diacritical marks, then official titles are shown without diacritical marks. Diacriticals may not appear in direct quotes or public comments. Elsewhere in this document, diacritical markings are used for Hawaiian terminology, proper names and place names.

**DRAFT ENVIRONMENTAL IMPACT STATEMENT
FOR THE
ARMY TRAINING LAND RETENTION AT PŌHAKULOĀ TRAINING AREA
ISLAND OF HAWAII, HAWAII**

This environmental document is prepared pursuant to Hawaii Revised Statutes, Chapter 343,
Environmental Impact Statement Law and Chapter 200 of Title 11, Administrative Rules,
Department of Health, Environmental Impact Statement Rules.

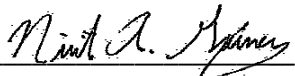
This draft EIS and all ancillary documents were prepared under my direction or supervision
and that the information submitted, to the best of my knowledge, fully addresses
the content requirements set forth in Section 11-200.1-24.

REVIEWED BY:



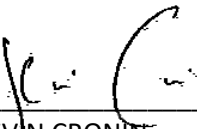
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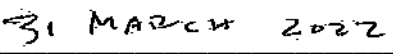
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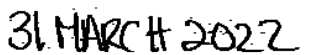


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Appendices (Volume II)

Appendix A: EIS Notices

- Notice of Intent
- Amended Notice of Intent
- Notification for the Environmental Impact Statement Preparation Notice
- Affidavit of Publication for Scoping Public Notices

Appendix B: Scoping Comments and Responses

- Federal Agencies
- State of Hawai‘i Agencies
- County of Hawai‘i Agencies
- Elected Officials
- Organizations
- Individuals
- Responses to Scoping Comments

Appendix C: Scoping Virtual Open House Meeting Materials

- Posters
- Fact Sheet
- Flyer
- Direct Mail Postcard
- Questions and Answers

Appendix D: Archaeological Literature Review

Appendix E: Cultural Impact Assessment

Acronyms and Abbreviations

AADT	Annual Average Daily Traffic	CRM	cultural resources management
AGL	above ground level	CWA	Clean Water Act
AHA	ammunition holding area	CWRM	Commission on Water Resource Management
amsl	above mean sea level	CZ	Clear Zone
AOR	area of responsibility	CZM	Coastal Zone Management
APZ	Accident Potential Zone	CZMA	Coastal Zone Management Act
AR	Army Regulation	dB	decibels
Army	U.S. Army	dBA	A-weighted decibels
ASP	ammunition supply point	dBc	C-weighted decibels
ASR	Area of Species Recovery	dBp	Peak Sound Level
AST	aboveground storage tank	DDESB	DoD Explosives Safety Board
ATC	Air Traffic Control	DHHL	Department of Hawaiian Home Lands
BAAF	Bradshaw Army Airfield	DKI	Daniel K. Inouye
BAX	Battle Area Complex	DLNR	Department of Land and Natural Resources
bgs	below ground surface	DMM	discarded military munitions
BLNR	Board of Land and Natural Resources	DoD	Department of Defense
BMP	best management practice	DoDI	Department of Defense Instruction
BO	Biological Opinion	DOH	Department of Health
°C	degrees Celsius	DOT	Department of Transportation
CAB	Clean Air Branch	DPW	Directorate of Public Works
CAS	close air support	DRO	diesel range organics
CDUP	Conservation District Use Permit	DU	depleted uranium
CEQ	Council on Environmental Quality	EAL	Environmental Action Level
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	ECOP	Environmental Condition of Property
CFA	controlled firing area	EIS	Environmental Impact Statement
CFR	Code of Federal Regulations	EISPN	Environmental Impact Statement Preparation Notice
CIA	Cultural Impact Assessment	EMS	electromagnetic spectrum
CO	carbon monoxide	EO	Executive Order
CO ₂	carbon dioxide		
COC	contaminant of concern		

EPC	Exposure Point Concentration	IWFMP	Integrated Wildland Fire Management Plan
ERL	exposure reference level		
ERP	Environmental Review Program	KOA	Ellison Onizuka Kona International Airport
ESA	Endangered Species Act		
ESQD	Explosive Safety Quantity-Distance	kW	kilowatt
°F	degrees Fahrenheit	LBP	lead-based paint
FAA	Federal Aviation Administration	LOS	Level of Service
FARP	forward arming and refueling point	LRAM	Land Rehabilitation and Maintenance
FEMA	Federal Emergency Management Agency	LTA	Local Training Area
FIP	Facilities Improvement Program	LUPZ	Land Use Planning Zone
FIRM	Flood Insurance Rate Map	MARFORPAC	Marine Corps Forces Pacific
FP	firing point	MBTA	Migratory Bird Treaty Act
FR	Federal Register	MC	munitions constituents
GHG	greenhouse gas	MEC	munitions and explosives of concern
GIS	Geographic Information System	MOUT	Military Operations on Urban Terrain
HAR	Hawai'i Administrative Rules	mph	miles per hour
HCF	Honolulu Control Facility	MSL	mean sea level
HELCO	Hawai'i Electric Light Company	MTA	Major Training Area
HEPA	Hawai'i Environmental Policy Act	NAAQS	national ambient air quality standards
HIARNG	Hawaii Army National Guard		
HRS	Hawai'i Revised Statutes	NAGPRA	Native American Graves Protection and Repatriation Act
ICRMP	Integrated Cultural Resources Management Plan	NDS	National Defense Strategy
ICUZ	Installation Compatible Use Zone	NEPA	National Environmental Policy Act
ID	Infantry Division	NFIP	National Flood Insurance Program
IEEE	Institute of Electrical and Electronics Engineers	NHPA	National Historic Preservation Act
IMC	instrument meteorological conditions	NMS	National Military Strategy
INRMP	Integrated Natural Resources Management Plan	NNL	National Natural Landmark
ITAM	Integrated Training Area Management	NOA	Notice of Availability
ITO	Hilo International Airport	NOI	Notice of Intent
		NPDES	National Pollutant Discharge Elimination System
		NRC	Nuclear Regulatory Commission
		NRHP	National Register of Historic Places

NRO	Natural Resources Office	SPCCP	Spill Prevention Control and Countermeasures Plan
NSS	National Security Strategy		
O ₃	ozone	State	State of Hawai'i
OEQC	Office of Environmental Quality Control	SUA	Special Use Airspace
		SVFR	Special Visual Flight Rules
PA	programmatic agreement	SVOH	Scoping Virtual Open House
PACAF	Pacific Air Forces	TA	Training Area
PACFLT	U.S. Pacific Fleet	TCP	Traditional Cultural Properties
PAM	Army Pamphlet	TMK	Tax Map Key
PCB	polychlorinated biphenyl	TMT	Thirty Meter Telescope
PIP	Pōhakuloa Implementation Plan	TPH	total petroleum hydrocarbons
PM _{2.5}	particulate matter measured less than or equal to 2.5 microns in diameter	TSCA	Toxic Substances Control Act
		UAV	unmanned aerial vehicle
		UH	University of Hawai'i
PM ₁₀	particulate matter measured less than or equal to 10 microns in diameter	UIC	Underground Injection Control
		U.S.	United States
POL	petroleum, oil, and lubricant	USACE	U.S. Army Corps of Engineers
PTA	Pōhakuloa Training Area	USAF	U.S. Air Force
RCMP	Range Complex Master Plan	USAG-HI	U.S. Army Garrison-Hawaii
RCRA	Resource Conservation and Recovery Act	USAPHC	U.S. Army Public Health Command
ROI	region of influence	USARHAW	U.S. Army Hawaii
ROD	Record of Decision	USARPAC	U.S. Army Pacific
RPMP	Real Property Master Plan	U.S.C.	United States Code
RSL	Regional Screening Level	USDA	U.S. Department of Agriculture
SARA	Superfund Amendments and Reauthorization Act	USEPA	U.S. Environmental Protection Agency
SDZ	Surface Danger Zone	USFWS	U.S. Fish and Wildlife Service
SDWA	Safe Drinking Water Act	USGS	U.S. Geological Survey
SDWB	Safe Drinking Water Branch	USINDOPACOM	U.S. Indo-Pacific Command
SHPD	State Historic Preservation Division	USMC	U.S. Marine Corps
		USN	U.S. Navy
SMA	Special Management Area	UST	underground storage tank
SO ₂	sulfur dioxide	UXO	unexploded ordnance
SONMP	Statewide Operational Noise Management Plan	VFR	Visual Flight Rules
SOP	standard operating procedures	VMC	Visual Meteorological Conditions

EXECUTIVE SUMMARY

ES.1 Introduction

The United States (U.S.) Army prepared this Environmental Impact Statement (EIS) to analyze the potential environmental impacts associated with retaining up to approximately 23,000 acres of State-owned land at Pōhakuloa Training Area (PTA) to support continued military training. This EIS was prepared in accordance with the National Environmental Policy Act of 1969, as amended (NEPA; 42 United States Code [U.S.C.] Section 4321 *et seq.*); the 1978 version of the Council on Environmental Quality NEPA regulation, as amended (40 Code of Federal Regulations [CFR] Parts 1500–1508); applicable Army requirements, including the Army NEPA regulation (32 CFR Part 651, Environmental Analysis of Army Actions); and the “Hawai‘i Environmental Policy Act” (HEPA) statute and implementing rule, codified in Hawai‘i Revised Statutes (HRS) Chapter 343 and Hawai‘i Administrative Rules Chapter 11-200.1, Environmental Impact Statement Rules.

On September 4, 2020, the Army published a Notice of Intent (NOI) for the EIS in the *Federal Register* (FR). On September 8, 2020, the HEPA EIS Preparation Notice was published in the Office of Environmental Quality Control (now Environmental Review Program) bulletin *The Environmental Notice*. Both notices informed the public of the 40-day scoping period that ended on October 14, 2020. On September 23, 2020, an amended NOI was published in the FR canceling in-person comment stations to comply with the *Interim Army Procedures for National Environmental Policy Act (NEPA)* and Hawai‘i emergency rules and proclamations for COVID-19 public gathering restrictions.

ES.2 Location

PTA encompasses approximately 132,000 acres between Mauna Loa, Mauna Kea, and Hualālai mountains on the island of Hawai‘i. The Army leases approximately 23,000 acres of land within PTA from the State. The lease began in 1964 and extends 65 years. The State-owned land entirely surrounds the 758-acre U.S. Government-owned parcel that houses the Cantonment and Bradshaw Army Airfield, and provides access between the Cantonment and Bradshaw Army Airfield and two other U.S. Government-owned parcels (i.e., approximately 25,000 acres containing the Ke‘āmuku parcel to the north and 84,000 acres containing the impact area and training ranges to the south). In preparation for this EIS, the Army ordered Preliminary Title Reports and a metes and bounds survey for the State-owned land; completed an Environmental Condition of Property and Analysis of Alternatives Study; and obtained a Major Land Acquisition Waiver from the Under Secretary of Defense for Acquisition and Sustainment.

The geographical location of Hawai‘i is a strategic one for national defense and rapid deployment of military forces, and the island plays a key role within the U.S. Indo-Pacific Command area of responsibility to help achieve U.S. national security objectives and protect national interests. PTA is the only Army Major Training Area in Hawai‘i, making it the Army’s primary ground maneuver tactical training area supporting home-station, joint, and multinational training in the State. PTA can accommodate collective live-fire and maneuver training above the company level (i.e., battalion and brigade). No other training area in Hawai‘i

can accommodate collective live-fire training at larger than company size. Additionally, PTA is the largest contiguous live-fire range and maneuver training area in the State. It is the only training area where U.S. Army Hawaii (USARHAW) units can use weapons systems at maximum capabilities and complete all their training requirements without leaving Hawai'i.

ES.3 Scope

The scope of this EIS includes a description of the Proposed Action, alternatives considered, existing conditions, and environmental consequences (i.e., potential impacts). The Proposed Action is a real estate action (i.e., administrative action) that would enable the continuation of ongoing activities on the State-owned land. Current ongoing activities conducted within the State-owned land were previously analyzed in separate NEPA documents, as applicable; therefore, new activities or changes to ongoing activities within the retained State-owned land would require separate NEPA (and potentially HEPA) compliance, as applicable.

The NEPA and HEPA processes require compliance with other relevant environmental laws and regulations. These include the National Historic Preservation Act; 1997 State of Hawaii Environmental Council's *Guidelines for Assessing Cultural Impacts*; HRS Chapter 6E, Historic Preservation; and Hawai'i Administrative Rules Chapter 13-5, Conservation District.

ES.4 Agency Roles and Decisions to be Made

The Army will decide on and identify a preferred alternative in the Final EIS. This decision process will consider which alternative best meets the Proposed Action's purpose and need, public comments, and the environmental analysis associated with each alternative. The final decision and rationale for the preferred alternative selection will be presented in a Record of Decision.

The State Department of Land and Natural Resources' Board of Land and Natural Resources will be the accepting authority for the EIS under HEPA rules, and will provide the State's EIS acceptability determination.

ES.5 Purpose and Need

The purpose of the Proposed Action is to enable USARHAW to continue to conduct military training on the State-owned land within PTA to meet its ongoing training requirements.

The Proposed Action is needed to:

- Preserve limited maneuver area.
- Provide austere environment training.
- Enable access between parcels of U.S. Government-owned land located within PTA.
- Retain substantial infrastructure investments.
- Allow for future facility and infrastructure modernization.
- Maximize use of the impact area in support of USARHAW-coordinated training.

The Army needs to retain the State-owned land at PTA for the following reasons:

- The State-owned land provides essential connections for maneuvering throughout PTA.
- Critical U.S. Government-owned facilities, utilities, and infrastructure are located on the State-owned land.
- Retention of maneuver area on State-owned land at PTA is important for maneuver, live-fire, and non-live-fire training, and to accommodate larger than company-sized units.
- PTA is the only training area in Hawai'i that can accommodate collective live-fire training at larger than company size.
- PTA is the primary ground maneuver tactical training area for U.S. Indo-Pacific Command and is used for joint and multinational training exercises.
- Loss of the State-owned land at PTA would result in substantial impacts to training at PTA and Hawai'i because several of the training features and capabilities within the State-owned land are not available elsewhere within PTA or Hawai'i and several of the training and support facilities and features within the State-owned land cannot be rebuilt within the U.S. Government-owned portions of PTA due to operational, safety, and environmental constraints.

ES.6 Brief Description of the Action

The Army proposes to retain up to approximately 23,000 acres of State-owned land at PTA in support of continued military training. Retention would occur by attaining a land interest that would allow continued use of the land; the land retention estate would not be selected until after completion of this EIS. The Army would arrange for retention and continued use of the State-owned land prior to the expiration of the 1964 lease to ensure uninterrupted training. Following the arrangement for retention of the State-owned land, the Army would continue to conduct Army ongoing activities (military training; facility, utility, and infrastructure maintenance and repair activities; resource management actions; and associated activities such as emergency services) on the retained State-owned land. The Army also would continue to permit and coordinate ongoing activities (training and other activities such as public use programs) on the retained State-owned land by other PTA users, including Department of Defense agencies, international partners, local agencies, and the community.

The Proposed Action is a real estate action (i.e., administrative action) that would enable continuation of ongoing activities on the retained State-owned land. It does not include construction, modernization, or changes in ongoing activities in the retained State-owned land. Additionally, the Proposed Action does not include changes to the use, size, or configuration of the special use airspace overlying the State-owned land.

ES.7 Public Involvement

Public scoping was conducted to provide relevant information about and gather public input on the Proposed Action and alternatives. Public involvement is a key component of the NEPA and HEPA processes; the NEPA and HEPA public involvement processes are running concurrently to fulfill both regulations. The NOI was initially published in the FR on September 4, 2020 (85 FR 55263), and the EIS Preparation Notice was published in *The Environmental Notice* on September 8, 2020. In response to

emerging COVID-19 mandates (*Interim Army Procedures for National Environmental Policy Act (NEPA)*) [March and June 2020], the County of Hawai'i COVID-19 Emergency Rule No. 11 [August 25, 2020], and the State's Twelfth Proclamation Related to the COVID-19 Emergency [August 20, 2020], a NOI amendment was published on September 23, 2020 (85 FR 59753), to remove in-person comment stations. This amendment had no impact on the 40-day scoping period, which ended on October 14, 2020.

Methods to solicitate public input during the scoping process included notification, publication of project information, and invitations to participate in scoping. The public notice for scoping was published in three newspapers on three separate dates. Additionally, postcards were mailed to approximately 100 stakeholders. On September 21, 2020, 19 different State agency divisions attended a Virtual Agency Scoping Meeting. On September 23, 2020, a public Scoping Virtual Open House provided the public an opportunity to view and listen to prerecorded presentations, review project documents, and submit written and oral comments. During the 5-hour period of the Scoping Virtual Open House event, 36 oral comments were received. During the 40-day scoping period, 240 written submissions were received; the EIS team identified 417 substantive comments covering 24 topics in the written submittals. Most of the substantive comments fell under the following topics: biological resources, cultural resources, hazardous materials, land use and lease issues, and noise.

The Draft EIS public review period was initiated through publication of a notice of availability (NOA) in the FR, and in the Environmental Review Program (formerly Office of Environmental Quality Control) bulletin *The Environmental Notice*. In accordance with 32 CFR Part 651, a public notice also was published in local newspapers. Additionally, postcards with similar information to the public notice were mailed via U.S. Postal Service to approximately 100 individual, agency, and organization stakeholders. Per NEPA and HEPA, publication of the NOA in federal and state bulletins initiates the Draft EIS public review period, which is 45 days. Draft EIS public meetings are scheduled to provide information to the public and agencies and to facilitate oral and written comments. Written comments must be received or postmarked within 45 days of publication of the Draft EIS NOA. All written comments on the Draft EIS will be considered during the preparation of the Final EIS.

ES.8 Alternatives Considered

The NEPA process includes consideration of reasonable alternatives required to satisfy the purpose and need for the Proposed Action and meet identified screening criteria. The Army developed three action alternatives for the Proposed Action. The action alternatives carried forth for analysis in this EIS are a practical representation of the range of reasonable alternatives regarding the extent (e.g., full, modified, and minimum) and location of retention of the State-owned land. Additionally, this EIS considered the No Action Alternative in accordance with Council on Environmental Quality regulations.

ES.8.1 Alternative 1: Full Retention

Under Alternative 1, the Army would retain all the State-owned land (approximately 23,000 acres) at PTA. The Army would continue to manage and use all the State-owned land; have unrestrained access between the three U.S. Government-owned parcels on PTA; and conduct Army ongoing activities. The Army also would continue to permit and coordinate ongoing activities on all the State-owned land by other PTA users. This alternative is considered the baseline land retention alternative with respect to the area of land that would continue to be used and managed by the Army.

ES.8.2 Alternative 2: Modified Retention

Under Alternative 2, the Army would retain approximately 19,700 acres of State-owned land at PTA. Additionally, the Army would retain all U.S. Government-owned utilities and associated access throughout the State-owned land to enable continued safe operation of the U.S. Government-owned land and retained State-owned land at PTA.

ES.8.3 Alternative 3: Minimum Retention and Access

Under Alternative 3, the Army would retain approximately 10,100 acres and 11 miles of select roads and training trails within the State-owned land at PTA. Additionally, the Army would retain all U.S. Government-owned utilities and associated access throughout the State-owned land; firebreaks/fuel breaks and associated access along most of the 11 miles of select roads and training trails proposed for retention; and land use rights to enable the firing of indirect-fire weapons from firing points on U.S. Government-owned portions of PTA northwest of the State-owned land into the impact area.

ES.8.4 No Action Alternative

Under the No Action Alternative, the Army would not retain any of the State-owned land at PTA after lease expiration. Due to the lack of access within the State-owned land, the Army would have no land access to the impact area and training ranges south of the State-owned land, which would cease or severely limit Army activities in those areas. Additionally, the Army would have no access to U.S. Government-owned utilities and infrastructure within the State-owned land, including the potable water facility, the electrical substation, communication infrastructure, roads, training trails, and firebreaks/fuel breaks, which would impact training, range operations, range and emergency services communication, use of the Cantonment, emergency service access, and wildfire protection and firefighting activities. This alternative also would create the greatest potential for encroachment among the alternatives considered because all three of the U.S. Government-owned parcels would be surrounded by adjoining parcels not controlled by the Army.

ES.9 Environmental Impacts

The Army identified 15 environmental resource areas that could be impacted by the Proposed Action. Resource areas include land use, biological resources, cultural resources, hazardous and toxic materials and wastes, air quality and greenhouse gases, noise, geology/topography/soils, water resources, socioeconomics, environmental justice, transportation and traffic, airspace, electromagnetic spectrum, utilities, and human health and safety. For each resource area, a detailed definition, regulatory framework, region of influence, existing conditions, methodology and significance criteria, and environmental analysis of potential direct and indirect, short- and long-term, and adverse and beneficial impacts and cumulative impacts that could result from each alternative were evaluated. Each resource area was analyzed using the most impactful/restrictive land retention estate to capture the greatest potential impacts.

Environmental impacts that could result from implementation of an alternative are summarized in **Table ES-1**. Overall, implementation of the Proposed Action (through implementation of one of the action alternatives) would result in impacts that are less than significant or significant but mitigable to less than significant. All significant impacts are associated with the No Action Alternative.

All resource areas are expected to experience some impact, less than significant or significant but mitigable to less than significant, from implementation of any of the action alternatives. In general, there are anticipated beneficial impacts associated with decreased military activities on State-owned land not retained. **Table 3-24** in **Section 3.17** provides a text summary of impacts and additional information.

Table ES-1 Environmental Impacts				
Resource	Alternative 1	Alternative 2	Alternative 3	No Action Alternative
Land Use	⊙	⊙	⊙	⊙
Biological Resources	⊙	⊙	⊙	⊗
Cultural Resources				
Historical Architecture	○	○	○	○
Archaeological Sites	⊙	⊙	⊙	⊙
Traditional and Customary Practices	⊖	⊖	⊖	+
Hazardous and Toxic Materials and Wastes	⊙	⊙	⊙	⊙
Air Quality and Greenhouse Gases	⊙	⊙	⊙	⊙
Noise	⊙	⊙	⊙	⊙
Geology, Topography and Soils	⊙	⊙	⊙	⊙
Water Resources	⊙	⊙	⊙	⊙
Socioeconomics	⊙	⊙	⊙	⊗
Environmental Justice	⊙	⊙	⊙	⊙
Transportation and Traffic	⊙	⊙	⊙	⊙
Airspace	⊙	⊙	⊙	⊙
Electromagnetic Spectrum	⊙	⊙	⊙	⊙
Utilities	⊙	⊙	⊙	⊗
Human Health and Safety	⊙	⊙	⊙	⊙

LEGEND

- ⊗ = Significant adverse impact
- ⊖ = Significant adverse impact but mitigable to less than significant
- ⊙ = Less than significant impact
- = No impact
- ⊕ = Significant beneficial impact

ES.10 Cumulative Impacts

This EIS identifies potential cumulative impacts from implementation of the Proposed Action when combined with past, present, and reasonably foreseeable future actions, which include military, public, and private actions.

Cumulative impacts for all resource areas, except for cultural resources and socioeconomics, were found to be adverse and less than significant. Cultural resources were analyzed to have significant, adverse cumulative impacts based on destruction of historical resources and reduced access to cultural sites that have occurred over-time and are not specific to the Proposed Action. Cumulative impacts for socioeconomics were determined to likely remain moderate and beneficial.

Cumulative impacts, by resource area, are analyzed in **Chapter 4**.

ES.11 Potential Mitigation Measures

The Army could propose mitigation measures to reduce the severity of adverse impacts from the Proposed Action. These potential mitigation measures are summarized below and in **Table 3-25** in **Section 3.17** of the EIS.

Land Use: The Army would consider adding fencing and signage to minimize encroachment from adjacent non-U.S. Government-owned land (Alternatives 2 and 3).

Cultural Resources: Through consultation with Native Hawaiians, and/or other ethnic groups as appropriate, provide access to promote and protect cultural beliefs, practices, and resources (Alternatives 1, 2, and 3).

Human Health and Safety: Negotiation of an agreement with the State to allow the Army to monitor the State-owned land not retained for wildfires and assist wildfire responders with wildfire suppression (Alternative 3).

ES.12 Incomplete Information

NEPA and HEPA require that incomplete information be disclosed.

Land Retention Estate(s) and Method(s): The Army may proceed with the Proposed Action after completion of the EIS and Record of Decision, and would consider, at that time, the appropriate land retention estate(s) and method(s) based on the selected alternative. One or more estates and methods may be considered. Additionally, negotiation is required with the State to determine what estate(s) and method(s) would be considered.

Lease Compliance Actions: The lease stipulates conditions associated with lease expiration, including some to be negotiated. The parameters for lease compliance actions are subject to the terms of the lease and negotiation with the State, which cannot be done until this EIS is completed and an alternative has been selected; therefore, the parameters would be defined and determined after completion of this EIS.

ES.13 Compatibility with Land Use Plans and Policies

The Proposed Action would comply with all applicable federal and state land use plans and policies. Federal regulations include: 10 U.S.C. Section 2852, Military Construction Projects: Waiver of Certain Restrictions; 10 U.S.C. Section 2661, Miscellaneous Administrative Provisions Relating to Real Property; 10 U.S.C. Section 2663, Land Acquisition Authorities; 10 U.S.C. Section 2802, Military Construction Projects; The Coastal Zone Management Act, as amended (16 U.S.C. Section 1451); and The Sikes Act, as amended, (16 U.S.C. Section 670a–670o). The State land use plans and policies include: HRS Chapter 205, State Land Use Commission, which sets rules related to the Conservation District; HRS Chapter 344, State Environmental Policy; and HRS Chapter 226, Hawai‘i State Planning Act.

The Proposed Action is a real estate action (i.e., administrative action) that would enable continuation of ongoing activities on the retained State-owned land. **Chapter 3** of this EIS lists the regulatory environment and best management practices employed by the Army by resource area. The project’s consistency with regulations, land use plans, policies, and controls is provided in more depth in **Section 5.3**.

Chapter 1

PURPOSE OF AND NEED FOR THE PROPOSED ACTION

1.1 Introduction

The United States (U.S.) Army (Army) conducts training to meet its federally mandated mission of readiness based on national and Army security and defense strategies. In the state of Hawai'i (State), U.S. Army Hawaii (USARHAW) conducts training on the islands of O'ahu and Hawai'i. Pōhakuloa Training Area (PTA) on the island of Hawai'i (**Figure 1-1**) is the largest contiguous military live-fire range and maneuver training area in the State and is a premier military training center in the Pacific region (USAG-PTA, 2021a). It is the only training area in Hawai'i where USARHAW units can complete all mission essential tasks, and it is the only training area in Hawai'i that can accommodate larger than company-sized units (i.e., battalion and brigade¹) for live-fire and maneuver exercises (USAG-HI & USARPAC, 2013).

Training offered at PTA supports the Army's fulfillment of its role in the defense of the United States. Users of PTA rely on the installation to meet their agency-specific mission and readiness requirements, and include: the Army, including Army Reserve and Hawaii Army National Guard (HIARNG); U.S. Marine Corps (USMC); U.S. Navy (USN); U.S. Air Force (USAF); state and county first responders and firefighters; Hawai'i Civil Defense Agency; Hawai'i Emergency Management Agency; State Office of Homeland Security; and Hawai'i Police Department.

The U.S. Government leases approximately 23,000 acres of land at PTA from the State. This land is referred to as "State-owned land" in this Environmental Impact Statement (EIS). The 65-year lease of the State-owned land expires on August 16, 2029. Over the past six decades, the State-owned land has been the keystone of PTA and an important portion of the 132,000-acre training area (**Figure 1-2**). The State-owned land provides access between the U.S. Government-owned portions of PTA and supports numerous training facilities and capabilities that are essential to USARHAW and other military services and local agencies. The State-owned land contains some key training facilities not available elsewhere in Hawai'i, and the contiguous maneuver area that accommodates exercises at larger than company size also is not available anywhere in the State. Loss of this land would substantially impact the ability of USARHAW, as well as other military services and local agencies, to meet their training requirements and mission readiness. Therefore, U.S. Army Garrison-Hawaii (USAG-HI), the Army entity responsible for management of PTA, proposes to retain up to approximately 23,000 acres of the State-owned land at PTA in support of continued military training.

¹ Section 1.2.3 defines unit size.

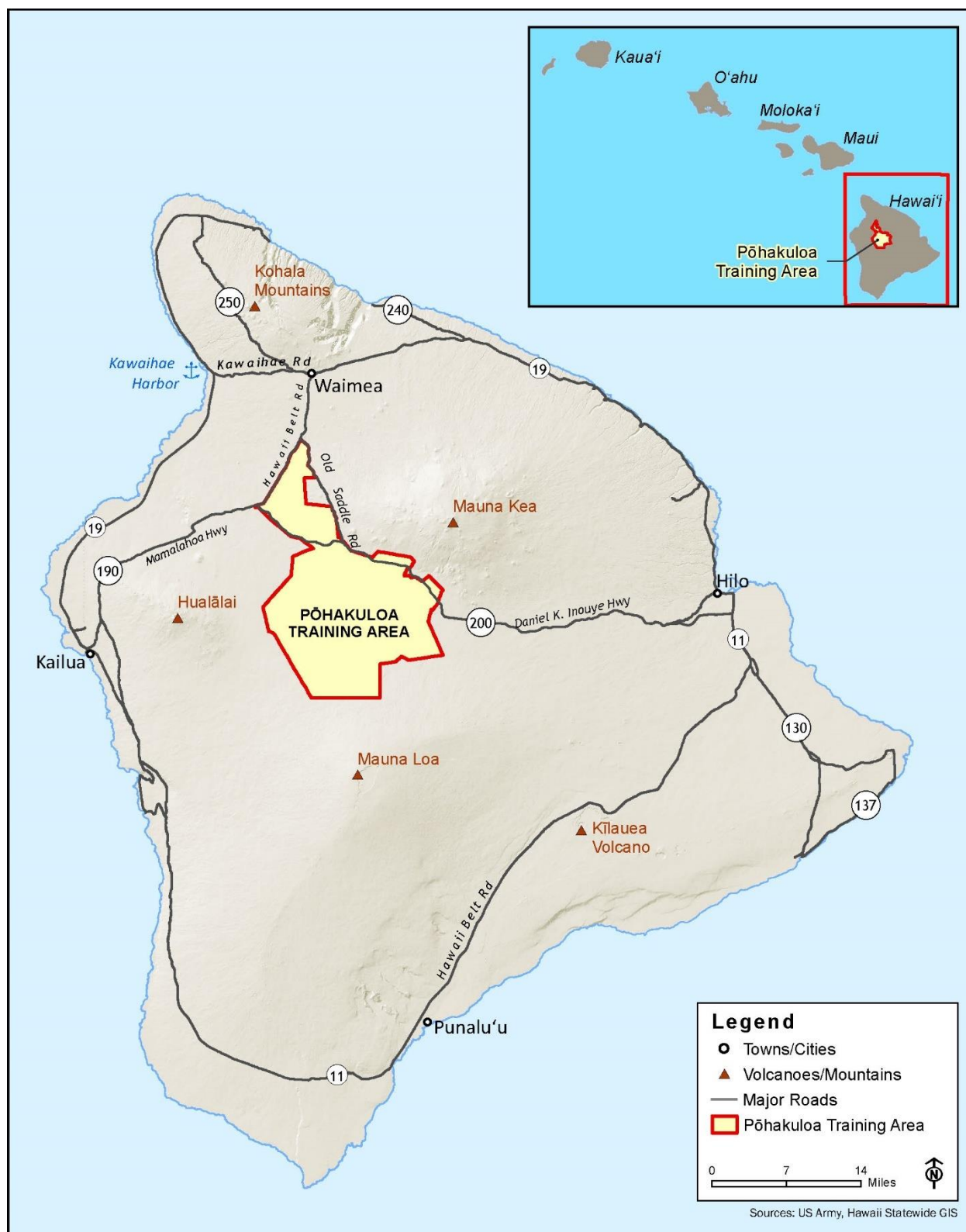


Figure 1-1: Location of Pōhakuloa Training Area, Island of Hawai'i

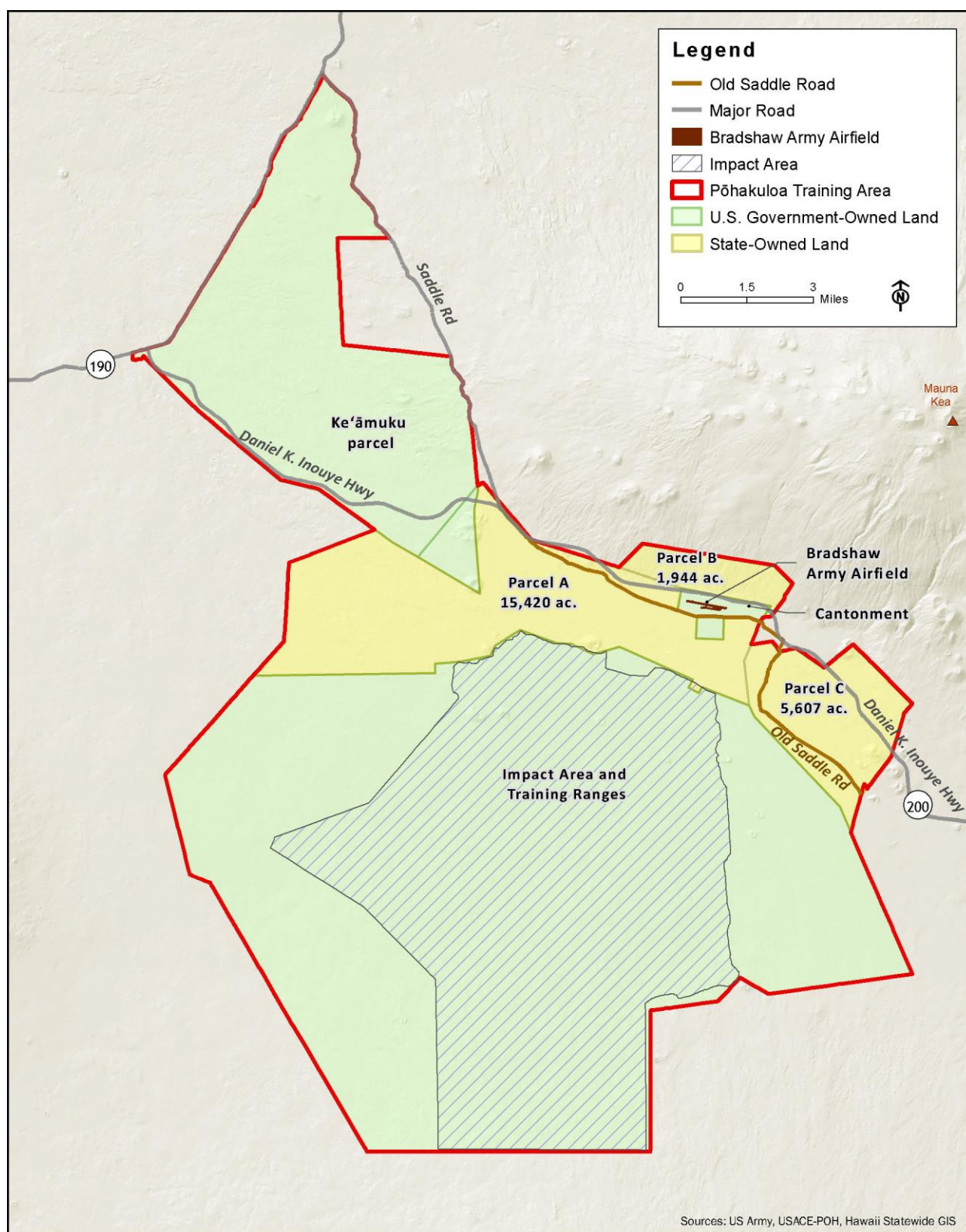


Figure 1-2: U.S. Government-Owned and State-Owned Land at Pōhakuloa Training Area

Pursuant to the National Environmental Policy Act of 1969 (NEPA) (42 United States Code [U.S.C.] Section 4321 *et seq.*), USAG-HI has initiated this EIS process to analyze the potential environmental impacts of the Army's Proposed Action.

Because the Army's Proposed Action involves retention of State land, this EIS also must fulfill the Hawai'i EIS statute and implementing rule, codified in Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Chapter 11-200.1. Collectively, the Hawai'i statute and rule are referred to as the "Hawai'i Environmental Policy Act" (HEPA). Both NEPA and HEPA require government agencies to fully consider the environmental impacts of a proposed major action and to take appropriate steps, where necessary, to mitigate potential adverse effects.

The Army is preparing a single EIS, compliant with NEPA and HEPA regulations, to facilitate concurrent public review and processing at the federal and state levels of government.

1.1.1 Location

PTA encompasses approximately 132,000 acres between the mountains of Mauna Loa, Mauna Kea, and Hualālai on the island of Hawai'i (**Figure 1-1**). The primary access to PTA's base camp, referred to as the Cantonment, is from State Route 200, also known as the Daniel K. Inouye (DKI) Highway. The DKI Highway right-of-way crosses State- and U.S. Government-owned land at PTA (**Figure 1-2**). The Cantonment serves as temporary quarters for troops, and permanent office space for USAG-HI personnel. The Cantonment is approximately 35 miles from the county seat in Hilo, and approximately 50 miles from the town of Kailua-Kona. Waimea is the nearest town and is approximately 30 miles away.

The State-owned land connects all three U.S. Government-owned parcels at PTA, and it entirely surrounds the 758-acre U.S. Government-owned parcel that houses the Cantonment and Bradshaw Army Airfield (BAAF). The U.S. Government-owned land south of the State-owned land includes approximately 84,050 acres and contains the 51,000-acre impact area. The U.S. Government-owned land north of the State-owned land totals approximately 25,025 acres and is known as the Ke'āmuku parcel (**Figure 1-2**). Most of the U.S. Government-owned land to the north consists of the approximately 23,685-acre Keamuku Maneuver Area. **Chapter 3** provides additional details on parcels, ownership, zoning and relevant land use.

Chapter 2 presents the Proposed Action and alternatives considered to meet the project's purpose and need. **Chapter 3** describes the affected environment and environmental consequences and summarizes potential impacts and mitigation measures; **Chapter 4** addresses cumulative impacts; **Chapter 5** identifies incomplete information, land use consistency, and unavoidable and irreversible impacts; and **Chapters 6, 7, and 8** contain lists of references, document preparers, and public notification and input methods used throughout the EIS process. **Chapter 9** contains the glossary.

1.1.2 History of State-Owned Land at PTA

Prior to and following European contact in 1778, the Pōhakuloa area was used for bird hunting, resource gathering, and other cultural purposes by Native Hawaiians (USACE-POH & USAG-HI, 2017a). While the Pōhakuloa area did not support permanent settlement due to elevation, climate, and lack of water, numerous archaeological resources associated with Native Hawaiian use of the area have been identified (USACE-POH, 2017). In 1859, the land was leased for sheep and cattle ranching by Francis Spencer. In the 1870s, John Parker of Parker Ranch began acquiring leases in the area. **Section 3.4** provides a historical overview.

The PTA area was first used for U.S. military training during World War II by USMC as an artillery live-fire training area. After the war, PTA fell under the control of the Hawai'i Territorial Guard, and in the mid-1950s, the Army took over PTA (USAG-HI, 2020a). In 1956, the Governor of the Territory of Hawai'i signed Executive Order (EO) No. 1719² for approximately 758 acres at PTA for “. . . uses and purposes of the United States of America, to be under the control and management of the Department of the Army.” The 758 acres encompass the Cantonment and BAAF.

Later in 1956, PTA was permanently established as a training site through a formal Maneuver Agreement between the Territory of Hawai'i and the United States. The Maneuver Agreement granted exclusive use of 99,200 acres to the U.S. Government for military training. In 1964, President Lyndon B. Johnson issued EO No. 11167³ and authorized the fee simple acquisition (i.e., owned completely without any limitations or conditions) of 84,057 acres of the 99,200-acre training area for use by the United States (USACE-POH, 2016). This 84,057-acre area encompasses the U.S. Government-owned land south of the State-owned land, including the impact area and training ranges.

The State-owned land, which is approximately 23,000 acres, was leased by the U.S. Government from the State in August 1964 (i.e., State General Lease No. S-3849 and U.S. Lease Contract No. DA-94-626-ENG-80) (**Figure 1-2**). The term of the lease is 65 years. Three parcels are defined in the lease as:

- Tract A-105-1 (Parcel A), approximately 15,420 acres
- Tract A-105-2 (Parcel B), approximately 1,944 acres
- Tract A-105-3 (Parcel C), approximately 5,607 acres (DLNR, 1964; USACE-POH & USAG-HI, 2019a)

Chapter 3 further describes the State-owned land leased by the Army based on federal, state, and county laws and classifications of land tenure.

1.1.3 Planning for Retention of State-Owned Land at PTA

In anticipation of the lease expiring in 2029, the Army initiated several planning efforts that preceded this EIS. USAG-HI ordered Preliminary Title Reports and a metes and bounds survey for the State-owned land, completed an Environmental Condition of Property (ECOP) and Analysis of Alternatives Study, and obtained a Major Land Acquisition Waiver from the Under Secretary of Defense for Acquisition and Sustainment. The ECOP facilitates informed decisions about potential human and ecological health risks associated with potential contamination and is discussed in **Section 3.6**. The Analysis of Alternatives Study and Major Land Acquisition Waiver processes are described in the following paragraphs.

Analysis of Alternatives Study. An Analysis of Alternatives Study was prepared in 2017 per Army Regulation (AR) 350-19, The Army Sustainable Range Program, to create a preliminary list of alternatives to land retention; evaluate the economic feasibility, mission impact, and environmental impact of each alternative; and identify a preferred alternative (USACE-POH, 2017). The alternatives evaluated included

²Setting Aside Land for Public Purposes.

³Setting Aside for the Use of the United States Certain Public Lands and Other Public Property Located at the Pōhakuloa Training Area, Hawaii.

no action, use of other lands (including U.S. Government-owned land at PTA, other land in Hawai'i not under military or State control, and other military installations), computer-based simulation training, re-stationing the 25th Infantry Division (ID), and retention of the State-owned land.

The No Action Alternative was determined to result in significant adverse impacts on the PTA mission, and a financial cost potentially more than the estimated land value of the State-owned land. The alternative of using land other than the State-owned land was considered but eliminated due to mission impact, environmental impact, and financial cost. The alternative of using computer-based simulation training was deemed not viable because it is not an adequate substitute for live training. The 25th ID re-stationing alternative was eliminated due to the adverse mission impact and financial cost. Retention of the State-owned land was selected as the preferred alternative due to low environmental impact, low to high financial cost, and low to no impact on mission (USACE-POH, 2017).

In summary, the Analysis of Alternatives Study analyzed the potential impacts of alternatives to retention of the State-owned land, but determined that land retention is the preferred alternative. Consequently, this EIS analyzes alternatives for implementing retention of the State-owned land.

Major Land Acquisition Waiver. On September 13, 1990, Department of Defense (DoD) established a moratorium on major land acquisitions to ensure that land is acquired only when a need is clearly demonstrated. The Army submitted a Major Lands Acquisition Proposal to DoD in 2017 to request an exception (waiver) to the moratorium for acquisition of the State-owned land at PTA. The proposal summarized the alternatives considered, current and projected force structure and training load, public and political sensitivity, potential environmental impacts, proposed future use of the State-owned land, future viability of PTA, benefits of land retention, and impacts of not retaining the land (USARHAW, 2017a). The Under Secretary of Defense for Acquisition and Sustainment approved the Major Land Acquisition Waiver Request on June 4, 2018, allowing the Army to pursue land retention options and to initiate an environmental analysis process in accordance with NEPA. This EIS is a key step in the process to define and analyze various land retention alternatives to meet USARHAW's ongoing training needs.

1.2 Background

1.2.1 National Defense Policies

National defense policies inform the vision, strategy, and mission requirements across the DoD service branches. This section provides an overview of key national defense policy documents and their applicability to the Army and the Indo-Pacific region.

The Army plans and executes its operational and training mission by implementing key U.S. military policy documents such as the National Security Strategy (NSS), National Defense Strategy (NDS), National Military Strategy (NMS), and Army Strategy. As the nation's primary land-based military force, the Army is organized, trained, and equipped to support the nation's global security and defense interests.

USARHAW's mission and training requirements are based on national and Army security and defense strategies. Training at installations such as PTA supports the Army's fulfillment of its role in the nation's defense. Joint users of PTA, including USMC, USN, and USAF, also rely on PTA to fill their agency-specific mission and readiness requirements. **Section 1.2.6** describes joint agency and community use of PTA.

National Security Strategy

The 2017 NSS establishes the U.S. security strategy through the implementation of four pillars and specific regional strategies. The third pillar seeks to preserve peace through strength by rebuilding the U.S. military so that it remains pre-eminent, deters its adversaries, and, if necessary, is able to fight and win. The NSS also provides a strategy for each region of the world to protect U.S. national interests. Hawai'i is strategically located within the Indo-Pacific region and plays an important role in achieving regional military objectives. Regarding the Indo-Pacific region, the December 2017 NSS states, "We will maintain a forward military presence capable of deterring and, if necessary, defeating any adversary" (White House, 2017).

National Defense Strategy

Consistent with the 2017 NSS, the February 2018 NDS articulates the U.S. defense strategy to compete, deter, and win, emphasizing the need for a Joint Force (i.e., two or more DoD military departments operating under a single commander) structured to match this reality. The U.S. defense challenge is the reemergence of long-term strategic competition by revisionist powers (i.e., Russia and China) and rogue regimes (i.e., North Korea and Iran). Revisionist powers and rogue regimes are competing across all dimensions of power: air, land, sea, space, and cyberspace. Notably, three of the four revisionist powers and rogue regimes are within the Indo-Pacific region. The 2018 NDS prioritizes military preparedness in three key regions, one of which is the Indo-Pacific region, and expanding security relationships with Indo-Pacific alliances and partnerships (DoD, 2018a).

National Military Strategy

The 2018 NMS provides the Joint Force a framework for protecting and advancing U.S. national interests. It is an overarching military strategic framework implementing the policy and strategy established in the 2017 NSS, 2018 NDS, and other documents such as the Defense Planning Guidance (The Joint Staff, 2018).

The Army Strategy

The Army is mandated by Congress to preserve the peace and security of, and provide for the defense of, the United States, its commonwealths, and its territories; support national policies and implement national objectives; and overcome any nations responsible for aggressive acts that endanger the peace and security of the United States.

The Army Strategy articulates how the Total Army (i.e., Army, Army Reserve, and Army National Guard) achieves its objectives defined by the Army Vision and fulfills its duties based on input from the NSS, NDS, and NMS. The strategy includes the Army's mission statement: To deploy, fight, and win our nation's wars by providing ready, prompt, and sustained land dominance by Army forces across the full spectrum of conflict as part of the Joint Force. To achieve the 2018 Army Strategy, the Army simultaneously employs readiness, modernization, reform, and alliances and partnerships (DA, 2018a).

1.2.2 Strategic Importance of Hawai'i to National Defense

U.S. military objectives in the Indo-Pacific region are the responsibility of the U.S. Indo-Pacific Command (USINDOPACOM), which is one of six of the DoD's geographic combatant commands and is headquartered in Hawai'i. USINDOPACOM integrates Army, USN, USAF, and USMC forces within the USINDOPACOM area of responsibility (AOR) to achieve U.S. national security objectives while protecting national interests. The

USINDOPACOM AOR covers about half of the earth's surface (i.e., from the waters of the U.S. west coast to the western border of India, and from Antarctica to the North Pole) in a region that is home to more than 50 percent of the world's population. USINDOPACOM is supported by four component commands: U.S. Army Pacific (USARPAC), U.S. Pacific Fleet (PACFLT), Marine Forces Pacific (MARFORPAC), and U.S. Pacific Air Forces (PACAF) (USINDOPACOM, 2021). USARHAW supports ready forces to provide the Army Contingency Response Force per USARPAC order and the Pacific Response Force per USINDOPACOM order (USARHAW, 2017a).

USARPAC is the Army's largest Service Component command and includes approximately 106,000 personnel assigned throughout the USINDOPACOM AOR. PACFLT is the world's largest fleet command with approximately 200 ships and submarines, 1,200 aircraft, and 130,000 sailors and civilians. MARFORPAC includes approximately 86,000 personnel and 640 aircraft. PACAF is one of nine USAF major commands and includes approximately 46,000 airmen and civilians and more than 420 aircraft (USINDOPACOM, 2021). In addition to the U.S. military commands and personnel stationed in Hawai'i, Hawai'i is geographically situated between the west coast of the continental United States and the countries in the USINDOPACOM AOR and serves as a logistical link with U.S. military installations across the Pacific region. Therefore, Hawai'i is a strategic location for national defense and rapid deployment of military forces.

1.2.3 The Army in Hawai'i

Major Army units in Hawai'i that require training land consist of the 25th ID, 8th Theater Sustainment Command, 29th Infantry Brigade, HIARNG, and the 9th Mission Support Command of the Army Reserve.

Army Training in Hawai'i. Army training includes a variety of individual and group (i.e., unit) training events. The number of Soldiers in a unit varies by the type of unit (e.g., artillery versus aviation), but the general unit sizes are as follows:

- ***Platoon:*** 16–40 Soldiers
- ***Company:*** 100–200 Soldiers
- ***Battalion:*** 500–900 Soldiers
- ***Brigade:*** 3,000–5,000 Soldiers (DA, 2018b)

Army training areas support progressively higher levels of individual and group proficiencies that are required to support unified land operations. The three types of Army training areas are Local Training Areas (LTA), Major Training Areas (MTA), and Combat Training Centers:

- ***Local Training Area.*** Supports individual-service and crew-served weapons proficiency training with the objective of qualifying Soldiers and small units on their weapon systems. Soldiers and units also practice maneuver tactics, techniques, and procedures. The training objectives focus on individual through platoon weapons systems proficiency and up to battalion level maneuver operations.
- ***Major Training Area.*** Supports larger unit collective live-fire training (platoon and higher) and maneuver training (battalion or brigade). MTA training builds on the training proficiencies achieved at LTAs and integrates maneuver tactics, techniques, and procedures, as necessary.
- ***Combat Training Center.*** Provides an enhanced maneuver training experience, a dedicated opposing force, and a robust instrumentation and formal evaluation and feedback process to brigade-sized units. Combat Training Center training allows large units to conduct their doctrinally required training and prepares them for their operational mission prior to deployment.

Army training lands in the State include numerous LTAs; however, only the islands of O‘ahu and Hawai‘i have Army training lands, and there is limited collective training capability and capacity on the island of O‘ahu. In the State, only PTA on the island of Hawai‘i is classified as an MTA. No Combat Training Centers are present in the State (USAG-HI & USARPAC, 2013).

Army training facilities in the State provide a range of environments, from tropical climates to the remote and austere high-altitude environment on the island of Hawai‘i. This unique combination of environments cannot be replicated in training areas located in the continental United States or Alaska. Army training lands in Hawai‘i total approximately 187,781 acres, are located on the islands of Hawai‘i and O‘ahu, and contain U.S. Government-owned, U.S. Government-controlled, and State-owned land. At 132,000 acres, PTA provides approximately 70 percent of all Army training land in Hawai‘i.

1.2.4 PTA’s Role

PTA is the primary ground maneuver tactical training area that provides the USINDOPACOM Commander with capabilities to support home-station training, joint training with other U.S. military units, and multinational training with other Indo-Pacific region militaries (USARHAW, 2015). PTA also supports USARPAC’s Joint Pacific Multinational Readiness Capability to create a high-fidelity, joint and multinational maneuver and live-fire training venue with robust after-action reviews that increase interoperability and enable Army units to achieve their full readiness potential, with the eventual goal of supporting joint combined multinational training events (USARHAW, 2015).

The PTA Mission

PTA provides a quality joint/combined arms facility that provides logistics, public works, airfield support, and environmental and cultural stewardship in support of the USARPAC training strategy, while maintaining an enduring partnership with the Hawai‘i Island community.

As noted in **Section 1.1**, PTA is the largest contiguous live-fire range and maneuver training area in Hawai‘i and is the only training area in the Pacific region where USARHAW units can use weapons systems at maximum capabilities and complete all of their training requirements. PTA also is the only DoD Pacific training facility that can accommodate larger than company-sized units for live-fire and maneuver exercises without degradation of training quality (USAG-HI & USARPAC, 2013).

Army Training and Doctrine Command Regulation 350-6 prescribes that training shall occur in an austere field environment (DA, 2019a). PTA fulfills the requirement to train in an austere field environment, which contains significant environmental hazards (e.g., heat, cold, altitude) with limited access to a reliable source of electricity or where force protection levels mandate prolonged use of body armor or chemical protection equipment. In this environment, Soldiers are exposed to the heat, cold, and altitude with only standard issue equipment. PTA replicates an austere location where an intermediate staging base can be established. To comply with the training regulation, PTA must be able to continue to support the following:

1. three battalion level units physically on site
2. two battalions conducting training simultaneously with one battalion in support
3. one battalion conducting collective maneuver and live-fire training at company level or higher
4. one battalion conducting collective maneuver and live-fire training at crew through platoon levels, and situational training exercise lanes (USARHAW, 2015)

1.2.5 PTA Features

PTA's mission includes providing modern training features and facilities for USARPAC and other USINDOPACOM units that train at PTA. These units require a full suite of ranges and maneuver areas that support live-fire and non-live-fire training requirements. Each Soldier and weapon system crew is assigned an annual or semiannual live-fire training and qualification requirement (USAG-HI & USARPAC, 2013). Facilities at PTA support U.S. military units by providing doctrinally required training to achieve required readiness training prior to deployment. This training requires use of features on the U.S. Government-owned land and State-owned land at PTA. **Sections 2.1.1 and 2.1.2** provide information specific to facilities and training on the State-owned land at PTA.

Training at PTA is scheduled at full capacity throughout the year. The Army's training mission at PTA is supported by a variety of training features. These include the Cantonment and BAAF, impact area, maneuver area, special use airspace (SUA), training areas (TA) and ranges, a transportation network, and utilities. The following summarizes the primary training and support features available at PTA. Training features specific to the State-owned land are covered in **Section 2.1.1**.

Cantonment and BAAF: The Cantonment is an area of U.S. Government-owned land sited within the 758-acre parcel that established PTA in 1964. The Cantonment consists of approximately 150 buildings used for training support facilities, including administration offices, troop billeting, and support services. Many of the buildings are Quonset huts that were relocated to PTA and erected between 1955 and 1961. BAAF, directly west of the Cantonment, includes a 3,700-foot runway at approximately 6,200 feet elevation. It is the highest elevation airfield in consistent use in the Hawaiian Islands (USACE-POH & USAG-HI, 2019a). BAAF supports helicopter and limited fixed-wing operations.

Impact Area: The impact area is approximately 51,000 acres extending from central PTA to the southern boundary of the installation on U.S. Government-owned land. Select types of live-fire training require an impact area for munitions detonation. The impact area at PTA supports live-fire ranges, firing points (FPs), and aviation live-fire training.

Maneuver Area: Maneuver training is a primary military tactical training and includes battlefield movement by vehicle and on foot. A majority of PTA consists of unsuitable or restricted maneuver area due to physical, operational, and environmental constraints such as large lava flows that are inaccessible even on foot, and areas set aside for conservation of cultural and natural resources. Unrestricted maneuver area is suitable for light infantry maneuver training due to lack of physical constraints such as steep slopes, dense vegetation, and large lava flows (USACE-POH, 2017). PTA includes approximately 37,513 acres of restricted maneuver area, 51,000 acres of impact area, 565 acres of range area, and the 758-acre area containing BAAF and the Cantonment. The remaining 42,833 acres are unrestricted maneuver area, over half of which are on the State-owned land. Total unrestricted maneuver area for USARHAW in Hawai'i is 57,438 acres, including the State-owned land at PTA (USACE-POH, 2017).

Special Use Airspace: Restricted areas are a type of SUA that allows certain military training activities to occur within that designated airspace. Restricted area R-3103 overlies PTA, extends from the ground surface to 30,000 feet, and is used intermittently (activated when needed due to military training that requires use of the restricted airspace). Civilian aircraft are prohibited from entering R-3103 airspace during activation. PTA Range Control and the Federal Aviation Administration (FAA) Honolulu Control Facility manage this airspace. Airspace is further described in **Section 3.13**.

Training Areas and Ranges: PTA has 24 TAs, including 23 individual TAs and the Ke‘āmuku parcel, which together have 31 direct-fire ranges, 118 FPs, and a variety of other ground and aviation training and training support facilities (**Figure 1-3**). Military training has taken place within most of these TAs since PTA was established in 1956. TAs support a variety of training types with realistic conditions and facilities such as FPs, landing zones, drop zones, small arms ranges, the Battle Area Complex (BAX), forward arming and refueling points (FARPs), and Cooper Air Strip (unmanned aerial system airfield) (**Figure 1-3**). TAs include “no go” areas where training is not allowed; these are generally management areas to protect threatened or endangered plants and animals, critical habitat, and cultural resources. **Figure 1-3** depicts the TAs, ranges, training facilities, and the impact area. Most of the training facilities are on the State-owned land.

Transportation: PTA contains a network of interior roads and training trails that provides access for training, conservation, emergency services, and administrative purposes throughout the installation. Equipment and supplies are transported between PTA and the U.S. Government-owned Kawaihae Military Reservation, an Army port facility on the northwest side of the island of Hawai‘i at Kawaihae Harbor. As part of deployment training, military vehicle convoys are used to move personnel and equipment on the public roads between Kawaihae and PTA including Mamalahoa Highway and DK1 Highway (DA, 2018b). Transportation is further described in **Section 3.12**.

Utilities: The majority of utility infrastructure on PTA supports operations in the Cantonment; overhead power lines and communication equipment cross some of the TAs. Utilities are further described in **Section 3.15**.

1.2.6 PTA Joint Agency and Community Use

Joint Agency Use of PTA

The Army’s primary user of PTA is the 25th ID; however, there is considerable use of the installation by other Army units, Service Components (primarily USMC), DoD agencies, international partners, and local agencies. Other PTA users include the Army Reserve, HIARNG, USMC, USN, USAF, and several multinational and community users. All current training and other activities at PTA are covered by appropriate NEPA documentation.

U.S. Marine Corps. USMC is the second largest user of the PTA after the 25th ID. Marine Corps Base Hawaii relies on PTA to fulfill a large portion of its training requirements. USMC training exercises at PTA include live-fire training on ranges, military operations on urban terrain (MOUT) training, and non-live-fire training. USMC is expanding Marine Air Group 24, 1st Marine Aircraft Wing with the introduction of more squadrons ranging from the MV-22B to additional unmanned aerial systems. USMC is studying the re-stationing of a Marine Regiment as it shifts forces from Okinawa.

PTA also supports training for USMC units that are part of the Fleet Marine Forces afloat on transports in the Pacific and includes transiting Marine Expeditionary Units from the U.S. west coast to participate in training at the installation. These units conduct combined arms live-fire and maneuver and close air support (CAS) training at PTA.

U.S. Navy. USN uses PTA to accomplish its multinational, sea control/power projection exercises biennially. Several types of USN training events that occur at PTA, or use PTA assets, include Command and Control activities, air support exercises including CAS and Strike Warfare, live-fire exercises, Special Warfare Operations, Aircraft Operations Support, and Air-to-Surface Missile exercises.

U.S. Air Force. USAF trains at PTA to practice CAS and strategic air support with its fighter and strategic aircraft for squadrons deployed to theater and uses PTA for Visual Flight Rules (VFR) training. USAF trains regularly at PTA in conjunction with other military exercises such as the USN's Rim of the Pacific Exercise.

Joint Training and Multinational Exercises. The Pacific Training Complex strategy integrates regional training centers in Hawai'i, Alaska, Japan, and Korea and enables Army, Joint Force, and multinational training. PTA is strategically located within the Pacific Training Complex to serve as a regional training center. PTA's training capabilities develop and train USARHAW units and support joint and multinational training requirements. Additionally, PTA is used to leverage USARPAC's Joint Pacific Multinational Readiness Capability to create a high-fidelity, joint and multinational maneuver and live-fire training complex.

In addition to PTA's role as the primary ground maneuver tactical training area for USINDOPACOM joint and multinational training capabilities, the remote location of PTA is ideally suited for emergency deployment readiness services; regional Joint Reception, Staging, Onward movement and Integration training; and multinational exercises in support of Theater Security Cooperation Programs and shaping phase operations (security cooperation activities performed by the Army to deter potential adversaries and solidify relationships with allies and partners) (CALL, 2016). PTA also supports joint training requirements such as PACAF/Hawaii Air National Guard Dual Row Airdrop Systems operations, PACFLT/MARFORPAC opportunity training for transiting forces, urban operations, CAS, and joint live-fire training (USARHAW, 2015).

Community Use of PTA

PTA is used for training by State and county agencies including Hawai'i Emergency First Responders, Hawai'i Civil Defense Agency, Hawai'i Emergency Management Agency, State Office of Homeland Security, and the Hawai'i Police Department. PTA also is used by non-profit organizations including the Red Cross, Boy Scouts, Girl Scouts, and Youth Challenge.

The State-owned land at PTA is periodically opened to public recreation activities, provided such activities are consistent with use of the land and do not conflict with the military mission. Requests for use are made through the Deputy Garrison Commander/Commander at PTA, who coordinates requests with Range Control and others that may be affected. Appropriate access control procedures are established for each approved outdoor recreation activity. Public recreational activities have been conducted at PTA and include archery in TAs 5 and 6; guided hikes; and hunting for birds, pigs, sheep, and goats within specific areas.

Multiple community and regional initiatives are supported by the installation and include the Dryland Forest Working Group, Hawai'i Rare Plant Restoration Group (fosters initiatives to restore rare plants) and the Big Island Invasive Species Committee. USAG-HI, Environmental Division and PTA personnel cooperate and coordinate with approximately two dozen groups and agencies, including the Palila (finch-billed Hawaiian honeycreeper) Working Group, Hawaiian Hoary Bat Working Group, and Nēnē (Hawaiian goose) Recovery Action Group.

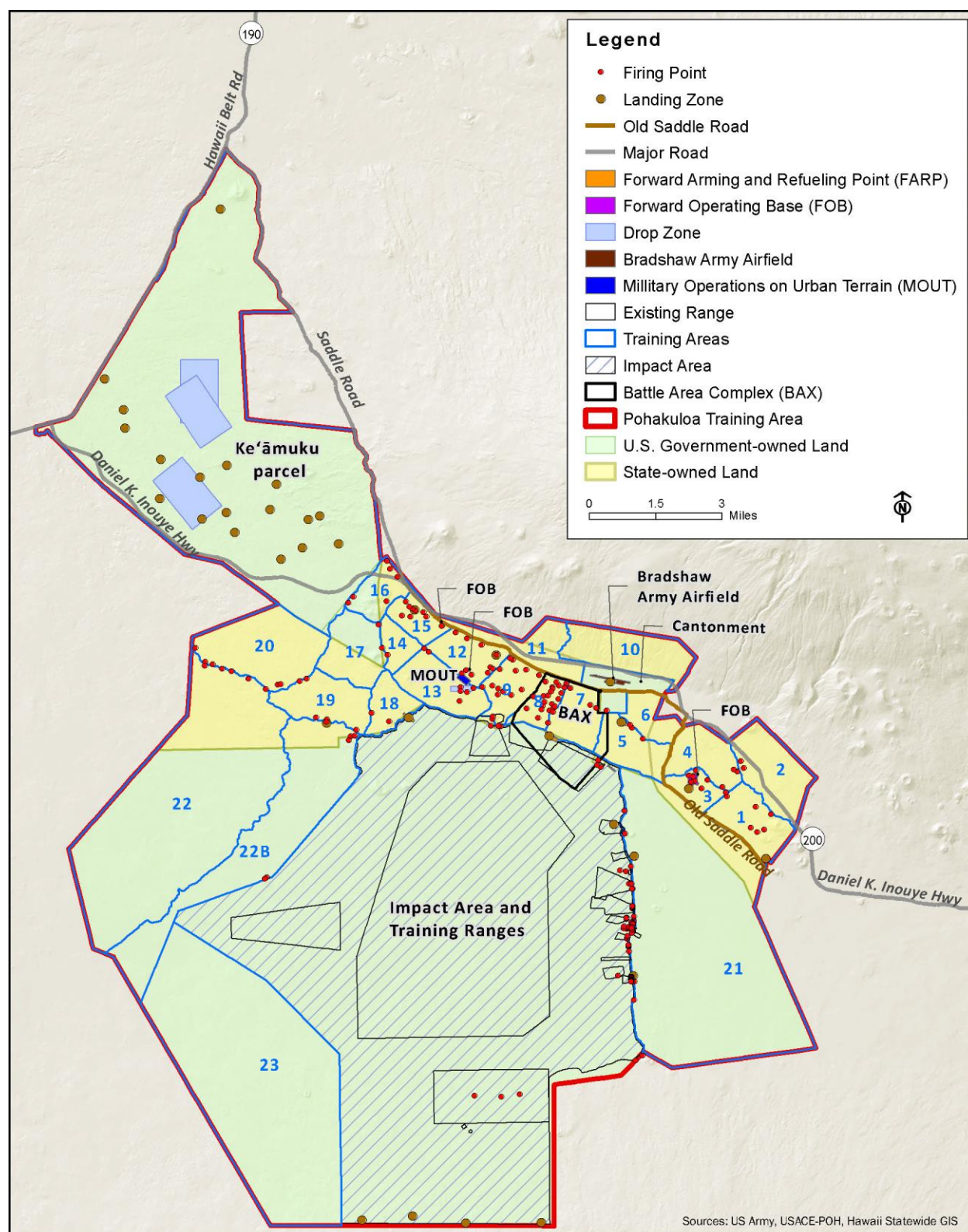


Figure 1-3: Pōhakuloa Training Area Training Areas and Features

1.3 Purpose and Need

1.3.1 Proposed Action

The Army proposes to retain up to approximately 23,000 acres of State-owned land at PTA in support of continued military training. The Proposed Action is fully described in **Section 2.1**.

1.3.2 Purpose

The purpose of the Proposed Action is to enable USARHAW to continue to conduct military training on the State-owned land within PTA to meet its ongoing training requirements.

1.3.3 Need

The Proposed Action is needed to preserve limited maneuver area, provide austere environment training, enable access between major parcels of U.S. Government-owned land in PTA, retain substantial infrastructure investments, allow for future facility and infrastructure modernization, and maximize use of the impact area in support of USARHAW-coordinated training. The following paragraphs further describe the Army's need to retain the State-owned land at PTA.

Retention of maneuver area on State-owned land at PTA is important for maneuver, live-fire, and non-live-fire training, and to accommodate larger than company-sized units for training exercises. Despite the availability of land at PTA, land suitable for maneuver area is limited. A majority of PTA consists of the impact area and land unsuitable or restricted due to physical constraints. Approximately 54 percent of PTA's unrestricted maneuver area is located on the State-owned land (**Section 1.2.5**).

The landscape at PTA provides an austere, real-world training environment (**Section 1.2.4**). The State-owned land provides essential connections for maneuvering throughout PTA. State-owned land is necessary to access the TAs and training facilities on the State-owned land, as well as the ranges, TAs, and the impact area located on U.S. Government-owned land to the south. The State-owned land is also necessary to provide access between the three U.S. Government-owned portions of PTA (Cantonment and BAAF, impact area and training ranges, and Ke'āmuku parcel).

Critical facilities (e.g., BAX, ammunition storage locations), utilities (e.g., electricity, potable water, communications), and infrastructure (e.g., roads, firebreaks/fuel breaks) are located on the State-owned land. **Section 2.1.1** provides additional detail. Federal directives, such as 10 U.S.C. Section 2852, Military Construction Projects: Waiver of Certain Restrictions, and AR 405-10, Acquisition of Real Property and Interests Therein, specify that to carry out military improvements or modernization efforts, a long-term interest (i.e., 25 years) in the land must be acquired. With fewer than 10 years remaining on the lease of State-owned land, these directives limit the Army's ability to invest in improvements at PTA. USARHAW is unable to modernize existing facilities on the State-owned land without a long-term land retention agreement in place.

No other training area in Hawai'i can accommodate collective training at larger than company size. As currently configured, PTA provides the maneuver area, SUA, training features and facilities needed to meet USARHAW training requirements for Hawai'i-based units. PTA provides the longest distance for indirect-fire weapons (i.e., artillery and mortars) among all training areas within 1,000 miles. FPs located

on the State-owned land support training with indirect-fire weapons at long-range and maximize firing capabilities into the impact area.

In addition to allowing Soldiers to meet training requirements, other military units (listed in **Section 1.2.6**) use PTA to meet their training requirements. PTA is the primary ground maneuver tactical training area for USINDOPACOM and is used for joint and multinational training exercises (e.g., Rim of the Pacific Exercise).

Loss of the State-owned land would result in substantial impacts to training as the Army would no longer have access to these critical maneuver areas, facilities, utilities, and infrastructure. Several of the training features and capabilities within the State-owned land are not available elsewhere within PTA or Hawai'i.

1.4 Scope and Content of the EIS

NEPA requires federal agencies to examine the potential environmental effects of their proposed actions on the human environment. The NEPA process ensures that environmental information is available to public officials and citizens for review and input before decisions are made and before actions are taken. To pursue retention of the State-owned land for continued USARHAW training, the Army has initiated this EIS under the Council on Environmental Quality (CEQ) NEPA implementing regulations in 40 Code of Federal Regulations (CFR) Parts 1500–1508, and Army NEPA implementing regulations in 32 CFR Part 651. The Notice of Intent (NOI) for this EIS was published in the *Federal Register* (FR) on September 4, 2020, which is prior to the September 14, 2020, effective date of CEQ's update to its NEPA implementing regulations; therefore, this EIS adheres to the 1978 version, as amended, of CEQ's NEPA implementing regulations.

As noted in **Section 1.1**, this EIS also is being prepared to comply with HEPA regulations. HEPA allows draft and final federal EIS documents to be submitted in compliance with HRS Chapter 343, as long as the federal EIS satisfies the content requirements identified in HEPA, including addressing potential cultural resources impacts (HAR Section 11-200.1-31 [4] and [5]). HAR Chapter 11-200.1 dictates the process and content for developing environmental disclosure documents.

The scope of this EIS includes a description of the Proposed Action, alternatives considered, existing conditions, and environmental consequences (i.e., potential impacts). The Proposed Action, as described in **Chapter 2**, is retention of the State-owned land at PTA for continued military training. Should Army training needs and impacts change in the future, separate NEPA compliance would be required.

1.4.1 Resource Analysis

The Proposed Action is a real estate action (i.e., administrative action) that would enable continuation of ongoing activities on the retained State-owned land. Current activities within the State-owned land were previously analyzed in separate NEPA documents, as applicable; therefore, continuation of current activities is not re-evaluated in this EIS. Future construction, modernization, or changes in ongoing activities within the retained State-owned land would require separate NEPA (and potentially HEPA) compliance, as applicable.

The scope of the analysis in this EIS includes evaluation of the existing conditions and potential environmental consequences (impacts) associated with the following resource areas:

- Land Use
- Biological Resources
- Cultural Resources
- Hazardous and Toxic Materials and Wastes
- Air Quality and Greenhouse Gases
- Noise
- Geology, Topography and Soils
- Water Resources
- Socioeconomics
- Environmental Justice
- Transportation and Traffic
- Airspace
- Electromagnetic Spectrum
- Utilities
- Health and Safety

1.4.2 Regulatory Compliance Associated with the Proposed Action

The NEPA and HEPA processes require compliance with other relevant environmental laws and regulations. Regulations relevant to implementation of this proposed real estate action are highlighted here to provide decision-makers with an overview of the regulatory context. Anticipated permits and approvals required for the Proposed Action are listed in **Table 1-1**. The regulatory context for ongoing activities within the State-owned land is provided by resource area in **Chapter 3**.

National Historic Preservation Act

NEPA regulations require federal agencies to consider the impacts of proposed actions and alternatives on historic and cultural resources. Federal agencies are encouraged to prepare NEPA documents while coordinating and integrating the analysis and requirements of applicable historic preservation laws. The National Historic Preservation Act (NHPA) (54 U.S.C. Section 300101 *et seq.*, 36 CFR Part 800) defines a process considering those impacts and is the primary federal historic preservation law applicable to the Proposed Action. In compliance with the NHPA, the Army executed a programmatic agreement (PA) with the State Historic Preservation Officer and the Advisory Council on Historic Preservation in 2018 (DA, 2018b). The PA resolves adverse effects to historic and cultural resources that may result from ongoing routine military training actions and related activities at PTA, including those activities on the State-owned land. The potential adverse effects are mitigated through programmatic treatments and procedures specified in the PA. The PA is a 15-year agreement that will remain in effect until at least 2033 and includes a process to extend the life of the agreement.

Hawai'i Revised Statutes Section 343-2, Hawai'i Cultural Impact Assessment

HRS Section 343-2 requires that the effects of a proposed action "...on the economic welfare, social welfare, and cultural practices of the community and State..." be disclosed. The impacts of the Proposed Action alternatives on cultural practices and beliefs have been evaluated in a formal Cultural Impact Assessment (CIA) as a part of the EIS process. The CIA was created following the methodology and content protocols in the 1997 State Environmental Council's *Guidelines for Assessing Cultural Impacts*. Information was collected through consultation and community engagement with traditional cultural practitioners,

knowledgeable informants and individuals or organizations with expertise in the types of cultural practices and beliefs associated with the area, and other stakeholders. The outreach also provided accurate and meaningful information about the project and the opportunity to obtain input on the Proposed Action, potential alternatives, and their potential impact on cultural properties, beliefs, practices and resources of Native Hawaiians and other ethnic groups. **Appendix E** contains the CIA.

Hawai'i Revised Statutes Chapter 6E

Under HRS Chapter 6E, state agencies providing a permit or entitlement must determine if a project would affect historic properties, aviation artifacts, or burial sites. If the project may affect such sites, a project review must be conducted in coordination with the Hawai'i State Historic Preservation Division (SHPD). Chapter 6E compliance provides for the state agency proposing to issue a permit or entitlement (e.g., a division of the State Department of Land and Natural Resources [DLNR]) to determine whether a project may have an effect on historic properties. The determination can include commitments to mitigation that address potential effects. SHPD can review the agency's determination and decide whether it concurs or advises further action under Chapter 6E.

While this EIS documents known cultural resources on the State-owned land and analyzes potential impacts from the alternatives, Chapter 6E rules do not provide for SHPD review of EIS documents. Rather, the rules allow SHPD to review and comment on a State agency's determination of effect when the agency considers permits and/or land transfers by a state agency (e.g., a lease, or Conservation District Use Permit [CDUP]). Thus, compliance with Chapter 6E would follow the EIS process. SHPD was notified of the intent to prepare an EIS and of the Draft EIS availability, although it has no regulatory review responsibility.

Hawai'i Administrative Rules Chapter 13-5 Conservation District Rules

In 1961, the State enacted a land use law that established four major land use districts into which all lands throughout the State were categorized: urban, rural, agricultural, and conservation. Boundaries of the Conservation District were established in 1964 and went into effect with the Conservation District statute (HRS Chapter 183C). The conservation district was established to conserve, protect, and preserve important natural and cultural resources of the State through appropriate management and use to promote their long-term sustainability and public health, safety, and welfare.

The region including and surrounding PTA was included in the conservation district. The lease for Army use of State-owned land was signed in August 1964, prior to the enactment of HRS Chapter 183C. Per the statute and its enacting rule, HAR Chapter 13-5, Conservation District, lawful use of land prior to October 1, 1964, is considered nonconforming. PTA falls primarily in the resource subzone, one of the four defined subzones, which is intended for uses such as park land, lands for growing and harvesting commercial forest products, and outdoor recreation.

Military use is not included as an allowable use for any conservation district subzone. HAR Chapter 13-5 provides for authorization of additional uses through discretionary permits from the State Board of Land and Natural Resources (BLNR). Any request for a permit would follow the EIS process and determination of the land retention estate(s) and method(s) (see **Section 2.3**). **Section 3.2** provides additional information on the State land use district rules.

1.4.3 List of Anticipated Reviews

A list of all permits and approvals from federal, state, and county agencies necessary for implementation of the Proposed Action is required to be included in this EIS under 40 CFR Part 1502.25 and HAR Section 11-200.1-23. **Table 1-1** lists the anticipated reviews related to this real estate action; no County of Hawai'i permits or approvals are anticipated. **Section 5.3** discusses consistency with principal land use plans, policies and controls applicable to the Proposed Action.

Table 1-1 Anticipated Reviews	
Reviews	Agency
Federal	
Endangered Species Act of 1973 <i>16 U.S.C. Section 1531 et seq.</i>	U.S. Fish and Wildlife Service
State	
Coastal Zone Management <i>HRS Chapter 205A</i>	State Office of Planning
Hawai'i Historic Preservation Review <i>HRS Chapter 6E-8 and HAR Chapter 13-275</i>	State DLNR Land Division SHPD
Hawai'i State Land Use Law <i>HRS Chapter 183C and HAR Chapter 13-5</i>	State DLNR Office of Conservation and Coastal Lands

1.5 Decisions to be Made

1.5.1 Army Decision

The Army will decide on and identify a preferred alternative in the Final EIS after taking into consideration which alternative best meets the purpose of and need for the Proposed Action, public comments on the Draft EIS, and the environmental analysis associated with each alternative. The final decision and rationale for selection of an alternative for implementation will be presented in a Record of Decision (ROD) following issuance of the Final EIS. The ROD will document the decision made, provide supporting explanation, and identify mitigation measures the Army will implement. It will explain the pertinent factors relied on in making the decision and how the selected alternative meets the purpose of and need for the Proposed Action. Once the ROD is signed by the Army's decision-maker, the Army Installation Management Command's Executive Deputy to the Commanding General, the Army will place a Notice of Availability (NOA) in the FR to announce the availability of the ROD for public review.

1.5.2 State Reviews

Decisions to be made by state agencies related to this EIS would be made by the State DLNR's Board of Land and Natural Resources. Under HRS Chapter 343, the agency with the greatest responsibility for approving the action as a whole is the accepting authority. The State-owned land is under the management of DLNR's Land Division; thus, DLNR would be the accepting authority for the State. Under HAR Section 11-200.1-28, the accepting authority evaluates whether the EIS fulfills the intent and

provisions of HRS Chapter 343, adequately discloses and describes identifiable impacts and satisfactorily responds to comments provided during public review.

Once the EIS acceptability determination is made (by the State) and the ROD is issued (by the Army), the alternative selected in the ROD can be implemented. Depending on the alternative selected, possible decisions that may need to be made by state agencies, following acceptance of this EIS, include the following:

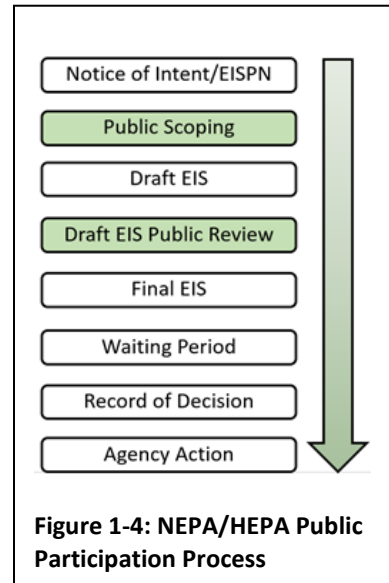
- Whether to allow Army retention of the State-owned land.
- What estate(s) and method(s) would be used to allow Army retention of the State-owned land, and what terms would be associated with the selected estate(s) and method(s).
- If presented with a CDUP application to permit military use of lands in the State's conservation district (resource subzone), consider allowable uses and management actions to meet the purposes of the conservation district.

1.6 Public Participation

Public involvement is a key component of the NEPA and HEPA processes. Public input is formalized in a public scoping process and in prescribed public review/comment periods. **Figure 1-4** illustrates stages of public involvement in NEPA/HEPA environmental processes, with public input opportunities shown in green. HEPA and NEPA public involvement processes for this EIS are running concurrently to meet the requirements for both regulations.

1.6.1 Notice of Intent / EIS Preparation Notice

The Army's NEPA notice requirements are codified in 32 CFR Part 651.45, which aligns with the requirements of 40 CFR Part 1506.6. Publication of an NOI in the FR alerts the public of an agency's intent to prepare an EIS and initiates the NEPA 30-day public scoping period. The NOI for this EIS was published on September 4, 2020 (85 FR 55263). An amendment to the NOI was published on September 23, 2020 (85 FR 59753) to notify the public of the cancellation of in-person comment stations associated with the EIS Scoping Virtual Open House (SVOH) due to the COVID-19 pandemic. **Section 1.6.2** provides further details. The NOI notices are provided in **Appendix A**, and the SVOH meeting materials are provided in **Appendix C**.



In accordance with HAR Section 11-200.1-23, publication of the HEPA EIS Preparation Notice (EISPN) in the State Office of Environmental Quality Control (now Environmental Review Program [ERP]) bi-monthly publication, *The Environmental Notice*, alerts the public of the applicant's intent to prepare an EIS and initiates the HEPA 30-day public comment period. Notice of the HEPA EISPN availability was published in *The Environmental Notice* on September 8, 2020. The State EISPN notice is provided in **Appendix A**.

1.6.2 Scoping

The purpose of a public scoping process is to help identify reasonable alternatives and potential impacts and obtain input from the community regarding key issues of concern and resources to be addressed or

analyzed through the EIS process. In this regard, it helps to define the “scope” of issues and analyses in the EIS. The intent of a scoping process is to reach out early and engage a broad range of stakeholders with the purpose of informing and requesting input.

Methods to solicitate public input during the scoping process for this EIS included notification, publication of project information, and invitations to participate in scoping. The NEPA public scoping period began September 4, 2020, with publication of the NOI, and the HEPA public comment period began September 8, 2020, with publication of the EISPN. The Army voluntarily chose to extend the NEPA and HEPA scoping periods beyond the required 30 days; the NEPA and HEPA scoping periods ran concurrently, and the joint 40-day scoping period ended on October 14, 2020.

A public notice in local newspapers, published in multiple newspapers on multiple days, was also used to notify the public of the Army’s intent to develop an EIS and to provide information regarding the Proposed Action and alternatives. The public notice was published in the *West Hawaii Today*, *Hawaii Tribune Herald*, and *Honolulu Star-Advertiser* on three separate dates (September 6, 14, and 20, 2020). Affidavits of publication are provided in **Appendix A**. Additionally, postcards with similar information were mailed via U.S. Postal Service to approximately 100 individual, agency and organization stakeholders on September 4, 2020 (**Table 8-1**). Stakeholders consist of agencies with a regulatory role, individuals and organizations from contact lists maintained by USAG-HI for issues related to PTA, and elected officials whose jurisdiction includes PTA. The scoping direct mail postcard is shown in **Appendix C**.

The Army invited federal, state, and local agencies; Native Hawaiian organizations; and the public to participate in the scoping process. Written comments were accepted throughout the 40-day public scoping period using three methods: a comment form accessed via the project EIS website (<https://home.army.mil/hawaii/index.php/PTAEIS>), a letter via U.S. Postal Service mail, and a message to the Army email address (usarmy.hawaii.nepa@mail.mil).

National and local orders and proclamations were issued in response to the coronavirus (COVID–19) pandemic including: *Interim Army Procedures for NEPA* (issued in March and June 2020), the County of Hawai‘i *COVID–19 Emergency Rule No. 11* (dated August 25, 2020), and the State’s *Twelfth Proclamation Related to the COVID–19 Emergency* (dated August 20, 2020). The Army, therefore, shifted to host “virtual” agency and public scoping events. To facilitate the receipt of public comments and distribution of project information, two “in-person comment stations” were initially planned to be held in two communities on the island of Hawai‘i near PTA as part of the SVOH event. The comment stations were conceptualized to: (1) accept written comments, (2) provide a telephone for those who wanted to record oral comments, and (3) provide printed project materials for those without computer access. In line with COVID-19 guidance to avoid large group gatherings, no project presentations or question/answers were planned at the in-person stations. The State and county orders and proclamations issued in August limited the number of people allowed to gather in a single location. Out of an abundance of caution regarding COVID-19, the Army decided to cancel the in-person comment stations.

Two scoping events were held via on-line platforms: a Virtual Agency Scoping Meeting for agencies and an SVOH event for the public. The Virtual Agency Scoping Meeting was held on September 21, 2020, from 1:30 p.m. to 3:00 p.m., Hawai‘i Standard Time. Thirty-six relevant federal, state and county agencies and divisions received invitations; 25 individuals representing 19 different agency divisions attended. The meeting was conducted through a web-hosted video-conference platform to allow participants to see the

speakers, view prepared slides, and record the meeting. The presentation provided an overview of the Proposed Action and alternatives and identified the resource areas proposed for analysis in this EIS.

The SVOH event was held on September 23, 2020, from 4:00 p.m. to 9:00 p.m., Hawai'i Standard Time. An SVOH webpage was activated on the EIS website at the start of the SVOH event and remained available to the public for the rest of the scoping period (until October 14, 2020). During the SVOH event, the public was invited to view and listen to prerecorded presentations (narrated posters), review project documents (e.g., NOI, EISPN, Fact Sheet, Questions and Answers, and Flyer) and submit written and oral comments. The scoping meeting materials are provided in **Appendix C**. Oral comments were accepted via telephone by calling a specific telephone number during the 5-hour SVOH event to fulfill HEPA requirements and allow oral comments during a portion of the SVOH (HAR Section 11-200.1-23[d]). The SVOH was designed to replicate an in-person, open house style event. Written comments were accepted throughout the scoping period.

During the 5-hour period of the SVOH event, 36 oral comments were received by fewer than 36 individuals as some commentors called more than once. Roughly one-third of the 36 comments expressed preference that the Army's Proposed Action—retention of State-owned land—does not occur. Several commenters asked that the EIS address impacts to training if the State-owned land is not retained. Support for training and for the Army was expressed by several callers; one specifically elaborated on programs undertaken by the Army and the staff at PTA that have benefited the community. Three commenters asked that results of a lawsuit against the State "Ching versus DLNR" be implemented and progress on clean-up of the State-owned land be documented in the EIS. Six callers conveyed an expectation that the SVOH would be a "town hall" type setting that would include face-to-face video interaction. These callers expressed disappointment they could not ask questions directly. Per HAR Section 11-200.1-23(d), the original recordings have been submitted as audio files with the Draft EIS to the ERP and are available from its on-line EA/EIS library. Transcripts of the oral comments are provided in **Appendix B**; a list of those that provided comments during scoping is included in **Table 8-1 (Chapter 8)**.

A total of 240 written submissions were received during the 40-day scoping period. Nearly all submittals were provided by individuals, agencies, and organizations within the State. The EIS development team reviewed all submissions for substantive content and assigned a topic to substantive statements; each substantive statement assigned a topic is considered one "comment." In determining whether a comment is substantive, the EIS preparer " . . . shall consider the validity, significance and relevance of the comment to the scope, analysis or process of the EIS (HAR Section 11-200.2-26[a])." For this EIS, comments that help refine the Proposed Action or alternatives; identify specific resource analysis to be conducted in the EIS (e.g., cultural resources, biological resources, hazardous waste); and/or recommend technical data, specific impacts or mitigation measures were considered substantive. Statements considered to not be substantive were general comments with no specific information, such as those that stated preferences for or against the Proposed Action, military, or Army in Hawai'i.

The team identified 417 substantive comments and 24 topics in the written submittals. Most of the substantive comments fell under the following topics: biological resources, cultural resources, hazardous materials, land use and lease issues, and noise. **Appendix B** includes all scoping comments received and provides responses to the substantive comments.

1.6.3 Draft EIS

The Draft EIS public review period was initiated through publication of an NOA in the FR, and in the ERP bulletin *The Environmental Notice*. In accordance with 32 CFR Part 651, a public notice also was published in local newspapers. Additionally, postcards with similar information to the public notice were mailed via U.S. Postal Service to approximately 100 individual, agency and organization stakeholders; names of elected officials were updated between the scoping and EIS notifications to reflect the outcome of November 2020 elections (**Table 8-1**). Per NEPA and HEPA, publication of the NOA in federal and state bulletins initiates the Draft EIS public review period, which is 45 days. Draft EIS public meetings are scheduled to provide information to the public and agencies and to facilitate oral and written comments.

Written comments must be received or postmarked within 45 days of publication of the Draft EIS NOA. All written comments on the Draft EIS will be considered during the preparation of the Final EIS.

1.6.4 Final EIS

The Final EIS will take into consideration comments received on the Draft EIS, identify substantive comments, and provide responses commensurate to the comment. The Final EIS may be refined to address substantive comments and to clarify information. Like the Draft EIS, availability of the Final EIS will be published in the FR and in the ERP bulletin. DLNR, as the State's accepting authority for this EIS, will conduct its HEPA acceptability determination within 30 days of publication of Final EIS availability in the ERP bulletin. DLNR's determination will be published in the ERP bulletin. A public notice that the Final EIS has been published also will be placed in local newspapers.

Chapter 2

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action

The Army proposes to retain up to approximately 23,000 acres of State-owned land at PTA in support of continued military training. Retention would occur through attainment of a land interest that would allow continued use of the land. The Army would arrange for retention and continued use of the State-owned land prior to expiration of the 1964 lease to ensure training is not interrupted. Following arrangement for retention of the State-owned land, the Army would continue to conduct Army ongoing activities (military training; facility, utility, and infrastructure maintenance and repair activities; resource management actions; and associated activities such as emergency services) on the retained State-owned land. The Army also would continue to permit and coordinate ongoing activities (training and other activities such as public use programs) on the retained State-owned land by other PTA users, including DoD agencies, international partners, local agencies, and the community.

The Proposed Action is a real estate action (i.e., administrative action) that would enable continuation of ongoing activities on the retained State-owned land. It does not include construction, modernization, or changes in ongoing activities in the retained State-owned land. Additionally, the Proposed Action does not include changes to the use, size, or configuration of the SUA overlying the State-owned land. Current activities within the State-owned land were previously analyzed in separate NEPA documents, as applicable, and future construction, modernization, or changes in ongoing activities within the retained State-owned land would require separate NEPA (and potentially HEPA) compliance, as applicable. Army training evolves constantly in response to new technology and the changing threats around the world. These changes can require the use of new maintenance and repair activities. The management of environmental resources also can be expected to evolve. It cannot be expected that use of the State-owned land would remain the same over a long period any more than it remained static in the years following execution of the lease in 1964.

Section 2.1.1 describes the TAs, facilities, utilities, and infrastructure within the State-owned land. **Section 2.1.2** provides details on the primary features and associated military training conducted on the State-owned land. **Section 2.1.3** summarizes the training procedures and requirements on the State-owned land. **Section 2.1.4** lists the screening criteria the Army used to assess the alternatives for implementing the Proposed Action.

2.1.1 State-Owned Land Training Areas, Facilities, Utilities, and Infrastructure

The State-owned land includes TAs 1–15, 18, 19, and 20, and portions of TAs 16, 17, 21, and 22 (including the northern portion of TA 22B), which accounts for 22 of the 24 TAs at PTA. The TAs are used for maneuver and weapons training and include a variety of training and support facilities, utilities, and infrastructure. U.S. Government-owned facilities within the State-owned land include live-fire and non-

live-fire FPs; ranges for mounted, dismounted, and aviation training; and support facilities such as ammunition storage areas and helicopter and tilt-rotor aircraft landing zones. U.S. Government-owned utilities within the State-owned land include electricity (electrical distribution lines and the installation's only electrical substation), potable water facility (pump stations, storage tanks, chlorination system, and distribution pipe), fire protection water (storage tank and distribution pipe), and communications equipment. U.S. Government-owned infrastructure within the State-owned land includes roads (65 miles), training trails (94 miles), and firebreaks/fuel breaks. The State-owned land supports larger than company-sized units (i.e., battalion and brigade) for live-fire and maneuver exercises.

Table 2-1 summarizes the facilities within the State-owned land. Facilities on the State-owned land have been roughly valued at more than \$200 million (USACE-POH, 2017). **Figure 2-1** presents the TAs and facilities on State-owned land. For security reasons, the figures in this EIS do not show utilities, the ammunition supply point (ASP), ammunition holding area (AHAs), and Cooper Air Strip, which is an unmanned aerial vehicle (UAV) airfield. For ease of viewing, **Figure 2-1** does not show the infrastructure on the State-owned land.

Table 2-1 Facilities within the State-Owned Land		
Facility	Description	Number in State-Owned Land versus all of PTA
Battle Area Complex	Digital live-fire range for mounted, dismounted, and aviation training	1 of 1
Military Operations on Urban Terrain	Range with several buildings to simulate a village for practicing military operations in an urban setting	1 of 1
Ammunition Supply Point	Facility where ammunition is securely stored for issue to and return by military units	1 of 1
Ammunition Holding Area	Area where ammunition is temporarily stored while a military unit is training	2 of 5
Cooper Air Strip	UAV airfield with storage buildings	1 of 1
Firing Point	Location used for live-fire and non-live-fire training by indirect-fire weapons (i.e., artillery, mortars, and rockets)	107 of 118
Portion of Range 14	Multi-purpose live-fire range	1 of 1
Landing Zone	Cleared area for landing and takeoff of helicopters and tilt-rotor aircraft	6 of 27
Drop Zone	Cleared area used to drop equipment and personnel via parachute from aircraft	1 of 4
Forward Arming and Refueling Point	Cleared area with concrete pads for providing fuel and ordnance to helicopters and tilt-rotor aircraft	2 of 3
Forward Operating Base	Entry-controlled position used to support a strategic goal or objective (e.g., medical facilities, airfields, and maintenance support facilities)	3 of 3
Helicopter Dip Tank	Surface water feature where helicopters can fill buckets with water during firefighting operations	8 of 10

Source: DA, 2018b; USARHAW, 2021

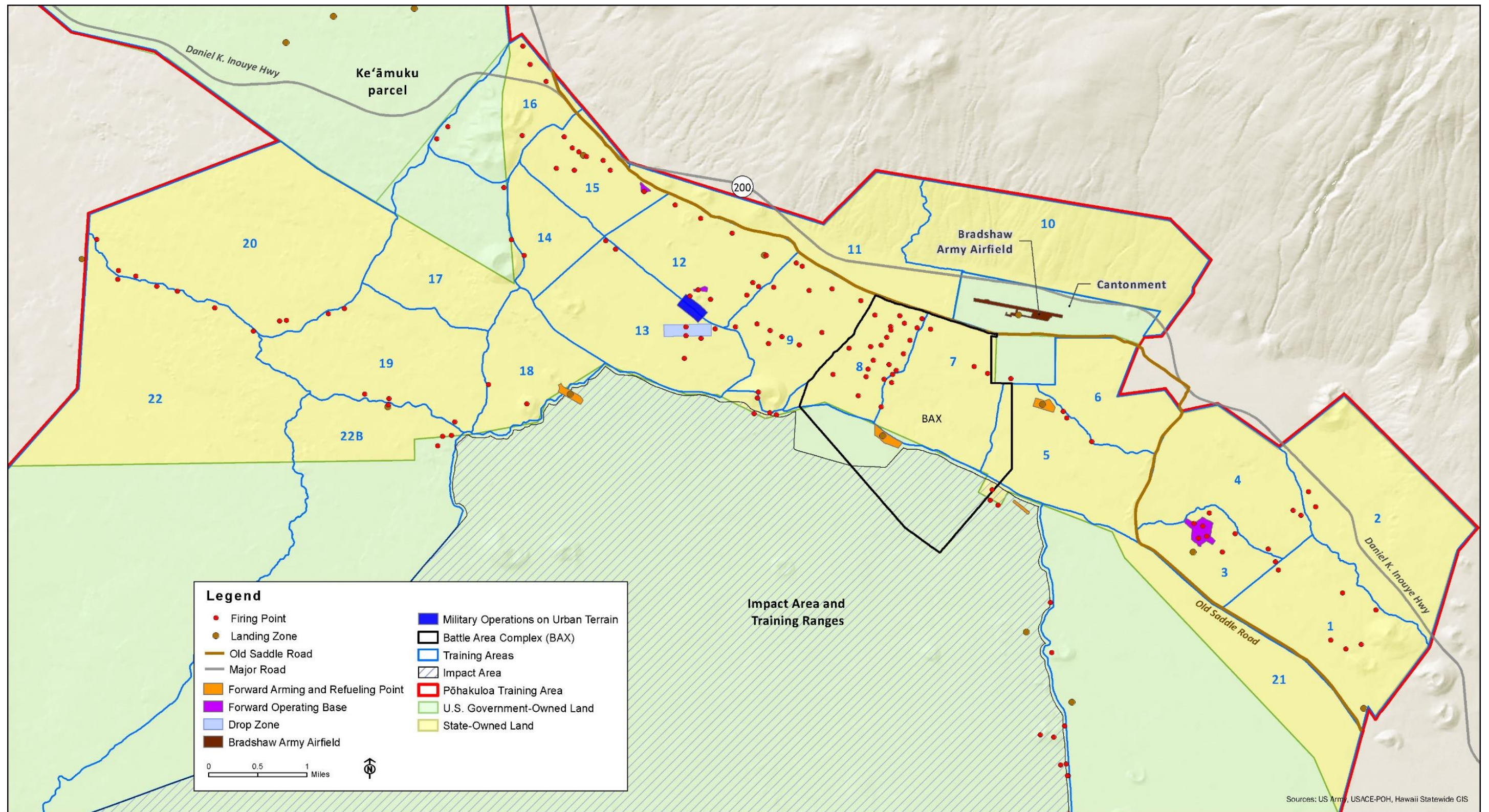


Figure 2-1: Training Areas and Facilities on State-Owned Land

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2.1.2 Features and Associated Training on State-Owned Land

PTA is used for training by a variety of DoD agencies, international partners, and local agencies. Much of this training is conducted on the State-owned land, as described in the following paragraphs.

Battle Area Complex. The BAX is a digital live-fire range used for mounted, dismounted, and aviation training. It is instrumented to capture audio, video, and automated scoring to provide feedback on performance. The BAX is a single range with multiple capabilities that include crew gunnery lanes and convoy live-fire, aerial gunnery, and move and shoot capacity for up to a company (100–200 personnel). It supports use of ball ammunition and rockets. The BAX also is integrated with Range 11-T (not on State-owned land) to provide depth to employ several weapons systems with complimentary effects and varying distances. The BAX allows for training, certification, and qualification of various combat units. It ensures units are prepared to integrate with lateral units while deployed in combat and peace-time missions. The training outcomes provided at the BAX are the Army standard benchmark, focusing on the Army's Integrated Weapons Training Strategy, which builds proficiency from individual weapons to Combined-Arms Live-Fire Exercises. The BAX is the only digital live-fire military range in Hawai'i and is potentially the most important range facility in USARHAW's training strategy. It also is used by the USMC, USAF, and USN (USARHAW, undated). In fiscal year 2019, 7,926 personnel were trained at the BAX, and 12,000 personnel were trained across PTA (USAG-PTA, 2020a; USARHAW, 2019a). Therefore, 66 percent of all personnel trained at PTA in fiscal year 2019 used the BAX.

Maneuver Areas. TAs 1 through 20 within the State-owned land represent the largest contiguous area of land with soil on PTA, as opposed to the bare lava that dominates much of the rest of PTA. This soil area allows cross-country maneuver on foot and vehicle as well as the ability to dig and excavate survivability positions for personnel and their equipment (USARHAW, undated).

All of the State-owned land (approximately 23,000 acres) meets the Army Training and Evaluation Program standards for unrestricted maneuver area. The State-owned land represents approximately 54 percent of PTA's unrestricted maneuver area (approximately 42,833 acres).

Firing Points. Approximately 91 percent of the FPs on PTA are on the State-owned land (USARHAW, 2021). The FPs are used by indirect-fire weapons (i.e., artillery, mortar, and rocket systems). Artillery units conduct up to battalion-level training at PTA. This training cannot be conducted anywhere else in Hawai'i due to the distances required to fire artillery for this size unit. The State-owned land allows artillery and mortar units to maneuver by using broad areas to engage and then conduct survivability moves multiple times per training event. Survivability moves are required because an enemy can determine the source of artillery and mortar fire and target those locations. Artillery and mortar units must practice relocating to new FPs to avoid being targeted by enemy forces. During collective training, the indirect-fire weapons are integrated to provide variable ranges of fire support to simulate real world situations (USARHAW, undated). The High Mobility Artillery Rocket System is used to deliver rocket fire from FPs located within State-owned land onto the impact area located on U.S. Government-owned land. Training on this system occurs no more than four times per year at PTA (USAG-HI, 2019).

Long-Range Firing. Indirect-fire weapons require long-range firing capabilities. Based on the geometry of PTA, the longest indirect-fire distances are from north to south. The Ke'āmuku parcel and other PTA areas north of DK1 Highway are not suitable for indirect-fire weapons because of safety restrictions that prohibit firing over DK1 Highway into the impact area. Therefore, FPs on the State-owned land provide the longest firing distance on PTA and are essential for training (USARHAW, undated). These FPs offer distances that are approximately four times longer than other military facilities in Hawai'i.

Aviation. Aircraft training requires a series of increasingly complex and larger collective qualifications for annual certification. UAVs require their own qualification and support collective training events. Aircraft training locations within the State-owned land includes the FARPs, drop zone, landing zones, and Cooper Air Strip.

Cooper Air Strip is dedicated to UAV operations and provides safe separation from the manned aircraft operations at BAAF (USARHAW, undated). It underlies restricted area R-3103, so the UAVs can be operated without conflicts with general aviation traffic. Cooper Air Strip is used for approximately 8,500 operations annually (USAG-PTA, 2020b).

Ammunition Management. Ammunition within the State-owned land is managed at the ASP, AHAs, and FARPs. The ASP is a safe and secure storage facility that receives, stores, issues, and maintains accountability of ammunition at PTA. It is licensed by the DoD Explosive Safety Board and was sited and built to meet regulatory requirements for net explosive weight, compatibility, and explosive safety quantity-distance (ESQD) for ammunition storage and operations. The ASP is critical to support training operations at PTA. AHAs are temporary sites close to a range or TA where ammunition is issued and turned-in by the individual or crew that will use the ammunition. AHAs are licensed and must comply with regulatory requirements. FARPs are used to arm and fuel helicopters and tilt-rotor aircraft during training operations (USARHAW, undated). There are two AHAs and two FARPs on the State-owned land.

2.1.3 Training Procedures and Requirements on State-Owned Land

Training on PTA, including the State-owned land, adheres to procedures and requirements in USARHAW Regulation No. 350-19, *Installations Ranges and Training Areas*; *U.S. Army Garrison, Pōhakuloa External Standard Operating Procedures*; and the 1964 lease (e.g., only small arms ammunition is permitted to be fired into Parcel A of the State-owned land). *U.S. Army Garrison, Pōhakuloa External Standard Operation Procedures* identifies cultural and biological resources restricted areas, general restrictions, vehicle restrictions, excavation restrictions, mechanical equipment excavation restrictions, emergency discovery procedures, area specific restrictions (e.g., Palila critical habitat, conservation fence units), restrictions for endangered wildlife protection, and special restrictions for invasive species prevention (USAG-PTA, 2018a). The State-owned land includes approximately 5,095 acres of critical habitat for Palila and approximately 8,500 acres of conservation fence units for protecting federally listed plant species from ungulates (i.e., sheep, goats, and pigs).

2.1.4 Screening Criteria

The Army established screening criteria to identify the range of potential alternatives that support the purpose of and need for the Proposed Action. The Army used the screening criteria to assess whether each alternative was reasonable and would be carried forward for evaluation in this EIS. **Table 2-2** compares the potential action alternatives against the following screening criteria:

1. Allow for long-term use, maintenance, repair, and future modernization of vital ranges, facilities, U.S. Government-owned utilities, and infrastructure on the State-owned land in support of ongoing USARHAW training and operational requirements.
2. Include long-term use of contiguous unrestricted maneuver area to accommodate continuation of collective training, including live-fire and maneuver exercises at larger than company size.
3. Include long-term access in the State-owned land to permit continuation of ongoing activities (training, maintenance and repair activities, resource management actions, emergency services, public use programs) in the State-owned land and U.S. Government-owned land.

4. Enable continued full use of the impact area, including long-range use of indirect-fire weapons.
5. Be cost effective, fiscally allowable by the federal government, and meet the parameters of DoD's approved Major Land Acquisition Waiver Request.

Alternatives	Screening Criterion 1	Screening Criterion 2	Screening Criterion 3	Screening Criterion 4	Screening Criterion 5
Alternative 1: Full Retention					
Alternative 2: Modified Retention					
Alternative 3: Minimum Retention and Access					
Alternative 4: Retention of Access, Utilities, and Infrastructure					
Alternative 5: Retention with Training and Modernization Limitations					
Alternative 6: Short-Term Retention					

Key: green = fully meets screening criteria,
yellow = partially meets screening criteria,
red = does not meet screening criteria

As illustrated in **Table 2-2**, only Alternatives 1, 2, and 3 (see **Sections 2.2.1** through **2.2.3** for detailed descriptions) adequately meet all the screening criteria and are carried forward for detailed analysis. **Section 2.2.5** provides descriptions of Alternatives 4, 5, and 6, which do not adequately meet one or more of the screening criteria and are not carried forward for detailed analysis.

2.2 Alternatives Considered

The NEPA process includes consideration of reasonable alternatives for the Proposed Action. Reasonable alternatives must satisfy the purpose of and need for the Proposed Action, as defined in **Section 1.3**, and meet the screening criteria specified in **Section 2.1.4**. The alternatives carried forth for analysis in this EIS are presented in **Sections 2.2.1** through **2.2.3** and are a practical representation of the range of reasonable alternatives regarding the extent (e.g., full, modified, and minimum) and location of retention of the State-owned land. This EIS analyzes the potential impacts associated with these alternatives. Additionally, CEQ regulations require the inclusion of a No Action Alternative (**Section 2.2.4**) for EISs. While the No Action Alternative would not satisfy the purpose of or need for the Proposed Action, it is analyzed in detail in this EIS. **Section 2.2.5** addresses the alternatives considered and eliminated from detailed study.

2.2.1 Alternative 1: Full Retention

Under Alternative 1, the Army would retain all the State-owned land (approximately 23,000 acres) at PTA (**Figure 2-2**). The Army would continue to manage and use all the State-owned land; have unrestrained

access between the Cantonment and BAAF, impact area and training ranges, and Ke'āmuku parcel; and conduct Army ongoing activities. The Army also would continue to permit and coordinate ongoing activities on all the State-owned land by other PTA users (see **Section 1.2.6**). Alternative 1 is considered the baseline land retention alternative with respect to the area of land that would continue to be used and managed by the Army.

Alternative 1 would allow the Army to continue military training and other ongoing activities without downtime; retain its substantial investment in facilities, utilities, and infrastructure on the State-owned land; and conduct future modernization (requires separate NEPA compliance) of the facilities, utilities, and infrastructure. This alternative has the least potential for encroachment (outside actions that inhibit normal military training and operations) on U.S. Government-owned land at PTA from adjacent properties because the Army would continue to control access to all of the State-owned land. This alternative also maximizes military training noise buffer areas.

2.2.2 Alternative 2: Modified Retention

Under Alternative 2, the Army would retain approximately 19,700 acres of the State-owned land at PTA (**Figure 2-3**). Additionally, the Army would retain all U.S. Government-owned utilities and associated access throughout the State-owned land to enable continued safe operation of U.S. Government-owned land and retained State-owned land at PTA. **Figure 2-3** depicts the principal retention area, but for security reasons it does not include the U.S. Government-owned utilities and associated access that would be retained under Alternative 2.

Alternative 2 includes the following potential Army actions and responsibilities:

- Continue to use all the State-owned land (approximately 23,000 acres) for ongoing activities until a new real estate agreement is in place or the lease expires, whichever occurs first.
- Continue to conduct Army ongoing activities (training, maintenance and repair activities, resource management actions, and associated activities such as emergency services) on the retained State-owned land (approximately 19,700 acres).
- Continue to permit and coordinate other PTA users ongoing activities (training and other activities such as public use programs) on the retained State-owned land.
- Continue to maintain and repair U.S. Government-owned utilities on the State-owned land not retained to ensure their operability for U.S. Government-owned land and retained State-owned land.

The following potential Army actions and responsibilities are not part of Alternative 2 but would be triggered by lease expiration for the State-owned land not retained (approximately 3,300 acres). As such, these actions and responsibilities are considered connected actions because implementation of Alternative 2 would result in lease expiration for the State-owned land not retained:

- Following lease expiration and in accordance with the lease or otherwise negotiated with the State, the Army may conduct various lease compliance actions within the State-owned land not retained.

The Army would adhere to applicable Army, federal, and state laws regarding investigation, removal, and cleanup of hazardous and toxic materials and wastes, including munitions and explosives of concern (MEC), within the State-owned land not retained.

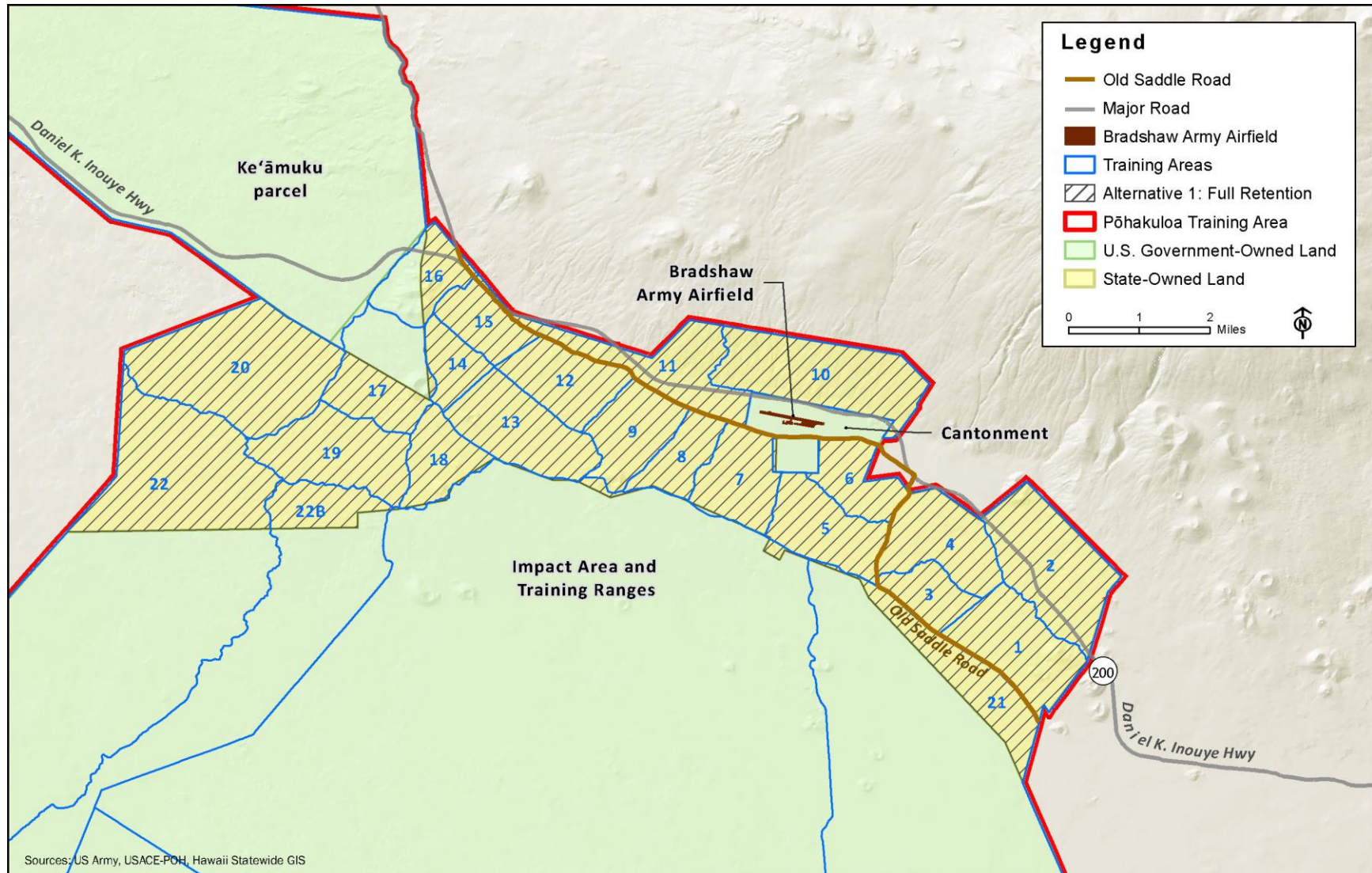


Figure 2-2: Alternative 1 - Full Retention

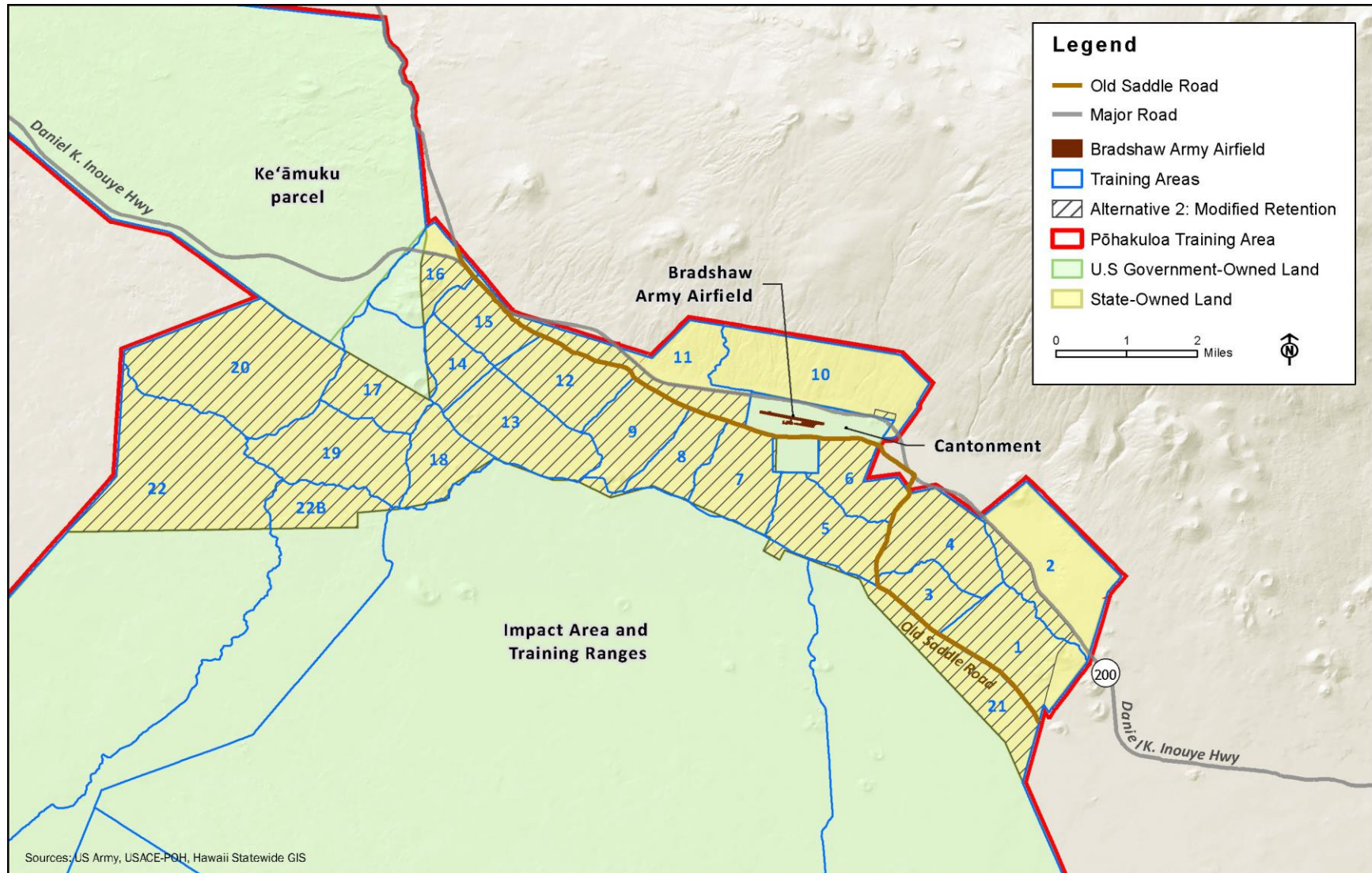


Figure 2-3: Alternative 2 - Modified Retention

Alternative 2 includes the following State actions and responsibilities:

- Assume full control and management of the State-owned land not retained.
- Be solely responsible for the funding and management of resource management and public use programs on the State-owned land not retained.

Under Alternative 2, the Army would no longer have access to approximately 3,300 acres of maneuver area, facilities, and roads and training trails in the State-owned land not retained. Most of this area is critical habitat designated by the U.S. Fish and Wildlife Service (USFWS) for Palila. The State-owned land that would not be retained has limited facilities and infrastructure, has Palila critical habitat training restrictions, is mostly physically separated from the rest of the State-owned land by DKI Highway, and has cinder cones in the portion that is south of DKI Highway. Consequently, Alternative 2 would have negligible impact on the ongoing training conducted in the State-owned land.

Alternative 2 would allow the Army to continue to manage and use approximately 19,700 acres of the State-owned land; maintain access between the Cantonment and BAAF, impact area and training ranges, and Ke'āmuku parcel; conduct ongoing military training, maintenance and repair activities, resource management actions, and associated activities; retain much of its substantial investment in facilities, utilities and infrastructure on the State-owned land; continue military training and other activities without downtime; and enable future modernization (requires separate NEPA compliance) of the retained facilities, utilities and infrastructure within the State-owned land. The Army also would continue to permit and coordinate ongoing training and other activities by other PTA users on the retained State-owned land. This alternative would have negligible potential for encroachment on U.S. Government-owned land at PTA from adjacent properties because the Army would continue to control access to most State-owned land.

Lease compliance actions include items such as reforestation, removing signs, removing or abandoning structures, and removing weapons and shells (i.e., payload-carrying projectiles such as mortar and artillery shells). The parameters for lease compliance actions are subject to the terms of the 1964 lease and negotiation with the State, which cannot be done until this EIS is completed and an alternative has been selected; therefore, the parameters would be defined and determined after completion of this EIS. It is assumed lease compliance actions would occur under various DoD programs. Additionally, it is assumed investigation, removal, and cleanup of hazardous and toxic materials and wastes, including MEC, within the State-owned land not retained, would occur under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), which is the legal framework for these actions in contaminated property and plays a substantial role in the cleanup and transfer of DoD sites.

2.2.3 Alternative 3: Minimum Retention and Access

Under Alternative 3, the Army would retain approximately 10,100 acres and 11 miles of select roads and training trails within the State-owned land at PTA. The approximately 10,100 acres contains vital training and support facilities and associated maneuver areas necessary for USARHAW to continue to meet its ongoing training requirements on the State-owned land (see purpose and need statements in **Section 1.3** and screening criteria in **Section 2.1.4**). Additionally, the Army would retain all U.S. Government-owned utilities and associated access throughout the State-owned land; firebreaks/fuel breaks and associated access along most of the 11 miles of select roads and training trails proposed for retention; and land use rights to enable the firing of indirect-fire weapons from three FPs on U.S. Government-owned portions of PTA northwest of the State-owned land into the impact area. **Figure 2-4** depicts the principal retention area (approximately 10,100 acres) and select roads and training trails (approximately 11 miles) but for

security reasons it does not show the U.S. Government-owned utilities and associated access that would be retained under Alternative 3. The firebreaks/fuel breaks proposed for retention are included in the select roads and training trails proposed for retention and are not shown separately on **Figure 2-4** due to scale. Access to vital training and support facilities (and associated maneuver areas), U.S. Government-owned utilities, and infrastructure within the State-owned land is necessary to enable continuation of larger unit collective live-fire and maneuver exercises at PTA; range and emergency services communication at PTA; and facility, utility, and infrastructure maintenance and repair within the State-owned land. Access to the 11 miles of select roads and training trails (and associated firebreaks/fuel breaks) is necessary to ensure continuance of wildfire protection and firefighting activities along vital areas within the State-owned land not retained, as well as training, range operations, repair and maintenance activities, resource management actions; wildfire protection and firefighting activities; and emergency services on U.S. Government-owned land. The three FPs on U.S. Government-owned land northwest of the State-owned land (see TAs 16 and 17 in **Figure 2-1**) are among the farthest from the impact area, allowing for long distance firing by indirect-fire weapons, and are therefore essential for training. Land use rights associated with firing over State-owned land not retained from these three FPs would consider appropriate safety requirements.

Alternative 3 includes the following potential Army actions and responsibilities:

- Continue to use all the State-owned land (approximately 23,000 acres) for ongoing activities until a new real estate agreement is in place or the lease expires, whichever occurs first.
- Continue to conduct Army ongoing activities (training, maintenance and repair activities, resource management actions, and associated activities such as emergency services) on the retained State-owned land (approximately 10,100 acres).
- Continue to permit and coordinate other PTA users ongoing activities (training and other activities such as public use programs) on the retained State-owned land.
- Continue to maintain and repair U.S. Government-owned utilities on the State-owned land not retained to ensure their operability for U.S. Government-owned land and retained State-owned land.
- Continue to maintain and repair and conduct firefighting activities within the firebreaks/fuel breaks along most of the 11 miles of select roads and training trails proposed for retention.
- Meet ongoing biological resources mitigation requirements (e.g., conservation fence units) in the State-owned land not retained via reforestation of portions of the State-owned land not retained or some other arrangement negotiated with USFWS and State, as applicable.

The following potential Army actions and responsibilities are not part of Alternative 3 but would be triggered by lease expiration for the State-owned land not retained (approximately 12,900 acres). As such, these actions and responsibilities are considered connected actions because implementation of Alternative 3 would result in lease expiration for the State-owned land not retained:

- Following lease expiration and in accordance with the lease or otherwise negotiated with the State, the Army may conduct various lease compliance actions within the State-owned land not retained.
- The Army would adhere to applicable Army, federal, and state laws regarding investigation, removal, and cleanup of hazardous and toxic materials and wastes, including MEC, within the State-owned land not retained.

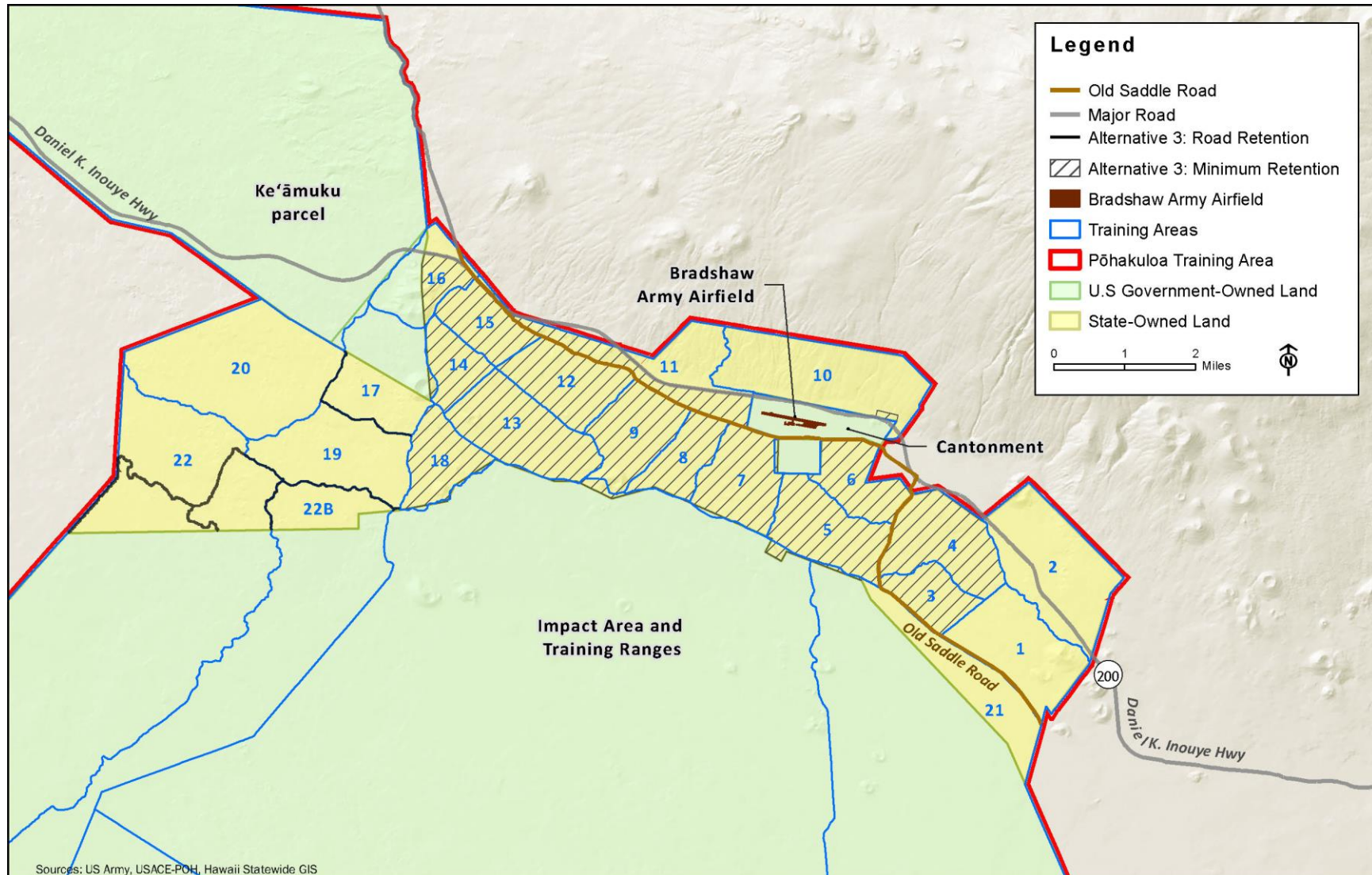


Figure 2-4: Alternative 3 - Minimum Retention and Access

Alternative 3 includes the following State actions and responsibilities:

- Assume full control and management of the State-owned land not retained.
- Be solely responsible for the funding and management of resource management and public use programs on the State-owned land not retained.

Alternative 3 would allow the Army to continue to manage and use approximately 10,100 acres of the State-owned land that contain vital training and support facilities and associated maneuver areas; maintain necessary access between the Cantonment and BAAF, impact area and training ranges, and Keʻāmuku parcel; conduct necessary levels and types of military training, maintenance and repair activities, resource management actions, and associated activities; permit the Army to access firebreaks/fuel breaks along the 11 miles of roads and training trails proposed for retention for wildfire protection and firefighting activities; enable future modernization (requires separate NEPA compliance) of the retained facilities, utilities and infrastructure within the State-owned land; and fire indirect-fire weapons from three FPs on U.S. Government-owned portions of PTA northwest of the State-owned land into the impact area. Access between the Cantonment and BAAF, impact area and training ranges, and Keʻāmuku parcel is vital to enable the Army to continue military training, maintenance and repair activities, resource management actions, and associated activities within U.S. Government-owned land at PTA. The Army also would continue to permit and coordinate training and other activities by other PTA users on the retained State-owned land, but at reduced levels (no activities in land not retained, same level of activities in land retained) due to the minimum retention.

Lease compliance actions and investigation, removal, and cleanup of hazardous and toxic materials and wastes for the State-owned land not retained would occur under the same parameters as identified under Alternative 2.

Under Alternative 3, the Army would no longer have access to the training and support facilities, maneuver areas, and non-selected roads and training trails on the State-owned land not retained. The Army would lose access to approximately 12,900 acres of unrestricted maneuver areas, which is approximately 30 percent and 56 percent of the unrestricted maneuver areas on PTA and the State-owned land, respectively. Therefore, training capabilities at PTA would be moderately reduced. Loss of training would affect combat readiness of USARHAW and all military units that use PTA, as well as readiness of state and county government agencies that use PTA. Alternative 3 would increase the potential for encroachment on U.S. Government-owned land at PTA from adjacent properties because the Army would control access of less than half of the State-owned land; however, it is assumed the State would continue to manage the majority of the State-owned land not retained as conservation areas (i.e., Palila critical habitat and conservation fence units).

Alternative 3 does not include but could result in the Army accommodating lost training in other ways such as increasing training tempo and rebuilding facilities that no longer would be accessible under Alternative 3. Should the Army pursue those options in the future, it would require separate NEPA compliance.

2.2.4 No Action Alternative

Under the No Action Alternative, the Army would not retain any of the State-owned land at PTA after lease expiration.

The No Action Alternative includes the following potential Army actions and responsibilities, many of which would be triggered by lease expiration:

- Continue to use all the State-owned land for ongoing activities until lease expiration.
- No longer fund or manage resource management actions and public use programs in the State-owned land after lease expiration.
- Meet ongoing biological resources mitigation requirements (e.g., conservation fence units) in the State-owned land via reforestation of portions of the State-owned land or some other arrangement negotiated with USFWS and State, as applicable.
- Conduct various lease compliance actions within the State-owned land (following lease expiration and in accordance with the lease or otherwise negotiated with the State).
- Adhere to applicable Army, federal, and state laws regarding investigation, removal, and cleanup of hazardous and toxic materials and wastes, including MEC, within the State-owned land.

The No Action Alternative includes the following State actions and responsibilities:

- Assume full control and management of the State-owned land after lease expiration.
- Be solely responsible for the funding and management of resource management and public use programs on the State-owned land after lease expiration.

Lease compliance actions and investigation, removal, and cleanup of hazardous and toxic materials and wastes for the State-owned land would occur under the same parameters as identified under Alternative 2.

The Army would continue to have land access to the Cantonment, BAAF, and Ke'āmuku parcel via DK1 Highway but would have no land access to the impact area and training ranges south of the State-owned land, which would cease or severely limit Army training, maintenance and repair activities, resource management actions, wildfire protection and firefighting activities, emergency services, and biological resources mitigation requirements (e.g., conservation fence units) in the impact area and training ranges. Additionally, the Army would have no access to U.S. Government-owned utilities and infrastructure within the State-owned land, including the potable water facility for the Cantonment, the electrical substation for the installation, retransmission stations, antennas, other communication infrastructure, roads, training trails, and firebreaks/fuel breaks, which would impact training, range operations, range and emergency services communication, use of the Cantonment, emergency service access, and wildfire protection and firefighting activities. This alternative would result in the loss of approximately 54 percent of the unrestricted maneuver areas on PTA (USACE-POH, 2017).

Under the No Action Alternative, the Army would have: (1) no ability to train in or access the State-owned land; (2) limited to no ability to train in or access the impact area and training ranges; (3) limited use of the Cantonment due to loss of the potable water facility and the electrical substation for the installation; (4) no ability to operate, maintain, or repair utilities and infrastructure in the State-owned land that serve the U.S. Government-owned land at PTA; and (5) no ability to fire indirect-fire weapons from three FPs within U.S. Government-owned portions of PTA northwest of the State-owned land into the impact area. Without land access, the impact area and training ranges might have to be abandoned. The Army would lose access to the ASP and three AHAs (two in the State-owned land and one in the training ranges to the south), leaving access to only two AHAs, which would severely reduce ammunition storage capabilities.

The No Action Alternative would substantially reduce ongoing training and resource management actions on U.S. Government-owned land at PTA and would reduce use by other PTA users due to lack of access to the State-owned land and impact area and training ranges. This alternative also would create the greatest potential for encroachment because all three of the U.S. Government-owned areas would be surrounded by adjoining parcels not controlled by the Army.

The No Action Alternative would compromise the integrity of PTA and reduce USARHAW's collective live-fire and maneuver training capabilities at PTA from above the company level (i.e., battalion and brigade level) to the platoon level for infantry, artillery, and aviation units (USARHAW, 2017b). Due to lack of some required training, USARHAW would not be able to support ready forces to provide the Pacific Response Force per USINDOPACOM order or the Army Contingency Response Force per USARPAC order (USARHAW, 2017a). USARHAW (includes the 25th ID), 3rd Marine Regiment, and many other military units and state and county government agencies would be unable to train at PTA effectively. Loss of training would affect combat readiness of USARHAW and all military units that use PTA, as well as the readiness of state and county government agencies that use PTA. Reduced training and limited utilities, including at the Cantonment, would result in reduced personnel, equipment, and funding. Therefore, the Army no longer would be able to provide community services, such as local firefighting support, local emergency services, and community relation events (e.g., parades, festivals, educational outreach venues, local self-help projects) to areas outside the U.S. Government-owned portions of PTA.

The No Action Alternative does not include but could result in the need to restation USARHAW (includes the 25th ID) and 3rd Marine Regiment, which would reduce military readiness, have considerable economic costs, and negatively impact the mission requirements of the Army, Army National Guard, and USMC. Army expenditures supported 75,920 employees (i.e., military personnel, civilians, contractors) in the State, 1,962 of which were in the County of Hawai'i. Army expenditures also accounted for approximately \$4.4B in labor income (i.e., military personnel, civilians, and contractors) in the State, \$92M of which was in the County of Hawai'i (USACE-POH, 2019). Several of the training and support facilities and features within the State-owned land cannot be rebuilt within the U.S. Government-owned portions of PTA due to operational, safety, and environmental constraints (e.g., ASP, BAX, and long-range FPs) and are not available elsewhere in Hawai'i (e.g., BAX, long-range FPs, large and contiguous unrestricted maneuver area). Consequently, the Army would not be able to increase training tempo within PTA or elsewhere in Hawai'i to make up for the loss of training and operational features and capabilities associated with the No Action Alternative. Military units that rely on these facilities and areas of PTA to meet training requirements would be required to conduct training outside of Hawai'i, which could necessitate restationing due to the cost and time constraints of constantly traveling to the continental U.S. to train. Restationing of USARHAW (includes the 25th ID) or 3rd Marine Regiment and replacement of facilities, utilities, and infrastructure would require separate NEPA compliance.

2.2.5 Alternatives Considered and Eliminated from Detailed Study

The following alternatives were considered but not carried forward for detailed analysis because they do not meet elements of the purpose and need statements for the Proposed Action and do not adequately meet one or more of the screening criteria presented in **Section 2.1.4**.

Alternative 4: Retention of Only Access, Utilities, and Infrastructure

Under this alternative, the Army would retain the following on State-owned land: select roads and training trails (and associated firebreaks/fuel breaks); all U.S. Government-owned utilities and associated access;

and land use rights to enable the firing of indirect-fire weapons from U.S. Government-owned portions of PTA northwest of the State-owned land into the impact area. No facilities or maneuver areas within the State-owned land would be retained. This alternative would result in the loss of approximately 54 percent of the unrestricted maneuver area on PTA (USACE-POH, 2017). Therefore, training capabilities at PTA would be considerably reduced. This alternative does not meet the following elements of the purpose and need statements: (1) enable USARHAW to continue to conduct military training on State-owned land to meet ongoing training requirements; (2) retain substantial Army investments; (3) allow for future facility and infrastructure modernization; (4) preserve limited maneuver area; and (5) maximize use of the impact area. Therefore, this alternative does not fully meet screening criteria 1, 2, 4, and 5 (see **Table 2-2**) and is not carried forth for detailed analysis.

Alternative 5: Retention with Limits on the Types of Training and Future Modernization

Under this alternative, the Army would retain the State-owned land but be subject to restrictions on the types of training and future modernization that would be permitted by the State. This alternative does not meet the following elements of the purpose and need statements: (1) enable USARHAW to continue to conduct military training on State-owned land to meet ongoing training requirements; (2) allow for future facility and infrastructure modernization; and (3) maximize use of the impact area. Therefore, this alternative does not meet screening criterion 1 and only partially meets screening criteria 2, 4, and 5 (see **Table 2-2**), and is not carried forth for detailed analysis.

Alternative 6: Short-Term Retention

Under this alternative, the Army would retain the State-owned land for a short duration, such as a 10-year lease. This alternative would not meet the Proposed Action purpose of securing the long-term military use of the State-owned land to meet USARHAW's ongoing training requirements. The Army must have at least a 25-year lease to permit permanent construction. Therefore, this alternative does not meet screening criteria 1, 2, and 3 and only partially meets screening criterion 5 (see **Table 2-2**), and is not carried forth for detailed analysis.

2.3 Land Retention

After completion of the EIS and ROD, the Army may proceed with the Proposed Action and would consider, at that time, the appropriate land retention estate(s) and method(s) based on the selected alternative. One or more estates and methods may be considered.

The U.S. Government's authority to acquire real property interests includes, but is not limited to, 10 U.S.C. Sections 2661, 2663, 2802, and 2869. As implemented by AR 405-10, authorized estates for Army acquisition or retention of non-federal government-owned land include title, lease, easement, and license.

Title/Ownership: Fee simple title is the most comprehensive ownership of real property permitted by law. Fee simple title represents the largest bundle of ownership rights possible in real property.

Lease: A lease is a contract by which a rightful possessor of real property conveys the right to use and occupy real property for a specified term in exchange for consideration, usually rent. Hawai'i law prohibits (except in certain special circumstances generally not applicable in this case) renewing existing leases or

extending leases in excess of 65 years (HRS Section 171-36). Therefore, a new lease could be contemplated between the State and the U.S. Government.

Easement: An easement is a privilege or right to use or travel over the land of another. An easement represents an interest of limited use in land, and it may be temporary or permanent, exclusive or non-exclusive.

License: A license is permission to use the land of another that generally can be revoked at any time and may contain restrictions or constraints.

2.4 Preferred Alternative

The Preferred Alternative will be identified in the Final EIS.

Chapter 3

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Introduction

Chapter 3 describes the affected environment (existing conditions) for resources evaluated in this EIS and discloses the potential environmental consequences of each of the three action alternatives and the No Action Alternative (see **Section 2.2**). Identification of the existing conditions and evaluation of the potential environmental consequences adhere to the 1978 version of the CEQ NEPA Regulations, as amended (40 CFR Parts 1500–1508), the Army’s NEPA Regulation (32 CFR Part 651), and HEPA (HRS Chapter 343 and HAR Chapter 11-200.1). **Section 3.1** discusses how **Chapter 3** is organized and what information is provided under the discussion of each resource area. **Sections 3.2** through **3.16** discuss individual resource areas. **Section 3.17** contains a summary of potential environmental consequences and a summary of potential mitigation measures.

3.1.1 Environmental Resource Sections

Environmental resources include aspects of the natural, cultural, and human environment. Environmental analysis is conducted for resource areas that could be affected by the action alternatives or the No Action Alternative. This EIS considers the potential for impacts to the following resource areas:

- Land Use
- Biological Resources
- Cultural Resources
- Hazardous and Toxic Materials and Wastes
- Air Quality and Greenhouse Gases
- Noise
- Geology, Topography and Soils
- Water Resources
- Socioeconomics
- Environmental Justice
- Transportation and Traffic
- Airspace

- Electromagnetic Spectrum
- Utilities
- Human Health and Safety

3.1.2 Existing Conditions

According to CEQ NEPA Regulations (40 CFR Part 1502.15), “the Environmental Impact Statement shall succinctly describe the environment of the area(s) to be affected or created by the alternatives under consideration.” The existing conditions in the affected environment must be determined prior to conducting an impact analysis. Impact analyses are, therefore, conducted in two steps: identifying the existing conditions in the affected environment, then disclosing the potential environmental consequences resulting from the action and no action alternatives. Each resource area section includes a discussion of existing conditions, which describes the current condition of the affected environment.

3.1.3 Environmental Consequences

Implementation of the alternatives described in **Chapter 2** could result in impacts to the human, cultural, and natural environment. This chapter describes the potential environmental consequences (or environmental impacts) associated with each resource area and the methodology used to conduct the analysis. The analysis includes discussions of possible conflicts with government land use plans, policies, and regulations; environmental impacts associated with the action alternatives and No Action Alternative and their significance; and potential means to mitigate adverse environmental impacts.

Assumptions Applied to the Impact Analysis

Each of the action alternatives proposes retaining a portion of the State-owned land at PTA. For the land retained under each alternative, it is assumed that ongoing activities would continue. For the land not retained, ongoing activities would stop or be resumed by the State (e.g., resource management programs) and the Army would conduct applicable lease compliance actions and hazardous and toxic materials and wastes actions. Therefore, this chapter describes new impacts (generally associated with the land not retained) as well as continued impacts from ongoing activities.

The impact analysis conducted for each resource area is based on land retention via title (ownership through fee simple title) for portions of the State-owned land proposed for retention under the action alternatives. This assumption is based on title being the least restrictive of the land retention estates because the land would be owned by the Army and, therefore, have none of the conditions that could be associated with the other land retention estates (i.e., lease, easement, license). The Army considered whether different land retention estates would have greater impacts than title but did not identify any instances where this would apply.

As described in **Chapter 2**, Alternatives 2 and 3 and the No Action Alternative include State-owned land that would not be retained. On the land not retained, Army use of maneuver areas and associated training facilities, utilities, and infrastructure would be terminated. The Army could consider relocation of training and/or training features to make up for the land not retained; however, these potential actions are not part of the Proposed Action. Consequently, impacts due to relocation of training and/or training features are not analyzed in this EIS and may require separate NEPA compliance.

For the State-owned land not retained, it is assumed that the Army would no longer fund or manage resource management programs, management of the land would shift to the State, and the State would establish recreation, hunting, and resource management programs. Additional discussion is provided in **Section 3.2**.

Expiration of the lease will trigger various Army actions and responsibilities on the State-owned land not retained. As described in **Section 2.2**, these actions are not associated with the action alternatives or No Action Alternative but would follow expiration of the lease. Due to the proximate timeframe of these actions and responsibilities with the potential implementation of one of the action alternatives or the No Action Alternative, they are discussed in the impact analysis associated with State-owned land not retained.

3.1.4 Analysis Methodology

This section describes the method for determining the environmental consequences associated with each alternative. For each resource area, each of these components is discussed to support the environmental analysis and impact conclusions.

Definition

In this section, a description of the resource area is provided.

Regulatory Framework

In this section, the specific relevant county, state, and federal regulations for the resource area are provided.

Region of Influence

In this section, the region of influence (ROI) for the resource area is provided. The ROI is defined as the geographic area that could be impacted by the Proposed Action. The geographic extent is determined by how far-reaching impacts to the human, cultural, and natural environment could be. The ROI for the Proposed Action typically is the extent of the State-owned land; however, depending on the resource area, the geographic extent of the affected environment may vary. For example, the Proposed Action may have impacts on soils within the confines of the State-owned land; however, potential impacts to water resources could reach beyond the State-owned land to include the regional aquifers and watersheds. Similarly, the ROI in the CIA (**Appendix E**) considers a greater geographic extent, specifically the area of the Saddle Region, as part of its ROI.

Existing Conditions

According to 40 CFR Part 1502.15, “the Environmental Impact Statement shall succinctly describe the environment of the area(s) to be affected or created by the alternatives under consideration.” This section describes the affected environment (existing conditions) for each resource analyzed in this EIS.

Methodology and Significance Criteria

In this section, the methodology for the environmental analysis and significance criteria are provided. Methodology can include the scientific or analytic basis for drawing impact conclusions and comparisons among the alternatives.

In accordance with 40 CFR Part 1508.27, when determining significance, both the context and intensity of the Proposed Action should be considered. Context is associated with the location or ROI for the Proposed Action, which varies among resource areas. Intensity refers to the severity of the impact.

For each resource area, specific significance criteria are presented. These are standards or thresholds by which a significance conclusion can be drawn.

Environmental Analysis

In this section, the potential impacts are presented. The impact determination comprises several separate assessments: (1) whether the impact is considered a short- or long-term impact, (2) whether the impact is considered direct or indirect, (3) the level of significance of the impact, and (4) whether the impact is considered beneficial or adverse. The definition of impacts changed in the 2020 CEQ NEPA regulation. As discussed in **Chapter 1.4**, this EIS uses the definitions from the 1978 version of the regulation, as amended.

Short-term and Long-term Impacts

Short-term impacts are characterized by a limited duration, such as during implementation of lease compliance actions (**Section 2.2.2**). Long-term impacts are those that continue beyond a specific action or may be permanent in nature following an action, such as changes in noise in State-owned land not retained following lease expiration. Long-term impacts can also result from repeated activities over an extended period. For example, ongoing, non-continuous, periodic training activities can generate long-term impacts.

Direct and Indirect Impacts

Direct impacts are caused by the Proposed Action and would occur at the same time and place as the action (e.g., decreased local spending due to less activities at PTA). Indirect impacts are those related to the Proposed Action but would occur later in time or be farther removed in distance (e.g., changes in population density due to change in the pattern of land use).

In this EIS, most impacts are considered direct impacts. In the environmental analysis, direct impacts are assumed and are not identified as direct. If an indirect impact is identified in the analysis, the text specifically identifies the impact as “indirect” and explains the rationale for identifying it as such.

Level of Impacts

The intensity (or severity) of potential environmental impacts is expressed in level of significance. The following descriptions are used to classify the intensity of impacts:

- None: Impacts are not present.
- Negligible: Impacts are not measurable, are barely perceptible, and are discountable.

- Minor: Measurable impacts, but these impacts would be slight.
- Moderate: Impacts that would not reach the resource's threshold of significance, but would have a noticeable effect on a resource perceptible to an observer.
- Significant: Impacts to a resource would reach or surpass a significance threshold; impacts would be obvious, serious, and easily noticed by an observer.
- Significant but mitigable: Impacts would be significant but could be mitigated to less than significant (i.e., none, negligible, minor, or moderate).

Each environmental analysis section concludes with identification of one of the following overall levels of significance: (1) No impact, (2) Less than significant (includes negligible, minor, and moderate impacts), (3) Significant, or (4) Significant but mitigable.

Beneficial or Adverse Impacts

Implementation of alternatives can result in adverse or beneficial impacts, or both. Adverse impacts would cause a decline in the condition of a resource, whereas beneficial impacts would improve the condition of a resource. Significant impacts could occur with both beneficial and adverse impacts.

Potential Mitigation Measures

In this section, potential mitigation measures are identified. Impacts can be reduced by compliance with applicable laws or regulations and implementation of best management practices (BMPs) and standard operating procedures (SOPs). These are identified in this chapter but are considered to be part of the Proposed Action rather than mitigation. Mitigation measures are new actions recommended to avoid, minimize, rectify, reduce, or compensate adverse impacts (40 CFR Part 1508.20). Some mitigation measures may apply to multiple resource areas and show up several times throughout the analysis.

3.2 Land Use

3.2.1 Definition

Land use describes use of land by humans including management of resources for conservation purposes. The two main objectives of land use planning are to ensure orderly growth and compatible uses among adjacent properties. Land use definitions generally occur at the local level via zoning ordinances. Land use can be divided into two primary categories: natural property conditions and descriptive terms of development. Natural property conditions are often described as undeveloped, unimproved, preservation or conservation areas, and scenic or natural areas. Development includes residential, industrial, commercial, military, agricultural, transportation, recreation, communication, and utilities. Land use also considers other factors such as the ability to fully use land for its intended land use category and compliance with land use regulations and policies.

For the purposes of this EIS, land use topics relevant to the Proposed Action include land tenure, recreation, encroachment management, and vistas. Land tenure is the legal regime of property rights, and the rules and laws that regulate land use, regardless of ownership. State land use rules and county zoning are the relevant regulatory mechanisms in Hawai'i and are analyzed under land tenure. Hunting is the primary recreational use of State-owned land at PTA. Encroachment management maintains Army-

controlled lands necessary for training and allows restricted public access while maintaining safety; and includes public and adjacent land holder coordination to minimize potential encroachment issues. Vistas are natural or human-made features that form the overall impression that an observer receives.

3.2.2 Regulatory Framework

Federal and state policies and regulations, and county-level guidance and zoning, create the regulatory framework for land use. Land owned by the U.S. Government is regulated under federal law; under the supremacy clause in the U.S. Constitution (Clause 2, Article VI), federal land is not subject to land use regulation by the state or county.

The impetus for this EIS is the proposed real estate action to retain the State-owned land at PTA in support of continued military training (**Section 2.1**). Per 10 U.S.C. Section 2852, Military Construction Projects: Waiver of Certain Restrictions, the DoD must hold long-term (i.e., 25 years or more) federal interest in a property to make improvements or undertake modernization efforts. Therefore, lack of long-term federal interest in a property limits the DoD's use of that property. Land use planning in the Army is guided by AR 405-10, Acquisition of Real Property and Interests Therein. This regulation sets forth the responsibilities, authority, policy, and procedures of acquisition of real property and interests by the Army for military purposes.

The U.S. Government's authority to acquire real property interests includes 10 U.S.C. Sections 2661, Miscellaneous Administrative Provisions Relating to Real Property; 2663, Land Acquisition Authorities; and 2802, Military Construction Projects. **Section 5.3** covers the Proposed Action's consistency with relevant sections of 10 U.S.C. Armed Forces.

The Coastal Zone Management Act of 1972 (CZMA) (16 U.S.C. Section 1451), as amended, applies to all coastal states and those that border the Great Lakes. Federal agencies are required to conduct planning, management, development, and regulatory activities consistent with applicable state coastal management programs. The Hawai'i Coastal Zone Management (CZM) program is codified in HRS Chapter 205A. In Hawai'i, the coastal zone management area includes all of Hawai'i (DBEDT-OP, 2020). Each county is responsible for designating and regulating Special Management Areas (SMAs) within the State's coastal areas. The Hawai'i CZM program and SMAs are further described in **Section 5.3.3**.

Section 307 of the federal CZMA requires federal agency activities and development projects affecting any coastal use or resource to be undertaken, in a manner consistent to the maximum extent practicable, with a state's CZM program. The Army has initiated coordination with the State to meet CZM consistency review requirements, which will result in a determination of the Proposed Action's consistency from the State. The project's consistency with the CZM objectives and policies is described in **Section 5.3**.

The Sikes Act (16 U.S.C. Section 670a-670o), as amended, requires DoD installation Integrated Natural Resources Management Plans (INRMPs) to reflect mutual agreements with federal and state agencies (e.g., USFWS) for conservation, protection, and management of fish and wildlife resources. The Sikes Act notes that land uses are subject to military security and safety requirements while allowing compatible public access to military installations that do not interfere with military training or operations. Department of Defense Directive 4715.03, Natural Resources Conservation Program, establishes "The principal purpose of DoD lands and waters is to support mission-related activities. Those lands and waters shall be made available to the public for educational or recreational use of natural and cultural resources when

such access is compatible with military mission activities, ecosystem sustainability, and other considerations such as security, safety, and fiscal soundness. Opportunities for such access shall be equitably and impartially allocated” (DoD, 2018b; DoD, 2018c). The PTA 2019-2023 INRMP allows for recreational activities consistent with use of the land and subject to military training schedules to occur on PTA; this includes hunting game animals and game birds (USAG-PTA, 2020c).

Hawai‘i has a unique system of classifying and managing lands in which both state and county agencies hold distinct responsibilities. HRS Chapter 205, State Land Use Law, was adopted in 1961 and established a framework of land use management and regulation in which all lands in the State are classified into one of four land use districts. Further detail regarding the State Land Use Law is in **Section 5.3.2**. The conservation district was one of the four land use districts established, largely encompassing forest and water reserve zones that had been identified in 1957. Laws specific to the conservation district (HRS Chapter 183C) were established and went into effect in 1964; the relevance to PTA is discussed under Land Tenure (**Section 3.2.4.1**).

3.2.3 Region of Influence

The ROI for land use includes the State-owned land and U.S. Government-owned land at PTA, land surrounding and adjacent to PTA, and public recreational activities directly or indirectly linked to PTA.

3.2.4 Existing Conditions

The State-owned land at PTA connects all three U.S. Government-owned parcels at PTA and surrounds the U.S. Government-owned parcel that houses the Cantonment and BAAF (**Section 1.1.1** and **Figure 3-1**). The history and establishment of PTA for military use are described in **Section 1.1.2**. A variety of DoD agencies, international partners, and local emergency responders and law enforcement agencies use PTA to fulfill essential training requirements. Facilities within and use of the State-owned land are described in **Sections 2.1.1** and **2.1.2**.

The State-owned land is bordered by U.S. Government-owned land to the north and south. The county-managed Gilbert Kahele Recreation Area is roughly 1 mile southeast of the main entrance to PTA (**Figure 3-1**). Most of the land surrounding PTA is undeveloped and used for forest reserves, game management, and cattle grazing. The closest residential area is Waiki‘i Ranch, approximately 13 miles north along DK1 Highway from the PTA main gate, with homes on 10- to 20-acre lots zoned for agriculture use.

The residentially developed areas of Waikoloa Village, Waimea, and Hilo are each approximately 25 miles from the PTA main gate. According to 2010 U.S. Census data, population density surrounding most of PTA is low, with 0 to 49 individuals per square mile (USCB, 2010). The only exception is a population segment of 50 to 99 individuals within Waiki‘i Ranch along the northeast section of Ke‘āmuku parcel (**Figure 3-1**).

3.2.4.1 Land Tenure

Ownership

The tenure of the State-owned land is based on federal, state, and county laws and classifications. Current laws and legal rulings affirm the State-owned land at PTA was legally transferred to the State. This EIS analysis is based on these legal precedents.

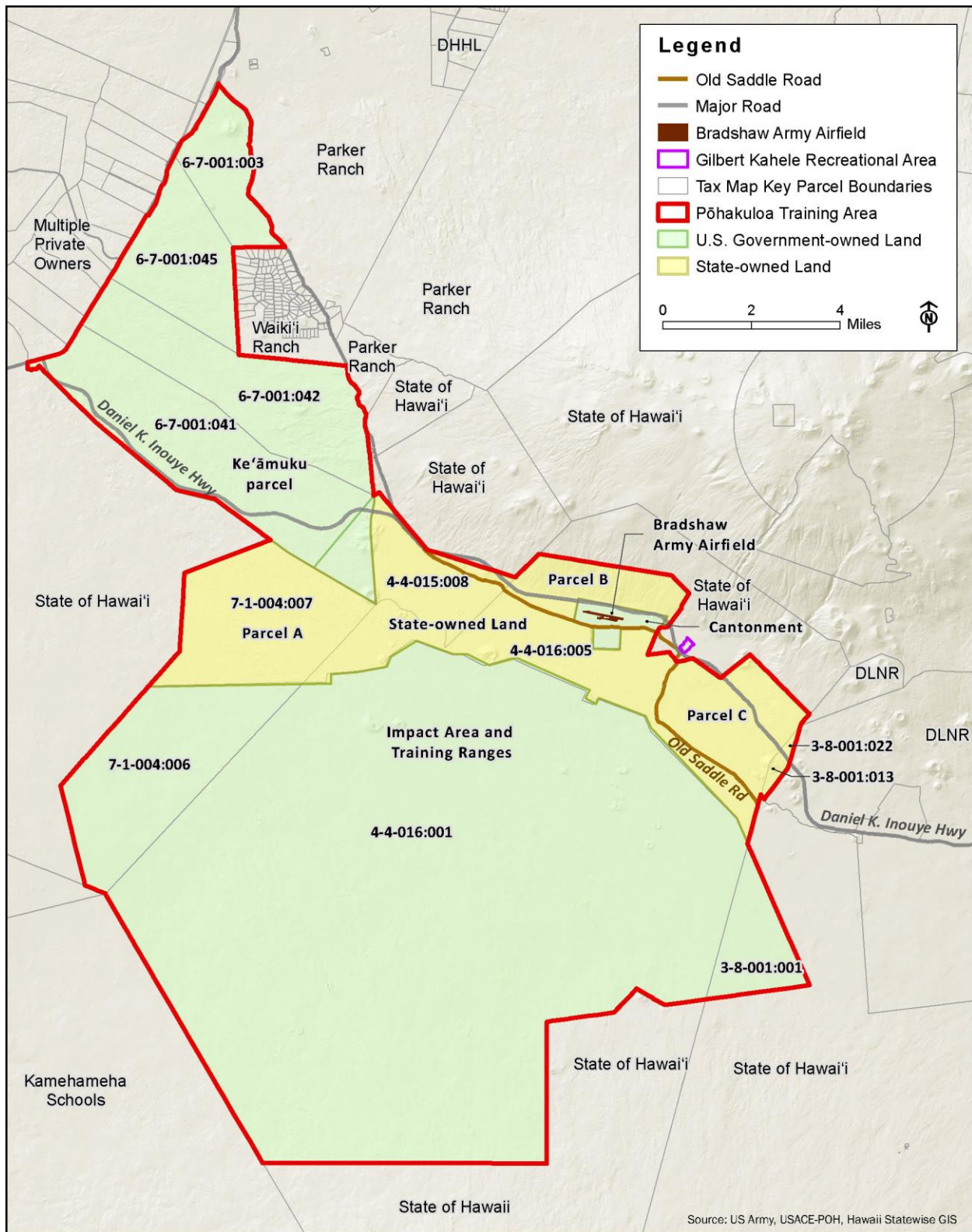


Figure 3-1: Land Ownership of Pōhakuloa Training Area and Surrounding Land

Tax Map Key (TMK) numbers are used in Hawai‘i to identify real property ownership, including the island, zone, section, plat, and parcel. Information obtained from the County of Hawai‘i Real Property Tax Office contains no warranties for accuracy. At this time, the U.S. Government’s best information as to ownership of the TMK parcels comprising the State-owned land is as follows, from west to east: TMKs (3) 7-1-004:007, (3) 4-4-015:008, and (3) 4-4-016:005 are owned by the State; the two easternmost TMKs, (3) 3-8-001:013 and (3) 3-8-001:022, are owned by the State and managed and administered by the Department of Hawaiian Home Lands (DHHL) (**Figure 3-1**). These two easternmost parcels are referred to as “DHHL-administered” in this EIS. The TMKs do not correlate with the boundaries of the TAs or Parcels A, B, and C. A boundary survey is currently underway for State-owned land at PTA to validate the precise boundaries, including the DHHL-administered land.

Ceded Land

Ceded land was either Crown or government land until 1893, when the Hawaiian Kingdom was overthrown. The successor government, the Republic of Hawai‘i, assumed ownership and control of the land and continued its public use. When the Republic of Hawai‘i was annexed as a territory of the United States in 1898, it ceded the land to the United States, which took ownership in fee simple. During the territorial era, the United States set some of the land aside for military and other public purposes. When Hawai‘i became a state in 1959, the United States retained ownership of the ceded land it anticipated needing for military and public purposes and conveyed the remaining ceded land to the State.

The 1959 “Admissions Act,” Public Law 86-3, 73 Stat 4, created a compact with the United States, and was duly adopted by the people of Hawai‘i through election, to admit Hawai‘i into the United States. The Admissions Act included provisions related to management and disposition of the Hawaiian Home Lands, as defined in the Hawaiian Homes Commission Act, 1920, as amended. The DHHL-administered land on PTA falls into Section 5(f) of the Admissions Act. Land under Section 5(f) of the Admissions Act is defined as follows:

The lands granted to the State of Hawaii by subsection (b) of this section and public lands retained by the United States under subsections (c) and (d) and later conveyed to the State under subsection (e), together with the proceeds from the sale or other disposition of any such lands and the income therefrom, shall be held by said State as a public trust for the support of the public schools and other public educational institutions, for the betterment of the conditions of native Hawaiians, as defined in the Hawaiian Homes Commission Act, 1920, as amended, for the development of farm and home ownership on as widespread a basis as possible for the making of public improvements, and for the provision of lands for public use. Such lands, proceeds, and income shall be managed and disposed of for one or more of the foregoing purposes in such manner as the constitution and laws of said State may provide, and their use for any other object shall constitute a breach of trust for which suit may be brought by the United States. The schools and other educational institutions supported, in whole or in part out of such public trust shall forever remain under the exclusive control of said State; and no part of the proceeds or income from the lands granted under this Act shall be used for the support of any sectarian or denominational school, college, or university.

In 1993, Congress acknowledged and apologized for the role of the United States in the overthrow of the Hawaiian Kingdom through a *Joint Resolution to Acknowledge the 100th Anniversary of the January 17, 1893 Overthrow of the Kingdom of Hawaii* (“Apology Resolution”). A review of the Hawai‘i Supreme Court

decision brought to the U.S. Supreme Court in 2009 resulted in a unanimous court opinion. The U.S. Supreme Court in *Hawaii v. Office of Hawaiian Affairs*, 556 U.S. 163 (2009) opined:

The Apology Resolution's first substantive provision uses six verbs, all of which are conciliatory or precatory. Specifically, Congress "acknowledge[d] the historical significance" of the Hawaiian monarchy's overthrow, "recognize[d] and commend[ed] efforts of reconciliation" with native Hawaiians, "apologize[d] to [n]ative Hawaiians" for the monarchy's overthrow, "expresse[d] [Congress'] commitment to acknowledge the ramifications of the overthrow," and "urge[d] the President of the United States to also acknowledge the ramifications of the overthrow . . ." Section 1. Such terms are not the kind that Congress uses to create substantive rights--especially those that are enforceable against the cosovereign States. See, e.g., *Pennhurst State School and Hospital v. Halderman*, 451 U.S. 1, 17-18, 101 S. Ct. 1531, 67 L. Ed. 2d 694 (1981).

The Apology Resolution's second and final substantive provision is a disclaimer, which provides: "Nothing in this Joint Resolution is intended to serve as a settlement of any claims against the United States." Section 3. By its terms, Section 3 speaks only to those who may or may not have "claims against the United States." The court below, however, held that the only way to save Section 3 from superfluity is to construe it as a congressional recognition -- and preservation-- of claims against Hawai'i and as "the foundation (or starting point) for reconciliation" between the State and native Hawaiians. 117 Haw. at 192, 177 P. 3d at 902.

Pages 173-174 of the opinion state: "We must have regard to all the words used by Congress, and as far as possible give effect to them," *Louisville & Nashville R. Co. v. Mottley*, 219 U.S. 467, 475, 31 S. Ct. 265, 55 L. Ed. 297 (1911), but that maxim is not a judicial license to turn an irrelevant statutory provision into a relevant one. And we know of no justification for turning an express disclaimer of claims against one sovereign into an affirmative recognition of claims against another. Cf. *Pacific Bell Telephone Co. v. linkLine Communications, Inc.*, 555 U.S. 438, 457, 129 S. Ct. 1109, 1123, 172 L. Ed. 2d 836, 851 (2009) ("Two wrong claims do not make one that is right"). The Supreme Court of Hawaii erred in reading Section 3 as recognizing claims inconsistent with the title held in "absolute fee" by the United States, 30 Stat. 750, and conveyed to the State of Hawaii at statehood. See *supra*, at 167-168, 173 L. Ed. 2d, at 339-340.

State General Lease No. S-3849

State General Lease No. S-3849 and U.S. Lease Contract No. DA-94-626-ENG-80 documents the agreement and boundaries for the approximately 23,000-acre area that was leased by the U.S. Government from the State in August 1964 (**Figure 1-2**). The term of the lease is 65 years. Three parcels are defined in the lease:

- Tract A-105-1 (Parcel A), approximately 15,420 acres
- Tract A-105-2 (Parcel B), approximately 1,944 acres
- Tract A-105-3 (Parcel C), approximately 5,607 acres (DLNR, 1964)

Parcel A includes TAs 5–9, 12–15, 18–20, and the portions of TAs 16, 17, 21, 22, and 22B that are in the State-owned land. Parcel B includes TAs 10 and 11. Parcel C includes TAs 1–4.

Approximately 112 acres within Parcels A and C encompass Old Saddle Road, which is excluded from the lease and not part of the Proposed Action. This segment of Old Saddle Road was closed to the public when

DKI Highway was constructed; the State transferred its interest to the County of Hawai‘i, which grants PTA exclusive use (USACE-POH & USAG-HI, 2019b). Additionally, the U.S. Government conveyed a roadway easement for approximately 232 acres to the State Department of Transportation (DOT) for portions of DKI Highway due to highway construction occurring after the lease signing. The roadway easement was granted to the State DOT in consideration for construction, operation, and maintenance of DKI Highway as a public road for the benefit of the United States and the public.

The following summary of the lease content is intended to convey general lease terms and does not contain all legal conditions. The lease parties are the State, represented by its BLNR, and the United States of America (called the “Government”); the lease is granted for “Military purposes.” Compensation to the State is a nominal \$1.00 for the 65-year term of the lease. The lease identifies the rights of the U.S. Government to attach fixtures, erect structures, and signs. Rights conveyed to the U.S. Government include unrestricted control and use of the leased land, except as otherwise provided for in the lease, including the right to fire all combat weapons into the designated PTA impact area (on U.S. Government-owned land).

Lease conditions stipulate the following:

- The U.S. Government is to make every reasonable effort to stockpile supplies and equipment in an orderly fashion away from established roads and trails, and to remove or deactivate all live or blank ammunition upon completion of training exercise or prior to entry by said public, whichever is sooner.
- The U.S. Government may interrupt traffic on Saddle Road (now DKI Highway) during training or passage of troops.
- Firing of live ammunition into any portion of the State-owned land is prohibited, except for artillery simulators, atomic bomb simulators and any similar devices, and explosives used in construction work, and a portion of Parcel A deemed by the U.S. Government to be safe for small arms firing.
- The U.S. Government should take every reasonable precaution to prevent the start of any fire and is to take immediate and continuing action to extinguish any fire resulting from U.S. Government training activities. Additionally, the U.S. Government is required to establish and maintain an SOP for fighting fires within or adjacent to the leased properties resulting from U.S. Government training activities.
- The State retains the right to allow public hunting access. **Section 3.2.4.2** describes the hunting access on State-owned land at PTA.
- Lease terms amended in April 2010 allow the U.S. Government to “. . . develop and use coral, rock and similar material occurring naturally on the premises for road projects and other specified, approved construction projects.” Additionally, the right of the U.S. Government to use ground and surface waters on, in or under the State-owned land for purposes of the rights in the lease were clarified.
- The U.S. Government has 60 days after lease expiration, or within additional time that may be mutually agreed upon, to remove its signs and structures or abandon structures in place.
- Weapons and shells used in connection with training activities are to be removed to the extent that technical and economic capability exists and provided that expenditure for removal would not exceed the fair market value of the land.

- Following lease expiration and as negotiated with the State, the U.S. Government should reforest areas, as expeditiously as practicable and within a period mutually agreed upon, where it can be demonstrated that substantial forest cover, including trees, has been destroyed as a direct result of U.S. Government activities, with approval of planting by the State.

As noted in **Section 2.3**, Hawai'i law prohibits (except in certain special circumstances generally not applicable in this case) renewing existing leases or extending leases in excess of 65 years (HRS Chapter 171-36). The 2021 Hawai'i Legislature passed an amendment to HRS Chapter 171-36 that provides lease extensions for "government use" and defines "government" as an "...agency of department of the State or its polictical subdivision other than the University of Hawai'i . . .". The recent amendment, therefore, does not apply to federal military leases.

Lawsuit Against the State

In 2014, Native Hawaiian descendants brought a legal complaint against DLNR, charging that the agency failed reasonably to monitor or inspect the land at PTA, under the terms of the lease. Following a hearing in September 2015, the Circuit Court issued a decision on April 3, 2018. The lawsuit did not include the U.S. Government. An appeal by the State, from the Circuit Court was decided by the Hawai'i Supreme Court in 2019, remanding to the Circuit Court to develop a Court Ordered DLNR Management Plan for Leased Lands at Pohakuloa. The Court Ordered DLNR Management Plan was issued on April 20, 2021. It includes periodic monitoring and inspection and designates priority areas for review to ensure the State will fulfill its trust duty to inform itself of the condition of the leased land. The inspection reports must be made available to the public and should contain recommendations for corrective actions. It is reasonable to expect that these inspection and corrective action requirements would be included in any future lease of the land, and this EIS makes that assumption. The Hawai'i Supreme Court decision emphasized that the issue of lease renewal was not properly before the Court.

Zoning

The County of Hawai'i zoning for the State-owned land is "Open" and "Forest Reserve" (**Figure 3-2**). The Open district includes areas that contribute to the general welfare, and objectives of this district include to create buffers for incompatible uses and to preserve valuable scenic vistas. The Forest Reserve district is considered non-zoned by the county and is instead regulated under State conservation district rules, which are described in the next subsection.

PTA is outside the SMA established by the County of Hawai'i under the State's CZM program (**Section 3.2.2**). **Section 5.3.3** provides further information on the SMA.

State Land Use Districts

All of PTA was classified as conservation district under the State's 1961 Land Use Law. Hawai'i conservation district statute and rules, HRS Chapter 183C and HAR Chapter 13-5, were enacted in 1964. Lawful use of land, established prior to October 1, 1964, is considered nonconforming. The statute and rule define nonconforming as "the lawful use of any building, premises or land for any . . . purposes which is the same as and no greater than that established prior to October 1, 1964 . . ." The lease for military use of the approximately 23,000 acres at PTA was signed on August 16, 1964, and is considered nonconforming per HRS Chapter 183C and HAR Chapter 13-5.

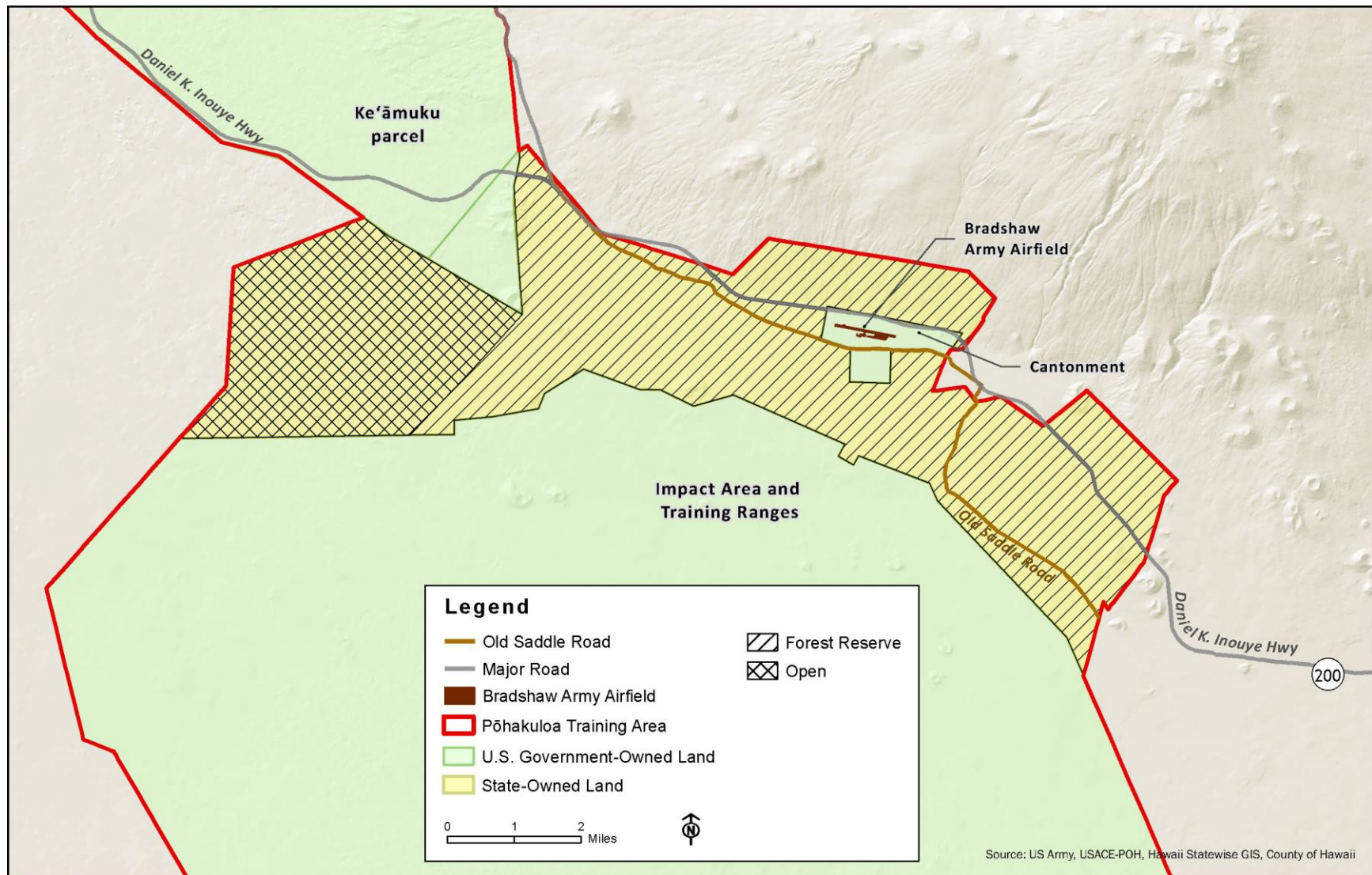


Figure 3-2: County of Hawai'i Zoning

The State-owned land is included in the resource subzone of the conservation district. As noted under the preceding section on zoning, the county considers its Forest Reserve district to be non-zoned and, therefore, is regulated under State conservation district rules. Military use is not defined as an allowable use for any conservation district subzone, but HAR Chapter 13-5 provides for authorization of additional uses and, therefore, allows for conformance with the rules.

3.2.4.2 Recreation

PTA supports recreational uses and hunting on the State-owned land and other portions of the installation for outdoor activities that are consistent with use of the land and do not conflict with the PTA mission. Activities include archery and hunting for birds, pigs, sheep, and goats within specific areas, and bird dog training (USAG-PTA, 2020c). Recreational areas near PTA include the Mauna Kea Observatories at the summit of Mauna Kea; the Gilbert Kahele Recreation Area that allows overnight stays, trail hiking and hunting opportunities; and Mauna Loa, which provides hiking and sightseeing opportunities.

Public hunting within PTA is governed by State rules, HAR Chapter 13-122 and HAR Chapter 13-123, although the schedule is subject to training schedule compatibility. PTA staff work with organizations such as the Wildlife Conservation Association of Hawai'i, Hawai'i Island Archery Club, and Pig Hunters of Hawai'i to collaborate on management decisions that affect hunting access and issues at PTA. Archery hunting of game mammals (e.g., feral pigs and goats, wild sheep) is allowed year-round, while buckshot is allowed for upland game bird season from November to January and wild turkey season from March to April (COH, 2019; USAG-PTA, 2020c). Hunting is subject to training schedule compatibility and a permit from the PTA Commander. PTA hunting is open to the public within six designated hunting areas, located in TAs 1 through 4 and 9 through 16 (USAG-HI & USARPAC, 2013), on weekends and national holidays. The availability of units open for hunting at a particular time is based on military training schedules and is tracked through the PTA hunting program. The hunting program is managed through iSportsman, an interactive web-based program designed to provide a streamlined process for hunting registration, check-in/-out, providing updated hunting information, and harvest reporting. Per Department of Defense Directive 4724.03, funds collected from hunting activities are used for conservation and management to fund partnerships and research agreements, or to support wildlife and habitat management (USAG-PTA, 2020c).

In addition, the PTA Natural Resources Office (NRO) sets community education goals designed to reach out to the public. Goals include the following:

- Outdoor recreational opportunities and community activities.
- Educational materials about the natural resources of the installation.
- Development of an active volunteer program.
- Continuous review and update of PTA's hunting SOPs (USAG-PTA, 2020c).

3.2.4.3 Encroachment Management

PTA works consistently to manage encroachment issues, defined by the Army as the “cumulative result of any and all outside influences that inhibit normal military training and testing” (Santicola, 2006). Additionally, the Implementation Guidance for Army Compatible Use Buffers broadens this encroachment definition to “All influences threatening or constraining testing and training activities required for force

readiness and weapons acquisition. Encroachment stems from environmental (for example, noise, endangered species, cultural resources, unexploded ordnance [UXO], and munitions constituents [MC]), social (for example, urban sprawl), and economic (for example, changing land values) influences. Impacts include, but are not limited to, restrictions on available testing and training locations; restrictions on available times and duration for testing and training; reduced effectiveness of testing and training activities; and restrictions on weapons systems, equipment, and munitions used during testing and training. Land use and/or development that, individually or through cumulative effect, contributes to restricting the Army's ability to conduct mission activities."

PTA's proactive approach to encroachment management helps to minimize public access restrictions while maintaining mission-essential training. The preemptive measures taken by the Army to manage encroachment also work to minimize training impacts on the neighboring lands; the buffer around the Waiki'i Ranch is one initiative. Other encroachment management initiatives include the following:

- Maintain current real property holdings to minimize future/new encroachment issues.
- Work with adjacent land holders and users to abate conflicts at the lowest level.
- Conduct interagency consultation (e.g., Endangered Species Act (ESA), critical habitat) to augment environmental stewardship of the land.
- Continually assess and analyze encroachment issues to understand where additional leverages or actions may be beneficial to the installation and community (USAG-PTA, 2020c).

3.2.4.4 Vistas

Viewsheds

PTA and Surrounding Land: PTA is generally characterized by panoramic views of the open area between Mauna Loa and Mauna Kea. Mauna Kea's gently sloping form to the north and Mauna Loa's to the south are dominant visual landscape features. PTA terrain is open and sloping, with dark lava flows creating receding areas and sporadic volcanic cinder cones (pu'u) dotting the landscape.

The lands that surround PTA are utilized for forest reserves, game management, and cattle grazing. The vegetation is generally comprised of sparse and low-growing grasses and shrubs, with few trees. Other viewsheds surrounding PTA include the Pu'u Anahulu and the Waiki'i Paddock Game Management Areas, the Upper Waiakea Forest Reserve, the Mauna Loa Forest Reserve, and the Mauna Kea State Park. The PTA landscape provides minimal visual complexity but dramatic expansiveness that, when coupled with the panoramic views, is considered high visual quality (USAG-HI & USARPAC, 2013).

Sensitive Views: Sensitive views may occur in areas of high public or recreational use. These views are sensitive in that the public is accustomed to or has experiences connected with these views. Around PTA, sensitive views include those from Gilbert Kahele Recreation Area. DK1 Highway is the primary public route for viewing PTA, particularly the State-owned land. Public traffic on this highway is generally light, with travelers typically driving by without stopping. While most public views of PTA occur from a traveling vehicle, some drivers and passengers may hike and take photographs of the views.

Some areas of PTA are visible from the Mauna Kea Observatory. While the observatory has limited public access, the rest of Mauna Kea is general access, including Pu'u Poliahu, which is on the southwestern side of Mauna Kea and has views of PTA. The public may also access Lake Waiau or hike to the Mauna Loa summit; both areas provide views of PTA (USAG-HI & USARPAC, 2013).

Mauna Kea

Mauna Kea is a high-quality landscape with its remote location and distance from large cities. This area holds significant meaning and connection for local Hawaiians and visitors for the unusual views and exceptional stargazing observatory opportunities available in very few places in the world. Mauna Kea is one of seven National Natural Landmarks (NNLs) in Hawai'i. NNLs are administered by the National Park Service and are created and managed in cooperation with land managers, partners, and landowners to promote the natural heritage of the United States. The southern portion of the Mauna Kea NNL overlaps with the northern portion of the State-owned land (**Figure 3-3**).

With Mauna Kea's value as an NNL and a night sky observatory and sensitivity to lights, light pollution is a consideration. The management of light pollution is listed as one of the management actions for the Mauna Kea Comprehensive Master Plan (UH, 2009). PTA adheres to state and local laws, including the County of Hawai'i Outdoor Lighting Ordinance, and regulations to minimize operational light pollution including retrofitting lights and adherence to Unified Facilities Criteria 3-530-01, Interior and Exterior Lighting Systems and Controls, which provides standards for external lighting such as full shielding (louvers) or diffused lenses for external lights (DoD, 2015). Buildings on State-owned land that have external lighting include the BAX, MOUT Site, and ASP.

3.2.5 Methodology and Significance Criteria

Current land uses and controls within the ROI, as defined in regulations, objectives, and policies of relevant federal, state, and county agencies, are analyzed to evaluate the consistency and compatibility of proposed use of land under each alternative. Impacts are assessed based on whether the alternatives would limit, preclude, or conflict with the existing or planned land uses in and around the State-owned land. This analysis assumes the following:

- The State would fund and manage natural resources and public use programs at current levels within the State-owned land not retained.
- Land not retained under the various action alternatives that is managed for public hunting would have the potential for fewer training conflicts and therefore access would be increased.
- The current nonconforming use of State conservation district land is assumed to cease with the lease term. Army use could be brought into conformance with conservation district rules as part of the land retention process, following the EIS process when the land retention method is known (**Sections 1.4.2 and 3.2.4.1**).
- The State would use land not retained for recreation/conservation purposes, which would be compatible with adjacent land that is owned by the State.

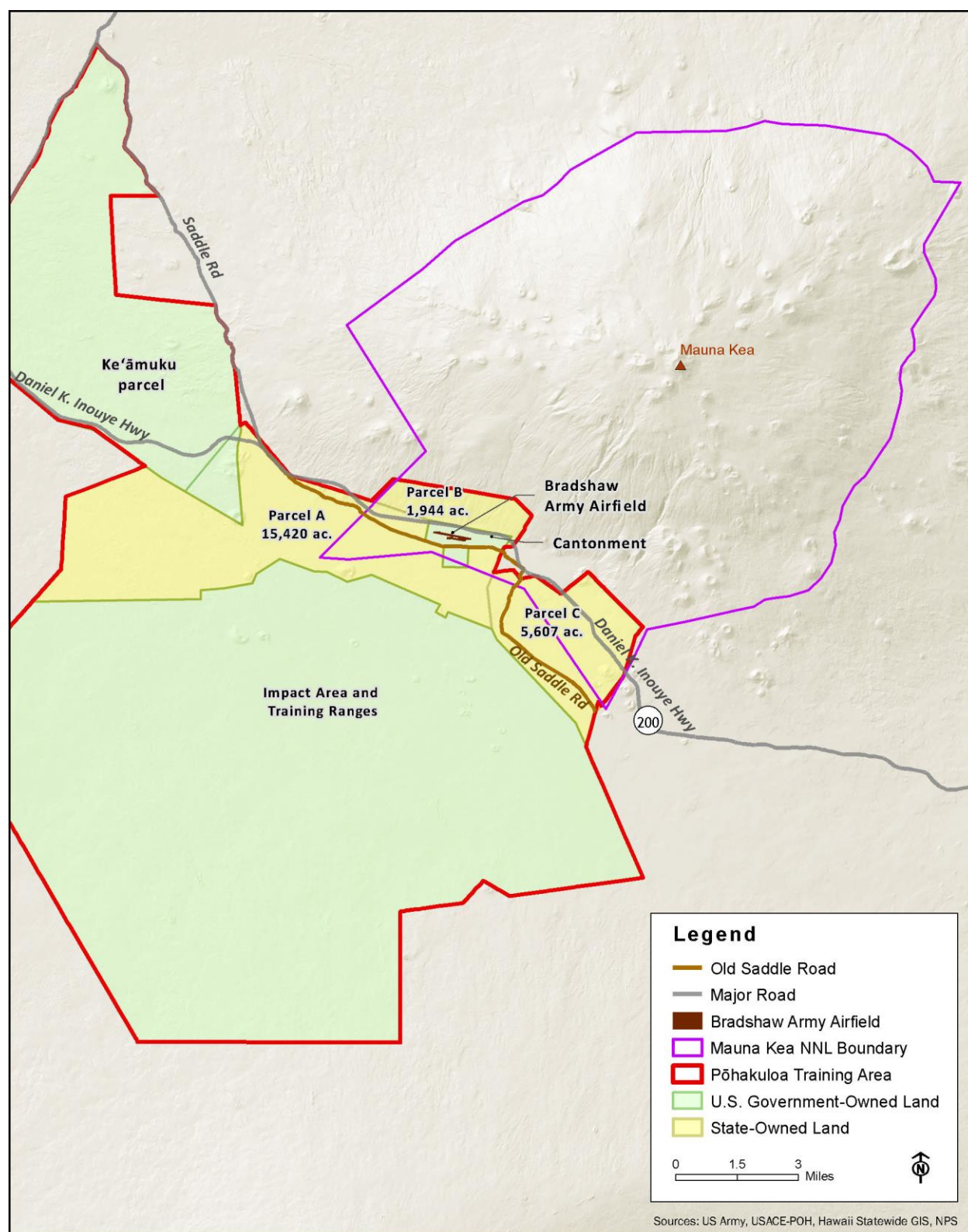


Figure 3-3: Mauna Kea National Natural Landmark

The criteria considered to assess whether an alternative would result in potential significant impacts on land use include the extent or degree to which an alternative would result in the following:

- Preclusion of existing or planned land uses on or surrounding the State-owned land.
- Incompatibility with objectives, policies, or guidance of federal, state, and local land use, recreation, and natural resource management plans such as zoning or CZM policies.
- Long-term adverse impacts to the public's right of access to recreation areas.
- Adverse impacts on viewsheds that affect vistas, during day or night, identified in county or state plans or studies [HAR Section 11-200.1-13(b)(12)].

3.2.6 Environmental Analysis

3.2.6.1 Alternative 1: Full Retention

Under Alternative 1, there would be no new impacts to recreation, encroachment management, or vistas. There would be new long-term, minor, beneficial impacts on land tenure through conformance with State land use rules (e.g., conservation district rules, HAR Chapter 13-5). There would be continued long-term, minor, adverse impacts to recreation due to ongoing restricted public access within the State-owned land.

A boundary survey, title report, and title insurance policy would be obtained as part of any future real estate action to confirm parcel boundaries and land ownership.

Summary of Impacts: Alternative 1 would result in no new impacts to recreation, encroachment management, or vistas; however, there would be new long-term, minor, beneficial impacts on land tenure. There would be continued long-term, minor, adverse impacts on recreation. In total, impacts would be less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.2.6.2 Alternative 2: Modified Retention

Land Retained

There would be no new impacts on recreation, vistas, or encroachment management. There would be new long-term, minor, beneficial impacts on land tenure through conformance with State land use rules. There would be continued long-term, minor, adverse impacts on recreation due to ongoing restricted public access on the State-owned land retained.

Land Not Retained

There would be no new impacts on land tenure or vistas. There would be new long-term, minor, beneficial impacts to recreation from reduced restrictions to public access on the land not retained. There would be new long-term, minor, adverse impacts to encroachment management from the loss of Army control over lands adjacent to U.S. Government-owned land, creating potential safety and security concerns if the public inadvertently enters U.S. Government-owned lands.

Summary of Impacts: For State-owned land retained, there would be no new impacts on recreation, encroachment management, or vistas; there would be new long-term, minor, beneficial impacts on land tenure and continued long-term, minor, adverse impacts on recreation. For State-owned land not retained, there would be no new impacts on land tenure or vistas; there would be new long-term, minor, beneficial impacts to recreation, and new long-term negligible, adverse impacts on encroachment management. In total, impacts would be less than significant.

Potential Mitigation Measures: The Army would consider adding fencing and signage to minimize encroachment from adjacent non-U.S. Government-owned land (i.e., land not retained).

Level of Significance: Less than significant.

3.2.6.3 Alternative 3: Minimum Retention and Access

Land Retained

There would be no new impacts on recreation, encroachment management, or vistas. There would be new long-term, minor, beneficial impacts on land tenure through conformance with State land use rules. There would be continued long-term, minor, adverse impacts on recreation due to ongoing restricted public access.

Land Not Retained

There would be no new impacts on land tenure or vistas. There would be new long-term, moderate, beneficial impacts to recreation from reduced restrictions to public access on the land not retained. There would be new long-term, minor, adverse impacts to encroachment management from the loss of Army control over lands adjacent to U.S. Government-owned land, creating potential safety and security concerns if the public inadvertently enters U.S. Government-owned lands.

Summary of Impacts: For State-owned land retained, there would be no new impacts to recreation, vistas, or encroachment management; there would be new long-term, minor, beneficial impacts on land tenure and continued long-term, minor, adverse impacts on recreation. For State-owned land not retained, there would be no new impacts on land tenure or vistas; there would be new long-term, moderate, beneficial impacts to recreation, and new long-term, minor, adverse impacts on encroachment management. In total, impacts would be less than significant.

Potential Mitigation Measures: The Army would consider adding fencing and signage to minimize encroachment from adjacent non-U.S. Government-owned land.

Level of Significance: Less than significant.

3.2.6.4 No Action Alternative

Under the No Action Alternative, the Army would not retain any State-owned land at PTA after the lease expires. There would be no new impacts to land tenure. There would be new long-term, minor, beneficial impacts on recreation from reduced restrictions to public access, and to vistas from assumed, negotiated lease compliance actions for natural resources and no light from facilities or night training on the land not retained, and new long-term, moderate, adverse impacts to encroachment management from the loss of

Army control over lands adjacent to U.S. Government-owned land, creating potential safety and security concerns if the public inadvertently enters U.S. Government-owned lands.

Summary of Impacts: The No Action Alternative would result in no new impacts to land tenure. There would be new long-term, minor, beneficial impacts on recreation and vistas, and new long-term, moderate, adverse impacts on encroachment management. In total, impacts would be less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.3 Biological Resources

3.3.1 Definition

Biological resources include vegetation and wildlife, native and non-native, and the habitats in which they occur. For this analysis, biological resources are evaluated in four major categories: vegetation, wildlife, protected species and associated areas, and conservation management.

Protected species and associated areas include the habitats that sustain, or are critical to the survival of, a particular population. These habitats may be present, although the species of conservation interest is absent. Interactions between ecosystems are also considered.

At PTA, conservation management refers to the maintenance of natural resources to prevent harm to protected species and associated habitats, to manage wildfires, and to prevent the spread of invasive species. The Army coordinates with State and federal agencies to determine the appropriate management efforts, protocols, and BMPs to be implemented.

3.3.2 Regulatory Framework

Regulations are enacted to protect biological resources by preventing or limiting activities that may harm or reduce species populations. The Army is committed to environmental stewardship and protection and adheres to regulations including, but not limited to, the Department of Defense Instruction (DoDI) 4715.03, Natural Resources Conservation Program and AR 200-1, Environmental Protection and Enhancement.

The ESA of 1973 (16 U.S.C. Chapter 1531 *et seq.*) is a federal law passed in 1973 to protect and recover imperiled species and the ecosystems they need to survive. The ESA requires federal agencies, in consultation with USFWS, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. Under the ESA, “jeopardy” occurs when an action is reasonably expected, directly or indirectly, to diminish numbers, reproduction, or distribution of a species so that the likelihood of survival and recovery in the wild is appreciably reduced. An “endangered species” is defined by the ESA as any species in danger of extinction throughout all or a significant portion of its range. A “threatened species” is defined by the ESA as any species likely to become an endangered species in the foreseeable future. The ESA also prohibits any action that causes a “take” of any listed

animal. “Take” is defined as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct.” Listed plants are not protected from “take,” although it is illegal to collect or maliciously harm them on federal land.

The USFWS designates critical habitat when it is determined that habitat is essential to the conservation of a threatened or endangered species. Federal agencies must ensure that their activities do not adversely modify designated critical habitat to the point that it will no longer aid in the species’ recovery. Areas that are owned or controlled by the DoD are exempt from a critical habitat designation if it is determined that a signed INRMP provides a benefit to the species—these plans are required under the Sikes Act (NOAA 2021).

The Sikes Act, as amended (16 U.S.C. Section 670a-670o), authorizes the development of cooperative installation plans (e.g., INRMP) and reflects mutual agreements with federal and state agencies for conservation of natural resources, including recreation, while maintaining military safety and security. The Sikes Act is discussed in more depth in **Section 3.2.2**.

The Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. Chapters 703–712), as amended, and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, require federal agencies to minimize or avoid impacts on migratory birds. Under the MBTA, it is unlawful by any means or in any manner to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, [or] possess migratory birds or their nests or eggs at any time unless permitted by regulation.

The Federal Noxious Weed Act (Public Law [P.L.] 93-629) mandates control of noxious weeds by limiting potential weed seed transport between infested and non-infested sites. EO 13112, *Invasive Species*, and EO 13571, *Safeguarding the Nation from the Impacts of Invasive Species*, require federal agencies to prevent the introduction of invasive species; provide for their control; and minimize their economic, ecological, and human health impacts.

The State provides protections for threatened species, endangered species, and species of concern under HAR Chapter 107, Threatened and Endangered Plants; HAR Chapter 124, Indigenous Wildlife, Endangered and Threatened Wildlife, Injurious Wildlife, Introduced Wild Birds, and Introduced Wildlife; and HRS Chapter 195D, Conservation of Aquatic Life, Wildlife, and Land Plants. These regulations work to conserve and protect native plants and animals and to manage non-native species. Additionally, HAR Chapters 122, Rules Regulating Game Bird Hunting, Field Trials and Commercial Shooting Preserves, and 123, Rules Regulating Game Mammal Hunting, provide hunting regulations.

3.3.3 Region of Influence

The ROI for biological resources includes State-owned land leased by the Army and adjacent lands, both Government- and State-owned lands, where population distributions of plants or animals are contiguous. This ROI includes wildlife corridors and areas encompassing habitats that connect to the State-owned land at PTA, which potentially support protected populations.

3.3.4 Existing Conditions

3.3.4.1 Vegetation

The PTA landscape is dominated by non-native herbaceous plants, particularly *Cenchrus setaceus* (crimson fountaingrass) and *Senecio madagascariensis* (Madagascar fireweed). A sub-alpine tropical dryland ecosystem supporting *Metrosideros polymorpha* (‘ōhi’a lehua) and dryland native shrubs, including *Myoporum sandwicense* (false sandalwood, naio) and *Sophora chrysophylla* (māmane), covers the PTA landscape (USACE-POH, 2017; USAG-PTA, 2020c).

Four vegetation types occur within the State-owned land: shrublands, grasslands, barren lava with less than 5 percent vegetation cover, and woodlands. Within these types, a total of 333 vascular plants have been documented; 44 percent are forbs, 17 percent are grasses or grass-like plants, 21 percent are shrubs, the remaining 18 percent are comprised of ferns, vines, and trees. Approximately 36 percent of plant species on PTA are native; the rest are non-native (USAG-PTA, 2020c; USNVC, 2021). **Table 3-1** lists the 14 plant communities and alliances (e.g., shrub, woodland [tree], and herbaceous layer) identified on PTA; of these, 12 occur on State-owned land (**Figure 3-4**).

Table 3-1 Plant Communities on Pōhakuloa Training Area		
Community Type	Acres Occupied within State-owned Land	Percent Acreage Occupied within State-owned Land ¹
<i>Dodonaea viscosa</i> shrubland *	4,553	20
<i>Metrosideros polymorpha</i> woodland	730	3
<i>Cenchrus (ciliaris setaceum)</i> mixed medium-tall ruderal grassland*	3,726	16
<i>Myoporum sandwicense-Sophora chrysophylla</i> shrubland*	2,515	11
<i>Cenchrus clandestinum</i> semi-natural grassland	0	0
<i>Eragrostis atropioides</i> herbaceous*	3,425	15
<i>Metrosideros polymorpha</i> sparsely vegetated woodland*	228	1
<i>Myoporum sandwicense-Sophora chrysophylla</i> woodland*	2,447	11
Semi-natural herbland*	1,173	5
<i>Olea europaea</i> semi-natural woodland	0	0
<i>Chenopodium oahuense</i> shrubland*	527	2
<i>Eucalyptus</i> ssp. semi-natural woodland*	6	<1
Barren land or sparsely vegetated semi-natural herbland*	3,901	17
Urban land cover*	64	<1
Totals	23,295	100

Key: * – Occurs on State-owned land

¹ – Percentage sum exceeds 100 due to rounding

Source: USAG-PTA, 2020c; USAG-PTA, 2020d; USNVC, 2021

USAG-PTA also tracks NatureServe heritage ranking, which reviews and ranks the global conservation statuses of imperiled species to determine if the species are extirpated (locally or geographically extinct with populations existing elsewhere), globally extinct, or at risk of extirpation or extinction (NS, 2021). Following is the breakdown of global ranks for plant species at PTA:

- G1 (critically imperiled) – 17 plant species.
- G2 (imperiled) – 25 plant species.
- G2/G3 (imperiled/vulnerable) – 8 plant species.
- T1 taxa specific (infraspecific/subspecies or varieties, critically imperiled) – 10 plant species (USAG-PTA, 2020c).

The global conservation status of plants known in the State-owned land is described in **Section 3.3.4.3**.

Invasive Plants

A total of 194 non-native (invasive) plant species have been documented across PTA. Of this total, 34 species are categorized as invasive, and an additional 9 species are under consideration for categorization as an invasive species; 28 of these species have been documented on State-owned land (USAG-PTA, 2020c; USAG-PTA, 2020d). The USAG-PTA invasive plant species list includes the following five species on the Hawai'i State-listed noxious weed list: *Acacia mearnsii* (black or green wattle), *Rubus niveus* (Ceylon raspberry), *Passiflora tarminiana* (banana poka), *S. madagascariensis*, and *Emex spinosa* (spiny emex). *Emex spinosa* is also a federal noxious weed (USDA, 2003; USDA, 2012). A noxious weed is considered a threat to agricultural, public health, property, recreation or wildlife and is designated by federal, state or local governmental agencies (WSSA, 2016). **Table 3-2** list all PTA invasive plant species, including species listed on the federal and State-listed noxious weed lists.

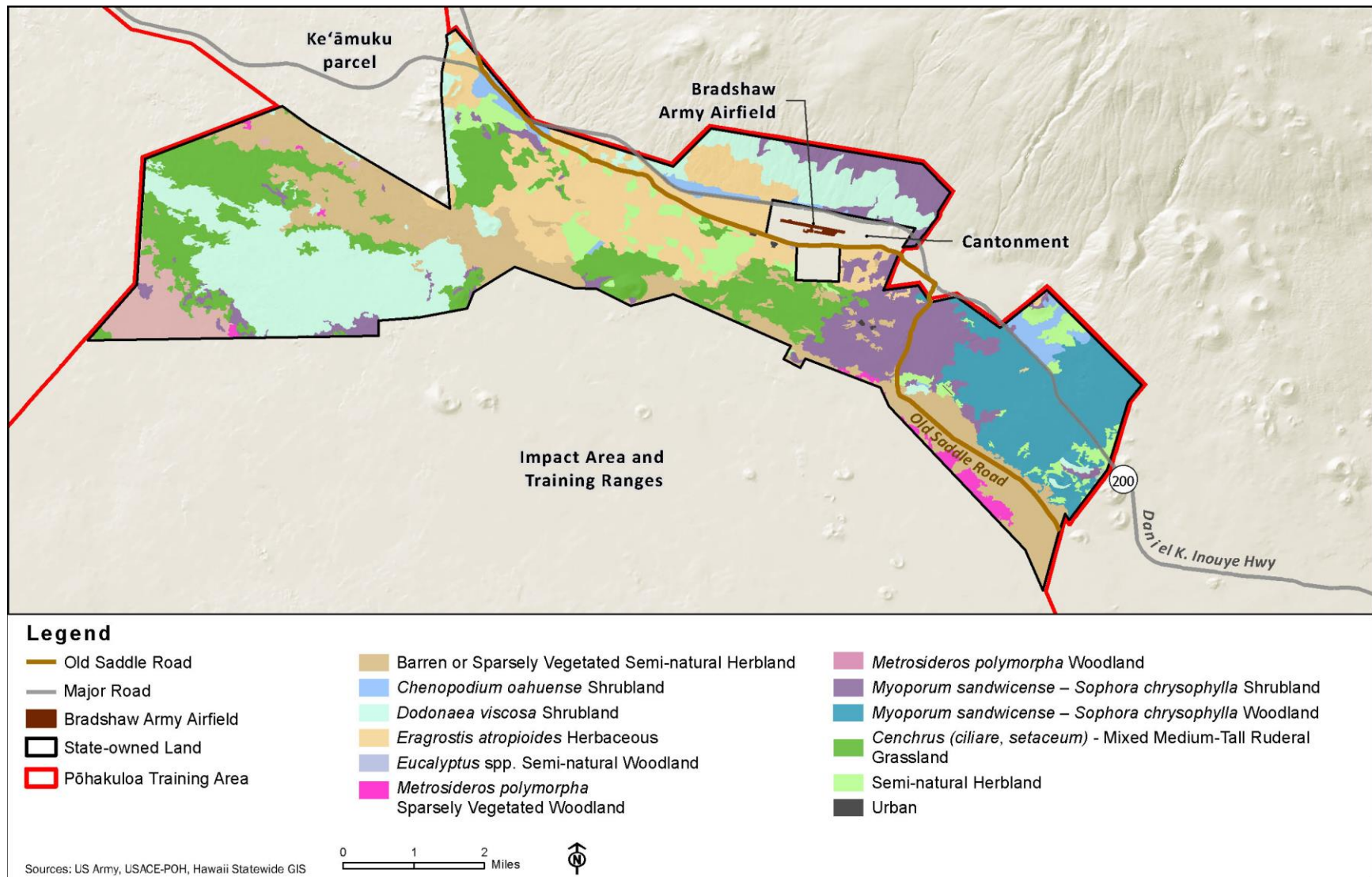


Figure 3-4: Vegetation Communities on State-Owned Land at Pōhakuloa Training Area

Table 3-2 List of Invasive Plant Species on Pōhakuloa Training Area

Species Name (Common, Local Name)			
<i>Ambrosia artemisiifolia</i> * (ragweed)	<i>Schedonorus arundinaceus</i> *, ¹ (tall fescue)	<i>Nicotiana tabacum</i> ¹ (cultivated tobacco)	<i>Ricinus communis</i> * (castor bean)
<i>Acacia decurrens</i> (black or green wattle)	<i>Foeniculum vulgare</i> * (fennel)	<i>Olea europea</i> * (olive tree)	<i>Rubus niveus</i> ² (Ceylon raspberry)
<i>Gomphocarpus physocarpus</i> * (balloon plant)	<i>Neonotonia wightii</i> *, ¹ (glycine)	<i>Parthenium hysterophorus</i> (Santa Maria feverfew)	<i>Rubus rosifolius</i> (thimbleberry, ola'a)
<i>Cenchrus setaceus</i> * (fountain grass)	<i>Grevillea robusta</i> (silver or silky oak)	<i>Paspalum dilatatum</i> *, ¹ (dallisgrass)	<i>Salsola kali</i> *, ² (prickly Russian thistle)
<i>Centaurea melitensis</i> * (Malta starthistle)	<i>Heteromeles arbutifolia</i> *, ¹ (Toyon)	<i>Passiflora tarminiana</i> *, ² (banana poka)	<i>Sambucus nigra ssp. canadensis</i> (Mexican elderberry)
<i>Cirsium vulgare</i> * (bull thistle)	<i>Kalanchoe delagoensis</i> * (mother of millions)	<i>Piptatherum miliaceum</i> *, ¹ (smilgrass)	<i>Schinus molle</i> (California peppertree)
<i>Cupressus species</i> * (Monterey cypress)	<i>Lantana camara</i> (common lantana)	<i>Pluchea carolinensis</i> (sour bush)	<i>Senecio madagascariensis</i> *, ² (Madagascar fireweed)
<i>Datura stramonium</i> * (Jimson weed)	<i>Leucaena leucocephala</i> (white leadtree, koa haole)	<i>Portulaca pilosa</i> (hairy purselane, 'lhi)	<i>Sphagneticola trilobata</i> (wedelia)
<i>Delairea odorata</i> * (Cape ivy)	<i>Asarina erubescens</i> * (creeping gloxinia)	<i>Prosopis pallida</i> (tropical mesquite, kiawe)	<i>Tribulus terrestris</i> * (puncture vine)
<i>Emex spinosa</i> *, ^{1, 2, 3} (spiny emex)	<i>Melinis minutiflora</i> ¹ (molasses grass)	<i>Psidium guajava</i> (guava)	<i>Trifolium pratense</i> *, ¹ (red clover)
<i>Eschscholzia californica</i> * (California poppy)	<i>Nicotiana glauca</i> * (tobacco)	<i>Rhamnus californica</i> * (coffee berry)	

Key: * – Documented on State-owned land
¹ – Under consideration for invasive classification
² – State noxious weed list
³ – Federal noxious weed list

Source: USAG-PTA, 2020c; USAG-PTA, 2020d; USDA, 2003; USDA, 2012

The INRMP for PTA prioritizes invasive species according to management importance. Accordingly, *C. setaceus* and *S. madagascariensis* are managed as top priorities because of landscape prevalence, combined with their fine fuel production and habitat-altering capacities. USAG-PTA's Invasive Plants Program, established and managed per the INRMP, outlines early invasive plant survey efforts and actions. Actions include surveys for initial identification of target invasive plants conducted annually along roadsides and quarterly at BAAF and construction sites. Once an invasive species is located, initial treatment is completed. This treatment can include hand pulling and various herbicide applications depending on the literature recommendations for the species. Follow-on surveys of the species are scheduled based on species reproductive period and known effectiveness of treatment methods (USAG-PTA, 2020c; USAG-PTA, 2020d; USFWS, 2003).

3.3.4.2 Wildlife

Invertebrates

Not much is known about invertebrates at PTA, although more than 500 species of arthropods have been identified on PTA from surveys conducted in the 1990s.

Amphibians, Reptiles, and Fish

PTA does not have water bodies to support aquatic fauna. Therefore, no amphibians, fishes, or other aquatic wildlife have been documented on PTA.

No comprehensive reptile survey has been conducted on PTA (USAG-PTA, 2020c). There are no reptile species native to Hawai'i; therefore, all reptiles observed at PTA are considered invasive. USAG-PTA has conducted quarterly reptile surveys around the BAAF and auxiliary construction sites in use since 2015. Additionally, civilian and military personnel are provided a reptile briefing that includes reporting sightings to Range Control and the PTA Natural Resources Program, particularly for brown tree snakes. Contractors are also provided a general briefing for invasive species and training on PTA decontamination procedures to minimize the risk of invasive animal transportation (USAG-PTA, 2020d).

Birds

Thirty-eight species of bird have been observed on PTA; 34 of those species have been observed on State-owned land. Bird species observed on PTA include nine native and 29 non-native species. All nine native species and six of the non-native species are protected under the MBTA (USAG-PTA, 2020c). Three species, *Branta sandvicensis* (Hawaiian goose, nēnē), *Oceanodroma castro* (Band-rumped storm petrel, 'akē'akē), and *Pterodroma sandwichensis* (Hawaiian petrel, 'ua'u) are federally and State-listed, and *Asio flammeus sandwichensis* (Hawaiian short-eared owl, pueo) is State-listed.

The INRMP also tracks three DoD Partners in Flight species. The DoD Partners in Flight is a natural resources cooperative network that works to enhance the military mission with proactive and habituated-based management and conservation strategies aimed to maintain healthy ecosystems on training lands (DoD-PIF, 2021). The Hawai'i State Wildlife Action Plan further classifies native species as endemic or indigenous to help specify the geographic distribution and associated importance. An indigenous species is found in Hawai'i and other Pacific islands, while an endemic species is only found only in Hawai'i. Endemic species may be further limited to a specific area of the Hawaiian Islands (DLNR-DOFAW, 2015). As with plants, USAG-PTA also considers the global conservation ranks of bird species in its proactive management efforts.

Mammals

Lasiurus cinereus semotus ('ōpe'ape'a, Hawaiian hoary bat), the only native mammal species documented on PTA, is federally and State-listed as endangered (**Section 3.3.4.3**). Ten non-native mammal species have been observed on PTA: the introduced feral game animals *Sus scrofa* (pig), *Ovis* species (sheep), *Capra hircus* (goat); three *Rattus* species (rat), *Herpestes javanicus* (small Indian mongoose), *Mus domesticus* (house mouse); and feral dogs and cats. Both feral cats and *H. javanicus* are listed as species of invasive concern by the Hawai'i Invasive Species Council, per EO 13112, *Invasive Species*, listing criteria. The council directs funding for the prevention, control, and research of listed species of invasive concern (HISC, 2021; USAG-PTA, 2020c).

3.3.4.3 Protected Species and Areas

The Pacific Island Fish and Wildlife Office provided a federally listed vertebrate avifauna species list with the potential to occur on PTA. This list contains 50 species: 35 plants, 3 invertebrates, 1 mammal, and 11 birds. Potential for species occurrence within PTA is considered when a habitat range or a historically reported population distribution overlaps with a specified land area. Biological surveys of PTA habitat and species have documented suitable habitat for, and the presence of, 26 federally listed species. This includes 20 plants, 2 invertebrates, 1 mammal, and 3 birds. Eighteen of these species are also State-listed. Additionally, there are two bird species listed as endangered by the State—*Asio flammeus sandwichensis* and *Buteo solitarius* (DLNR-DOFAW, 2015; USAG-HI, 2021a; USAG-PTA, 2020c). See **Tables 3-3, 3-4, and 3-5**.

The installation has three USFWS issued Biological Opinions (BOs) that guide conservation work and include conservation measures for *Branta sandvicensis*, *Buteo solitarius*, *Pterodroma sandwichensis*, and 15 plant species. The 2003 and 2008 BOs included Incidental Take Statements to offset military activities effects on the *L. cinereus semotus* (USFWS, 2003; USFWS, 2008). The 2008 and 2013 BOs included Incidental Take Statements to offset military training effects on *B. sandvicensis* (USFWS, 2008; USFWS, 2013). The 2013 BO determined military activities do not affect *B. solitarius* and associated conservation measures no longer apply (USFWS, 2013). *B. solitarius* was removed from the Federal List of Endangered and Threatened Wildlife in 2020. Additionally, in 2020 an informal consultation with USFWS occurred for predator control during breeding season at a *O. castro* colony on U.S. Government-owned land (USAG-PTA, 2020d; USAG-PTA, 2021b). The Army is preparing a programmatic biological assessment in consultation with the USFWS. This programmatic biological assessment covers newly listed species and critical habitats with full consideration of Army training and operations.

Protected Plants

The 20 federally listed plant species on PTA include 19 endangered and 1 threatened species; 12 of the federally listed plant species are also State-listed (**Table 3-3**). Another undescribed *Tetramolopium* species, although not listed, is provided the same protections as the listed *Tetramolopium* due to the rarity and limited distribution of the species and has been documented on State-owned land. Of the 20 listed species, 5 species have only been documented on PTA. The Army undertakes conservation measures issued by USFWS in 2003, 2008, and 2013 BOs (USAG-PTA, 2020d).

Of the 20 listed plant species, only 14 species have been documented on the State-owned land and are clustered in portions of the western and southern TAs (**Figure 3-5**) (USAG-PTA, 2020c). ESA-listed plant species are monitored annually per the 2003 BO. For protected plant species with fewer than 500 individuals, each individual is surveyed annually by the NRO. For protected plant species with greater than 500 individuals, 30 percent of the population is surveyed annually by the NRO. Annual percentages are averaged over five years to extrapolate abundance (USAG-PTA, 2020d).

Table 3-3 Protected Plants Documented on Pōhakuloa Training Area

Scientific Name	Common, Local Name	Status	Federal	State	Other
<i>Asplenium peruvianum</i> var. <i>insulare</i>	fragile fern	N/E	E	-	P1/G5T1
<i>Exocarpos menziesii</i>	Menzie's ballart or heau	N/E	E	-	P3/G2
<i>Festuca hawaiiensis</i> *, ¹	Hawaiian fescue	N/E	E	-	P3/G1
<i>Haplostachys haplostachya</i> *	Hawaiian mint, honohono	N/E	E	E	P3/G1
<i>Isodendron hosakae</i> ¹	aupaka	N/E	E	E	P1/G1
<i>Kadua coriacea</i> *, ¹	leather-leaf sweet ear, kio'ele	N/E	E	-	P1/G1
<i>Lipochaeta venosa</i>	spreading nehe	N/E	E	-	P1/G1
<i>Neraudia ovata</i>	spotted nettle bush ma'aloa	N/E	E	E	P1/G1
<i>Portulaca sclerocarpa</i> *	hard fruit purslane, po'e	N/E	E	E	P1/G2
<i>Portulaca villosa</i> *	hairy purslane, 'ihi	N/E	E	-	P1/G1
<i>Schiedea hawaiiensis</i> ¹	mā'oli'oli	NN	E	-	P1/G1
<i>Sicyos macrophyllus</i>	Alpine bur cucumber, 'ānunu	N/E	E	-	P1/G1
<i>Silene hawaiiensis</i> *	Hawaiian catchfly	N/E	T	T	P3/G2
<i>Silene lanceolata</i> *	lance-leaf catchfly	N/E	E	E	P3/G1
<i>Solanum incompletum</i> *	Hawaiian prickle leaf, pōpolo kū mai	N/E	E	E	P1/G1
<i>Spermolepis hawaiiensis</i>	Hawaiian parsley	N/E	E	E	P3/G2
<i>Stenogyne angustifolia</i> var. <i>angustifolia</i> *	creeping mint or narrowleaf stenogyne	N/E	E	E	P3/G2
<i>Tetramolopium arenarium</i> var. <i>arenarium</i> var. <i>arenarium</i> *, ¹	Mauna Kea pāmakani	N/E	E	E	P1/G1T1
<i>Vigna o-wahuensis</i>	O'ahu cowpea	N/E	E	E	P1/G1
<i>Zanthoxylum hawaiiense</i> *	Hawaiian yellow wood, a'e	N/E	E	E	P2/G1

Key:

E – Endangered

T – Threatened

N/E – Native/Endemic

NN – Non-native

P (1-3) – PTA Priority Management
Status greatest to least.

T – taxa specific, infraspecific,
subspecies, or varieties are
critically imperiled

G (1-5) – NatureServe Global
Conservation Status (most to least)

* – Documented on State-owned Land

¹ – Species found only on PTA

Source: DLNR-DOFAW, 2015; USAG-HI, 2021a; USAG-PTA, 2020c; USAG-PTA, 2020d; USAG-PTA, 2021c

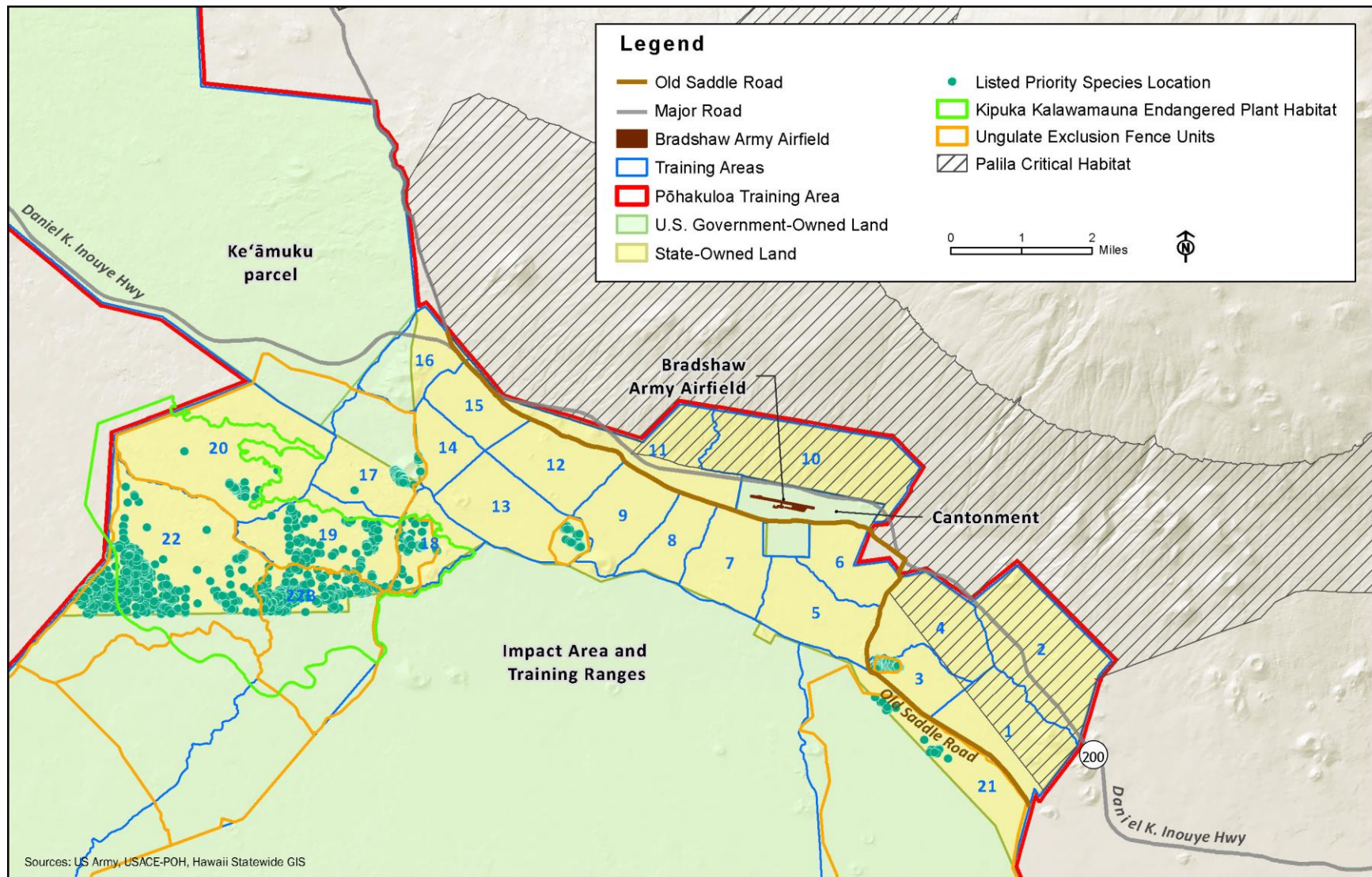


Figure 3-5: Endangered Plant Habitat, Ungulate Exclusion Fence, Critical Habitat, and Listed Plants on State-Owned Land

PTA actively implements projects to manage federally and State-listed plant species genetic diversity as authorized by a 2017 Recovery Permit. Genetic conservation and outplanting conservation measures for 13 of the federally listed plant species are undertaken as identified in the 2003 and 2013 BOs (USAG-PTA, 2020d). The five implementation priorities associated with outplanting for management of plant species are listed from highest to lowest as follows:

- Implementation Priority 1 (High): *Isodendron hosakae*, *Lipochaeta venosa*, *Sicyos macrophyllus*, *Vigna o-wahuensis*.
- Implementation Priority 2: *Kadua coriacea*, *Portulaca sclerocarpa*, *Portulaca villosa*.
- Implementation Priority 3: *Neraudia ovata*, *Silene hawaiiensis*, *Solanum incomletum*.
- Implementation Priority 4: *Asplenium Peruvianum* var. *insulare*.
- Implementation Priority 5 (Low): *Exocarpos menziesii*, *Festuca hawaiiensis*, *Haplostachys haplostachya*, *Silene lanceolata*, *Schiedea haraiiensisi*, *Stenogyne angustifolia*, *Zanthoxylum hawaiiense*.

There are 15 Areas of Species Recovery (ASRs) used to outplant protected plant species within this program. These ASRs include 151 plants from 6 species on 9 planting locations. In 2019, four outplanting locations were designated on Government-owned lands, within TA 21 for 24 *K. coriacea*, 9 *N. ovata* and 2 *S. hawaiiensis*, and two outplanting sites on TA 22 for 45 *K. coriacea* and 18 *P. sclerocarpa*. See **Section 3.3.4.4** for additional information on ASRs.

The Army manages protected plant species by priority levels based on the species abundance and distribution. Priority levels include greatest management with fewer than 500 individuals and/or 5 or fewer populations remaining statewide (P1), moderate management with 500–1,000 individuals and/or 6–10 populations remaining statewide (P2), and limited management with more than 1,000 and/or more than 10 populations remaining statewide (P3). P1 species are monitored quarterly, while P2 and P3 are monitored annually by the NRO (USAG-PTA, 2020d; USAG-PTA, 2021c).

Protected Invertebrates

Two federally listed invertebrates—*Hylaeus anthracinus* and *Manduca blackburni*—have been documented on PTA. In 2004, a single specimen of *H. anthraci* was collected at PTA but the exact location is unknown (USAG-PTA, 2020c). This bee species, typically found along coasts, was found in a *K. coriacea* fruit capsule in an unknown location and was suspected to have been accidentally transported. A 2018 *Hylaeus* species survey did not record any *H. anthracinus*.

Manduca blackburni was first observed on PTA in 2019 as a caterpillar on *N. glauca* in Keamuku parcel (DLNR-DOFAW & UH, 2013; USAG-PTA, 2020d). This species is generally observed below 5,000-foot elevation; the State-owned land is mostly above that elevation, and this species is unlikely to be found within the State-owned land (USFWS, 2005).

The Army has identified five protected invertebrate species at PTA; two (i.e., *H. anthracinus* and *Manduca blackburni*) are federally and State-listed, and three are considered rare and species of concern by the State (**Table 3-4**).

Table 3-4 Protected Invertebrates Documented on Pōhakuloa Training Area					
Scientific Name	Common, Local Name	Type	Status	Federal	State
<i>Manduca blackburni</i>	Blackburn's sphinx moth	Arthropod	N/E	E	E
<i>Hylaeus anthracinus</i>	Yellow-faced bee	Arthropod	N/E	E	E
<i>Helicoverpa confusa</i> *	Hawaiian heliconia moth	Arthropod	N/E	-	Rare
<i>Hylaeus kona</i> *	Kona yellow-faced bee	Arthropod	N/E	-	Rare
<i>Hylaeus flavipes</i> *	yellow-footed yellow-faced bee	Arthropod	N/E	-	Rare

Key:

* – Observed on State-owned land

E – Endangered

N/E – Native/Endemic

T – Threatened

Source: (USAG-PTA, 2020c; USAG-PTA, 2020d)

Protected Birds

Federally and State-listed endangered or threatened bird species observed on PTA and protected under the ESA, MBTA, or NatureServe Global Conservation Status, are listed in **Table 3-5**.

The translocation of 595 Hawaiian geese (*B. sandvicensis*) from Kaua'i to the island of Hawai'i between 2011 and 2016 created new visitation patterns and breeding behaviors for the species on the island. Many of the translocated geese were released at Pu'u O'o in the Hilo Forest Reserve, 11 miles east of PTA. *B. sandvicensis* has been observed on PTA, including on State-owned land in TAs 1, 3, 4, 6, and 7. The most frequent observations occur at BAAF and on TAs 1, 3, and 4 (USAG-PTA, 2014a). Of geese that could be identified by leg bands, it is estimated approximately 48 percent of the sightings (12 geese) were from this population. *B. sandvicensis* breeding activity has been exceedingly rare at PTA, with three documented nesting events since 2014. In 2014, two successful nesting events occurred; defined as "hatched goslings," one nest was at BAAF and a second at Forward Operating Base Warrior (a collective reference to TAs 1, 3, and 4) on State-owned land (USAG-PTA, 2014a; USAG-PTA, 2014b). There was an unsuccessful nesting event on TA 7 in 2017 (USAG-PTA, 2017). Between 2017 and 2019, there were no *B. sandvicensis* observed on State-owned land during monitoring events, but 19 incidental sightings were reported (USAG-PTA, 2020c; USAG-PTA, 2020d).

Pterodroma sandwichensis has been detected on PTA since 1995, including on State-owned land. There are known breeding colonies on Mauna Loa and possibly Mauna Kea, but no colonies or nesting have been confirmed on PTA. This species is believed to transit, not reside within, the PTA area (USAG-PTA, 2020c).

Oceanodroma castro has been detected on PTA since 2008, including on State-owned land. Acoustical activity suggests the species may be present seasonally; however, it is unknown how this species may use habitats in PTA. *O. castro* is known to use the Saddle Region as a flyway to nesting habitat, typically located on the steep slopes of the northeast rift zone of Mauna Loa within Hawai'i Volcanoes National Park (USMC, 2013). In 2015, a nest was discovered on PTA outside of State-owned land, with confirmed activity at a burrow; subsequent monitoring indicates eight potential nests and video documentation of four active nests on U.S. Government-owned land. This is important because no active nesting burrow had been previously observed in the Hawaiian Islands prior to this record (USAG-PTA, 2020d).

Table 3-5 Protected Birds Observed on Pōhakuloa Training Area

Scientific Name	Common, Local Name	Status	Federal	State	Other
<i>Alauda arvensis</i> *	Eurasian skylark	NN	-	-	MBTA
<i>Asio flammeus sandwichensis</i> *	Hawaiian short-eared owl, pueo	N/I	-	E	MBTA
<i>Buteo solitarius</i> *	Hawaiian hawk, 'io	N/I	-	E	MBTA
<i>Branta sandvicensis</i> *	Hawaiian goose, nēnē	N/E	T	E	MBTA
<i>Cardinalis</i> *	Northern cardinal	NN	-	-	MBTA
<i>Haemorhous mexicanus</i> *	House finch	NN	-	-	MBTA
<i>Hemignathus virens</i> *	Hawai'i amakihi	N/E	-	-	MBTA/G3
<i>Himatione sanguine</i> *	Apapane	N/E	-	-	MBTA/G3
<i>Mimus polyglottus</i> *	Northern mockingbird	NN	-	-	MBTA
<i>Myadestes obscurus</i>	Hawaiian thrush, 'ōmao	N/E	-	-	MBTA
<i>Oceanodroma castro</i>	Band-rumped storm petrel, 'akē'akē	N /I	E	E	MBTA
<i>Pluvialis fulva</i> *	Pacific golden-plover, kōlea	N/I	-	-	MBTA
<i>Pterodroma sandwichensis</i>	Hawaiian petrel, 'ua'u	N/I	E	E	MBTA
<i>Tyto alba</i>	Barn owl	NN	-	-	MBTA
<i>Zenaida macroura</i> *	Mourning dove	NN	-	-	MBTA

Key:

* – Observed on State-owned land

E – Endangered

T – Threatened

N/I – Native/Indigenous

N/E – Native/Endemic

NN – Non-native

G (1-5) – NatureServe Global Conservation Status
(most to least)

T – NatureServe infraspecific taxa (subspecies or varieties) rank

Source: DLNR-DOFAW, 2015; DoD-PIF, 2021; NS, 2021; USAG-PTA, 2020c; USAG-PTA, 2020d; USAG-HI, 2021a

Protected Mammals

It is unknown if *L. cinereus semotus* breeds or roosts on PTA, but acoustical surveys indicate that it is present throughout the installation during the breeding season. Acoustical sampling at five established monitoring sites on PTA detected *L. cinereus semotus* between 2014 and 2019. Three monitoring sites are on State-owned land. Occupancy modeling done for 45 sites across PTA indicate *L. cinereus semotus* is present across PTA throughout the year. There is potential roosting habitat on State-owned land. There are no other known protected mammals at PTA. The 2003 BO requires the Army to assess effects of wildland fires that occur outside the impact area resulting from military training and report any indirect incidental take due to loss of potential available roosting habitat (USFWS, 2003). A 2018 wildland fire occurred in TA 19 and spread to TAs 18 and 22, burning approximately 370 acres of potential *L. cinereus semotus* roosting habitat (USAG-PTA, 2020d). This fire was started from discharge of aviation flares during aerial training. This acreage exceeded annual take limit of *L. cinereus semotus* potential roosting habitat; therefore, it was reported to the USFWS in September 2018 and is being addressed in the programmatic

biological assessment currently under development. In response to the fire, corrective actions were implemented as of August 8, 2018, to prevent repeating accidents that could cause fires from aerial training by prohibiting the use of flares at elevations below the point at which the flare would be expected to burn out before reaching the ground.

In addition, on July 17, 2021, a fire started from a muzzle blast burned approximately 7.5 acres of vegetation considered potential available *L. cinereus semotus* roosting habitat on PTA off State-owned land. The 2003 BO defines roosting habitat as vegetation types that could provide available roosting habitat, currently or at some time in the future, including all treeland communities and shrubland communities with *S. chrysophylla* and *M. sandwicense* as dominant or co-dominant species. The fire resulted in indirect incidental take of *L. cinereus semotus*, consuming approximately 6 percent of the allowable approximately 118.5 acres per year. No bat carcasses were reported in the burned area and impacts to *L. cinereus semotus* are assumed to be negligible. The fire was reported to USFWS on July 20, 2021. (CEMML, 2021).

Critical Habitat

Critical habitat was designated by USFWS in 1977 for the endangered *Loxioides bailleui* (palila, Hawaiian finch-billed honeycreeper). The Palila critical habitat encompasses approximately 60,000 acres encircling the lower elevations of Mauna Kea including approximately 5,095 acres of State-owned land (**Figure 3-5**). The plant composition within the Palila critical habitat is *Myoporum sandwicense-Sophora chrysophylla* shrubland. *Loxioides bailleui* are generally seen only at elevations well above those at PTA, and there have been no observations on State-owned land (USAG-HI, 2021a; USAG-PTA, 2020c).

3.3.4.4 Conservation Management

Wildfire, ungulates, and invasive species are the biggest threats to Hawai'i's populations of native plant and animal species. Wildfires destroy individual species and alter the habitat preventing species recovery, ungulate activity on PTA has severe impacts on the vegetation, and invasive plants outcompete native plants, dominating the habitat once established (Shaw & Castillo, 1997). On PTA, these threats are addressed through conservation programs and conservation measures implemented in accordance with the 2003 *Biological Opinion of the U.S. Fish and Wildlife Service for the Routine Military Training and Transformation of the 2nd Brigade 25th Infantry Division (light) U.S. Army Installation, Island of Hawaii*. The measures include ungulate exclusion fencing, firebreak maintenance, implementation of weed and insect controls, vehicle wash-down stations, and restricted military activities in sensitive areas (USFWS, 2003).

PTA conservation plans and conservation measures include coordination with the DLNR and USFWS to manage and protect natural resources. PTA's conservation plans include the following:

- Pōhakuloa Implementation Plan (PIP) and PTA External Standard Operating Procedures work together to reduce the magnitude of biological resource impacts from training activities and operations through established management actions (USAG-PTA, 2010; USAG-PTA, 2018a).
- An INRMP is implemented to guide biological conservation and restoration (USAG-PTA, 2020c).
- An Integrated Wildland Fire Management Plan (IWFMP) is implemented to respond to and reduce the risk of fires related to training activities (USAG-PTA, 2021g).

- An Installation Pest Management Plan describes the installation's pest issues and programs used to control those pests effectively and economically. This document outlines pest surveillance resources and control; and describes the safety, environmental, and administrative requirements of the program. This document also guides the Bird/Wildlife Air Strike Hazard policy implemented for Soldier, aircraft, and wildlife safety (USAG-PTA, 2015).

Wildland Fire Management

Fire prevention and minimization of fire damage are integrated into the installation's biological conservation efforts. The threat of fire damaging or destroying native plant assemblages and habitat on PTA is a concern and can be the result of military activities, accidents, or natural disasters. For example, in 2018, a wildfire started in TA 19 and spread to TAs 18 and 22; approximately 1,450 acres were burned. PTA fire responders used natural resource concerns and knowledge of sensitive areas to prioritize and focus firefighting efforts (USAG-PTA, 2020d). Hawaiian ecosystems are not fire-dependent for health; thus, any fire is detrimental and provides disturbance to the native environment providing the opportunity for non-native and invasive species to dominate the landscape (USAG-PTA, 2020c).

In addition to the fires discussed in **Section 3.3.4.3**, a separate incident occurred on July 15, 2021 when a wildland fire ignited at FP 519 in TA 16 at PTA, outside of State-owned land, during military training exercises with a smoke grenade. The fire was declared 100 percent contained that same evening. The fire burned approximately 10 acres in the *Eragrostis atropioides* Herbaceous Alliance (Block et al., 2013). There were no effects to ESA-listed plant species, *L. cinereus semotus* habitat, or Palila critical habitat from the July 15, 2021 fire.

The Army is applying lessons learned from recent fire events in 2018 and 2021. The corrective action for the July 15, 2021 fire involving a smoke grenade is to confirm the fire condition hourly per the SOPs for ignition control (USAG-PTA, 2021g). Additionally, awareness training for staff was conducted in October 2021. As a result of the July 17, 2021 fire that was started from a muzzle blast, the Army is updating its PTA training brief to use blank ammunition in areas away from dry vegetation, and is updating the PTA SOPs to include muzzle awareness and stricter guidelines for the use of blank ammunition in areas of high risk to prevent future similar fires. Some of these areas of high risk are on land leased from the State. The Army enforces training policy and the IWFMP to reduce the risk of fires related to training activities (USAG-PTA, 2021g).

The IWFMP addresses safety, land management, and environmental compliance relative to fires and fire hazards. Multiple programs are outlined to support fire prevention and suppression, with emphasis on the need to avoid fire damage in areas of high natural resource value. The fuel break system includes 14 fuel breaks of approximately 39 miles; approximately 20 miles are on State-owned lands. The fuel break system that includes State-owned land and the Kīpuka Kālawamauna endangered plant habitat incorporates varying widths of vegetation control and firebreak road. Fuel breaks are maintained to IWFMP standards of less than 20 percent crown cover and less than 12 inches of grass height. Additionally, fuel monitoring corridors are used for preventative wildfire measures. These corridors are designated belts of land, a minimum of 300 feet wide, used to monitor contiguous fuels along opposite sides of the corridor. A break in continuity is defined as an area where herbaceous crown cover is less than 20 percent. There are five fuel monitoring corridors covering approximately 35 miles; two fuel monitoring corridors, Keamuku and Eastern, are all or partially on State-owned land covering approximately 10 miles (USAG-PTA, 2019b; USAG-PTA, 2020c; USAG-PTA, 2020d).

Ungulate Exclusion Fence Units

Fencing is a conservation measure implemented in accordance with the 2003 BO issued to USAG-HI by USFWS at PTA to protect native habitat and federally listed plant species. Large-scale fence units are intended to provide species and habitat protection and to alleviate the threats to native and listed plant species. A total of 15 large-scale fence units at PTA cover approximately 86 miles and surround approximately 37,300 acres. Approximately 28 miles and 8,500 acres of ungulate exclusion fencing is on State-owned land (**Figure 3-5**). The installation works to keep these fenced areas free of ungulates using aerial surveys to track ungulate presence. As of 2017, all fence units were considered free of ungulates. Fence lines are inspected to locate damaged areas and repair them as necessary (USAG-PTA, 2020c; USAG-PTA, 2020d; USACE-POH, 2017).

The PIP provides additional wildland fire safety by integrating with the PTA NRO in the management of ASR located within ungulate exclusion fence units. Approximately 300-foot buffer zones are established around areas managed for rare plants. Forty-four ASRs cover approximately 2,830 acres and are periodically reviewed to adjust as conditions and populations change. Training activities can also present fire risks; the PTA External Standard Operating Procedures outlines when and how training activities can be conducted, stipulating when training can occur based on the IWFMP guidelines. Training considerations include relative humidity and wind criteria, particularly when dealing with pyrotechnics (USAG-PTA, 2010; USAG-PTA, 2018a, USAG-PTA, 2020d).

Three ungulate exclusion fence units protect the Kīpuka Kālawamauna endangered plant habitat (**Figure 3-5**). Designated by the installation when two rare plant species were discovered in 1977 and federally listed in 1979, this area is approximately 7,850 acres across both U.S. Government- and State-owned lands (USFWS, 2003). This plant habitat is home to 13 rare and listed plant species (USAG-PTA, 2020c). Ungulate exclusion fence units within Kīpuka Kālawamauna endangered plant habitat include:

- Kīpuka Kālawamauna north unit includes all of (and extends north of) TAs 17, 19, and 20; approximately 4,256 acres is located on State-owned land.
- Kīpuka Kālawamauna west unit includes most of TA 22 and extends south into U.S. Government-owned land; approximately 2,381 acres is located on State-owned land.
- Kīpuka Kālawamauna east unit includes all of TA 22B and extends south into U.S. Government-owned land; approximately 563 acres is located on State-owned land.

The other four ungulate exclusion fenced areas mostly on State-owned land include the following (**Figure 3-5**):

- Pu'u Koli unit includes most of TA 21 and extends south into U.S. Government-owned land; approximately 816 acres is located on State-owned land.
- *Silene hawaiiensis* unit is completely located on TA 3 and covers 43 acres.
- *Haplostachys haplostachya* unit is completely located on TA 13 and covers 165 acres.
- *Solanum incompletum* unit is completely located on TA 18 and covers 288 acres.

Ungulate and Small Mammal Control

Feral ungulates have detrimental effects on native vegetation. Ungulates browse on and trample native vegetation. This damage and recovery time to native plant populations presents invasive plant species an

opportunity to dominate the landscape, making recovery of native plant species even more challenging. Additionally, small invasive mammal populations depredate ESA-listed plants and animals. NRO actively works to control ungulates and ensure fence units protect sensitive species. NRO also controls small mammal populations. These control measures are a critical tool to minimize the negative effects from these predators to the listed and sensitive species and to maximize listed and sensitive species' overall success within the natural landscape (USAG-PTA, 2020d).

Game Management Program

NRO uses the Game Management Program to manage introduced game animals in conjunction with State hunting regulations. This program is designed to reduce negative impacts to Palila critical habitat, minimize potential ungulate ingress into ungulate exclusion fence units, and provide outdoor recreation and public access for hunting game mammals and upland game birds. Hunting occurs on approximately 60 square miles within six designated hunting areas at PTA. Five of the six hunting areas—Ahi, Huu'ula, Keiki, Menehune, and Turkey—occur on State-owned land. The program actively monitors the hunting areas to reduce negative effects on protected natural resources and ensure game resources and hunter efficacy. Refer to **Section 3.2** for additional hunting information.

Invasive Species Management

As discussed in **Section 3.3.4.1**, the INRMP outlines the Invasive Plants Program for 39 invasive species (**Table 3-2**) in accordance with the 2003 BO. This program focuses on early detection, eradication, and follow-on surveys to ensure eradication success focusing along roads, the BAAF, construction sites, and around the vehicle washrack where new species of invasive concern might be introduced (USAG-PTA, 2020c; USAG-PTA, 2020d; USFWS, 2003). The BAAF and washrack are on U.S. Government-owned land.

To systematically survey and monitor high risk areas for invasive species, baited traps are deployed on equipment or vehicles and along roadsides. Established transects within the BAAF and at construction and auxiliary sites are intended to detect basking reptiles and uncommon or new species within approximately 15 feet of each transect line. Additionally, USAG-PTA and construction personnel are trained to inspect for invasive ants, particularly the Little Fire Ant (*Wasmannia auropunctata*). All incoming contractors are provided the PTA Invasive Pest Prevention SOP and other invasive species materials (USAG-PTA, 2020d).

USFWS Consultation

The Army is moving toward a programmatic approach to ESA consultations for PTA with federal resource agencies. In this approach, specific species, activities, avoidance and minimization measures, and conservation measures would be incorporated into a new programmatic BO. The existing BO, now applicable to activities at PTA, could then be superseded by the programmatic BO, or subsequent amendments required thereafter, pursuant to 50 CFR Part 402.16, resulting from a major land use change.

No ESA Section 7 consultation for the Proposed Action is anticipated at this time; the action is a land retention (real estate) action that does not propose new training or activities. All current activities at PTA are covered under previous NEPA and associated consultations, including the 2003, 2008, and 2013 BOs.

3.3.5 Methodology and Significance Criteria

The environmental analysis for biological resources includes the following assumptions:

- The State would fund and manage conservation and public use programs in the State-owned land not retained.
- The State would use State-owned land not retained for recreation/conservation purposes compatible with land use.
- For land not retained, the State would increase access on land managed for public hunting (**Section 3.2.5**).
- The State would continue current levels of species and habitat protections within State-owned land not retained.

The criteria considered to assess whether an alternative would result in potential significant impacts on biological resources include the extent or degree to which an alternative would result in the following:

- Reduction of populations or distribution of federally or State-protected species to include behavior alteration, survival, reproduction ability, or loss of individuals.
- A “take” of federally or State-protected species.
- Restriction of migratory or wildlife corridors between habitats.
- Increase of invasive species (plant or animal) prevalence or populations.
- Long-term loss or degradation of designated critical habitat or habitat necessary for species survival.

3.3.6 Environmental Analysis

3.3.6.1 Alternative 1: Full Retention

Under Alternative 1, the Army would retain and continue training and other activities on all of the State-owned land; this alternative would not result in new impacts on biological resources. There would be continued long-term, minor, adverse impacts to biological resources from ongoing activities.

To avoid and minimize adverse impacts on biological resources, and to conserve protected species and associated areas, the Army would continue to operate in accordance with the INRMP, IWFMP, PIP, and PTA SOPs, and implement BMPs and conservation measures, as appropriate; coordinate and implement monitor and survey programs; and comply with BOs and associated mitigation measures as noted in **Section 3.3.4**. Policy was implemented in August 2018 preventing future use of training flares from helicopters at elevations below the point at which the flare would be expected to burn out before reaching the ground. Due to this policy, fires such as the one started by flares in 2018 are not expected to occur. Additional updates in response to the 2021 fires include updating PTA SOPs to include muzzle awareness and confirming fire danger ratings hourly. The Army would continue to enforce training policy and the IWFMP to reduce the risk of fires related to training activities (USAG-PTA, 2021g).

Summary of Impacts: Alternative 1 would result in no new impacts to biological resources. There would be continued long-term, minor, adverse impacts to biological resources from ongoing activities. In total, the impact would be less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.3.6.2 Alternative 2: Modified Retention

Land Retained

The Army would retain and continue to train on approximately 19,700 acres of the State-owned land at PTA, under Alternative 2. Ongoing activities on the State-owned land retained would not result in new impacts on biological resources. This alternative would result in continued long-term, minor, adverse impacts to biological resources from ongoing activities.

As discussed in Alternative 1, the Army would continue to follow PTA conservation programs and agreements.

Land Not Retained

The Army would not retain approximately 3,300 acres of the State-owned land at PTA. Most of the State-owned land not retained is comprised of steep topography within Palila critical habitat, which is currently only occasionally used to support light training maneuvers. The State would continue current levels of species and habitat protections within the land not retained. The Army would need to re-initiate consultation with USFWS regarding the BO conservation measures for this area.

New impacts on biological resources in State-owned land not retained include: long-term, negligible, adverse impacts on vegetation, wildlife, and protected species from increased hunting and public access; long-term, minor, beneficial impacts on vegetation, wildlife and protected species from ceased training, maintenance, and repair activities; and long-term, minor to moderate, beneficial impacts from lease compliance actions (e.g., reforestation) that would be conducted in accordance with the lease or as otherwise negotiated with the State.

Summary of Impacts: For land retained, Alternative 2 would result in continued long-term, minor, adverse impacts to biological resources due to ongoing activities. For land not retained, Alternative 2 would result in new long-term, negligible, adverse impacts on vegetation, wildlife, and protected species from increased hunting and public access; long-term, minor, beneficial impacts on vegetation, wildlife, and protected species from a decrease in ongoing activities; and new, long-term, minor to moderate, beneficial impacts from lease compliance actions. In total, the impact would be less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.3.6.3 Alternative 3: Minimum Retention and Access

Land Retained

The Army would retain approximately 10,100 acres of the State-owned land at PTA, which includes approximately 1,800 acres of Palila critical habitat, under Alternative 3. No new impacts on biological resources on the State-owned land retained would occur. There would be continued long-term, minor, adverse impacts to biological resources from ongoing activities.

As discussed in Alternative 1, the Army would continue to follow PTA conservation programs and agreements.

Land Not Retained

The Army would not retain approximately 12,900 acres of the State-owned land at PTA. The State-owned land not retained includes the majority of the Kīpuka Kālawamauna endangered plant habitat and all of the Palila critical habitat within the State-owned land except for a segment of critical habitat that overlaps TAs 3 and 4. The State would continue current levels of species and habitat protections within the land not retained. The Army would need to re-initiate consultation with USFWS regarding the BO conservation measures for this area.

New impacts on biological resources would include: long-term, negligible, adverse impacts on vegetation, wildlife, and protected species from increased hunting and public access; long-term, minor, beneficial impacts on vegetation, wildlife, and protected species in these areas from ceased training, maintenance, and repair activities; and long-term, minor to moderate, beneficial impacts from lease compliance actions (e.g., reforestation), which would be conducted in accordance with the lease or otherwise negotiated with the State.

Summary of Impacts: For land retained, Alternative 3 would result in continued long-term, minor, adverse impacts to biological resources due to ongoing activities. For land not retained, Alternative 3 would result in new long-term, negligible, adverse impacts on vegetation, wildlife, and protected species from increased hunting and public access; long-term, minor, beneficial impacts on vegetation, wildlife, and protected species from a decrease in ongoing activities; and new long-term, minor to moderate, beneficial impacts from lease compliance actions. In total, the impact would be less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.3.6.4 No Action Alternative

Under the No Action Alternative, the Army would not retain any State-owned land at PTA after the lease expires, including all of the Kīpuka Kālawamauna endangered plant habitat and other ungulate exclusion fencing units on, or partially on, State-owned land and all Palila critical habitat on PTA. The State would continue current levels of species and habitat protections within the land not retained. The Army would need to re-initiate consultation with USFWS regarding the BO conservation measures for this area.

This change would result in new long-term, minor, adverse impacts on vegetation, wildlife, and protected species from increased hunting and public access; long-term, moderate, beneficial impacts on vegetation, wildlife, and protected species from ceased training, maintenance, and repair activities on all State-owned land; and new long-term, moderate, beneficial impacts from lease compliance actions (e.g., reforestation), which would be conducted in accordance with the lease or otherwise negotiated with the State.

The Army would have no land access to the impact area and training ranges south of the State-owned land, which would severely constrain the Army's ability to maintain and monitor the eight ungulate exclusion fence areas and 14 outplanting sites. These would result in new long-term, significant, adverse impacts on protected species on U.S. Government-owned land. The Army would need to re-initiate consultation with USFWS regarding the BO conservation measures for this area.

Summary of Impacts: The No Action Alternative would result in new long-term, minor, adverse impacts on vegetation, wildlife, and protected species from increased hunting and public access; new long-term, moderate, beneficial impacts on vegetation, wildlife, and protected species from a decrease in ongoing activities; new long-term, moderate, beneficial impacts from lease compliance actions; and new significant impacts on protected species on U.S. Government-owned land that could no longer be accessed. In total, the impact would be significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Significant.

3.4 Cultural Resources

3.4.1 Definition

NEPA analysis considers impacts to “unique characteristics of the geographic areas such as proximity to historic or cultural resources” [40 CFR Section 1508.27(b)(3)] as well as “the degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places [NRHP] or may cause loss or destruction of significant scientific, cultural, or historical resources” [40 CFR Section 1508.27(b)(8)]. Potential impacts to the relationship of people to their environment (40 CFR Section 1508.14) include cultural and historical resources [40 CFR Section 1508.1(g)(1)].

Resources that are cultural or historical in nature are defined by several federal laws and EOs varyingly as historic properties (districts, sites, buildings, structures, or objects listed in the NRHP), archaeological resources, sacred sites, cultural objects, and/or collections subject to protection under the NHPA, the Archaeological Resources Protection Act, the Native American Graves Protection and Repatriation Act (NAGPRA), American Indian Religious Freedom Act, EO 13007, *Indian Sacred Sites*, and the guidelines on Curation of Federally Owned and Administered Collections (36 CFR Part 79). Cultural resources considered in this section, therefore, include those associated with tangible heritage, namely Pre-Contact and historical archaeological sites and historic buildings and structures.

Cultural resources as indicators of the relationship of people to their environment also include intangible elements such as cultural and religious practices, cultural use of the biophysical environment, and traditional and customary rights. Resources of traditional or religious significance can include archaeological resources, sacred sites, buildings, structures, districts, prominent topographic features, landscapes, habitat, plants, animals, or minerals considered essential for the preservation of traditional culture. Resources of traditional or religious significance also include iwi kupuna, or ancestral human remains, as well as funerary and sacred items, and objects of cultural patrimony. Thus, this section also considers the affected environment of intangible cultural heritage in addition to the physical (tangible) markers of the norms, values, and beliefs of people on the landscape.

3.4.2 Regulatory Framework

NHPA of 1966, as amended (54 U.S.C. Part 300101 *et seq.*), establishes the national policy for the preservation of historic properties. The regulations at 36 CFR Part 800 implement Section 106 of the NHPA (54 U.S.C. Part 306108) and detail a process for federal agencies to assess the potential effects of their

undertakings on historic properties and provide the Advisory Council on Historic Preservation and other consulting parties the opportunity to comment. The adverse effects at PTA resulting from ongoing activities on historic properties have been taken into account through the Section 106 consultation process. That process resulted in a 2018 programmatic agreement (PA) to resolve adverse effects.

NEPA requires discussion of the direct and indirect environmental impacts that may result from a proposed action and alternatives, including potential impacts to “historic and cultural resources” (42 U.S.C. Section 1502.16).

HEPA requires disclosure of the direct and indirect effects of a proposed action and alternatives on the environment, including “natural and human-made resources of historic, archaeological, or aesthetic significance” (HAR Section 11-200-17) as well as the “effects of a proposed action on the cultural practices of the community and State” (HRS Section 343-2). The effects on cultural practices are normally evaluated through a CIA prepared in accordance with the Office of Environmental Quality (now Environmental Review Program) “Guidelines for Assessing Cultural Impacts” (adopted November 19, 1997). The Army commissioned a CIA in support of the HEPA requirement and Act 50, Hawai‘i State Legislature 2000. The CIA is included as **Appendix E**.

Act 50, Hawai‘i State Legislature 2000 states:

The legislature finds that there is a need to clarify that the preparation of environmental assessments or environmental impact statements should identify and address effects on Hawaii’s culture, and traditional and customary rights.

Articles IX and XII of the State Constitution, other state laws, and the courts of the State impose on government agencies a duty to promote and protect cultural beliefs, practices, and resources of native Hawaiians as well as other ethnic groups.

Article XII, Section 7 of the Hawaii State Constitution provides:

The State reaffirms and shall protect all rights, customarily and traditionally exercised for subsistence, cultural and religious purposes and possessed by ahupua‘a tenants who are descendants of native Hawaiians who inhabited the Hawaiian Islands prior to 1778, subject to the right of the State to regulate such rights.

In *Ka Pa‘akai O Ka‘Aina v. Land Use Com’n, State of Hawai‘i* (“Ka Pa‘akai”) the Hawai‘i Supreme Court provided government agencies an analytical framework to ensure the protection and preservation of traditional and customary Native Hawaiian rights while reasonably accommodating competing private development interests. State agencies, when considering any program or project initiated by an agency or applicant, must conduct a Ka Pa‘akai analysis to preserve and protect customary and traditional rights of Native Hawaiians. This would occur following the EIS process when the land retention method is known.

Consideration of and compliance with HRS Chapter 6E, Historic Preservation, is outside the scope of this EIS. However, the process for identifying important cultural resources under Act 50 can inform the determination as to whether or not a property may be significant under Criterion “e” of the HAR 13-275-6 or HAR 13-284-6, should either rule be applicable. Criterion “e” properties:

Have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts – these associations being important to the group’s history and cultural identity [HAR 13-275-6(b)(5); HAR 13-284-6-(b)(5)].

3.4.3 Region of Influence

The ROI for historic and archaeological resources includes the entire geographic extent of State-owned land within PTA.

The ROI for traditional and customary practices can extend beyond the ROI utilized for tangible cultural resources. There is clear guidance from the Hawai’i Environmental Review Program that recommends a geographic extent beyond the identified or typical boundaries of the geographic project area. The recommended area for considering when identifying traditional and customary practices is typically the size of the traditional land area (ahupua’a) or region (moku), but this can be larger or smaller depending on what best helps to identify the resources appropriately.

The CIA prepared for this EIS considered the geographic extent for traditional and customary practices as the region between Mauna Kea, Mauna Loa, and Hualālai, known generally as the Saddle Region. The geography of this interior plateau was primarily formed by the convergence of lava flows from Mauna Kea, Mauna Loa, and Hualālai, thus making this a largely distinct wahi pana (storied place). The CIA did not, nor did it intend to, identify all cultural resources within the geographic extent; rather the CIA assessed how the Proposed Action within the State-owned land at PTA would potentially affect traditional and customary practices within the larger geographic extent.

3.4.4 Existing Conditions

This section establishes the environmental setting against which potential environmental impacts were compared. The existing conditions reflect the current state of tangible and intangible cultural resources across the ROI and consider how existing and historic actions led to this current state.

3.4.4.1 Cultural History

The State-owned land is primarily within the ahupua’a of Ka’ohe Mauka in the moku of Hāmākua with a small portion of the eastern area within the western portion of the Humu’ula ahupua’a in the moku of Hilo. Early descriptions of the lands of Humu’ula and Ka’ohe describe them as sharing the summit region of Mauna Kea. Humu’ula and Ka’ohe are among the largest ahupua’a in the Hawaiian Islands (**Appendix E**).

Native accounts and other historical writings record the vast regional land divisions of Humu’ula and Ka’ohe, and the smaller ahupua’a and ‘ili that adjoin them on the lower mountain slopes, included a wide range of named environmental zones (wao). Each of these wao were noted for resources—extending from the sea to the forested lands, and in some instances, to the summits of the two mountains. It was these resources that sustained Hawaiian life, culture, and spirituality.

The lowlands of Ka’ohe, Humu’ula, and the other neighboring ahupua’a, extending from the shore to around the 3,000-foot elevation, supported residential, agricultural, and subsistence activities, spanning the centuries of Hawaiian residency. The upper mountain lands of the Ka’ohe-Humu’ula region were frequented by travelers, collectors of natural resources, and for a wide range of cultural practices (BCT,

1864-1920; Kamakau, 1961). The larger ‘āina mauna (mountain lands) were frequented by individuals who were traveling to the upper regions of Mauna Kea to worship, gather stone, bury family members, or deposit the piko (umbilical cords of newborn children) in sacred and safe areas; and by those who were crossing from one region of the island to another.

Traditions and historical records show that the deification and personification of the land and natural resources, and the practices of district subdividing and land use as described above, were integral to Hawaiian life and were the product of strictly adhered to resource management planning. In this system, the people learned to live within the wealth and limitations of their natural environment and were able to sustain themselves on the land and ocean. It is in this cultural system that the significance of the lands of Ka’ohe, Humu’ula, and the neighboring ‘āina mauna are described in **Appendix E**.

3.4.4.2 Historical Overview

Radiocarbon dates from archaeological excavations indicate traditional Hawaiian use of the region as early as AD 1000–1200, with intermittent visits occurring by AD 1200–1300 (Athens & Kaschko, 1989; Haun, 1986; Shapiro & Cleghorn, 1998). Early use of the area likely involved short-term, low-impact visits by small groups of Hawaiian specialists who used the area to gather wild fauna, hardwood for tool use and canoe making, and wild plants for subsistence, medicinal, and ceremonial purposes.

Archaeological evidence suggests that many of the site types identified within the State-owned land may be associated with travel corridors through the region (Robins et al., 2006; Shapiro et al., 1998; Williams, 2002). Travel routes through the Saddle Region have been identified in ethno-historical documents that connected Pre-Contact settlements (e.g., Kona, Waimea, and Hilo) and led to the Mauna Kea adze quarry and places of ceremonial and cultural importance (Cordy, 2000). Resource gatherers and travelers through the State-owned land found shelter in lava tubes, blisters, overhangs, and, to a lesser degree, small C-shaped surface structures that were typically found near the travel corridors (Athens & Kaschko, 1989; Cordy, 1994; Hommon & Ahlo, 1983; Streck, 1992). Occupation and use of these shelters were likely confined to short-term stays, although these groups likely established repeated-use camps while exploiting resources (Reinman & Schilz, 1992).

Pre-Contact activity in the Saddle Region increased around AD 1400–1450 (Athens et al., 1991), and by AD 1450, there was a dramatic increase of production at the Mauna Kea adze quarry to mine the highly valued volcanic glass and fine-grained basalt (Williams, 2002). The increased use of the Saddle Region may also be related to the capture of birds whose feathers and fledglings were increasingly used as tribute items (Athens et al., 1991). A number of bird species that habituated the Saddle Region were consumed by Hawaiians, were seasonally hunted in the Saddle Region, and were considered a high value food resource especially for the adze makers visiting the quarries on the Mauna Kea summit (McCoy, 1986; Williams, 2002; Ziegler, 1994; Ziegler, 2003).

During the early Post-Contact era, sandalwood was actively harvested in the upland forests of the Hawaiian Islands for export to China (Cuddihy & Stone, 1990). Sandalwood was a desirable export as the trees were plentiful, could be harvested year-round, and did not have to be cultivated. Thousands of trees were taken from the upland slopes of Kohala and Mauna Kea and transported by foot to Kawaihae for shipping to Honolulu and beyond. The overharvesting of sandalwood would soon exhaust the resource, leaving the upland regions deforested. By the 1840s, the sandalwood forests had been completely depleted to the point that only saplings remained (Clark, 1983). Early historic accounts provide insight into the remoteness of the Saddle Region and

the difficulties foreigners had while traveling across the Saddle along a few well-defined trails that were difficult to follow even with Hawaiian guides present (Hommon & Ahlo, 1983).

During the 1848 Māhele ‘Āina (division of lands), Ka’ohe Ahupua’a was designated as Crown Lands and awarded to Victoria Kamamalu, who relinquished the land to Kamehameha III. Later that same year, Kamehameha III gave Ka’ohe to the government land inventory (Buke Mahele, 1848). Four kuleana claims were registered by native tenants within Ka’ohe; however, none were located within or near the State-owned land. Humu’ula Ahupua’a was also designated as Crown Lands and awarded to Victoria Kamamalu, who relinquished the land to Kamehameha III (Maly & Maly, 2005). Humu’ula was retained as part of the Crown Land inventory. There were no kuleana claims registered or awarded in Humu’ula. Overall, the Māhele and subsequent land ownership regulations marked a key shift in Hawaiian land use history and ushered in a drastic transformation from a redistributive economy to a market-based system. This facilitated the rapid decline of native land tenure and led to the widespread purchase of land by wealthy foreign investors. **Appendices D and E** contain information on land tenure and changes during the Māhele ‘Āina period and present disposition of select lands in the ‘āina mauna.

One of the first foreign-led endeavors in the State-owned land was ranching, which has a long history on the island of Hawai’i. Cattle and sheep were first introduced to Hawai’i in 1793 when the English Captain George Vancouver presented Kamehameha I with a gift of seven longhorn cows and four sheep (Brennan, 1974). Vancouver returned the following year bringing goats and geese, as well as more cattle and sheep. Over the next decade, the free roaming cattle reproduced rapidly in the Waimea Region and mountain slopes, and in a measure to control the large free roaming herds, Kamehameha III sanctioned the hunting of bullocks by hiring foreign hunters in 1819. One of the first bullock hunters to be authorized by the Hawaiian Kingdom was John P. Parker, the founder of Parker Ranch (Kelly, 1974). Parker was compensated with live cattle, from which he selected the best cattle for breeding and re-domestication to form Parker Ranch (Brennan, 1974).

The sheep industry in Hawai’i emerged alongside cattle ranching and was prevalent by the 1840s (Langlas et al., 1999). By 1873, a wagon road was established following the present route of Saddle Road within the State-owned land. This provided access to the Humu’ula Sheep Station, located just east of the State-owned land, and to the grazing lands of Mauna Kea, the Saddle Region, and the north slope of Mauna Loa. The sheep industry declined over the next several decades, and by 1950, there were roughly 6,000 to 8,000 sheep and 3,000 cattle in Humu’ula. Around 1965, the sheep operation was phased out completely. Further details on ranching history and its effects are provided in **Appendix D**.

During World War II, the U.S. Government constructed Kaumana Road (currently Saddle Road) in 1943 to allow Soldiers’ ease of access to the island interior in the event of a coastal attack by invading forces (Langlas et al., 1999). At this time, the U.S. military also established several firing ranges at Pōhakuloa, including an anti-tank range, an artillery range, and an impact area. Section 1.1.2 describes use of the area by the Hawai’i Territorial Guard, and formal establishment of a training area in 1956 through an Executive Order by the Governor of the Territory of Hawai’i. Section 3.2 documents the land ownership as recognized under current laws and legal rulings and describes the lease under which the State-owned land is used by the Army.

3.4.4.3 Previous Cultural Resources Studies

The cultural resources management (CRM) program at PTA involves identification, documentation, evaluation, and treatment of Historic Period and traditional Hawaiian resources. AR 200-1 considers cultural resources to be “historic properties as defined by the NHPA; cultural items as defined by the

NAGPRA; archaeological resources as defined by the Archaeological Resources Protection Act; and sacred sites as defined by EO 13007.” The following sections identify previous studies and efforts by the Army to identify historic cultural resources in the State-owned land of PTA.

Historical Architecture Surveys

Previous cultural resources surveys and internal investigations by the USAG-HI cultural resources program have recorded and assessed NRHP eligibility of historic structures within PTA. Built resources within PTA are primarily located within the Cantonment and BAAF, which are outside the ROI. No historic buildings or structures have been recorded within the ROI.

Archaeological Investigations

Archaeological investigations of the Saddle Region began with inventory surveys conducted in the 1960s and 1970s under the direction of the Bishop Museum (Rosendahl, 1977). Following the passage of cultural resources legislation and the advent of the CRM program at PTA, the Army has been directly responsible for managing cultural resources at PTA with various CRM firms being contracted to supplement the Army’s survey coverage.

Of the approximately 23,000 acres that comprise the State-owned land, approximately 12,050 acres have been subjected to Phase I inventory survey (**Figure 3-6; Table 3-6**). The remaining approximately 11,920 acres are unsurveyed or were the subject of older studies that do not meet the USAG-HI’s current standards and so are not counted toward the current assessment. It should be noted that portions of unsurveyed State-owned land comprise remote and inaccessible areas, such as geologically recent lava flows and extremely steep foot slopes. These areas may have a low potential for extant cultural resources, and intensive pedestrian surveys are likely prohibitive. Activities that trigger a cultural resources study (e.g., a Section 106 undertaking) have not occurred as frequently in these unsurveyed portions of State-owned land due to the absence or low impact of Army training.

Thirty-one archaeological surveys have occurred within State-owned land. These studies have primarily been generated from regulatory compliance needs associated with infrastructure development projects, such as the construction of roadways, firebreaks, training facilities, fence lines, and an AHA. The sections below summarize these previous investigations. Older inventory surveys that do not meet current USAG-HI archaeological standards have been omitted from this overview, as they do not count toward the Army’s total survey coverage.

Archaeological surveys of the Saddle Road corridor, which passes through State-owned land, were conducted in the 1980s and 1990s (Langlas et al., 1999; Welch, 1993).

In 1994, an archaeological survey was conducted of roughly 8,000 acres within TAs 5, 6, 16, 17, 19, 20 and 22 (Shapiro & Cleghorn, 1998). Only 2,300 acres of this survey are included in the current overview because a portion of this work included an aerial survey and not intensive pedestrian survey. Archaeological investigations were also conducted at sites within TAs 5, 6, and 21 during two University of Hawai’i field school seasons (Bayman et al., 2001; Moniz-Nakamura, 1999).

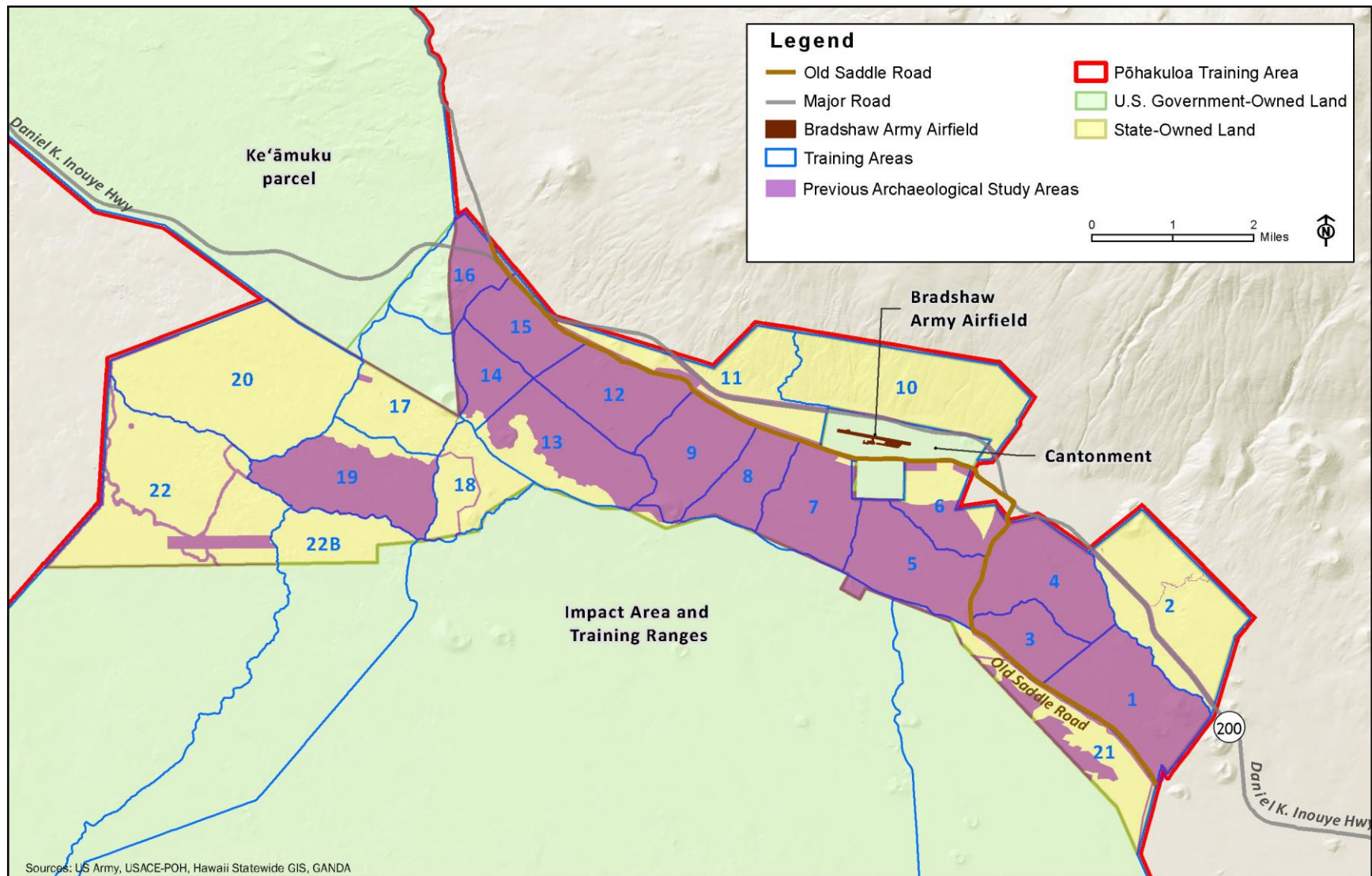


Figure 3-6: Archaeological Investigations Survey Coverage Map

Table 3-6 Archaeological Coverage of State-Owned Land at Pōhakuloa Training Area			
Reference	Training Area	Study Type	Summary of Findings within ROI
Welch, 1993	1, 3–9, 12, 15, 16	Survey and testing	Two previously recorded sites (Sites 5002 and 5003) and one new site (Site 14638). Subsurface testing at Site 5003 documented a cultural deposit containing charcoal, ash, faunal bone, and lithic debitage.
Moniz, 1997	5, 6	Survey	Two previously recorded sites (Sites 5003 and 14638) and one new site (Site 21351).
Langlas et al., 1999	1, 3–9, 11, 12, 15, 16	Survey and testing	Three previously recorded sites (Sites 5002, 5003, and 14638) were evaluated as significant under Criterion D.
Bayman et al., 2001; Moniz-Nakamura, 1999	5	Survey and testing	Two previously recorded sites (Sites 5003 and 21351) and two new sites (Sites 21744 and 21745). Testing at Site 5003 documented lithic debitage, basalt tools, and bird bone. Radiocarbon dating placed Site 5003 within the Pre-Contact Period. Testing at Site 14638 recovered charcoal.
Shapiro & Cleghorn, 1998	5, 22	Survey	Three new sites (Sites 19490, 19509 and 19529). Radiocarbon dating placed Sites 19490 and 19509 within the early Post-Contact to modern periods.
Godby, 2003	22	Survey	Identified iwi kūpuna at Site 23694.
King & Head, 2004	6–8	Survey	Four previously recorded sites (Sites 23452, 24326, 24327, and 24328).
Roberts et al., 2004a	21	Survey	One previously recorded site (Site 19490) and four new sites (Sites 23455, 23456, 23457 and 23462).
Roberts et al., 2004b	5, 21	Survey	Four previously recorded sites (Sites 14638, 21351, 21744, and 21745) and eight new sites (Sites 23455, 23562, 23563, 23565, 23566, 23568, 23572, and 23575).
Roberts et al., 2004c	1, 3, 4	Survey	Three previously recorded sites (Sites 5002, 21746, and 22941) and 15 new sites (Sites 23842 to 23856).
Buffum et al., 2004	6, 7	Survey	Additional features at one previously recorded site (Site 23455).
Desilets & Roberts, 2005	16, 17, 20	Survey	No sites identified within the State-owned land.
Desilets et al., 2005	6, 9, 12–16, 19	Survey	Three previously recorded sites (Sites 23450, 23452, and 23455).

Table 3-6 Archaeological Coverage of State-Owned Land at Pōhakuloa Training Area			
Reference	Training Area	Study Type	Summary of Findings within ROI
Robins et al., 2006	5, 7	Survey and testing	Five previously recorded sites (Sites 19490, 23455, 23456, 23457, and 23462). Testing at two sites (Sites 19490 and 23456).
Stine, 2006a	22	Survey	Five new sites (T-082306-01 to T-082306-05).
Stine, 2006b	22	Survey	No sites identified within the State-owned land.
Stine, 2006c	22	Survey	No sites identified within the State-owned land.
Taomia, 2006a	17	Survey	No sites identified within the State-owned land.
Taomia, 2006b	22	Survey	No sites identified within the State-owned land.
Taomia, 2007	22	Survey	No sites identified within the State-owned land.
Taomia & Stine, 2007	17–20, 22	Survey	One previously recorded site (Site 23452).
Luscomb, 2007	22	Survey	No sites identified within the State-owned land.
Escott, 2007	22	Survey	No sites identified within the State-owned land.
Stine, 2008	11	Survey	No sites identified within the State-owned land.
Brown et al., 2008	6, 8, 9, 12–17, 19, 20	Survey and testing	Three previously recorded sites (Sites 23450, 23452, and 23455).
Taomia, 2009	18	Survey	One new site (T-031709-01).
Crowell et al., 2010	21	Survey	No sites identified within the State-owned land.
Stine, 2010	2	Survey	No sites identified within the State-owned land.
Tejeda, 2013	7	Testing and evaluations	Testing conducted at four previously recorded sites (Sites 23457, 23462, 24326, and 24327). Site 23457 was evaluated as eligible, and Sites 23462, 24326, and 24327 were evaluated as not eligible.
Monahan et al., 2013	4–6, 21, 22	Survey and testing	Archaeological testing conducted at two previously recorded sites (Sites 23455 and 23856).

The largest survey projects conducted within State-owned land were performed in the early 2000s (Brown et al., 2008; Buffum et al., 2004; Desilets & Roberts, 2005; Desilets et al., 2005; Roberts et al., 2004a; Roberts et al., 2004b; Roberts et al., 2004c; Robins et al., 2006). These studies generally focused on Stryker Brigade Combat Team project areas and potential maneuver areas, covering approximately 10,315 acres.

More recent work includes an archaeological investigation of previously recorded pit features within TAs 4 to 6 (Monahan et al., 2013).

Since the early 2000s, PTA CRM staff have conducted numerous archaeological investigations throughout PTA, including State-owned land. These investigations are documented in brief internal memorandums that are contained within various annual reports.

Ethnographic Studies

Several ethnographic studies have been conducted in or near PTA. The CIA contains a list and relevant summaries of the ethnographic studies utilized for the geographic extent analyzed (**Appendix E**).

In 1999, Paul Rosendahl supervised an archaeological and traditional cultural property (TCP) inventory survey for the Hawaii Defense Access Road A-AD-6(1) and Saddle Road (SR 200), commissioned by the U.S. Federal Highways Administration. The survey included a historical and ethnographic study, which included evaluation of Hawaiian cultural or historic significance of sites for eligibility on the NRHP. A total of 19 sites were recorded during that survey, excluding 35 modern military sites that were evaluated as not significant. Evaluation of identified ritual sites concluded that none were being used by Hawaiian religious practitioners. In general, however, Hawaiians believe that heiau and other ritual sites still have mana (religious power) because of their previous use. In Western terms, they are still sacred sites (Langlas et al., 1999: 141).

In 1999, 2002, and 2005, Kepā Maly, with his wife Onaona, completed three ethnographic studies on the 'āina mauna of the island of Hawai'i. The research and documentation from those studies are extensively incorporated into the CIA for the purpose of identifying places of cultural importance and traditional or customary practices.

A 2012 ethnographic study was commissioned, completed and accepted by the Army for PTA: *"Ethnographic Study of Pohakuloa Training Area and Central Hāmākua District, Island of Hawai'i, State of Hawai'i"* (McCoy & Orr, 2012). This is the only ethnographic or TCP study commissioned by the Army for study and/or assessment of TCPs within PTA. The study found "a general lack of information in the literature concerning cultural practices and beliefs related to the Saddle Region, when compared to other, more populated areas of Hawaii." The study did not use any Hawaiian language resources. It further "evaluated information related to historic properties as well as cultural practices and beliefs associated with the project area [PTA]" (McCoy & Orr, 2012). The study identified traditional and contemporary cultural practices and noted conclusions regarding their potential TCPs (**Table 3-7**).

Since the McCoy and Orr study, no further studies for TCPs have been conducted at PTA by USAG-HI CRM staff or contractors.

Table 3-7 Traditional and Contemporary Cultural Practices	
Traditional or Contemporary Practice	TCP Determination
Quarrying and Stone Tool Manufacture	Properties associated with practice not considered eligible for consideration as TCPs (McCoy & Orr, 2012)
Bird Hunting	Past associations with bird hunting do not provide adequate justification of associated locations as TCPs (McCoy & Orr, 2012)
Human Burial Practices	“Although human burial practices apparently have occurred within the boundaries of PTA, there is no indication that it was a common practice in the area. Further, modern human burials have not occurred within PTA during present times, and no active community traditions relating to burials at PTA have been identified. For these reasons, the possibility of Pre-Contact burial practices is examined for in any area of PTA being considered eligible for consideration as a TCP” (McCoy & Orr, 2012)
Ceremonial and Ritual Practices and Religious Beliefs	Do not appear to qualify for consideration as TCPs
Journeying (<i>Huaka’i</i>)	“There does not appear to be sufficient reason to consider areas within PTA used during <i>hauka’i</i> (sic) as eligible for consideration as TCPs” (McCoy & Orr, 2012)
Hunting of Feral Ungulates	Not warranted to consider properties within PTA as potential TCPs
Scattering of Cremation Remains	Practice not known to have occurred prior to 50 years ago and individually are not significant events in the broad pattern of history
Ranching Activities	Not eligible for consideration as TCPs

It is not the role of the CIA to conduct significance assessments, but rather to identify effects of the Proposed Action on cultural practices. Impacts to traditional or customary practices have not been previously assessed and cultural access is not accounted for in the existing 2018 PA for training activities.

3.4.4.4 Identified Historic and Cultural Resources

The process of assessing impacts to historic and cultural resources begins by identifying significant resources in the ROI. Identification efforts used the following reference material to identify historical architecture resources and archaeological sites: (1) reports written for archaeological and other CRM studies previously conducted in the ROI (and which were approved by USAG-HI for use), (2) Geographic Information System (GIS) data representing locations of previously recorded cultural resources and previous study boundaries, (3) federal, state, and local inventories of historic places, including the NRHP, (4) historical and current maps and aerial photographs, (5) primary source documents, and (6) general reference literature. **Appendix D**, Archaeological Literature Review, contains a full review of historic and archaeological resources in the ROI.

The process for identifying traditional and customary practices included the following steps as a means of gathering the best information available: (1) historic cultural information was gathered from stories and other oral histories about the affected area to provide cultural foundation for the report from Hawaiian language and English language resources, (2) as much information as could be identified was inventoried about as many known cultural, historic, and natural resources, including previous archaeological inventory surveys, CIAs, and other documents, that may have been completed for the possible range of areas, and (3) these data were then updated with information from cultural or lineal descendants, other knowledgeable cultural practitioners, or stakeholders from other ethnic groups. See **Appendix E**, Cultural Impact Assessment, for a full review of traditional and customary practices in the ROI.

Historic Architectural Resources

Historic architectural resources represent the built human environment and are typically expressed as buildings and as structures, such as engineering works. The NHPA provides a definition for historic architectural properties as being typically 50 years of age or older and retaining historical significance and integrity per 36 CFR Part 800.4(c). To date, there are no historic architectural resources known to be extant within State-owned land. Previous cultural resources studies have recorded and evaluated historic structures within PTA, including Quonset huts and other Cantonment facilities that date from the World War II to Cold War periods. These resources are located outside the ROI in the nearby Cantonment and BAAF.

Pre-Contact and Historic Archaeological Sites

Within surveyed portions of State-owned land, 105 archaeological sites have been identified (**Table 3-8**), and ongoing documentation of archaeological sites is regularly conducted by PTA CRM staff, including mapping, archaeological testing, site condition updates, and GIS data collection. Four sites of unknown origin have been evaluated as not eligible for listing in the NRHP, including two rock cairns (SIHP 50-10-31-23462 and 24327), a blister cave and pit complex (SIHP 50-10-31-24326), and a rock wall and C-shaped structure (SIHP 50-10-31-24328). The remaining 101 sites within the State-owned land are treated as eligible for the purpose of Section 106 consultation and are avoided during ongoing training and related activities.

Table 3-8 Known Archaeological Sites within State-Owned Land			
Site Number	Location	Description	Period
50-10-31-5002	TA 5	Ranch wall	Historic
50-10-31-5003	TA 6	Habitation lava tube	Traditional
50-10-31-5009	TA 17	Trail	Traditional
50-10-31-14638	TA 5	Habitation lava tubes, rectangular house foundation, artifact scatter, pavement	Traditional
50-10-31-19490	TA 5	Habitation lava tubes, trails, C-shape	Traditional
50-10-30-19509	TA 22	Habitation lava tube	Traditional
50-10-30-19529	TA 22	Habitation lava tube	Traditional
50-10-31-21351	TA 5	Lithic workshop complex	Traditional

Table 3-8 Known Archaeological Sites within State-Owned Land

Site Number	Location	Description	Period
50-10-31-21744	TA 5	Lithic scatter	Traditional
50-10-31-21745	TA 5	Habitation lava blister	Traditional
50-10-31-21746	TA 4	Mound/excavation complex	Unknown
50-10-31-22941	TA 4	Lava blisters	Traditional
50-10-31-23450	TA 15	Habitation, overhang shelter, artifact scatter, pictographs	Traditional
50-10-31-23452	TA 1, 3–9, 13, 14, 16, 17	Ranching fence line	Historic
50-10-31-23455	TA 5	Pāhoehoe pits	Traditional
50-10-31-23456	TA 5	Possible habitation enclosure	Traditional
50-10-31-23457	TA 7	Trail	Traditional
50-10-31-23462	TA 7	Cairn	Unknown
50-10-31-23562	TA 5	Habitation lava tube	Traditional
50-10-31-23563	TA 5	Modified outcrop/wall	Traditional
50-10-31-23565	TA 5	Volcanic glass quarry	Traditional
50-10-31-23566	TA 5	Habitation lava tube	Traditional
50-10-31-23568	TA 5	Habitation lava tube	Traditional
50-10-31-23572	TA 5	Habitation complex	Traditional
50-10-31-23575	TA 5	Habitation lava blister	Traditional
50-10-30-23694	TA 22	Lava tube and burial	Traditional
50-10-31-23842	TA 1	Habitation platform/terrace	Unknown
50-10-31-23843	TA 1	Enclosure/mound complex	Unknown
50-10-31-23844	TA 1	Mound	Unknown
50-10-31-23845	TA 1	Mound	Unknown
50-10-31-23846	TA 1	Ranching enclosure	Historic
50-10-31-23847	TA 3	Ranching alignments	Historic
50-10-31-23848	TA 3	Mound	Historic
50-10-31-23849	TA 4	Mound	Historic
50-10-31-23850	TA 4	Ranch corral	Historic
50-10-31-23851	TA 4	Habitation lava tube	Unknown
50-10-31-23852	TA 1, 3–9, 13, 14, 16, 17	Rock wall and enclosure	Historic

Table 3-8 Known Archaeological Sites within State-Owned Land

Site Number	Location	Description	Period
50-10-31-23853	TA 4	Habitation lava tube	Unknown
50-10-31-23854	TA 3	Volcanic glass quarry	Traditional
50-10-31-23856	TA 4	Pāhoehoe pits	Traditional
50-10-31-24326	TA 7	Blister cave and pit complex	Unknown
50-80-10-24327	TA 7	Cairn	Unknown
50-80-10-24328	TA 7	Wall, C-shape	Unknown
50-10-31-26728	TA 5	Habitation lava tube	Traditional
50-10-31-26729	TA 5	Habitation lava tube blister	Traditional
C-020305-01	TA 22	Lava tube	Unknown
C-031705-01	TA 22	Lava tube	Traditional
C-031705-02	TA 22	Lava tube	Traditional
C-031705-03	TA 22	Lava tube	Traditional
C-031705-04	TA 22	Lava tube	Traditional
C-031705-05	TA 22	Lava tube	Traditional
C-031705-06	TA 22	Lava tube	Traditional
PL-PTA-02	TA 21	Volcanic glass quarry	Traditional
PL-PTA-03	TA 21	Volcanic glass quarry	Traditional
PL-PTA-04	TA 21	Volcanic glass quarry	Traditional
PL-PTA-05	TA 21	Volcanic glass quarry	Traditional
PL-PTA-06	TA 21	Volcanic glass quarry	Traditional
PL-PTA-029	TA 21	Volcanic glass quarry and artifact scatter	Traditional
PL-PTA-030	TA 21	Volcanic glass quarry	Traditional
PL-PTA-031	TA 21	Volcanic glass quarry and artifact scatter	Traditional
PL-PTA-032	TA 21	Volcanic glass quarry and artifact scatter	Traditional
PL-PTA-033	TA 21	Volcanic glass quarry	Traditional
PL-PTA-034	TA 21	Volcanic glass quarry	Traditional
PL-PTA-061	TA 21	Volcanic glass quarry and artifact scatter	Traditional
PL-PTA-062	TA 21	Volcanic glass quarry and artifact scatter	Traditional
PL-PTA-063	TA 21	Volcanic glass quarry and artifact scatter	Traditional
PL-PTA-064	TA 21	Volcanic glass quarry and artifact scatter	Traditional
PL-PTA-065	TA 21	Volcanic glass quarry	Traditional

Table 3-8 Known Archaeological Sites within State-Owned Land

Site Number	Location	Description	Period
PL-PTA-066	TA 21	Volcanic glass quarry and artifact scatter	Traditional
PL-PTA-067	TA 21	Volcanic glass quarry and artifact scatter	Traditional
PL-PTA-068	TA 21	Volcanic glass quarry and artifact scatter	Traditional
T-012805-02	TA 22	Habitation lava tube	Traditional
T-020305-02	TA 22	Habitation lava tube	Traditional
T-020701-02	TA 6	Artifact scatter	Traditional
T-031709-01	TA 18	Mound	Unknown
T-040418-01	TA 1	USGS survey marker	Historic
T-041906-01	TA 22	Habitation lava tube	Unknown
T-041906-02	TA 22	Habitation lava tube	Unknown
T-041906-03	TA 22	Habitation lava tube	Unknown
T-043094-02	TA 22	Habitation lava tube	Unknown
T-043094-03	TA 22	Habitation lava tube	Unknown
T-043094-04	TA 22	Habitation lava tube	Unknown
T-043094-05	TA 22	Habitation lava tube	Unknown
T-050906-01	TA 22	C-shape	Unknown
T-070104-01	TA 5	Artifact scatter	Traditional
T-071306-01	TA 22	Enclosure	Unknown
T-080206-01	TA 1	Enclosure	Unknown
T-082217-08	TA 14	USGS boundary marker	Historic
T-082306-01	TA 22	Cairn	Unknown
T-082306-02	TA 22	Modified outcrop	Unknown
T-082306-03	TA 22	Lava tube	Unknown
T-082306-04	TA 22	Pāhoehoe pit	Unknown
T-082306-05	TA 22	Pāhoehoe pit	Unknown
T-092202-01	TA 3	Volcanic glass quarry	Traditional
T-092202-02	TA 3	Artifact scatter	Traditional
T-092202-03	TA 3	Artifact scatter	Traditional
T-092202-04	TA 3	Artifact scatter	Traditional
T-092202-05	TA 3	Artifact scatter	Traditional
T-092899-01	TA 22	Habitation lava tube	Traditional

Table 3-8 Known Archaeological Sites within State-Owned Land

Site Number	Location	Description	Period
T-100606-01	TA 22	Mound	Unknown
T-100606-02	TA 22	Mound	Unknown
T-111402-01	TA 3	Artifact scatter	Traditional
T-111402-02	TA 3	Volcanic glass quarry	Traditional
T-111402-05	TA 3	Volcanic glass quarry	Traditional
T-111402-06	TA 3	Volcanic glass quarry	Traditional

Archaeological resources within the State-owned land fall into several broad site types that date from the Pre-Contact to Historic periods. Pre-Contact Hawaiian archaeological resources recorded in the ROI include habitation features (lava tube caves, blisters, and overhangs, stone platforms, walls, enclosures, and C-shaped structures); excavated pāhoehoe pits, likely related to the procurement of ‘u‘au (Hawaiian petrel); lithic quarries; ahu (rock cairns); and trail segments. Historic Period archaeological sites in the State-owned land include trails (often extending from or following along traditional Hawaiian trail systems), military features (foxholes, enclosures, walls, excavations, trash/ammunition scatters), ranching infrastructure remnants (walls, enclosures, fence lines), and features associated with land surveying activities (survey benchmark/boundary monuments). Traditional Hawaiian and Historic Period site types are described in the sections below.

Traditional Hawaiian Sites

Traditional Hawaiian habitation sites within the ROI are typically classified as either limited-use or repeated-use sites. Limited-use sites were occupied on a short-term basis, such as an overnight stay (Streck, 1992) in surface structures (e.g., rock-constructed enclosures) and natural shelters formed in lava flows (e.g., caves and rock shelters). The limited-use occupation sites are defined by sparse amounts of cultural material, often limited to charcoal scatters or shallow ash deposits, and small artifact scatters. Repeated-use sites contain cultural midden deposits and features and exhibit structural modifications, such as constructed platforms, walls, terraced areas, and cupboards. Cultural deposits at repeated-use sites are stratified and typically contain a wide range of well-preserved artifacts (Athens & Kaschko, 1989; Haun, 1986; Shapiro et al., 1998; Shapiro & Cleghorn, 1998; Robins et al., 2006). Faunal assemblages excavated from repeated-use sites are dominated by bird bone, particularly those of adult ‘ua‘u, while marine shell and fish bone also occur in limited quantities (Athens & Kaschko, 1989; Ziegler, 1994). Some repeated-use sites may represent base camps for groups exploiting natural resources in upland areas (Reinman & Schilz, 1992).

Limited-use and repeated-use habitation site types are typically located along trails running through the Saddle Region and near important upland resources, such as lithic quarries, lava tubes with drip water sources, and bird nesting areas. Within the ROI, habitation sites are generally concentrated within TAs 5 and 22. Site 19490 in TA 5 is comprised of several lava tube habitation features along with a trail segment, a C-shaped structure, and other archaeological features, including midden deposits, ahu, and a surface artifact scatter. In 2003, a pair of well-preserved kī (ti) leaf sandals was collected from Site 19490 by PTA CRM staff (**Appendix E**). Within TA 22, Site 23694 is situated within the “C” (Charlie) lava tube cave system, where archaeological features and cultural materials were first identified during a biological resources

survey of PTA (Godby, 2003). A subsequent site visit by PTA CRM staff in 2003 documented iwi kūpuna (human remains) at Site 23694 along with an artifact scatter containing lithic debitage, water-worn stones, and gourd fragments. A circular-shaped hearth containing charcoal, ash, and bird bone was also noted near one of the cave entrances (Godby, 2003).

Other traditional Hawaiian sites in the State-owned land are related to the procurement of upland resources, including volcanic glass used in the production of stone tools. The Saddle Region is one of Hawai'i's most abundant volcanic glass sources, and the relatively recent pāhoehoe flows in the State-owned land contain a great number of volcanic glass outcrops, most of which have been exploited and are generally concentrated within the eastern portion of the State-owned land. In addition to volcanic glass flakes, quarry sites also frequently contain fragmented and complete hammerstones, hundreds of which have been documented within State-owned land. Williams noted the use of "large hammerstones made of vesicular pahoehoe" for initial quarrying of the material and small, dense basalt hammerstones derived from Mauna Kea basalt for secondary reduction activities (Williams, 2002). While lithic scatters are commonly associated with quarry sites where primary reduction of lithic material occurred, lithic scatters are also frequently documented at repeated and limited-use occupation sites, representing secondary reduction to produce adze blanks, and the maintenance and production of flake cutting tools.

Excavated pāhoehoe pits are by far the most abundant feature type within the Saddle Region, although they are outnumbered by lithic quarries within the ROI. Moniz-Nakamura suggests that the excavated pits represent efforts to create nesting habitat for 'ua'u or to enlarge natural burrows to retrieve nestlings (Moniz-Nakamura, 1999). Nesting burrows can be up to 1.8 meters long with 15- to 20- centimeter-high entrances; enlarging these entrances makes it easier to retrieve the nestlings from the burrow.

Microfossil and organic residue analysis of sediment samples from excavated pit features within the State-owned land was also conducted at Site 23455 in TA 5 and Site 23856 in TA 4 (Monahan et al., 2013). Using control samples from known petrel nesting sites on the slopes of Mauna Loa, the samples produced strong Fourier Transform Infrared Spectroscopy avian signatures from all sampled pits and some of the samples closely resembled the Mauna Loa samples (Monahan et al., 2013). However, this same signature was also found in control samples outside the pits; thus, indicating that birds were in the area but not specifically targeting the excavated pits. Monahan also cautioned that the avian signature is general (not classified to genus or species) and could reflect the presence of birds, other than seabirds, that are known to use the pits during recent times (Monahan et al., 2013).

Several traditional Hawaiian trail segments are situated within the State-owned land, and other major Hawaiian trails have been identified within PTA but outside State-owned land. These isolated trail segments often consist of worn lava paths, sometimes with associated linear curbstone constructions, and alignments of cairns or ahu. Site 5009, the Pu'u Kapele trail, is located within TA 17, and a 100-meter-long trail segment is mapped at Site 23457 within TA 7. Trail segments leading to habitation features have also been documented at Site 19490 within TA 5.

Historic Period Sites

Historic Period archaeological sites associated with nineteenth century ranching include rock walls, fence lines, and animal enclosures. Site 23452, a fence line incorporating rock walls constructed around 1895, extends across a roughly 10-mile-long alignment within State-owned land, situated to the south of Saddle Road. Several other sites associated with Historic Period ranching are located in the eastern portion of the

ROI, including Sites 5002 (NRHP-eligible rock wall), 23846 (animal enclosure), 23847 (alignment), and 23850 (corral).

Following the attack at Pearl Harbor in 1941, over 50,000 acres of Parker Ranch were taken over by the U.S. military for war maneuvers (termed the Waikoloa Maneuver Area) and used as a live-fire TA. Saddle Road was constructed in 1943 to allow movement into the interior in case of another foreign attack (Langlas et al., 1999). A roughly 12-mile-long segment of Saddle Road, today known as DK1 Highway, is located within State-owned land. Military training maneuvers have expanded into the ROI, as indicated by the presence of hundreds of hastily constructed rock training structures and associated debris. These military sites are also tracked by PTA CRM staff but, due to their recent age, are not eligible for the NRHP and are thus not considered historic properties.

Properties of Traditional Religious and Cultural Importance to a Native Hawaiian Organization or Other Ethnic Group

In addition to the tangible cultural resources identified above, there are 10 sites of traditional, religious, and/or cultural importance within the boundaries of the State-owned land (**Table 3-9**). These wahi (traditional places) reflect the intergenerational knowledge and place-based understandings of Native Hawaiians or other ethnic groups.

Traditional or Customary Practices

In order to identify these activities, the CIA conducted analyses of archival documents, oral traditions (oli [chants], mele [songs], and/or hula [dance]), and Hawaiian language sources including books, manuscripts, and newspaper articles that focused on identifying recorded cultural and archaeological resources present on the landscape, including: Hawaiian and non-Hawaiian place names, landscape features (ridges, gulches, cinder cones), archaeological features (kuleana parcel walls, house platforms, shrines, heiau [places of worship], etc.), culturally significant areas (viewsheds, unmodified areas where gathering practices and/or rituals were performed), and significant biocultural resources. The information gathered through research helped to focus interview questions on specific features and elements within the State-owned land. Information also was collected from area informants. Additional detail is provided in **Appendix E**.

Table 3-9 Sites of Traditional, Religious, and/or Cultural Importance		
Resource	Meaning / Interpretation of Name	Associated Use, if any
Pu'u (Hills)		
Pu'u Ke'eke'e	Crooked or deformed hill	'Umi built an ahu or temple here. Also used as a ceremonial site.
Pu'u Ka Pele (also Pu'u Kapele)	The hill of Pele or volcano hill	Ceremonial site
Pu'u Kea	White hill	-
Pu'u Mau'u	Grass hill	-
Pu'u Ko'ohi	None identified	-
Alanui (Trails)		
Alanui Kui	None identified	Part of the Alanui Aupuni trail system.
Ahu (Religious Structures)		
Unnamed: "I have located an ahu 18 feet long, 7 feet wide, and 4 feet high on the East side of the well known Alanui Kui leading across the ancient aa from the flow of 1859 to Puu Ka Pele and Waimea. The direction of the road, as far as visible is N. 20 E. magnetic. About 40 feet South of the ahu is the edge of the aa bank. At about 90 feet is another similar descent of say 7 or 8 feet" (as described in Emerson, 1895).	None identified	Possibly located in State-owned land, likely destroyed.

The goal of the CIA is not to provide an exhaustive list of practices, as many practitioners subscribe to a lifestyle in which tradition and custom can comprise a wide range of activities throughout their daily lives. The hope is to provide a comprehensive list of traditional and customary practices that were known to have occurred within the cultural landscape or were likely to have occurred based on the resources present in the area and known practices associated with those resources (**Table 3-10**). This demonstrates a good faith effort based on oral histories and the best data available to disclose the presence of cultural resources, which include tangible cultural and natural resources, and practices that fall within a larger cache of Native Hawaiian customs, or customs of other ethnic groups, associated with the geographic extent defined for this assessment. Additional detail is provided in **Appendix E**.

Table 3-10 Traditional or Customary Practices	
Traditional or Customary Practices	Traditional or Historic Origins
Quarrying	Traditional Practices with Pre-Contact Origins
Stone Tool Manufacturing	Traditional Practices with Pre-Contact Origins
Traditional Hunting, Bird Collection, and Feather Collecting	Traditional Practices with Pre-Contact Origins
Mālama Iwi	Traditional Practices with Pre-Contact Origins
Ceremonial Practices	Traditional Practices with Pre-Contact Origins
Kilo	Traditional Practices with Pre-Contact Origins
Kahuna and Associated Practices	Traditional Practices with Pre-Contact Origins
Alanui (Trail Usage)	Traditional Practices with Pre-Contact Origins
Habitation	Traditional Practices with Pre-Contact Origins
Agriculture, Cooking, and Food Traditions	Traditional Practices with Pre-Contact Origins
Life Cycle Practices	Traditional Practices with Pre-Contact Origins
Uhau Humu Pohaku (Dry Stone Stacking)	Traditional Practices with Pre-Contact Origins
Parietal Art (Petroglyphs and Petrographs)	Traditional Practices with Pre-Contact Origins
Haku Mele and Haku 'Oli	Traditional Practices with Pre-Contact Origins
Hula	Traditional Practices with Pre-Contact Origins
Hōlua (Sledding)	Traditional Practices with Pre-Contact Origins
La'au Lapa'au	Traditional Practices with Pre-Contact Origins
Mo'olelo	Traditional Practices with Pre-Contact Origins
Modern Hunting	Customary Practice with Post-Contact Influences
Disposition of Cremated Remains	Customary Practice with Post-Contact Influences
Ranching	Customary Practice with Post-Contact Influences
Paniolo	Customary Practice with Post-Contact Influences

3.4.4.5 Current Management Efforts

The Army operates a robust CRM Program at PTA, including the State-owned land. The team's CRM responsibilities include maintaining a listing of archaeological sites and global positioning system locations; conducting fieldwork to identify, evaluate, and manage cultural resources, which consists of archaeological surveys and monitoring before, during, and after training activities; managing site preservation, including conducting periodic site inspections and installing visual or physical boundaries to avoid or minimize impacts to sites; consulting with Native Hawaiian Organizations (NHO); and coordinating with other regulatory agencies.

Cultural resources at PTA are managed in compliance with all applicable federal laws and regulations; DoD Directive 4715.3 on CRM; AR 200-4, Cultural Resources Management; and USARHAW Regulation No. 350-19.

Compliance with Section 106 of the NHPA requires close coordination between PTA CRM staff and project planners to integrate the identification and evaluation of historic properties with training activities or other projects at PTA. This compliance process includes regular consultation with the SHPD, NHOs, and other interested parties. Such consultation is initiated by letter but may take place face to face. If a project is determined to have an adverse effect on historic properties, Army staff would first assess whether the action is already addressed in the 2018 PA. If not, then the Army would consult with SHPD, Native Hawaiians, and other interested parties through the NHPA Section 106 process to address these effects and mitigate any adverse effects. Army cultural resources staff members conduct regular outreach to Native Hawaiians to facilitate compliance with Sections 106 and 110 of the NHPA and other consultation efforts to fulfill its consultation obligations. This outreach includes offering tours and open houses, speaking to school groups and college students, and providing access for cultural activities and practices.

Rigorous avoidance measures for historic properties known to be extant within PTA are defined in two documents: (1) *Programmatic Agreement Among the U.S. Army Garrison, Pōhakuloa Training Area, U.S. Army Garrison, Hawaii, The Hawai'i State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding Routine Military Training Actions and Related Activities at United States Army Installations on the Island of Hawai'i, Hawai'i* (DA, 2018b), and (2) *An Integrated Cultural Resources Management Plan for the U.S. Army Garrison - Pōhakuloa, Hawai'i Island* (USAG-PTA, 2018b).

The Army finalized the 2018 PA with the objective of addressing its Section 106 requirements under the NHPA. The Army consulted with the Office of Hawaiian Affairs, the National Park Service, Royal Order of Kamehameha I, O'ahu Council of Hawaiian Civic Clubs, Hui Malama I Na Kupuna 'O Hawai'i Nei, O'ahu Island Burial Council, Hawai'i Island Burial Council, Historic Hawai'i Foundation, and NHOs, families, and individuals who attach traditional religious and cultural importance to cultural sites within the Army installations on the island of Hawai'i. The PA contains stipulations that satisfy the Army's Section 106 compliance responsibilities for PTA. However, the 2018 PA does not override any rights Native Hawaiians and NHOs have under federal law, as described in 36 CFR Section 800.2(c)(ii)(B).

The Army's Integrated Cultural Resources Management Plan (ICRMP) was also finalized in 2018. Along with providing an overview of cultural resources at PTA, the ICRMP outlines the missions of the various Army groups (USARPAC, USAG-HI, USAG-Pōhakuloa, 25th ID, and USARHAW) at PTA and dictates the responsibilities of the USAG-HI and USAG-Pōhakuloa Garrison Commanders. The ICRMP provides a summary of statutes, policies, implementing authorities, regulations, and guidelines pertaining to the management of cultural resources under USAG-Pōhakuloa stewardship, and lists their application to each of nine SOPs for managing cultural resources.

The Army also complies with NAGPRA. Iwi kūpuna (Native Hawaiian human skeletal remains) have been identified at one site within the ROI (SIHP 50-10-30-23694). The Army completed notification and consultation for this burial site in accordance with NAGPRA and left the iwi in place. Iwi recovered from collections related to previous cultural resources work have been repatriated. It is USAG-HI policy to leave burials in place and undisturbed whenever possible. Reburial areas are established as required after consultation with Native Hawaiian families, groups, and individuals. The 2018 PA also addresses inadvertent discoveries of iwi kūpuna within PTA and stipulates that any iwi accidentally uncovered would

be protected from additional disturbance, and all Army actions would be treated in accordance with NAGPRA.

Training operations at PTA also adhere to procedures and requirements in USARHAW Regulation No. 350-19, which stipulate that Garrison commanders conduct environmental awareness education programs to publicize the Army's concerns and actions regarding the conservation of cultural resources during training activities; that hunting, fishing, and recreational activity areas are designated in coordination with cultural resources managers; and that the Deputy Chief of Staff develops and coordinates training policies, programs, and initiatives to preclude conflicts between range operations, training, and CRM. Further, the PTA External Standard Operating Procedures (USAG-PTA, 2018a) identify cultural resources restricted areas, as well as a variety of general restrictions, including vehicle, excavation, and emergency discovery procedures. Finally, the 1964 lease offers additional procedures and requirements regarding the protection of cultural resources, such as limiting the firing of military munitions into Parcel A of the State-owned land to small arms ammunition.

3.4.5 Methodology and Significance Criteria

This section outlines the methods and criteria used to assess potential significant impacts on cultural resources.

Cultural resources were defined for the State-owned land as described in **Section 3.4.4.4**.

Significance was evaluated based on criteria that assessed whether an alternative would result in potential significant impacts on tangible cultural resources (including historic architectural and archaeological resources). The criteria include the extent or degree to which an alternative would result in the following:

- Physical destruction, damage, alteration, or removal of a cultural resource.
- Impacts that alter the characteristics that make the resource eligible for inclusion in the NRHP and diminish the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association.
- Neglect of a cultural resource that causes its deterioration (except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an NHO).
- Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the resource's historic significance.

This section also includes analysis of traditional or customary practices, including associated intangible cultural resources, which considers the potential direct and indirect impacts on traditional or customary practices and cultural access. The criteria considered to assess whether an alternative would result in potential significant impacts on these resources include the extent or degree to which an alternative would result in the following:

- Physical direct or indirect impacts to tangible cultural, historic, physiological, or biological resources utilized as part of traditional or customary practices.

- Direct or indirect impacts, including impacts to setting or feeling, of resources or places utilized as part of traditional or customary practices, including associated intangible cultural resources.
- Reduction of, loss of, or obstructions or limitations to cultural access or the allowance of traditional or customary practices.

This section also assumes the State would fund and manage cultural resources and access programs at current levels within the State-owned land not retained. It also assumes that the 2018 PA would remain in place and that any commitments made would be continued and maintained.

Additionally, current management efforts were reviewed, and if required, new mitigation measures were developed to ensure impacts to cultural resources are reduced, minimized, avoided, or rectified.

3.4.6 Environmental Analysis

This analysis considers impacts to cultural resources from the Proposed Action. Adherence with existing applicable regulations, BMPs, and SOPs is applied to the analysis before making impact conclusions (i.e., existing cultural resource management efforts are considered when determining the affected environment and are included in the baseline environmental conditions for the analysis).

Public concerns expressed during the scoping process were also considered in the analysis of impacts to cultural resources. These concerns included protection and preservation of archaeological sites and compliance with federal and state laws and regulations regarding cultural resources preservation. Practitioners and stakeholders interviewed for this Proposed Action also expressed concern regarding access for traditional and customary practices.

3.4.6.1 Alternative 1: Full Retention

Under Alternative 1, all State-owned land would be retained, and ongoing activities (including CRM actions) would continue. As a result, there would be no new impacts to known or undiscovered cultural resources. Continuing impacts related to current training and associated activities have already been assessed in previous NEPA/NHPA analyses. Impacts to traditional or customary practices have not been previously assessed. Impacts to traditional or customary practices are not considered “new;” however, in this analysis they are newly identified. The 2018 PA determined that previous military training and related activities have had adverse effects on historic properties within PTA, and some undertakings (activities) may continue to have adverse effects on historic properties (DA, 2018b).

Previously assessed impacts from training activities include damage to sites from subsurface excavations related to troop training (e.g., field fortifications, emplacement of obstacles), off-road mounted maneuvers with tactical vehicles and other routine vehicular traffic, increased access by ground troops into the ranges, possible damage from live fire where resources are in the line of fire although such activities are directed toward established live-fire impact areas, and cleanup of UXO within or adjacent to resources. The continued presence of training personnel may also continue to impact resources through accidental damage or vandalism.

Previous NEPA/NHPA reviews, such as the 2018 PA, have provided mitigation for ongoing training and related activities. Under current mitigation measures, USAG-HI would continue to identify and evaluate cultural resources eligible for inclusion in the NRHP, in compliance with Section 110 of the NHPA and the

PA. Ongoing activities would continue to comply with Section 106 and its implementing regulations. Impacts on archaeological and historic resources would continue to be mitigated in compliance with these existing regulatory requirements.

Ongoing activities on State-owned land also adhere to existing SOPs, developed during previous NEPA/NHPA review, for ongoing cultural resources preservation and management. For example, resources determined to be eligible for inclusion in the NRHP, as well as resources not yet formally evaluated, are to be avoided through protective measures to the fullest extent practicable. If it is not feasible to avoid NRHP-eligible or newly identified resources, the Army consults in accordance with the 2018 PA to determine the appropriate mitigation measure for damage to the resource, which could include archaeological data recovery or other appropriate mitigation measures. To address inadvertent discoveries of archaeological and historic resources, the Army has developed SOPs, as outlined in the ICRMP.

Although long-term, adverse impacts associated with ongoing activities have the potential to continue, current avoidance and protection protocols implemented during previous NEPA/NHPA review mitigate impacts to historic resources and archaeological sites to moderate, less than significant levels.

Further, under Alternative 1, the Proposed Action would result in no new impacts, and no additional mitigation measures would be required beyond those prescribed in the PA and ICRMP for the physical management of cultural resources.

Under Alternative 1, there would be no new impacts to traditional and customary practices. However, there would continue to be long-term, significant, adverse impacts to traditional and customary practices and cultural access due to current access restrictions. Mitigation is recommended to consult with Native Hawaiians, and/or other ethnic groups as appropriate, provide, or continue to provide, access to promote and protect cultural beliefs, practices, and resources. With allowance of access for State-owned land retained by the Army, promotion and protection of cultural beliefs, practices, and resources would be increased and impacts would be reduced. Impacts to traditional or customary practices have not been previously assessed and cultural access is not accounted for in the existing PA for training activities. Therefore, the following impact analyses and mitigation reflect ongoing impacts to these activities and mitigation measures that would address these impacts.

Historic Architectural Resources

Summary of Impacts: There are no recorded historic architectural resources in the ROI; thus, there are no foreseeable impacts to historic architectural resources under Alternative 1.

Potential Mitigation Measures: None recommended.

Level of Significance: No impact.

Archaeological Sites

Summary of Impacts: Alternative 1 would result in no new impacts to archaeological sites. Although continued long-term, moderate, adverse impacts associated with ongoing activities would occur, the overall impact to archaeological sites from Alternative 1 would be less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

Traditional and Customary Practices

Summary of Impacts: Alternative 1 would result in no new impacts to traditional and customary practices, yet there would be continued long-term, significant, adverse impacts from ongoing limitations on access resulting from Army control of the State-owned land. The overall impact to traditional and customary practices under Alternative 1 would continue to be significant but mitigable through potential mitigation measures.

Potential Mitigation Measures: Through consultation with Native Hawaiians, and/or other ethnic groups as appropriate, provide access to promote and protect cultural beliefs, practices, and resources.

Level of Significance: Significant but mitigable.

3.4.6.2 Alternative 2: Modified Retention

Land Retained

Alternative 2 (land retained) would result in similar impacts to Alternative 1. No new impacts are anticipated to known or undiscovered cultural resources because the retained land includes the same resources (and absence of recorded historic architectural properties) as those located in State-owned land retained under Alternative 1. Although long-term impacts associated with ongoing activities have the potential to continue, avoidance and protection protocols implemented during previous NEPA/NHPA reviews would mitigate impacts to archaeological sites to less than significant levels. However, existing impacts resulting from ongoing access limitations resulting from Army control of the State-owned land have the potential to continue.

Impacts to traditional or customary practices for State-owned land retained would be similar to those identified under Alternative 1.

Land Not Retained

State-owned land not retained under Alternative 2 is mostly unsurveyed and might contain unknown cultural resources. Alternative 2 would result in long-term, minor, beneficial impacts due to reduced risk of inadvertent discovery of cultural resources associated with military activities.

Because the State has typically allowed regular access to its lands for cultural access, there would be a long-term beneficial impact to traditional and customary practices resulting from the return of control of the land to the State, associated greater access to these areas, and lease compliance actions such as removal of fencing. There would be the potential to restore cultural access to those areas, specifically for the purpose of allowing traditional or customary practices. Lease compliance actions that would help to facilitate and restore traditional or customary practices would include, but not be limited to, removal of perimeter fencing that prevented practitioners from accessing Properties of Traditional Religious and Cultural Importance.

However, short-term, minor to moderate, adverse impacts would result from ground-disturbing activities associated with lease compliance actions on the State-owned land not retained. The parameters for

compliance with the lease conditions for the State-owned land not retained would be defined and determined after completion of this EIS, but they would comply with Section 106 and its implementing regulations. Impacts on cultural resources would continue to be mitigated in compliance with these existing regulatory requirements. Mitigation for impacts resulting from lease compliance actions on land not retained would fall under existing regulatory requirements and could include archaeological survey and monitoring of ground-disturbing activities to ensure cultural resources are identified and avoidance measures are met as well as to evaluate potential inadvertent discoveries. Impacts on newly identified archaeological and historic resources would be mitigated, in compliance with current regulatory requirements, to a level considered minor.

The Army would no longer fund or manage resource management and public use programs in the State-owned land not retained after expiration of the lease. The State would be solely responsible for the funding and management of resources on the State-owned land. It is assumed the State would adopt the Army's resource management commitments and therefore there would be no impact.

Historic Architectural Resources

Summary of Impacts: There are no recorded historic architectural resources in the ROI; thus, there are no reasonably foreseeable impacts to historic architectural resources under this alternative.

Potential Mitigation Measures: None recommended.

Level of Significance: No impact.

Archaeological Sites

Summary of Impacts: Alternative 2 (land retained) would result in the same impacts as Alternative 1, while Alternative 2 (land not retained) would result in long-term, minor, beneficial impacts from discontinued military activities as well as short-term, minor, adverse impacts from ground-disturbing activities associated with lease compliance actions in the State-owned land not retained. Overall impacts to archaeological sites under Alternative 2 would be less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

Traditional and Customary Practices

Summary of Impacts: Impacts for State-owned land retained would be the same as Alternative 1. For State-owned land not retained, there would be long-term, moderate, beneficial impacts from discontinued access restrictions on land not retained. Lease compliance actions would result in long-term, negligible, beneficial impacts to traditional and customary practices. Overall impacts to traditional and customary practices under Alternative 2 would be significant (due to land retained) but mitigable to less than significant through potential mitigation measures.

Potential Mitigation Measures: Through consultation with Native Hawaiians, and/or other ethnic groups as appropriate, provide access to promote and protect cultural beliefs, practices, and resources.

Level of Significance: Significant but mitigable.

3.4.6.3 Alternative 3: Minimum Retention and Access

Under Alternative 3, only vital TAs and access would be retained; ongoing activities would continue on State-owned land retained but would cease on land not retained.

Land Retained

Alternative 3 impacts for land retained would be the same as described under Alternative 1 because the retained land under Alternative 3 includes similar resources.

Land Not Retained

The land not retained in the western portion of the ROI (mainly TA 22) contains concentrations of traditional Hawaiian archaeological sites, mainly lava tubes and entrances, C-shapes, enclosures, mounds, pits, and modified outcrops. Land not retained in the eastern portion of the ROI includes a portion of TA 21. A concentration of traditional Hawaiian quarry archaeological sites is recorded in TA 21. These quarry sites comprise hundreds of individual exploited outcrops and associated lithic scatters. Land not retained in the northern and eastern portion of the ROI are mostly unsurveyed and might contain unknown cultural resources.

No new impacts would result from Alternative 3. Beneficial impacts from the discontinuation of military activities and associated impacts would increase, from minor to moderate in comparison to Alternative 2, because there is a greater number of recorded (known) archaeological sites within the State-owned land not retained than under Alternative 2. However, lease compliance actions and investigation, removal, and cleanup of hazardous and toxic materials and wastes, including MEC, on the State-owned land not retained would occur under the same parameters and regulatory measures as identified under Alternative 2 (land not retained) and would similarly result in short-term, minor to moderate, adverse impacts to archaeological sites.

Impacts to traditional or customary practices for State-owned land not retained would be similar to those identified under Alternative 2, with the potential for greater access than under Alternative 2.

Historic Architectural Resources

Summary of Impacts: There are no recorded historic architectural resources in the ROI; thus, there are no foreseeable impacts to historic architectural resources under this alternative.

Potential Mitigation Measures: None recommended.

Level of Significance: No impact.

Archaeological Sites

Summary of Impacts: Alternative 3 (land retained) would result in the same impacts as Alternative 1 and Alternative 2 (land retained), while Alternative 3 (land not retained) would result in new long-term, moderate, beneficial impacts from discontinued military activities as well as new short-term, minor to moderate, adverse impacts from ground-disturbing activities associated with lease compliance actions on the land not retained. Overall impacts to archaeological sites under Alternative 3 would be less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

Traditional and Customary Practices

Summary of Impacts: Alternative 3 (land retained) would result in the same impacts as Alternative 1 and Alternative 2 (land retained), while Alternative 3 (land not retained) would result in long-term, moderate, beneficial impacts from discontinued access restrictions on State-owned land not retained. Lease compliance actions would result in long-term, negligible, beneficial impacts to traditional and customary practices. Overall impacts to traditional and customary practices under Alternative 3 would be significant (due to land retained) but mitigable to less than significant with the implementation of potential mitigation measures.

Potential Mitigation Measures: Through consultation with Native Hawaiians, and/or other ethnic groups as appropriate, provide access to promote and protect cultural beliefs, practices, and resources.

Level of Significance: Significant but mitigable.

3.4.6.4 No Action Alternative

Under the No Action Alternative, no State-owned land would be retained, and there would be a substantial reduction in training at PTA because no training would occur on State-owned land. Additionally, there would be reduced or no training on U.S. Government-owned land (impact areas and training ranges) to the south due to lack of land access.

The No Action Alternative would produce similar impacts as Alternatives 2 and 3 (land not retained). Lease compliance actions would occur under the same parameters and regulatory measures as identified under Alternatives 2 and 3 (land not retained).

Similar to the State-owned land not retained under the action alternatives, under the No Action Alternative the Army would no longer fund or manage resource management and public use programs in the State-owned land after expiration of the lease. This may result in short-term, moderate, adverse, impacts to archaeological and historic resources during the transition period for CRM programs from Army to State management.

The No Action Alternative would result in long-term, significant, beneficial impacts to traditional or customary practices, as land returned to the State would likely result in a significant increase in cultural use and removal of perimeter fencing. As in Alternatives 2 and 3, cultural access would substantially increase when land is returned to the State, as existing access restrictions would be eliminated and the removal of perimeter fencing would improve ease of access for cultural practitioners.

Historic Architectural Resources

Summary of Impacts: There are no recorded historic architectural resources in ROI; thus, there are no reasonably foreseeable impacts to historic architectural resources under this alternative.

Potential Mitigation Measures: None recommended.

Level of Significance: No impact.

Archaeological Sites

Summary of Impacts: The No Action Alternative would result in the same impacts as Alternatives 2 and 3 for State-owned land not retained. In total, the impact would be less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

Traditional and Customary Practices

Summary of Impacts: The No Action Alternative would result in the same types of impacts as Alternatives 2 and 3 for State-owned land not retained, except more beneficial due to more land not retained. New long-term, negligible, beneficial impacts would result from lease compliance actions in the State-owned land through the removal of perimeter fencing that currently impedes traditional and customary access. The overall impact to traditional and customary practices under the No Action Alternative would be significant (beneficial).

Potential Mitigation Measures: None recommended.

Level of Significance: Significant (beneficial).

3.5 Hazardous and Toxic Materials and Wastes

3.5.1 Definition

The generation, use, storage, transport, and disposal of hazardous materials and wastes are regulated at the federal, state, and local levels. For this analysis, the terms hazardous waste, hazardous materials, and hazardous substances include those substances defined as hazardous by the CERCLA, the Resource Conservation and Recovery Act (RCRA), and the Toxic Substances Control Act (TSCA). In general, they include substances that, because of their quantity, concentration, or physical, chemical, or toxic characteristics, could present substantial danger to public health or welfare, or the environment, when released.

A hazardous material is any substance or material that has been determined to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce. Hazardous materials include hazardous and toxic substances and wastes, as well as petroleum and natural gas substances and materials (49 CFR Part 172.101).

Hazardous materials and wastes at the Army installations in Hawai'i include petroleum, oil, and lubricants (POLs); lead; asbestos; polychlorinated biphenyls (PCBs); pesticides; radon; hazardous wastes, including waste oils and biomedical waste; and radioactive materials. The Army maintains updated safety data sheets for all hazardous materials used in accordance with the Chemical Reporting: Community Right-to-Know regulations (40 CFR Part 370).

Military munitions [defined in 10 U.S.C. Section 101(e)(4)] includes all ammunition products and components such as small arms ammunition, explosives, pyrotechnics, smokes, incendiaries, rockets, bombs, mortar rounds, artillery ammunition, demolition charges, and propellants.

MEC consists of the following:

- **UXO** – UXO is military munitions that have been primed, fused, armed, or otherwise prepared for action; have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material; and remain unexploded, whether by malfunction, design, or any other cause.
- **Discarded military munitions (DMM)** – DMM is military munitions that have been abandoned without proper disposal or removed from storage in a military magazine or other storage area for the purpose of disposal. The term does not include UXO, military munitions that are being held for future use or planned disposal, or military munitions that have been properly disposed of consistent with applicable environmental laws and regulations.
- **Munitions constituents (MC)** – MC is any materials, including potentially contaminating materials, originating from UXO, DMM, or other military munitions, including explosive and nonexplosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions (DENIX, 2021).

3.5.2 Regulatory Framework

CERCLA, 42 U.S.C. Section 9601 *et seq.* (1980) [as amended by the Superfund Amendment Reauthorization Act (SARA) of 1986] regulates clean-up of uncontrolled or abandoned hazardous waste sites, accidents, spills, and other emergency releases of pollutants and contaminants into the environment. CERCLA also assigns liability to the parties responsible for any release and assures their cooperation in the cleanup. SARA reauthorizes CERCLA to continue cleanup activities around the country. CERCLA provides the framework and guidance for federal facilities to identify and cleanup contaminated property and plays a substantial role in the transfer of DoD sites.

The Defense Environmental Restoration Program was formally established by Congress in 1986 to provide for the cleanup of DoD property at active installations and formerly used defense sites throughout the United States and its territories. The two restoration programs under the Defense Environmental Restoration Program are the Environmental Restoration Program and the Military Munitions Response Program. The Environmental Restoration Program addresses contaminated sites, while the Military Munitions Response Program addresses closed military ranges and other sites suspected or known to contain UXO, DMM, or MC.

CERCLA regulations are found within the *National Oil and Hazardous Substances Pollution Contingency Plan* (National Contingency Plan), 40 CFR Part 300, which applies to cleanup response actions taken pursuant to CERCLA and *Hazardous Substances Spill Prevention* under Section 311 of the Clean Water Act (CWA), as amended. The National Contingency Plan provides the organizational structure and procedure for preparing for and responding to discharges of oil and releases of hazardous substances, pollutants, and contaminants.

Also, Title III of SARA authorized the Emergency Planning and Community Right-to-Know Act, 42 U.S.C. Section 11001 *et seq.* (1986). This act was designed to help local communities protect public health, safety, and the environment from chemical hazards.

The *Pollution Prevention Act*, 42 U.S.C. Section 13101 *et seq.*, is a national policy to reduce or eliminate the generation of waste at the source whenever feasible.

RCRA, 42 U.S.C. Section 6901 *et seq.* (1976), gives the U.S. Environmental Protection Agency (USEPA) the authority to control hazardous waste from cradle to grave. This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. Subtitle C of RCRA establishes guidelines for the generation, treatment, storage, and disposal of hazardous wastes. Subtitle I of RCRA governs the storage of materials in underground storage tanks (UST), including storage of unused products (including gasoline) and wastes. The determination of when military munitions become a waste, for purposes of regulation, is addressed in the Military Munitions Rule, which also amends regulations regarding emergency responses involving military and nonmilitary munitions and explosives.

The TSCA, 15 U.S.C. Chapter 2601 *et seq.* (1976), provides USEPA with authority to require reporting, record keeping and testing requirements, and restrictions relating to chemical substances and/or mixtures. The TSCA, 40 CFR Parts 700–799, gives the USEPA comprehensive authority to regulate any chemical substance whose manufacture, processing, distribution in commerce, use, or disposal may present an unreasonable risk of injury to health or the environment. Federal facilities are affected by regulations under TSCA because they address the handling and disposal of substances regulated under TSCA and the remediation of asbestos and radon.

EO 12088, *Federal Compliance with Pollution Control Standards* (43 FR 47707), requires all federal agencies to comply with environmental laws and fully cooperate with USEPA, state, interstate, and local agencies to prevent, control, and abate environmental pollution.

The *Federal Hazardous Materials Transportation Act*, 49 U.S.C. Chapter 5101 *et seq.*, gives the State DOT authority to regulate shipments of hazardous substances by air, sea, highway, or rail. The State DOT Hazardous Materials Program administers the regulations relating to the transporting of hazardous materials through areas under State DOT's control.

The USEPA Regional Screening Levels (RSLs) provide the screening level calculation tool to assist those involved in decision making concerning CERCLA hazardous waste sites and to determine whether levels of contamination found at a site may warrant further investigation or site cleanup, or whether no further investigation or action may be required (USEPA, 2020a). The Military Munitions Rule and Department of Defense Explosives Safety Board (DDESB) do not impose the regulatory requirements of RCRA Subtitle C on operational military ranges. Specifically, military munitions as they relate to solid waste and their intended use, are not discarded, not solid wastes under RCRA's Subtitle C regulations, and consequently not regulated as hazardous waste. On the other hand, if military munitions are used or fired, land off-range and are not promptly rendered safe or retrieved, they would be a solid waste and potentially subject to cleanup authorities under either CERCLA or RCRA corrective actions.

The Army uses federal USEPA RSLs and State Department of Health (DOH) Environmental Action Levels (EAL) for screening concentrations of contaminants in soil, soil gas, and groundwater that are used in decision making (DOH-EMD, 2017; USEPA, 2020a). The RSLs are contaminant concentration levels established by USEPA to evaluate contaminated sites that are on the National Priorities List or that are declared remedial sites under CERCLA or RCRA. They are used for screening and initial site cleanup and are not legally enforceable standards but instead provide long-term targets to be used to analyze different remediation techniques and alternatives. The Army uses the RSLs for industrial soil and drinking water and DOH EALs for sites greater than 150 meters from surface water and where groundwater is a current or potential drinking water resource to establish a basis of comparison for the concentrations of contaminants observed on the training ranges.

AR 200–1, *Environmental Protection and Enhancement*, governs the use, transport, and disposal of all hazardous materials and regulated waste by military or civilian personnel and on-post tenants and contractors at all Army facilities. Army Pamphlet 710-7, *Hazardous Material Management Program*, establishes the standard Army practices for the centralized control and management of hazardous material. USAG-HI follows its own Installation Hazardous Waste Management Plan, USAG-HI Regulation 200-4. This regulation provides plans and procedures for handling, storing, and disposal of hazardous materials and wastes on USAG-HI installations.

HRS Chapter 342L, Underground Storage Tanks, and its implementing rules HAR Chapter 11-280.1, Underground Storage Tanks, regulate compliance with USTs containing petroleum or other substances identified by DOH. The regulations govern inspection, compliance, record keeping, and maintenance of publicly available records for UST location and any violations associated with permitted USTs.

All training on PTA, including the State-owned land, adheres to procedures and requirements in USARHAW Regulation No. 350-19, *Installations Ranges and Training Areas*; PTA External Standard Operating Procedures; and the 1964 lease.

The State provides regulations for the handling of hazardous waste under HRS Chapter 342J, along with related implementing rules. The hazardous waste program of the State is preventative (supporting education about hazardous waste and its reduction and recycling) and regulatory.

HRS Section 128D-7, State Contingency Plan, ensures the State complies with the National Contingency Plan. The current response actions as described in the U.S. Army Corps of Engineers (USACE) Spill Prevention, Control, and Countermeasure Plan (SPCCP), which is applicable to federal military installations in Hawai'i, and a site-specific SPCCP for PTA are applicable to the State-owned land and are considered appropriate and reasonable for effective response actions (USAG-HI, 2012; USAG-PTA, 2018a).

State regulations for lead-based paint (LBP) and asbestos management are codified in HRS Chapter 342P, Asbestos and Lead, which establishes rules to control and prohibit asbestos pollution and LBP hazards and regulates asbestos and lead abatement for the State.

3.5.3 Region of Influence

The ROI for hazardous and toxic materials and wastes is the area on and immediately surrounding the State-owned land. Because fences and terrain cannot always confine or reduce impacts from potential releases of hazardous and toxic materials or wastes, the areas immediately adjacent to the State-owned land are considered part of the ROI.

3.5.4 Existing Conditions

Guidance and procedures on fuel, oil, and hazardous substance and waste storage and handling at USAG-HI installations, including PTA, are managed by USAG-HI and USAG-PTA SPCCPs (USAG-HI, 2012; USAG-PTA, 2018a). The PTA External Standard Operating Procedures provides guidance for spill plans, storage and usage of POLs, refueling procedures, and the usage of spill kits (USAG-PTA, 2018a). USAG-HI personnel that perform tasks involving the handling of oil and hazardous materials are trained and adequately supervised under the Environmental Compliance Officer training and inspection program.

The 2017 ECOP identified the following sites on or near the State-owned land as having potential to have hazardous substances or petroleum products in, on, or at the property (1) due to release to the environment, (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment (**Figure 3-7**) (USACE-POH & USAG-HI, 2017a). The TA(s) wherein the listed feature is located is indicated in parentheses.

- Aboveground Storage Tank (AST) (at the boundary of TAs 4 and 5; further discussed in **Section 3.5.4.1**)
- Former Target Vehicle Storage Site at FARP 18 (TA 5; further discussed in **Section 3.5.4.1**)
- BAX Target V-10 (TAs 7 and 8; further discussed in **Section 3.5.4.3**)
- Former Debris Pile (TA 21; further discussed in **Section 3.5.4.3**)
- Current Burn Pan Area (south of TA 13 on U.S. Government-owned land; further discussed in **Section 3.5.4.3**)
- Former Landfill (POTA-06 on TA 6; further discussed in **Section 3.8.5.3**)
- Former Bazooka Range (TA 17; further discussed in **Section 3.5.4.11**)
- Former Bazooka Range High Mortar Concentration (TA 17; further discussed in **Section 3.5.4.11**)
- Former Tank Gunnery Range (TA 12; further discussed in **Section 3.5.4.11**)
- Potential Former Burn Pan (TA 9; further discussed in **Section 3.5.4.11**)
- FPs (further discussed in **Section 3.5.4.11**)
- Former Davy Crockett Weapons Systems Range (TA 9; further discussed in **Section 3.5.4.12**)

Release mechanisms for potential contamination from training activities may include off-range flow of surface water, erosion, and deposition (via surface water) of soil, and vertical infiltration into groundwater, if SOPs and BMPs are not followed. The ECOP concluded that the contaminants detected in site soils have a low likelihood to become mobilized off-site due to the low rainfall in the area, lack of streams and absence of a developed drainage system across the State-owned land. The surface contamination detected is also unlikely to infiltrate to the underlying localized perched aquifer and more regional high-level aquifer present at PTA due to the low rainfall in the area and the considerable vertical depth to these groundwater systems, which are 700 and 1,800 feet below ground surface (bgs), respectively.

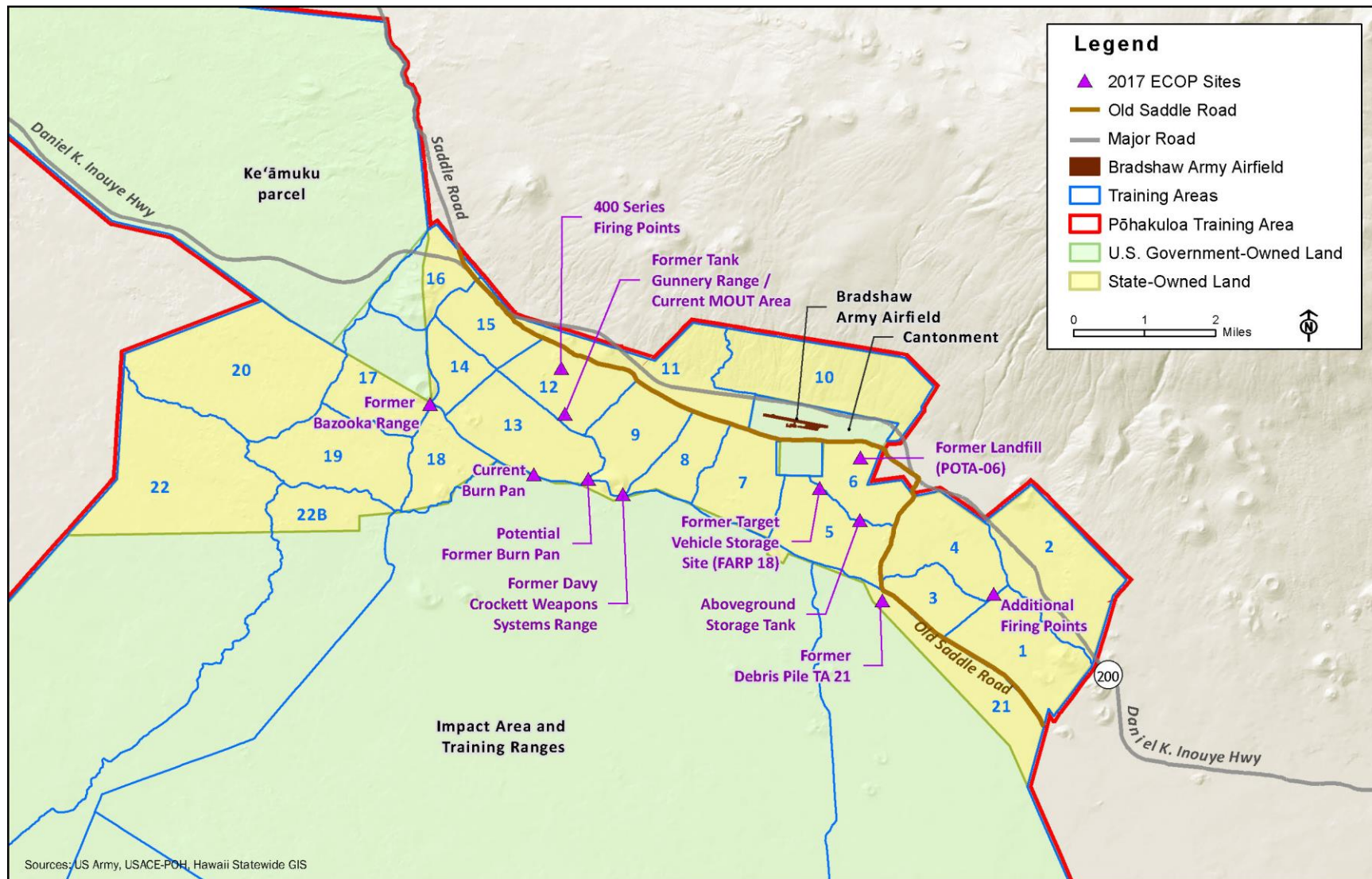


Figure 3-7: Sites Identified in the Environmental Condition of Property

3.5.4.1 Petroleum, Oils, and Lubricants

POLs used within the State-owned land include engine fuels (gasoline, diesel, and jet fuel), motor oils, and lubricants. Fuel is brought onto the State-owned land, as needed, with portable secondary containment (USACE-POH & USAG-HI, 2017a). Vehicles on the State-owned land that are not used for transportation are empty shells for training purposes. POL wastes are collected and temporarily stored at the Cantonment within secondary containment for recycling per AR 200-1 and USAG-HI Regulation 200-4.

All refueling operations on PTA use mobile refuelers and fuel storage tanks/bladders. Mobile refuelers and fuel storage tank trucks/bladders (with more than 55-gallon capacity) support the refueling of military vehicles and aircraft and are operated at established FARPs during tactical operations and exercises.

FARP 18 (located on TA 5), encompasses four FARP points and allows for rapid re-fueling and re-arming of helicopters and tilt-rotor aircraft during training (USACE-POH & USAG-HI, 2017a). No fuel is permanently stored within the State-owned land as fuel is brought in, as needed, and stored within portable secondary containment (USACE-POH & USAG-HI, 2017a). During 2017, in support of the ECOP, the Army conducted a preliminary screening within areas of concern of the State-owned land. The preliminary screening included soil sampling at FARP 18 that indicated that concentrations of total petroleum hydrocarbons (TPH) as diesel range organics (DRO) and TPH as residual range organics exceeded DOH EALs and/or USEPA Region 9 RSLs and are considered contaminants of concern (COC) that potentially pose an unacceptable risk to site users. The TPH contamination was attributed to active training where aircraft refueling operations are performed (USACE-POH & USAG-HI, 2017b).

Storage Tanks

No known USTs are or were present within the State-owned land (USACE-POH & USAG-HI, 2017a). One 140-gallon diesel AST (PTA601-1) is located adjacent to Building 601, Emergency Generator Building (located at the boundary of TAs 4 and 5) (DOH & USEPA, 2019; USACE-POH & USAG-HI, 2017a). The AST is located on top of a four-sided, gravel filled, open-bottomed, concrete berm (USACE-POH & USAG-HI, 2017b). During the 2017 sampling effort for the ECOP, the TPH-DRO Exposure Point Concentration (EPC) result sample collected around the AST inside the enclosure fence line exceeded the DOH EALs for Leaching and Groundwater Protection; however, the result was below the DOH EAL for direct exposure and there are no established USEPA preliminary remediation goals for TPH-DRO for either direct exposure scenarios or protection of groundwater. Because direct exposure pathways for groundwater are considered incomplete within the State-owned land, an EPC exceedance of the DOH EALs for protection of groundwater was not considered to pose an unacceptable risk to human health (USACE-POH & USAG-HI, 2017b). Based on this result, TPH-DRO is not a COC at the sampled location (USACE-POH & USAG-HI, 2017b).

A 100- to 200-gallon fuel day tank for a generator is located on a concrete pad within the gravel parking lot of the BAX (on TAs 7 and 8). The day tank has secondary containment and was installed in 2012 (USACE-POH & USAG-HI, 2017a).

One leaking UST site is located in proximity to the State-owned land. It is located on the Cantonment at the U.S. Army Dining Facility, Building T-186 (DOH UST Identification 9-603074 under Release Identification 970101). The 250-gallon diesel UST was taken out of service in 1994, and the DOH issued a Site Cleanup Completed No Further Action status as of December 31, 2001 (DOH-SHWB, 2020). The

leaking UST is not anticipated to have an adverse environmental impact on the State-owned land based on its regulatory status (USACE-POH & USAG-HI, 2017a).

Washracks, Sediment Basins, and Oil Water Separators

Washracks, sediment basins, and oil water separators are used on PTA to separate oil, fuel, and grease from water using gravity because these substances have a specific gravity that is lower than that of water (e.g., gasoline floats on water). No washracks, sediment basins, or oil water separators are within the State-owned land (USACE-POH & USAG-HI, 2017a).

Convoys of Military Vehicles

Tactical military vehicle convoys traveling onto or off USAG-HI installations are equipped with spill recovery equipment and supplies to respond to small oil, radiator, or hydraulic fluid leaks. At a minimum, supplies include drip pans, absorbent pads, socks/booms, granular or other loose absorbent, durable plastic bags, broom, shovel, and containers for the used absorbent (USACE-POH & USAG-HI, 2017a).

Drum Storage

New and used POLs are stored in 55-gallon and smaller drums located throughout the installation including the State-owned land (e.g., FARP 18). Generally, only containers of 55 gallons or greater are required to have secondary containment; however, it is the USAG-HI policy to store single-wall containers in secondary containment or on containment pallets where possible. Typically, new petroleum products are issued to units in containers of five gallons or less; however, some maintenance bays also have a few 55-gallon drums of new material (USAG-HI, 2012).

Motor Pool Complexes and Maintenance Facilities

Motor Pool Complexes provide storage and maintenance for tactical, construction, and utility vehicles as well as associated equipment such as trailers used by Army and USAG-HI activities. Other field maintenance facilities maintain associated equipment such as fuel bladders and power generators or perform tasks such as jet engine testing and painting that are outside the scope of Motor Pool Complexes maintenance (USAG-HI, 2012). POL and other chemical products used to maintain the vehicles and other equipment are stored at these maintenance shops. Maintenance at various levels includes fluid changes, component replacement, and technical inspections. Used POL and chemical products are stored at PTA and collected for disposal at regular intervals (USAG-HI, 2012).

Several maintenance facilities are located within the State-owned land including at the BAX Complex within TAs 7 and 8, FARP 18 on TA 5, and Cooper Air Strip (USAG-HI, 2012). The BAX maintenance building is used for maintenance of moving target equipment, draining of fluids from target vehicles was conducted within FARP 18, and maintenance of unmanned aircraft is conducted at Cooper Air Strip (USACE-POH & USAG-HI, 2017a).

3.5.4.2 Hazardous Waste Storage

There are limited temporary storage facilities for hazardous wastes on the State-owned land. Hazardous wastes are collected by the PTA Directorate of Public Works (DPW) Environmental Compliance office and

stored at the Cantonment (USACE-POH & USAG-HI, 2017a). PTA has an actively managed environmental compliance office. Staff identify, track, and document hazardous wastes.

3.5.4.3 Other Contaminated Areas of Concern

Current Burn Pan Area (South of TA 13)

The current burn pan is within PTA immediately south of TA 13 along the southern boundary of the State-owned land. The burn pan is a low-lying rectangular-shaped area located on a graded 'a'a lava flow. The burn pan has been in operation since the late 1990s/early 2000s. Military units dispose of excess propellant bags/increments incidental to artillery firing training through on-site powder burns at the completion of training. During the 2017 ECOP sampling, naphthalene and copper EPC results from soil samples collected in this area exceeded the USEPA RSLs for Risk-Based Soil Screening Level; however, none of these metals are COCs on the basis of this screening level exceedance because the pathway for leaching to groundwater is considered incomplete within the State-owned land (USACE-POH & USAG-HI, 2017b). Additionally, the EPCs for naphthalene and copper are below the DOH EALs for the protection of groundwater.

Former Debris Pile (TA 21)

Historically, metals, small arms casings, and miscellaneous debris were observed at the site that was attributed to being dumped from the adjacent road embankment (USACE-POH & USAG-HI, 2017b). The majority of the waste has been removed and the area has evidence of site grading activities being performed. The area is primarily lava flows (pahoehoe) and crushed lava. There is little to no soil or vegetation present. During the 2017 ECOP sampling, naphthalene and copper EPC results from soil samples collected in this area exceeded the USEPA RSLs for Risk-Based Soil Screening Level; however, none of these metals are COCs on the basis of this screening level exceedance because the pathway for leaching to groundwater is considered incomplete within the State-owned land (USACE-POH & USAG-HI, 2017b). Additionally, the EPCs for naphthalene and copper are below the DOH EALs for the protection of groundwater.

Battle Area Complex V-10 (TA 7/8)

The BAX V-10 is located at the boundaries of TAs 7 and 8 and contains approximately 115 active target areas that are actively used for practice. The BAX was constructed within the past 13 years and consists of a graded gravel roadway to a series of automated target areas. The BAX V-10 is used for aerial target practice for helicopter gunships. Samples collected from the BAX Target V-10 area contained concentrations of COCs (antimony, lead, and zirconium) that potentially pose unacceptable risks to site users (USACE-POH & USAG-HI, 2017b). The risk posed by COCs are through a direct exposure pathway and are unlikely to mobilize off-site.

3.5.4.4 Pesticides

The DoD has historically applied pesticides around the base of concrete pads to prevent insect infestation to structures. There are few, if any, older permanent structures within the State-owned land. The majority of buildings were constructed in the last 20 years, so there is a lower chance that pesticides were used around these buildings. Pesticides at PTA are managed by the DPW in accordance with the USAG-HI

Integrated Pest Management Plan and are stored within the U.S. Government-owned land (USAG-HI, 2014). No pesticide mixing or storage facilities are located on the State-owned land.

Herbicides have been used to control invasive species at PTA within the endangered species critical habitat areas located on TAs 18 through 22 (USACE-POH & USAG-HI, 2017a).

Fuel breaks, fence lines, and ASR locations may also have been sprayed with herbicide (USACE-POH & USAG-HI, 2017a). An ASR is defined as a 100-meter buffer around all known individual plants at sites selected for management and may be fenced. Existing roads are used for fuel breaks and are established along the western border of TAs 20 and 22, and along the eastern border and along Kipuka Road in TA 18.

The PTA NRO staff are required to follow state and federal regulations and label directions for all pesticide applications. Restricted pesticides are used by a certified pesticide applicator. The NRO also produces a monitoring and spraying program for each threat category and maintains copies of monitoring and spraying schedules, location of treatment, plant species treated, threat/pest treated, last time sprayed, and chemicals used for Army review (USAG-HI & USARPAC, 2013).

3.5.4.5 Hazardous and Toxic Waste

No hazardous or toxic waste is allowed to be disposed of within State-owned land. All hazardous and toxic wastes are collected by PTA DPW Environmental staff and stored in the approved, maintained, designated hazardous waste storage unit on the Cantonment before being containerized and removed from the facility for disposal off-island. PTA is listed as a Conditionally Exempt Small Quantity Generator under Site ID HIR000000703 (USEPA, 2021a).

3.5.4.6 Asbestos-Containing Material

Only one permanent structure on the State-owned land was constructed prior to the phase out of asbestos-containing materials (roughly 1973-1990)—a small single-story, poured concrete guard shack that is estimated to have been constructed in the late 1940s to 1950s. Construction of this structure predates the lease (USACE-POH & USAG-HI, 2017a). The other structures on the State-owned land were constructed between 1984 and 1987.

3.5.4.7 Mold

There are few permanent structures on the State-owned land. The low average rainfall that falls in the area prohibits mold growth.

3.5.4.8 Polychlorinated Biphenyls

Oil cooled pad-mounted electrical transformers are in use throughout the installation. Pad-mounted transformers typically have a coolant capacity ranging from 55 up to several hundred gallons. Transformers are cooled with a non-PCB mineral oil solution. Based on a PCB survey conducted in the early 1990s, no transformers containing PCBs were located on the State-owned land (USACE-POH & USAG-HI, 2017a). Two non-PCBs transformers are located on the State-owned land, including the pole-mounted transformer located adjacent to Building 601 (at the boundary of TA 4 and 5), likely installed during the mid-1990s, and the non-PCB pad-mounted transformer located in the BAX gravel parking lot (at the boundary of TA 7 and 8) that was installed in 2012.

Typically, discharges from pad-mounted transformers are small quantities, resulting from slow corrosion of transformer components due to weather exposure. Slow discharges tend to be absorbed rapidly into the soil surrounding the transformer pad and have minimal potential of entering waterways or storm drainage systems. Catastrophic failure and release of the full contents of a transformer is likely only in the event of a vehicular collision; however, most transformers are located away from roadways or are protected by collision obstacles or curbing.

Aside from a few exceptions, transformers are not equipped with secondary containment structures, dikes, or berms. Because early detection is the key to minimizing potential environmental pollution caused by leaking transformers, USAG-HI conducts regular inspections of all pad-mounted transformers (USAG-HI, 2012).

3.5.4.9 Lead

Lead sources can include LBPs and military munitions. Lead was a major ingredient in house paint used throughout the country for many years. LBP is defined as any paint or surface coating that contains more than 0.5 percent lead by weight. Buildings constructed before 1978 are considered a risk for LBP. One structure on the State-owned land was constructed prior to 1978; a single-story, poured concrete wall guard shack (located on TA 6) constructed in the late 1940s to 1950s, prior to the lease.

Lead associated with military munitions is discussed in **Section 3.5.4.11**.

3.5.4.10 Radon

Radon is a naturally occurring, slightly radioactive gas that is produced by the decay of rock containing uranium and radium. Radon collects in rooms that are in contact with the ground, like basements (USEPA, 2021b). Radon occurs in low concentrations in the Hawaiian Islands (Zone 3 – predicted average indoor radon screening levels less than two picocuries per liter) and is not considered a specific risk to this area (USEPA, 2021c).

3.5.4.11 Military Munitions and Munitions and Explosives of Concern

Military munitions at PTA are managed via the ASP and the Training Support System, which are licensed by the DDESB and sited and built to meet regulatory requirements for net explosive weight, compatibility, and quantity-distance for ammunition storage and handling. The ASP, located on State-owned land, is a safe and secure storage facility that receives, stores, issues, and maintains accountability of ammunition at PTA. Military munitions are brought to PTA from O'ahu for training exercises. No military munitions are stored permanently on PTA. The ASP is critical to support training operations at PTA. The Training Support System sites within the State-owned land consist of two AHAs and two FARPs. AHAs are temporary sites close to the range or TA where military munitions are issued and turned-in by the individual or crew that will use them. AHAs are licensed and must comply with regulatory requirements. FARPs are used to arm and fuel helicopters and tilt-rotor aircraft during training operations. Locations of the ASP and AHAs are not disclosed in this EIS for security reasons.

Live-fire exercises occur at TAs, FPs, and ranges across the State-owned land. Firing of military munitions into the State-owned land is limited to non-dudding (non-exploding), small arms (30 millimeter or less) ammunition in Parcel A (DLNR, 1964). Pyrotechnics and simulators are also used within approved portions of the State-owned land. Other military munitions (e.g., mortar and artillery rounds) are fired from the

State-owned land into the impact area, which is on U.S. Government-owned land. Following training activities, Soldiers are required to collect casings from spent rounds, wood boxes, and other solid waste debris generated during live-fire training and return them to the AHAs and ASP for recycling or disposal, as appropriate. Range Operations personnel oversee cleanup of ranges when the Soldiers have completed their training. Despite cleanup efforts, erratic bullets and gun components have been found on the TAs, FPs, and ranges. The types of military munitions that have been used on the State-owned land include small caliber, large caliber, pyrotechnics, obscurants, recoilless rifle projectiles, rifle grenades, rockets, mortars, and artillery (USACE-POH & USAG-HI, 2017a).

Use of military munitions potentially leaves behind MC that may represent a potential threat to soil and groundwater quality. Lead is the primary COC from small caliber munitions, while copper, antimony, zinc, and tungsten are other contaminants commonly associated with small caliber munitions. The high explosives used in medium and large caliber munitions may result in the release of compounds such as cyclotrimethylenetrinitramine, cyclotetramethylenetetranitramine, and trinitrotoluene, and the propellants for these munitions may release 2,4-dinitrotoluene, 2,6- dinitrotoluene, and nitroglycerin. Perchlorate compounds are commonly released from the use of pyrotechnics, and white phosphorus is commonly released from many obscurants. Pentaerythritoltetranitrate is a component of detonation cords and is possible on ranges where demolition training has been conducted (USACE-POH & USAG-HI, 2017a).

Mobilization of MCs typically occurs from surface water flow. The surface water carries the contaminants onto nearby soils where soil erosion and deposition further extend the range of the contamination. Contaminants in surface water also can infiltrate to groundwater. There are limited surface water and groundwater pathways on PTA because of low rainfall, lack of perennial streams, and the deep depth to the groundwater aquifer; therefore, the migration of MCs is limited (USACE-POH & USAG-HI, 2017a).

As stated previously, military munitions use occurs on TAs, FPs, and ranges; therefore, these locations have potential to contain MEC. The 2017 ECOP for the State-owned land identified the FPs within TAs 9, 12, and 13 as generally having received the greatest use and having the greatest potential to contain MEC (USACE-POH & USAG-HI, 2017a). Soil sampling has not been performed on all the TAs, FPs, and ranges to determine the presence or absence of MCs.

The 2017 ECOP for the State-owned land also identified three former ranges of special significance for MEC. These ranges are a Former Bazooka Range, Former Tank Gunnery Range, and Potential Former Burn Pan. No land use restrictions have been imposed on any of these sites. Each site is shown on **Figure 3-7** and described as follows:

- The Former Bazooka Range, including the High Mortar Concentration Area, is on TA 17 and measures approximately 60 acres. It was labeled on historical maps from 1959 and 1965 as the “Rocket Launcher and Practice Range.” The site used a rail mounted moving target for weapons practice. In 2015, the site underwent a surface only cleanup action that removed over 1,000 pounds of visible munitions debris. The debris was heavily concentrated within an 11-acre central location (USACE-POH & USAG-HI, 2017a). Subsurface military munitions have not been addressed. In 2017, surface soil at this site was sampled and analyzed for explosive material and MC metals. Analysis of the soil samples detected concentrations of MC metals above USEPA Region 9 RSLs for Risk Based Soil Screening for protection of groundwater but below State DOH Tier 1 EALs. The metals were either below background levels or only above protection of groundwater screening levels. Due to the arid conditions, lack of streams, and depth of groundwater at the site, which

creates a low potential for contaminant mobilization via leaching, as well as the lack of groundwater wells and surface water development in the State-owned land, the metals are not considered COCs that potentially pose unacceptable risk to site users and warrant further investigation. Subsurface soils were not evaluated because historical records and land use did not suggest that subsurface soil impacts have occurred (USACE-POH & USAG-HI, 2017b).

- The Former Tank Gunnery Range is on TA 12 to the north of the MOUT Area. This site was operational as a tank gunnery range in the 1950s and possibly up until the early 1960s based on a 1959 historical map (USACE-POH & USAG-HI, 2017a). There are no records of a cleanup action being performed at this site. In 2017, surface soil at this site was sampled and analyzed for explosive material and MC metals. The soil samples contained no concentrations of these contaminants above USEPA Region 9 RSLs or State DOH Tier 1 EALs. Subsurface soils were not evaluated because historical records and land use did not suggest that subsurface soil impacts have occurred (USACE-POH & USAG-HI, 2017b).
- A Potential Former Burn Pan is on TA 9. This site was identified on a 1959 historical map as an “Impact Area: Infantry and Armor Tactical Exercises Only.” A portion of the site was used for cinder mining. Approximately 0.4 acre of the site was used as a burn pan prior to the mid-1990s. A burn pan is an area where excess military munition propellant is ignited for disposal. It is unknown what materials were disposed of at this site. In 2017, surface soil at this site was sampled and analyzed for polycyclic aromatic hydrocarbons, explosive material, and MC metals. The soils samples contained concentrations of naphthalene (a polycyclic aromatic hydrocarbon) and copper (a metal) above the USEPA Region 9 RSLs but below State DOH Tier 1 EALs. Additionally, copper is not a concern because the pathway for leaching to groundwater is incomplete due to site conditions and the lack of groundwater wells and surface water development in the State-owned land. Therefore, neither naphthalene nor copper is considered a COC that potentially poses unacceptable risk to site users and warrants further investigation. Subsurface soils were not evaluated because historical records and land use did not suggest that subsurface soil impacts have occurred (USACE-POH & USAG-HI, 2017a; USACE-POH & USAG-HI, 2017b).

While all military munitions used on the State-owned land were targeted to an intended destination, it is possible that not all of the military munitions reached their intended destination, and some may have impacted the State-owned land. During the construction of the DKI Highway, subsurface investigations identified MEC including mortars. Therefore, there is a potential for MEC to be found anywhere on the State-owned land. If MEC is discovered, the Army immediately responds and deactivates and removes the item (USACE-POH & USAG-HI, 2017a).

3.5.4.12 Radioactive Materials

The Army used the Davy Crocket Weapons System at PTA from 1962 to 1968. The system consisted of a 120-millimeter or 155-millimeter recoilless rifle with a range of up to 2.5 miles. The system was capable of firing a nuclear projectile (M388) and a high explosive filled practice projectile (M390); however, only the high explosive filled practice projectile (M390) was used at PTA. Before firing the practice projectile, a 20-millimeter spotting round (M101) was fired to aim the weapon system. The spotting rounds consisted of a nosecone, body, and tailfin. The body of the spotting round was made of a depleted uranium (DU) alloy. Each spotting round contained approximately 0.5 pounds of D38 uranium alloy (92% DU and 8% molybdenum). The spotting round was a low velocity projectile designed to produce a small cloud of smoke and typically broke into large fragments upon impact. The spotting rounds did not aerosolize upon

impact (NDCEE, 2008; USACE-POH & USAG-HI, 2017a). DU is leftover uranium after the fuel and weapons grade isotopes of the metal are removed during the refinement process. It is 40 percent less radioactive than naturally occurring uranium and emits low energy alpha particles, which do not penetrate skin (Waikī'i Ranch Homeowners' Association, 2008). The Davy Crocket Weapons System was fired on four ranges at PTA. Approximately 30 to 100 DU spotting rounds could have been fired at each range. Each range consisted of a firing location and an impact location. The projectiles were fired from the firing locations to the impact locations. All of the impact locations are within PTA's impact area, which is on U.S. Government-owned land. Surveys of the four ranges located one spotting round (intact) within one of the impact locations within the impact area (USDHHS, 2008).

One of the four ranges where the Davy Crocket Weapons System was fired is partially on the State-owned land (i.e., Range 13 on TA 9). The FP for this range was on State-owned land and the impact area was on U.S. Government-owned land. The range impact area has the greatest potential for spotting round MEC. The other three ranges are entirely on U.S. Government-owned land (USACE-POH & USAG-HI, 2017a).

The Army performed a series of health and risk assessments from 2008 to 2010 to determine the potential impacts on human health from past use of DU at PTA. Each assessment determined that there are no likely adverse impacts to persons working on or living near PTA from past use of DU. The assessments concluded that off-installation populations would not be affected because of the ranges' distance to populated areas and the restricted access of PTA prevents the general population from exposure. If the land use of the DU ranges remains military, DU cleanup is not necessary. The FPs where the spotting rounds were fired from have since reopened, but DU-containing military munitions are no longer used at PTA. Per DODD 4715.11, *Environmental and Explosives Safety Management on Operational Ranges Within the United States*, paragraph 5.4.9.2, high-explosive munitions shall not be fired into the same area as DU (e.g., the impact area for these four ranges). (HQDA, 2010; USACE-POH & USAG-HI, 2017a).

In 2011, the DU health and risk assessment data and analysis were presented to the Nuclear Regulatory Commission (NRC). The NRC issued a license to PTA in 2013 for possession of DU related to former training with the Davy Crocket Weapons System. The license covers the entire area of all four ranges (FPs and impact areas) and does not distinguish between the State-owned land and U.S. Government-owned land. Under this license, the Army follows approved Safety and Environmental Radiation Monitoring plans to monitor potential DU migration by sampling groundwater and surface water in the vicinity of the ranges. The license requires the Army to comply with NRC regulations and standards for protecting the public and the environment from potential radiation and is subject to NRC inspections and periodic reviews. These requirements are meant to ensure the DU will not pose a future health risk. The license does not authorize the Army to use DU or decommission the ranges. Any cleanup would require additional review and approval by the NRC to ensure that public health and safety would continue to be protected (USARHAW, 2020).

In 2007, soil samples collected from the perimeter of the impact areas on the ranges found no indication of DU from the spotting rounds. Most soil types in Hawai'i bind uranium to the soil particles, which limits uranium mobility (USACE-POH & USAG-HI, 2017a). Monitoring data indicates no measurable migration of DU to nearby surface water (USARHAW, 2020). Fugitive dust downwind of the ranges was suspected to have higher than average levels of uranium. The Army completed a 1-year airborne uranium monitoring program in 2009 to determine if the decay and vaporization of DU fragments has impacted local air quality. The monitoring program collected 210 air samples from three sites upwind and downwind of PTA to provide a basis of comparison. The monitoring program concluded that the DU had not impacted air

quality at PTA or in the surrounding area because the total airborne uranium levels in the collected particulate matter samples were within the range of naturally occurring uranium in Hawaiian soils and rock and were several orders of magnitude below U.S. and international chemical and radiological health guidelines (USACE-POH & USAG-HI, 2010).

The DOH concurred that the current land use of the four ranges does not present a risk to users and off-installation populations (USACE-POH & USAG-HI, 2017a).

3.5.5 Methodology and Significance Criteria

This section outlines the methods and criteria used in **Section 3.5.6** to assess potential significant impacts due to hazardous and toxic materials and wastes. The Army reviewed and evaluated the baseline data to evaluate the types, quantities, and locations of hazardous and toxic materials and wastes as well as known or potentially contaminated areas on PTA for the environmental analysis.

The criteria considered to assess whether an alternative would result in potential significant impacts due to hazardous and toxic materials and wastes include the extent or degree to which an alternative would result in the following:

- An increase in the risk of a spill or release of a hazardous substance (as defined by 40 CFR Part 302 (CERCLA) or 40 CFR Parts 110, 112, 116, and 117 [CWA]) such that existing management plans and procedures are not sufficient to mitigate the risk and additional measures must be established
- Impact(s) to contaminated sites or the progress of remediation activities to a degree that would require consequential regulatory re-negotiation of selected site remedies or substantial delays to existing remediation plans
- An increase in the generation of hazardous substances to a crucial level such that existing management plans and procedures, waste handling contracts, and disposition alternatives must be substantially altered
- Exposure of military personnel or the public to areas likely containing MEC.

3.5.6 Environmental Analysis

3.5.6.1 Alternative 1: Full Retention

Under Alternative 1, no changes in use or new impacts to hazardous and toxic materials and wastes would occur. Continued long-term, minor, adverse impacts from ongoing generation, handling, and disposal of hazardous and toxic materials and wastes would occur. These impacts would continue to be managed through the regulatory requirements discussed in **Section 3.5.2** and established planning documents including the PTA SPCCP, Integrated Pest Management Plan, and Installation Hazardous Waste Management Plan. In addition, the Army would continue ongoing activities in accordance with Army requirements (i.e., AR 200-1 and Army Pamphlet 710-7) and PTA External Standard Operating Procedures (USAG-PTA, 2018a). These documents include general and site-specific BMPs designed to identify, evaluate, protect, and minimize impacts to natural resources by implementing procedures for the safe handling, distribution, and disposal of hazardous and toxic materials and wastes.

No structures containing asbestos would be remodeled or demolished within the State-owned land under Alternative 1.

Military Munitions and MEC. Full retention of the State-owned land would enable the continuation of ongoing live-fire training exercises on the State-owned land in accordance with range operations procedures. The types, quantities, storage, and expenditures of military munitions on the State-owned land would not change.

Military munitions use during training would continue to have a minor potential to impact soil and groundwater quality because there are limited surface water and groundwater pathways on the State-owned land and impact area (U.S. Government-owned land) and the Army would continue to follow range debris cleanup procedures. The Army would continue to manage MEC on the State-owned land, including the deactivation and removal of UXO. Contamination from ongoing training would continue but would be minimized with the constant management of MEC on the State-owned land and through established programs. Such programs include the Integrated Training Area Management (ITAM) Monitoring System, which identifies areas in need of land restoration, and the Range and Training Land Program, which provides centralized management for Army live-fire ranges and maneuver areas. Alternative 1 would result in continued long-term, minor, adverse impacts from ongoing use of military munitions and generation and handling of MEC.

If the State-owned land were to be retained via lease, it is assumed a lease compliance monitoring plan would be implemented by DLNR to confirm lease compliance, particularly with respect to military munitions and MEC.

Radioactive Materials. Full retention of the State-owned land would not change the Army's DU management practices on PTA, including at the portion of the former Davy Crocket Weapon System Range on the State-owned land (Range 13 on TA 9) where DU-containing spotting rounds formerly were fired.

The Army would continue to follow PTA's NRC license for the possession of DU and follow approved Safety and Environmental Radiation Monitoring plans to monitor potential DU migration. The Army would continue to comply with NRC regulations and standards for protecting the public and the environment from future health risk from radiation and be subject to NRC inspections and periodic reviews, including on the State-owned land. As such, no new impacts would occur from the management of existing DU. Continued long-term, minor, adverse impacts from ongoing management of DU would occur. **Section 3.6** provides details regarding DU impacts on air quality.

Other Hazardous and Toxic Materials and Wastes. Long-term, minor, adverse impacts from pollutant migration due to erosion and runoff from maneuver training would continue to have a less than significant impact as stormwater runoff is infrequent and tends to rapidly infiltrate into crevices of the highly permeable lava flows. Due to the depth of groundwater beneath the State-owned land, impacts to groundwater infiltrated from surface water containing pollutants from training would continue to be less than significant. No new adverse impacts increasing the risk of endangerment or exposure to the public or environment would occur.

Summary of Impacts: Alternative 1 would result in no new impacts from hazardous or toxic materials and wastes. Continued long-term, minor, adverse impacts from ongoing activities would be minimized through established programs to manage hazardous and toxic wastes, contamination, and MEC. The Army would continue to comply with NRC regulations and standards for protecting the public and the environment from health risks associated with the past use of DU. The impacts from Alternative 1 would be less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.5.6.2 Alternative 2: Modified Retention

Land Retained

Under Alternative 2, no new impacts would occur, but long-term, minor, adverse impacts from the ongoing generation, handling, and disposal of hazardous and toxic materials and wastes would continue due to ongoing activities within the State-owned land retained. Impacts for the land retained would be the same as under Alternative 1.

Land Not Retained

New long-term, minor, beneficial impacts would occur from the elimination of the generation, handling, and disposal of hazardous and toxic materials and wastes associated with ongoing activities on the State-owned land not retained. The State-owned land not retained is rarely used for military training; therefore, the elimination of the generation, handling, and disposal of hazardous and toxic materials and wastes would be a long-term, minor, beneficial impact.

Military Munitions and MEC. While the 3,300 acres of land not retained under Alternative 2 is not currently used for live-fire training exercises, there is the potential for MEC to be found anywhere on the State-owned land because of the prolonged history of PTA for live-fire military training.

Following lease expiration and in accordance with the lease or otherwise negotiated with the State, the Army would conduct various lease compliance actions such as removing weapons and spent shells. The Army would adhere to applicable Army, federal, and state laws regarding investigation, removal, and cleanup of MEC. These actions would result in new long-term, minor, beneficial impacts from reduced potential for exposure to MECs. Actions required under CERCLA would be coordinated with the DOH.

Radioactive Materials. The State-owned land not retained does not include the former FP for the Davy Crocket Weapon System Range on Range 13 on TA 9 or any other range where DU-containing spotting rounds formerly were fired. Consequently, no impacts from the former use of DU on PTA would occur on the State-owned land not retained.

Other Hazardous and Toxic Materials and Wastes. No government vehicles would traverse through the State-owned land not retained, which would eliminate associated spills or leaks. In addition, the ceased military activities would end the use of hazardous and toxic materials such as pesticides within the State-owned land not retained, leading to no potential exposure from these materials.

Following lease expiration, including any lease compliance actions, the Army would adhere to applicable Army, federal, and state laws regarding investigation, removal, and cleanup of hazardous and toxic materials and wastes. These actions would result in long-term, minor, beneficial impacts from reduced potential for exposure to hazardous and toxic materials and wastes. Actions required under CERCLA would be coordinated with DOH.

Summary of Impacts: Alternative 2 would result in no new adverse impacts from hazardous and toxic materials or waste management operations or an increase in the exposure of or risk to the public or environment within the ROI. Impacts for land retained would be the same as described for Alternative 1 (continued long-term, minor, adverse). New long-term, minor, beneficial impacts would occur from the elimination of the use generation, handling, and disposal of hazardous and toxic materials, including MEC, within the State-owned land not retained. New, long-term, minor beneficial impacts would occur from the lease compliance and MEC compliance actions. No impacts from the former use of DU on PTA would occur. Overall, impacts from Alternative 2 would be beneficial and less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.5.6.3 Alternative 3: Minimum Retention and Access

Land Retained

Under Alternative 3, the Army would continue activities on the retained State-owned land (approximately 10,100 acres). No new impacts would occur, but long-term, minor, adverse impacts from the ongoing generation, handling, and disposal of hazardous and toxic materials and wastes would continue due to ongoing activities within the State-owned land retained. Impacts for the State-owned land retained would be the same as under Alternative 2.

Land Not Retained

New long-term, minor to moderate, beneficial impacts would occur from ceased military activities and cleanup of contamination, including MEC, on the State-owned land not retained.

The State-owned land not retained is moderately used for military training purposes; therefore, the elimination of generation, handling, and disposal of hazardous and toxic materials and wastes associated with ongoing activities within the State-owned land would be a moderate, beneficial impact. Areas of concern within the State-owned land not retained include several FPs and the Former Bazooka Range and High Mortar Concentration Area on TA 17.

Military Munitions and MEC. New long-term, minor to moderate, beneficial impacts would occur from stopping live-fire training within the State-owned land not retained and identifying, removing, and remediating potential MEC from the State-owned land not retained. Live-fire exercises within the land not retained would cease by the lease expiration date. As such, no further MEC would be introduced on the State-owned land not retained. The 2017 ECOP for the State-owned land identified the TAs, FPs, and ranges and the Former Bazooka Range (TA 17) as specific sites on the land not retained where MEC may be present; however, there is the potential for MEC to be found anywhere on the State-owned land because of the prolonged history of PTA for live-fire military training.

Following lease expiration and in accordance with the lease or otherwise negotiated with the State, the Army would conduct various lease compliance actions such as removing weapons and spent shells. The Army would adhere to applicable Army, federal, and state laws regarding investigation, removal, and cleanup of MEC. These actions would result in long-term, minor to moderate, beneficial impacts from reduced potential for exposure to MECs. Actions required under CERCLA would be coordinated with the DOH.

Radioactive Materials. The State-owned land not retained does not include the former FP for the Davy Crocket Weapon System Range on Range 13 on TA 9 or any other range on PTA where DU-containing spotting rounds formerly were fired. Consequently, no impacts from the former use of DU on PTA would occur on the State-owned land not retained.

Other Hazardous and Toxic Materials and Wastes. No government vehicles would be traversing through the State-owned land not retained, which would eliminate associated spills or leaks. In addition, the ceased military activities would end the use of hazardous and toxic materials such as pesticides within the State-owned land not retained, leading to no potential for exposure from these materials.

Following lease expiration, including any lease compliance actions, the Army would adhere to applicable Army, federal, and state laws regarding investigation, removal, and cleanup of hazardous and toxic materials and wastes. These actions would result in long-term, minor to moderate, beneficial impacts from reduced potential for exposure to hazardous and toxic materials and wastes. Actions required under CERCLA would be coordinated with the DOH.

Summary of Impacts: Alternative 3 would result in new long-term, minor to moderate, beneficial impacts from reduced activities, implementation of lease compliance actions, reduction of the generation of hazardous waste and hazardous waste management requirements, and identifying, removing, and remediating potential MEC from the State-owned land not retained. There would be no new adverse impacts on hazardous and toxic materials or waste management operations or increase in the exposure of or risk to the public or environment within the ROI. Impacts for land retained would be the same as described for Alternative 2. No impacts from the former use of DU on PTA would occur. Overall, impacts from Alternative 3 would be beneficial and less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.5.6.4 No Action Alternative

Under the No Action Alternative, the Army would cease activities on all State-owned land, effectively halting the generation, handling, and disposal of hazardous and toxic materials and wastes associated with military activities within the State-owned land resulting in new long-term, moderate, beneficial impacts.

Military Munitions and MEC. New long-term, minor, beneficial impacts would occur from stopping military munitions storage at the ASP, two AHAs in State-owned land, and one AHA in U.S. Government-owned land to the south that would be inaccessible due to lack of land access.

New long-term, moderate, beneficial impacts would occur from stopping live-fire training within the State-owned land, as well as within the impact area and training ranges to the south due to lack of land access, and identifying, removing, and remediating potential MEC from the State-owned land. Live-fire exercises on the State-owned land would cease by the lease expiration date. As such, no further MEC would be introduced on the State-owned land. The 2017 ECOP for the State-owned land identified the TAs, FPs, and ranges; Former Bazooka Range (on TA 17); Former Tank Gunnery Range (on TA 12); and Potential Former Burn Pan (on TA 9) as specific sites where MEC may be present; however, there is the potential for MEC to be found anywhere on the State-owned land because of the prolonged history of PTA for live-fire military training.

Following lease expiration and in accordance with the lease or otherwise negotiated with the State, the Army would conduct various lease compliance actions such as removing weapons and spent shells. The Army would adhere to applicable Army, federal, and state laws regarding investigation, removal, and cleanup of MEC. These actions would result in new long-term, moderate, beneficial impacts from reduced potential for exposure to MECs. Actions required under CERCLA would be coordinated with the DOH.

Radioactive Materials. New long-term, minor, beneficial impacts would occur from decommissioning the portion of the former Davy Crocket Weapon System Range on the State-owned land (i.e., the FP for Range 13 on TA 9). That portion of the former Davy Crocket Weapon System Range would not be retained under the No Action Alternative. The Army would decommission that portion of the range and perform DU investigation and cleanup protocols, if needed. Decommissioning would be coordinated with the NRC to ensure that public health and safety would continue to be protected if cleanup is needed. The No Action Alternative would not change the Army's DU management practices at the portion of Range 13 on U.S. Government-owned land (i.e., the impact area). **Section 3.6** provides additional discussion regarding DU impacts on air quality.

Other Hazardous and Toxic Materials and Wastes. The No Action Alternative would not result in new adverse impacts from hazardous and toxic materials or waste management operations or increase the exposure of or risk to the public or environment within the ROI. No government vehicles would traverse through the State-owned land, which would eliminate associated spills or leaks. In addition, the ceased military activities would end the use of hazardous and toxic materials such as pesticides within the State-owned land not retained, leading to no potential for exposure from these materials. Ceased military operations on the State-owned land under the No Action Alternative would require decommissioning of the AST (at the boundary of TAs 4 and 5), BAX (that overlaps areas on TAs 7 and 8), FARP 18 (on TA 5), Current Burn Pan Area (TAs 13), and Former Debris Pile (on TA 21).

Following lease expiration, including any lease compliance actions, the Army would adhere to applicable Army, federal, and state laws regarding investigation, removal, and cleanup of hazardous and toxic materials and wastes. Actions required under CERCLA would be coordinated with the DOH. These actions would result in new long-term, moderate, beneficial impacts from reduced potential for exposure to hazardous and toxic materials and wastes.

Summary of Impacts: The No Action Alternative would result in new long-term, moderate, beneficial impacts from the elimination of military activities that could cause new contamination to the land, and through the implementation of actions required under CERCLA as coordinated with the DOH. There would be no new adverse impacts from hazardous and toxic materials or waste management operations. Long-term, moderate, beneficial impacts would occur from removing hazardous materials and wastes; identifying, removing, and remediating potential MEC and soil and groundwater contamination; and decommissioning the portion of the former Davy Crocket Weapon System Range on the State-owned land (i.e., the FP for Range 13 on TA 9). Overall, impacts from the No Action Alternative would be beneficial and less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.6 Air Quality and Greenhouse Gases

3.6.1 Definition

Air quality is defined by the concentration of various pollutants in the atmosphere at a given location. Air quality is dependent on the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological and weather conditions.

Greenhouse gases (GHGs) are compounds found naturally within the Earth's atmosphere that trap and convert sunlight into infrared heat. Increased levels of GHGs have been correlated to a greater overall temperature on Earth and global climate change. Global climate change refers to long-term fluctuations in temperature, precipitation, wind, sea level, and other elements of Earth's climate system. The most common GHGs emitted from natural processes and human activities include carbon dioxide (CO₂), methane, and nitrous oxide. CO₂ is the primary GHG emitted by human activities in the U.S., with the largest source generated from fossil fuel combustion. Scientific evidence indicates a trend of increasing global temperature over the past century because of an increase in GHG emissions from human activities. The climate change associated with this global warming is predicted to produce negative economic and social consequences across the globe.

3.6.2 Regulatory Framework

Under the Clean Air Act, the USEPA has established national ambient air quality standards (NAAQS) for several different air pollutants that are considered harmful to public health and the environment. These pollutants, referred to as criteria pollutants, are sulfur dioxide (SO₂), nitrogen dioxide, carbon monoxide (CO), ozone (O₃), suspended particulate matter [measured less than or equal to 10 microns in diameter (PM₁₀) and less than or equal to 2.5 microns in diameter (PM_{2.5})], and lead. CO, SO₂, lead, and some particulates are emitted directly into the atmosphere from emissions sources. O₃, nitrogen dioxide, and some particulates are formed through atmospheric chemical reactions that are influenced by weather, ultraviolet light, and other atmospheric processes. Volatile organic compounds and nitrogen oxide emissions are used to represent O₃ generation because they are precursors to O₃. Since the phase-out of leaded fuels in the 1970s and 1980s, lead emissions have been negligible from the types of emission sources under this Proposed Action. As such, they are not included in this air quality analysis.

The NAAQS protect against adverse health and welfare impacts. Areas that are and have historically been in compliance with the NAAQS or have not been evaluated for NAAQS compliance are designated as attainment areas. Areas that violate a federal air quality standard are designated as nonattainment areas. Areas that have transitioned from nonattainment to attainment are designated as maintenance areas and are required to adhere to maintenance plans to ensure continued attainment. The USEPA General Conformity Rule applies to federal actions occurring in nonattainment or maintenance areas when the total direct and indirect emissions of nonattainment and maintenance pollutants (or their precursors) exceed specified thresholds. The General Conformity Rule does not apply in areas designated as attainment.

The Hawai'i DOH, Clean Air Branch (CAB) also regulates and monitors air pollutants under HAR Chapter 11-59, Ambient Air Quality Standards, and HAR Chapter 11-60.1, Air Pollution Control. The CAB has established its own ambient air quality standards for the criteria pollutants, and these standards are stricter than the NAAQS for some pollutants. The CAB also has promulgated an additional air quality

standard for hydrogen sulfide. Additional Hawai'i Air Pollution Control regulations are found in HRS Chapter 342B. Although not directly related to air quality, HRS Chapter 342C addresses O₃ layer protection, and Act 17 of Session Laws of Hawai'i 2018 requires this EIS to consider sea level rise.

Army Directive 2020-08, U.S. Army Installation Policy to Address Threats Caused by Changing Climate and Extreme Weather, requires Army installations to assess, plan for, and adapt to the projected impacts of changing climate and extreme weather by adding the results of climate change prediction analysis tools into all facility and infrastructure-related plans, policies, and procedures. The Army Climate Resilience Handbook, dated August 2020, instructs Army planners on the process to systematically assess climate exposure impact risk and incorporate these findings into the planning process. The Army uses the Army Climate Assessment Tool to identify potential climate change threats and rank the relative risk each threat presents to a given Army installation in 2050 and 2085. The Army Climate Assessment Tool also includes summaries of regional climate change impacts as developed by the U.S. Global Change Research Program.

In accordance with EO 13990, *Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis*, and the Army's 4 March 2021 memorandum titled Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in Army NEPA Reviews, this EIS follows CEQ's August 2016 guidance titled Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA Reviews. This EIS qualitatively addresses direct and indirect GHG emissions from the Proposed Action alternatives and the impacts of ongoing climate change on the Proposed Action alternatives. A quantitative, full life-cycle analysis of GHG emissions (i.e., CO₂, methane, and nitrous oxide emissions from direct Army activities on PTA as well as from indirect activities such as manufacturing and shipping equipment and materiel and troop movements to and from PTA) and their associated social costs has not been performed because there are no tools, methodologies, or data inputs reasonably available to support such calculations for a real estate transaction, such as the Proposed Action.

3.6.3 Region of Influence

Impacts on air quality from the emission of criteria pollutants are largely limited to the region or locality in which they are produced. As such, the ROI from the criteria pollutant emissions under the Proposed Action is the island of Hawai'i.

Unlike the criteria pollutants, GHGs are global pollutants that have no impact on local and regional air quality. GHGs contribute to the global GHG inventory, which cumulatively affects climate conditions worldwide. While the effects of climate change are felt worldwide, they differ greatly depending on the region or locality. Therefore, the ROI for the effects of climate change is the island of Hawai'i.

3.6.4 Existing Conditions

Regional Air Quality. The State lies within the Northern Hemisphere Hadley Cell, which is responsible for persistent northeast trade winds. These trade winds result in relatively good air quality for Hawai'i because there is limited opportunity for locally generated air pollutants to accumulate.

The DOH, CAB currently operates 11 monitoring stations on the island of Hawai'i to measure SO₂ and PM_{2.5} and monitor compliance with national and state ambient air quality standards. No monitoring stations are located within PTA, and the nearest air monitoring station is located in Hilo, approximately 25 miles from PTA (DOH-CAB, 2021).

Based on ambient air monitoring results, the USEPA has designated the entire island of Hawai'i as unclassified/attainment for all criteria pollutants (USEPA, 2020b). This designation means the General Conformity Rule is not applicable for federal actions occurring on PTA. The monitoring stations on the island of Hawai'i show no recent exceedances of the SO₂ and PM_{2.5} national and state ambient air quality standards (DOH-CAB, 2021).

Air Emission Sources at PTA. Air emission sources at PTA include exhaust from military vehicles, aircraft flight operations, liquefied petroleum gas-fired boilers servicing four buildings, and ten internal combustion engines; dust from vehicle use on gravel and dirt roads and near-ground helicopter operations; and military munitions use (USAG-HI, 2011). Additionally, a mobile rock crushing facility is occasionally brought in from Schofield Barracks Military Reservation and operated at PTA (USAG-HI, 2006). The installation's potential and actual air emissions were last enumerated in the 2010 air pollutant emission summary. These emissions have not appreciably changed since 2010 because installation activities have remained largely consistent and no additional major facilities have been constructed. These emissions are outlined in **Table 3-11**. Potential emissions are the maximum allowable emissions from a source, while actual emissions are the measured emissions that the source produced. These emissions are from stationary sources (i.e., boilers and engines) and military munitions use and do not include mobile emissions sources.

Air emission sources associated with training and other activities within the State-owned land include exhaust from military vehicles and aircraft flight operations, dust from vehicle use on gravel and dirt roads and near-ground helicopter operations, military munitions use, and a 45-kilowatt (kW) (60-horsepower) internal combustion engine for an emergency generator at Building 601. This engine has a permitted potential to operate for up to 500 hours per year but in actuality operates for approximately 18 hours per year (USAG-HI, 2011).

To remedy landfill POTA-06, which is on the State-owned land in TA 6, the Army at one time monitored methane emissions from the landfill. After eight sampling events indicated that no methane was being produced from the landfill, the DOH approved the elimination of methane monitoring in May 2012 (USAEC & USAG-HI, 2014).

Table 3-11 Potential and Actual Emissions from Pōhakuloa Training Area (2010)						
	Nitrogen Oxide	SO ₂	CO	Volatile Organic Compounds	PM ₁₀	CO ₂ e
Potential Emissions (tpy)	9.46	0.42	10.12	0.68	10.24	2,567.55
Actual Emissions (tpy)	0.70	0.01	3.77	0.02	4.86	36.17

Key: tpy = tons per year,
CO₂e = carbon dioxide equivalent

Source: USAG-HI, 2011

A short-term air monitoring program was performed at PTA during January 2006 to January 2007 to determine the impact of fugitive dust from training and other activities at PTA. Seven monitoring stations were located on the installation to monitor total suspended particulate matter and PM₁₀. The results from each monitoring station indicated levels of airborne particulate matter well below the USEPA and State 24-hour PM₁₀ ambient air quality standard of 150 micrograms per cubic meter. The sampling concluded

that there was a less than a 0.1 percent chance that the federal and state ambient air quality standard for PM₁₀ would be reached or exceeded (USACE-POH & USAG-HI, 2007). The Army follows a Dust and Soils Management and Monitoring Plan to identify, monitor, and minimize fugitive dust emissions from the installation. While the predominant source of fugitive dust emissions at PTA is maneuver activities on unpaved roads and trails, rotor downwash from helicopter activities has been identified as a lesser source. The Army can implement restrictions on helicopters hovering and landing if soil and atmospheric conditions indicate that excessive dust generation would occur (USAG-HI, 2006).

DU. As noted in **Section 3.5**, the Army used the Davy Crocket Weapons System at PTA from 1962 to 1968. The system used a 20-millimeter spotting round (M101) to show where the weapon system was aimed. This body of the spotting round was made of a DU alloy. The system was fired from four ranges on PTA, and one of the four ranges is partially on the State-owned land (i.e., Range 13 on TA 9) (USACE-POH & USAG-HI, 2017a).

Fugitive dust downwind of the ranges was suspected to have higher than average levels of uranium. The Army completed a 1-year airborne uranium monitoring program in 2009 to determine if the decay and vaporization of DU fragments has impacted local air quality. The monitoring program collected 210 air samples from three sites upwind and downwind of PTA to provide a basis of comparison. The monitoring program concluded that the DU had not impacted air quality at PTA or in the surrounding area because the total airborne uranium levels in the collected particulate matter samples were within the range of naturally occurring uranium in Hawaiian soils and rock and were several orders of magnitude below U.S. and international chemical and radiological health guidelines (USACE-POH & USAG-HI, 2010).

Climate Change. The findings of the U.S. Global Change Research Program, as summarized by the Army Climate Assessment Tool, has determined that ongoing global climate change has the potential to increase average temperatures, alter precipitation patterns, raise sea level, and increase the risk of extreme drought and flooding within the State and other Pacific Islands. As a result, the availability of freshwater, potential for coastal flooding, stability of ecosystems and biodiversity, and the health of indigenous populations could be adversely impacted from ongoing climate change (Army, 2021).

The Army Climate Assessment Tool concludes that drought and riverine flooding are, by far, the greatest climate change threats to PTA. Drought is predicted to be the greatest threat in 2050, and riverine flooding the greatest threat in 2085. Both threats stem from changes to precipitation patterns. Increased energy demand, land degradation, heat, and historically extreme weather are lesser threats to PTA, and wildfire risk at PTA is relatively low. Coastal flooding is not a threat to PTA given that the installation is several thousand feet above sea level (Army, 2021).

3.6.5 Methodology and Significance Criteria

This section outlines the methods and criteria used in **Section 3.6.6** to assess potential significant impacts on air quality and GHG emissions. Due to the lack of information regarding the emissions generated within just the State-owned land, most of which is from mobile sources and military munitions, the air quality analysis is a qualitative assessment of the changes that would occur under the alternatives based on a generalization of the level of military activities that occur within various portions of the State-owned land (e.g., most training is conducted in the central portion of the State-owned land, some training is conducted in the eastern and western portions of the State-owned land, and little training is conducted in the northern and far eastern portion of the State-owned land).

The criteria considered to assess whether an alternative would result in potential significant impacts on air quality include the extent or degree to which an alternative would result in the following:

- Production of new air emissions that adversely affect the ambient air quality of the ROI and threaten to change its attainment status; and/or
- Creation of a violation of any federal or state air regulation.

The criterion considered to assess whether an alternative would result in potential significant impacts on GHG emissions include the extent or degree to which an alternative would result in the following:

- Meaningfully (measurably) contribute to the potential impacts of global climate change.

Impacts on the Proposed Action alternatives from ongoing changes to climate patterns would be significant if future climate patterns impaired or precluded an aspect of a Proposed Action alternative.

3.6.6 Environmental Analysis

3.6.6.1 Alternative 1: Full Retention

Air Emissions. No new impacts on air quality would occur. Full retention of the State-owned land would result in the continued emission of generally identical levels of criteria pollutants. All existing air emissions sources within the State-owned land would remain and emit criteria pollutants at identical levels as current conditions; therefore, continued long-term, minor, adverse impacts on air quality would occur from continuation of these ongoing activities. No changes to ambient air quality would occur from the continuation of these air emissions. Alternative 1 would be consistent with all federal, state, and local air regulations including HRS Chapters 342B and 342C.

Training and other activities on the State-owned land would continue at similar levels; therefore, exhaust from military vehicles and aircraft flight operations, dust from vehicle use on gravel and dirt roads and near-ground helicopter operations, and emissions and dust from military munitions use would not increase or decrease compared to current conditions. The land at Building 601 would be retained, therefore the 45kW internal combustion engine at Building 601 would continue to operate for approximately 18 hours per year. Fugitive dust would continue to be produced from maneuver activities on unpaved roads and trails and helicopter activities. The Dust and Soils Management and Monitoring Plan would continue to be followed to identify, monitor, and minimize fugitive dust emissions from PTA.

As noted in **Section 3.6.4**, the USEPA has designated the island of Hawai'i as unclassified/attainment for all criteria pollutants (USEPA, 2020b). This designation means the USEPA's General Conformity Rule is not applicable for Alternative 1.

DU. Monitoring for airborne DU concluded that the past use of DU had not impacted air quality at PTA or in the surrounding area, and the total airborne uranium levels in the collected particulate matter samples were within the range of naturally occurring uranium in Hawaiian soils and rock and were several orders of magnitude below U.S. and international chemical and radiological health guidelines. As such, Alternative 1 would have no impact on airborne DU.

Alternative 1 would not change the Army's DU management practices on PTA. **Section 3.5** contains further details on DU impacts and management practices.

Climate Change. No new impacts from GHG emissions would occur, but long-term, minor, direct and indirect, adverse impacts from GHGs would continue from activities within the State-owned land. Alternative 1 would result in the continued emission of identical levels of GHGs. These emissions would continue to be emitted from direct activities on the State-owned land retained such as exhaust from military vehicles, aircraft flight operations, and the internal combustion engine at Building 601, and military munitions use. Indirect activities not occurring on the State-owned land retained but that are necessary to support activities on the State-owned land—such as off-site energy production, agricultural processes, manufacturing and shipping equipment and materiel, and troop movements—would also continue to produce GHG emissions. The continued production of identical levels of GHGs would not meaningfully contribute to the potential impacts of global climate change.

Ongoing changes to climate patterns in Hawai'i are described in **Section 3.6.4**. These changes are unlikely to impact Alternative 1. The State-owned land is not near the shoreline; therefore, an increase in sea level would not increase the potential for coastal flooding on the State-owned land. Changes to the stability of ecosystems and biodiversity and the health of indigenous populations would not impact the Army's ability to retain the State-owned land and use it for continued military purposes. Additionally, increased potential for drought and riverine flooding at PTA from changes to regional temperature and precipitation patterns would be unlikely to preclude retention and continued military use of the State-owned land, and no climate change mitigation or adaptation measures would be required.

Summary of Impacts: Alternative 1 would result in no new impacts on air quality and GHGs, but continued long-term, minor, direct and indirect, adverse impacts on air quality and GHGs would occur from continuation of ongoing activities on the State-owned land. No impacts from airborne DU would occur.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.6.6.2 Alternative 2: Modified Retention

Due to the nature of air emissions, the potential air quality impacts associated with Alternative 2 are presented for the entirety of the State-owned land versus separating the impacts into land retained and land not retained.

Air Emissions. New short-term, negligible, adverse impacts on air quality would occur from completion of lease compliance actions and removal, investigation, and cleanup of hazardous and toxic materials and wastes, including MEC, within the State-owned land not retained.

The 19,700 acres that would be retained under Alternative 2 contain all buildings and most of the unpaved roads and maneuver area on the State-owned land. As such, most air emissions currently emitted on the State-owned land would continue to be emitted under Alternative 2. Consequently, continued long-term, minor, adverse impacts on air quality would occur from continuation of these ongoing activities within the State-owned land retained.

Training and other activities on the State-owned land would continue at similar levels; therefore, even with the loss of 3,330 acres of State-owned land, exhaust from military vehicles and aircraft flight operations, dust from vehicle use on gravel and dirt roads and near-ground helicopter operations, and military munitions use would not increase or decrease compared to Alternative 1. No changes to ambient

air quality would occur from the continuation of these air emissions. The land retained under Alternative 1 includes Building 601; therefore, the 45kW internal combustion engine at Building 601 would continue to operate for approximately 18 hours per year. Fugitive dust would continue to be produced from maneuver activities on unpaved roads and trails and helicopter activities. The Dust and Soils Management and Monitoring Plan would continue to be followed to identify, monitor, and minimize fugitive dust emissions from PTA. Alternative 2 would be consistent with all federal, state, and local air regulations including HRS Chapters 342B and 342C.

As noted in **Section 3.6.4**, the USEPA has designated the island of Hawai'i as unclassified/attainment for all criteria pollutants (USEPA, 2020b). This designation means the USEPA's General Conformity Rule is not applicable for Alternative 2.

DU. Monitoring for airborne DU concluded that the past use of DU had not impacted air quality at PTA or in the surrounding area, and the total airborne uranium levels in the collected particulate matter samples were within the range of naturally occurring uranium in Hawaiian soils and rock and were several orders of magnitude below U.S. and international chemical and radiological health guidelines. As such, Alternative 2 would have no impact on airborne DU. The State-owned land retained under Alternative 2 includes the portion of the range on the State-owned land where DU spotting rounds formerly were fired (i.e., Range 13 on TA 9).

Alternative 2 would not change the Army's DU management practices on PTA. **Section 3.5** contains further details on DU impacts and management practices.

Climate Change. New short-term, negligible, adverse impacts from GHG emissions would occur from completion of lease compliance actions and removal, investigation, and cleanup of hazardous and toxic materials and wastes, including MEC, within the State-owned land not retained. Continued long-term, minor, direct and indirect, adverse impacts from GHGs would occur from ongoing activities within the State-owned land retained. Because ongoing activities on the State-owned land retained would continue at similar levels as currently conducted, Alternative 2 would result in the continued emission of similar levels of GHGs even with the loss of 3,330 acres of State-owned land. These emissions would continue to be emitted from direct activities on the State-owned land retained such as exhaust from military vehicles, aircraft flight operations, and the internal combustion engine at Building 601 and military munitions use. Indirect activities not occurring on the State-owned land retained—such as off-site energy production, agricultural processes, manufacturing and shipping equipment and materiel, and troop movements—would also continue to produce GHG emissions. The continued production of similar levels of GHGs would not meaningfully contribute to the potential impacts of global climate change.

Ongoing changes to climate patterns in Hawai'i are described in **Section 3.6.4**. These changes are unlikely to impact Alternative 2. The State-owned land is not near the shoreline; therefore, an increase in sea level would not increase the potential for coastal flooding on the State-owned land. Changes to the stability of ecosystems and biodiversity and the health of indigenous populations would not impact the Army's ability to retain the State-owned land and use it for continued military purposes nor would it impact the State's ability to manage the State-owned land not retained. Additionally, increased potential for drought and riverine flooding at PTA from changes to regional temperature and precipitation patterns would be unlikely to preclude retention and continued military use of the State-owned land retained or the State's ability to manage the State-owned land not retained, and no climate change mitigation or adaptation measures would be required.

Summary of Impacts: Alternative 2 would result in new short-term, negligible, adverse impacts on air quality and GHGs from completion of lease compliance actions and removal, investigation, and cleanup of hazardous and toxic materials and wastes, including MEC, within the State-owned land not retained. Continued long-term, minor, direct and indirect, adverse impacts on air quality and GHGs would occur from the continuation of ongoing activities on the State-owned land retained. No impacts from airborne DU would occur.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.6.6.3 Alternative 3: Minimum Retention and Access

Due to the nature of air emissions, the potential air quality impacts associated with Alternative 3 are presented for the entirety of the State-owned land versus separating the impacts into land retained and land not retained.

Air Emissions. New short-term, negligible, adverse impacts on air quality would occur from completion of lease compliance actions and removal, investigation, and cleanup of hazardous and toxic materials and wastes, including MEC, within the State-owned land not retained.

The 10,100 acres that would be retained under Alternative 3 contain all buildings, most unpaved roads, most of the training and support facilities, and about half of the maneuver areas on the State-owned land. As such, air emissions from training and other activities currently emitted on the State-owned land would be moderately reduced under Alternative 3. Consequently, Alternative 3 would result in new long-term, negligible, beneficial impacts on air quality due to the elimination of Army training and other activities within the State-owned land not retained. Additionally, continued long-term, negligible to minor, adverse impacts on air quality would occur from continuation of ongoing activities within the State-owned land retained.

Training and other activities would continue on the State-owned land retained; therefore, even with the loss of 12,900 acres of State-owned land not retained, exhaust from military vehicles and aircraft flight operations, dust from vehicle use on gravel and dirt roads and near-ground helicopter operations, and military munitions use only would decrease moderately. No changes to ambient air quality would occur from the continuation of these air emissions. The State-owned land retained under Alternative 3 includes Building 601; therefore, the 45kW internal combustion engine at Building 601 would continue to operate for approximately 18 hours per year. Fugitive dust would continue to be produced from maneuver activities on unpaved roads and trails and helicopter activities. The Dust and Soils Management and Monitoring Plan would continue to be followed to identify, monitor, and minimize fugitive dust emissions from PTA. Alternative 3 would be consistent with all federal, state, and local air regulations including HRS Chapters 342B and 342C.

As noted in **Section 3.6.4**, the USEPA has designated the island of Hawai'i as unclassified/attainment for all criteria pollutants (USEPA, 2020b). This designation means the USEPA's General Conformity Rule is not applicable to Alternative 3.

DU. Monitoring for airborne DU concluded that the past use of DU had not impacted air quality at PTA or in the surrounding area, and the total airborne uranium levels in the collected particulate matter samples

were within the range of naturally occurring uranium in Hawaiian soils and rock and were several orders of magnitude below U.S. and international chemical and radiological health guidelines. As such, Alternative 3 would have no impact on airborne DU. The State-owned land retained under Alternative 3 includes the portion of the range on the State-owned land where DU spotting rounds formerly were fired (i.e., Range 13 on TA 9).

Alternative 3 would not change the Army's DU management practices on PTA. **Section 3.5** contains further details on DU impacts and management practices.

Climate Change. New short-term, negligible, adverse impacts from GHG emissions would occur from completion of lease compliance actions and removal, investigation, and cleanup of hazardous and toxic materials and wastes, including MEC, within the State-owned land not retained.

GHG emissions from Army training and other activities within the State-owned land would be moderately reduced under Alternative 3 due to the loss of 12,900 acres of State-owned land. Consequently, Alternative 3 would result in new long-term, negligible, direct and indirect, beneficial impacts from reduced GHG emissions due to the elimination of Army training and other activities within the State-owned land not retained. Additionally, continued long-term, negligible to minor, direct and indirect, adverse impacts from GHG emissions would occur from continuation of ongoing activities within the State-owned land retained. GHG emissions would continue to be emitted from direct activities on the State-owned land retained such as exhaust from military vehicles, aircraft flight operations, and the internal combustion engine at Building 601, and military munitions use. Indirect activities not occurring on the State-owned land retained—such as off-site energy production, agricultural processes, manufacturing and shipping equipment and materiel, and troop movements—would also continue to produce GHG emissions. The continued production of moderately reduced levels of GHGs would not meaningfully contribute to the potential impacts of global climate change.

Ongoing changes to climate patterns in Hawai'i are described in **Section 3.6.4**. These changes are unlikely to impact Alternative 3. The State-owned land is not near the shoreline; therefore, an increase in sea level would not increase the potential for coastal flooding on the State-owned land. Changes to the stability of ecosystems and biodiversity and the health of indigenous populations would not impact the Army's ability to retain the State-owned land and use it for continued military purposes nor would it impact the State's ability to manage the State-owned land not retained. Additionally, increased potential for drought and riverine flooding at PTA from changes to regional temperature and precipitation patterns would be unlikely to preclude retention and continued military use of the State-owned land retained or the State's ability to manage the State-owned land not retained, and no climate change mitigation or adaptation measures would be required.

Summary of Impacts: Alternative 3 would result in new short-term, negligible, adverse impacts on air quality and GHGs from completion of lease compliance actions and removal, investigation, and cleanup of hazardous and toxic materials and wastes, including MEC, within the State-owned land not retained. Alternative 3 also would result in new long-term, negligible, direct and indirect, beneficial impacts on air quality and GHGs due to the elimination of Army training and other activities within the State-owned land not retained. Additionally, continued long-term, negligible to minor, direct and indirect, adverse impacts on air quality and GHGs would occur from continuation of ongoing activities on the State-owned land retained. No impacts from airborne DU would occur.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.6.6.4 No Action Alternative

Air Emissions. New short-term, minor, adverse impacts on air quality would occur from completion of lease compliance actions and removal, investigation, and cleanup of hazardous and toxic materials and wastes, including MEC, within the State-owned land.

Long-term, minor, beneficial impacts on air quality would result from the No Action Alternative. The No Action Alternative would eliminate the Army's ability to perform training on the State-owned land and reduce its ability to sustain training and operations on certain U.S. Government-owned land, particularly the impact area, training ranges, and the Cantonment and BAAF. More than half of PTA's unrestricted maneuver area would not be retained. As a result, the Army would reduce training activities on PTA beginning in 2029, which would reduce the amount of criteria pollutant emissions produced from PTA. Exhaust from military vehicles and aircraft flight operations, dust from vehicle use on gravel and dirt roads and near-ground helicopter operations, and air emissions from military munitions use would decrease compared to current conditions. The Dust and Soils Management and Monitoring Plan would continue to be followed to identify, monitor, and minimize fugitive dust emissions from PTA. The No Action Alternative would be consistent with all federal, state, and local air regulations including HRS Chapters 342B and 342C.

The land at Building 601 would not be retained, so the 45kW internal combustion engine at Building 601 would be deactivated and would no longer operate for approximately 18 hours per year. The engine would be removed from PTA's potential to emit and air operating permits. The other existing stationary air emission sources at PTA are on U.S. Government-owned land and are assumed to remain and emit criteria pollutants at identical levels as current conditions; however, the reduction in PTA's ability to sustain training on certain U.S. Government-owned land may result in other boilers and internal combustion engines on PTA being deactivated.

The reduction in air emissions from PTA would result in long-term, beneficial impacts on ambient air quality. Because the island of Hawai'i already has good air quality, the reduction in air emissions from PTA would have only a minor impact. As noted in **Section 3.6.4**, the USEPA has designated the island of Hawai'i as unclassified/attainment for all criteria pollutants (USEPA, 2020b). This designation means the USEPA's General Conformity Rule is not applicable for federal actions such as the No Action Alternative.

DU. Monitoring for airborne DU concluded that the past use of DU had not impacted air quality at PTA or in the surrounding area, and the total airborne uranium levels in the collected particulate matter samples were within the range of naturally occurring uranium in Hawaiian soils and rock and were several orders of magnitude below U.S. and international chemical and radiological health guidelines. As such, the No Action Alternative—which includes the Army no longer retaining the portion of the range on the State-owned land where DU spotting rounds formerly were fired (i.e., Range 13 on TA 9)—would have no impact on airborne DU.

Section 3.5 contains further details on range decommissioning.

Climate Change. New short-term, negligible, adverse impacts from GHG emissions would occur from completion of lease compliance actions and removal, investigation, and cleanup of hazardous and toxic materials and wastes, including MEC, within the State-owned land.

Long-term, minor, direct and indirect, beneficial impacts on GHGs would result from the No Action Alternative. The No Action Alternative would result in reduced emission of GHGs from the elimination of Army training and other activities within the State-owned land and impact area and training ranges, reduction in activities at the Cantonment and BAAF, and the removal of the internal combustion engine at Building 601. This reduction in GHG emissions would not meaningfully reduce the severity of global climate change given the extremely limited contribution of PTA's GHG emissions to global GHG inventories.

Ongoing changes to climate patterns in Hawai'i are described in **Section 3.6.4**. These changes are unlikely to impact the No Action Alternative. The State-owned land is not near the shoreline; therefore, an increase in sea level would not increase the potential for coastal flooding on the State-owned land. Changes to the stability of ecosystems and biodiversity and the health of indigenous populations would not impact the State's ability to manage the State-owned land after the Army's lease ends. Additionally, increased potential for drought and riverine flooding at PTA from changes to regional temperature and precipitation patterns would be unlikely to affect the State's ability to manage the State-owned land, and no climate change mitigation or adaptation measures would be required.

Summary of Impacts: The No Action Alternative would result in new short-term, minor, adverse impacts on air quality and new short-term, negligible, adverse impacts on GHGs would occur from completion of lease compliance actions and removal, investigation, and cleanup of hazardous and toxic materials and wastes, including MEC, within the State-owned land. Long-term, minor, direct and indirect, beneficial impacts on air quality and GHG emissions would result from the No Action Alternative because of the elimination of training and other activities on the State-owned land (not retained) and impact area and training ranges (access lost) as well as the potential reduction in activities at the Cantonment due to loss of potable water and electricity. No impacts from airborne DU would occur.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.7 Noise

3.7.1 Definition

Sound is vibration of air, a term used to describe pressure variations that are sensed by humans and wildlife. Noise is generally defined as unwanted sound and can negatively affect the health and well-being of humans and wildlife. Noise can be steady or impulsive, continuous or intermittent; it can vary in frequency and sources that can be relatively nondescript or readily identifiable. Human and wildlife receptor response to increased sound levels varies according to the source type, characteristics of the sound source, time of day, receptor sensitivity, and distance between source and receptor.

Sound pressure level is measured in decibels (dB) and is used to quantify sound intensity. The dB is a logarithmic unit that expresses the ratio of a sound pressure level to a standard reference level. Sound

measurements are frequently filtered because the human ear does not hear all frequencies equally. A-weighted and C-weighted frequencies are used to put less weight on frequencies human ears do not hear well, and more weight on those human ears do. A-weighted decibels (dBA) approximate frequency response to adjust for human ear functions for higher frequency sounds (USAG-HI, 2017). C-weighted decibels (dBC) are used for low-frequency sounds (USAPHC, 2010). Noise beyond comfort levels can affect humans and wildlife, and their responses vary depending on multiple factors, including noise level, distance, noise regularity, noise perception, and species sensitivity (Shannon et al., 2016). Typical day-to-day sounds and their dBA levels are provided in **Table 3-12**.

Table 3-12 Common Sound Levels		
Outdoor	Sound Level (dBA)	Indoor
Jet flyover at 1,000 feet	100	Rock band
Gasoline lawnmower at 3 feet	90	Food blender at 3 feet
Downtown (large city)	80	Garbage disposal
Heavy traffic at 150 feet	70	Vacuum cleaner at 10 feet
Normal conversation	60	Normal speech at 3 feet
Quiet urban daytime	50	Dishwasher in next room
Quiet urban nighttime	40	Theater, large conference room

Source: Harris, 1998

Noise Metrics

Noise sources can affect the environment by changing ambient sound characteristics or influencing human or wildlife behavior with noise beyond comfort levels. Additionally, unexpected or uncomfortable levels of noise can increase wildlife startle, alarm, and alert behaviors and cause wildlife to move rapidly, fly in avoidance behavior or be prone to unexpected predation.

The sound pressure level noise metric describes steady noise levels, although very few noises are, in fact, constant; therefore, additional metrics have been developed to describe noise:

- **Day-night Sound Level** is the average noise level over 24 hours with a 10 dB penalty added to the nighttime levels (10 p.m. to 7:00 a.m.).
- **Maximum Sound Level** is the maximum sound level measured in a single event where sound levels change with time.
- **A-Weighted Day-Night Average Sound Level** evaluates human response or annoyance to noise, typically aircraft and ground transportation. Represents a 24-hour average noise level.
- **C-Weighted Day-Night Average Sound Level** is used to evaluate human response or annoyance to impulsive noise such as blasts, commonly associated with large caliber ammunition and explosives. Represents a 24-hour average noise level.
- **Peak Sound Level (dBP)** is a single-event sound level that has not been frequency weighted (USAPHC, 2020).

3.7.2 Regulatory Framework

The Noise Control Act of 1972 (42 U.S.C. Section 4901 *et seq.*) directs federal agencies to comply with applicable federal, state, and local noise control regulations to the fullest extent consistent with agency missions. Other noise laws include the Aviation Safety and Noise Abatement Act, the Control and Abatement of Aircraft Noise, and the Sonic Boom Act.

In Hawai‘i, the DOH, Indoor and Radiological Health Branch regulates noise in accordance with HAR Chapter 11-46, Community Noise Control, which limits sound generated by new or expanded developments. It provides for the prevention, control, and reduction of noise pollution. HAR Section 11-46-3 defines maximum permissible sound levels for three classifications of land use (Zone A, Zone B, and Zone C) by zoning district and provides for the reduction and control of excessive noise sources. **Table 3-13** outlines the maximum sound level at the property boundary for permanent stationary sources according to land use (DOH-IRHB, 2020).

Table 3-13 Hawai‘i Maximum Permissible Sound Levels		
Land Use ^a	Maximum Permissible Sound Levels ^b	
	Daytime dBA (7 a.m. – 10 p.m.)	Nighttime dBA (10 p.m. – 7 a.m.)
Zone A: Residential, conservation, preservation, public space, or similar land use.	55	45
Zone B: Multi-family dwellings, business, commercial, hotel, resort, or similar use.	60	50
Zone C: Agriculture, county, industrial, or similar use.	70	70

^a For mixed zoning districts, the primary land use designation is used to determine the permissible sound level.

^b Sound limits for impulsive noise is 10 dBA above the maximum permissible sound levels shown.

The DoD has been developing programs to evaluate noise on installations since the 1970s, including the Installation Compatible Use Zone (ICUZ) and the 2010 Hawai‘i Statewide Operational Noise Management Plan (SONMP) to address major noise sources, including airfield noise. AR 200-1, Environmental Protection and Enhancement categorizes noise exposure on communities into three noise zones and one subdivision zone.

- Zone III – Noise-sensitive land uses are not recommended or are incompatible.
- Zone II – Land use is strongly discouraged on the installation and in surrounding communities; viable alternatives should be taken into consideration.
- Zone I – Noise-sensitive land uses are generally acceptable.
 - Zone I subdivision – The Land Use Planning Zone (LUPZ) is 5 dB lower than Zone II. Within this area, noise-sensitive land uses are generally acceptable (DA, 2007).

These zones are used for land use planning guidance for noise abatement planning (**Table 3-14**) and noise complaint management (**Table 3-15**).

Table 3-14 Noise Limits for Noise Zones				
Noise Zone	Noise Limits			Noise-Sensitive Land Use
	Aviation A-Weighted Day- Night Average Sound Level (dB)	Impulsive C-Weighted Day- Night Average Sound Level (dB)	Small Arms (dB)	
LUPZ	60 - 65	67 - 62	N/A	Generally Compatible
I	< 65	< 62	< 87	Generally Compatible
II	65 - 75	62 - 70	87 - 104	Generally Not Compatible
III	> 75	> 70	> 104	Not Compatible

Source: DA, 1997

Table 3-15 Complaint Risk Guidelines		
Perceptibility ^a	dB	Risk of Receiving Noise Complaints
May be audible	< 115	Low
Noticeable, Distinct	115 - 130	Moderate
Very loud, may startle	> 130	High

^a Perceptibility is subjective. The classifications are based on how a typical person might describe the event.

Source: USAPHC, 2020

3.7.3 Region of Influence

The ROI for noise analysis is the area within and surrounding the State-owned land at PTA in which humans and wildlife may suffer annoyance or disturbance from noise sources from PTA. For most common noises, noise disturbances are limited to 0.5 mile of the noise source; high-intensity noises, such as those generated by aircraft and military munitions, may extend several miles from the source. The ROI extends into surrounding areas on and around PTA that might be affected by aircraft conducting training on PTA or military munitions noise.

Aircraft entering and exiting restricted area R-3103, or transiting to PTA airspace, are discussed in-depth in **Section 3.7.4** and **Section 3.13**.

3.7.4 Existing Conditions

Existing sources of noise on and adjacent to PTA include military munitions, military vehicles and aircraft, and road traffic. In most instances, military vehicles and convoy traffic are mildly disruptive but do not generate enough noise to warrant further analysis (USAPHC, 2010).

Military Munitions

The primary training features that generate military munitions noise on the State-owned land include the BAX, MOUT, and 107 FPs. Other sources of military munitions noise at PTA include the impact area and training ranges to the south of the State-owned land. A noise model assessment for military munitions was completed on PTA by the U.S. Army Public Health Command (USAPHC) in 2020. Per AR 200-1, the USAPHC modeled annual average CDNL contours for large caliber weapons based on noise energy averaged over 250 days. A Blast Noise Version 2 modeling program was used to account for the PTA terrain when creating the noise models (USAPHC, 2020).

The baseline noise model indicates that, except for a small area on the northern portion of the State-owned land, Zone III remains within the PTA boundary. Zone II and the LUPZ extend beyond the PTA boundaries up to 0.6 mile in certain areas (**Figure 3-8**). Noises that extend beyond the installation boundaries overlap with uninhabited forest reserve areas. There are no noise-sensitive lands impacted (USAPHC, 2020).

While land use guidelines indicate compatibility with baseline conditions, certain weather situations (i.e., low cloud cover, high humidity, variable winds) may allow noise to travel further than the baseline condition model shows. During neutral weather events, dBP between 115 and 130 dB extends less than 0.9 mile, at the maximum, beyond the PTA boundary; dBP above 130 dB extends marginally beyond the southeastern boundary line (**Figure 3-9**). During unfavorable weather conditions, dBP between 115 and 130 dB extends, at a maximum, 4.3 miles from the installation boundary; dBP above 130 dB extends less than 0.8 miles at any point beyond the installation's boundary (**Figure 3-10**). Noises that extend beyond the installation boundaries overlap with uninhabited forest reserve areas. There are no noise-sensitive lands impacted (USAPHC, 2020).

The PTA region is an unpopulated area with a proportionately low traffic volume on DKI Highway, Route 190, and Waikōloa Road; thus, PTA ambient noise levels are low except during training events.

Aircraft

The primary training features that generate aircraft noise from training activities associated within the State-owned land include Cooper Air Strip, FARPs, landing zones, and drop zones, as well as air support activities. Other sources of aircraft noise include the BAAF and the Ke'āmuku parcel landing and drop zones north of the State-owned land.

There have been no noise model surveys completed for aircraft at PTA. Aircraft noise associated with the facilities listed here originate from four main sources: take-off and landing from BAAF, FARPs, and LZs; UAVs launched from Cooper Air Strip; aircraft entering and exiting R-3103; and aircraft transiting from the ocean to PTA airspace.

Flight operations exceeding ambient noise levels generally occur during aircraft operations within airfield approach and departure corridors. Because aircraft noise levels increase the closer the aircraft get to the ground, most intense aircraft noise levels are associated with the airfield and adjacent staging and parking areas. All BAAF noise zones for aircraft take-off and landing and all UAV noises originating from Cooper Air Strip within the State-owned land are contained within the PTA boundaries (DN, 2012; USAG-PTA, 2017).

Precautionary measures have been put into place to minimize any impacts to local neighborhoods and residents for transiting aircraft. All transiting aircraft pilots and crew receive a briefing from the BAAF Air Traffic and Airspace Chief designed to minimize noise impacts and disruption to local communities. The briefing specifies the flight route to PTA devised specifically to avoid populated areas as much as possible. Additionally, aircraft are directed to fly at 2,000 feet above ground level (AGL) or above during transition to and from PTA airspace, unless low cloud cover necessitates flying lower for safety reasons (USAG-PTA, 2020e). For restricted area R-3103 usage, all aircraft are required to enter and exit the airspace at 2,000 feet AGL per the PTA External Standard Operating Procedures (USAG-PTA, 2018a).

Noise Impacts on Community and Wildlife

As noted in **Section 3.7.1**, noise beyond comfort levels can affect humans and wildlife with varying degrees of response based on multiple factors. The nearest local community is outside the northern boundaries of the Ke'āmuku parcel, significantly to the north of PTA's noise models contours; however, Ke'āmuku parcel landing and drop zones were not a part of the 2020 noise model. These communities are not expected to be impacted except by occasional unusual weather events that may increase military munitions or aircraft noise. While there is always a risk of noise complaints, based on the 2020 modeling, the risk is considered minimal.

Noise generated on PTA is expected to cause wildlife startle, alarm, and alert behaviors, potentially causing rapid movement or flight in avoidance behavior. This could increase the risk of wildlife being struck by live-fire, abandoning nest or young, receiving auditory damage, or increasing energy expenditure and food demands (USFWS, 2013). It is also possible that habituation to noise or distraction caused by noise could cause wildlife to be less aware of surroundings and more prone to predation.

3.7.5 Methodology and Significance Criteria

This section outlines the methods and criteria used in **Section 3.7.6** to assess potential significant impacts on noise conditions. The 2020 USAPHC Environmental Noise Consultation baseline condition models referred to in **Section 3.7.4** were used to evaluate significance criteria based on State-owned land use compatibility and whether any impacts would be created based on AR 200-1. The criteria considered to assess whether an alternative would result in potential significant impacts on noise conditions, are based on the Army's zone criteria listed below:

- LUPZ impacts = Less than significant impacts
- Zone II noise impacts = Significant impacts mitigable to less than significant impacts
- Zone III noise impacts = Significant impacts.

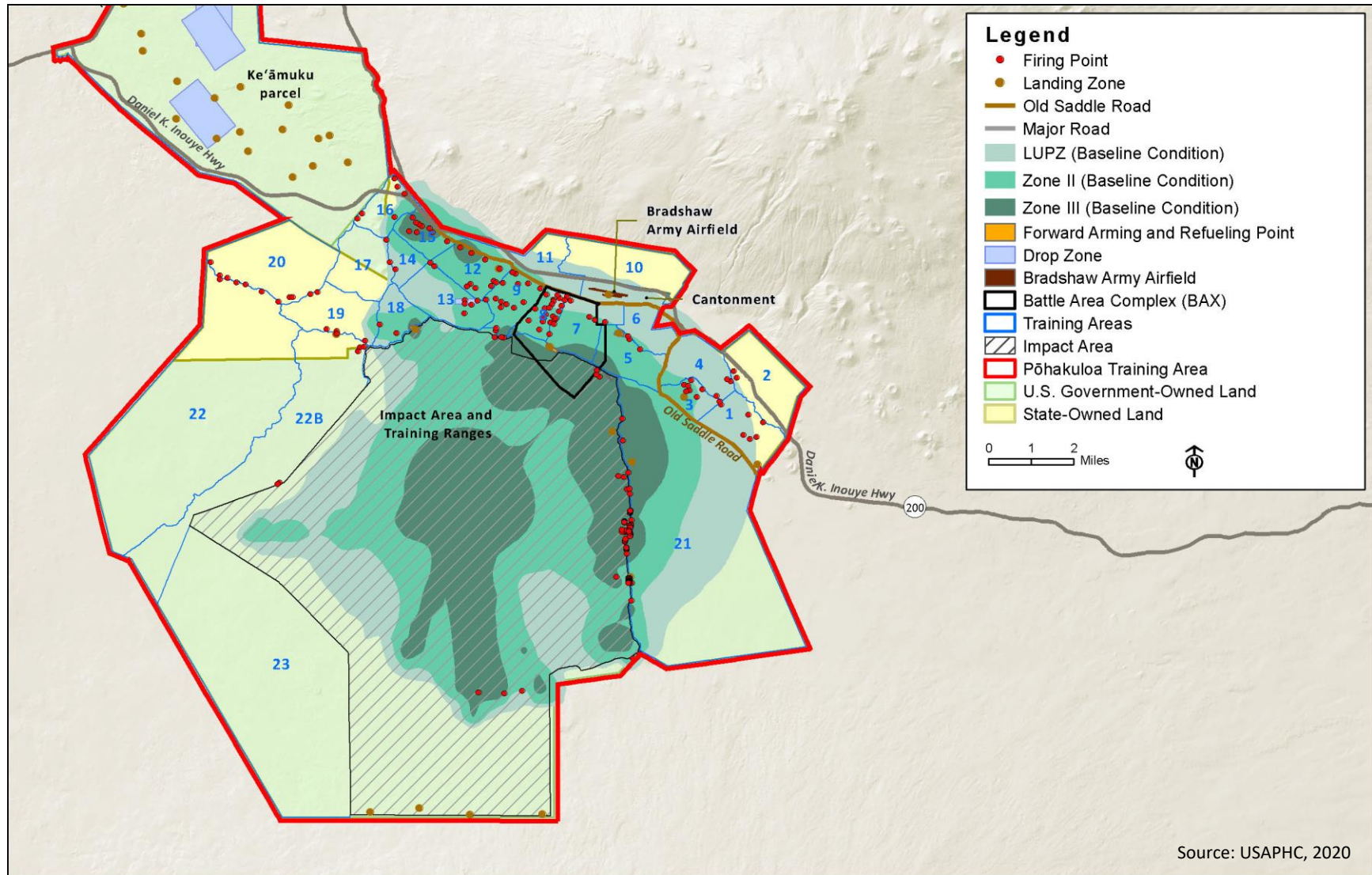


Figure 3-8: Pōhakuloa Training Area Baseline Military Munitions Conditions Noise Zones

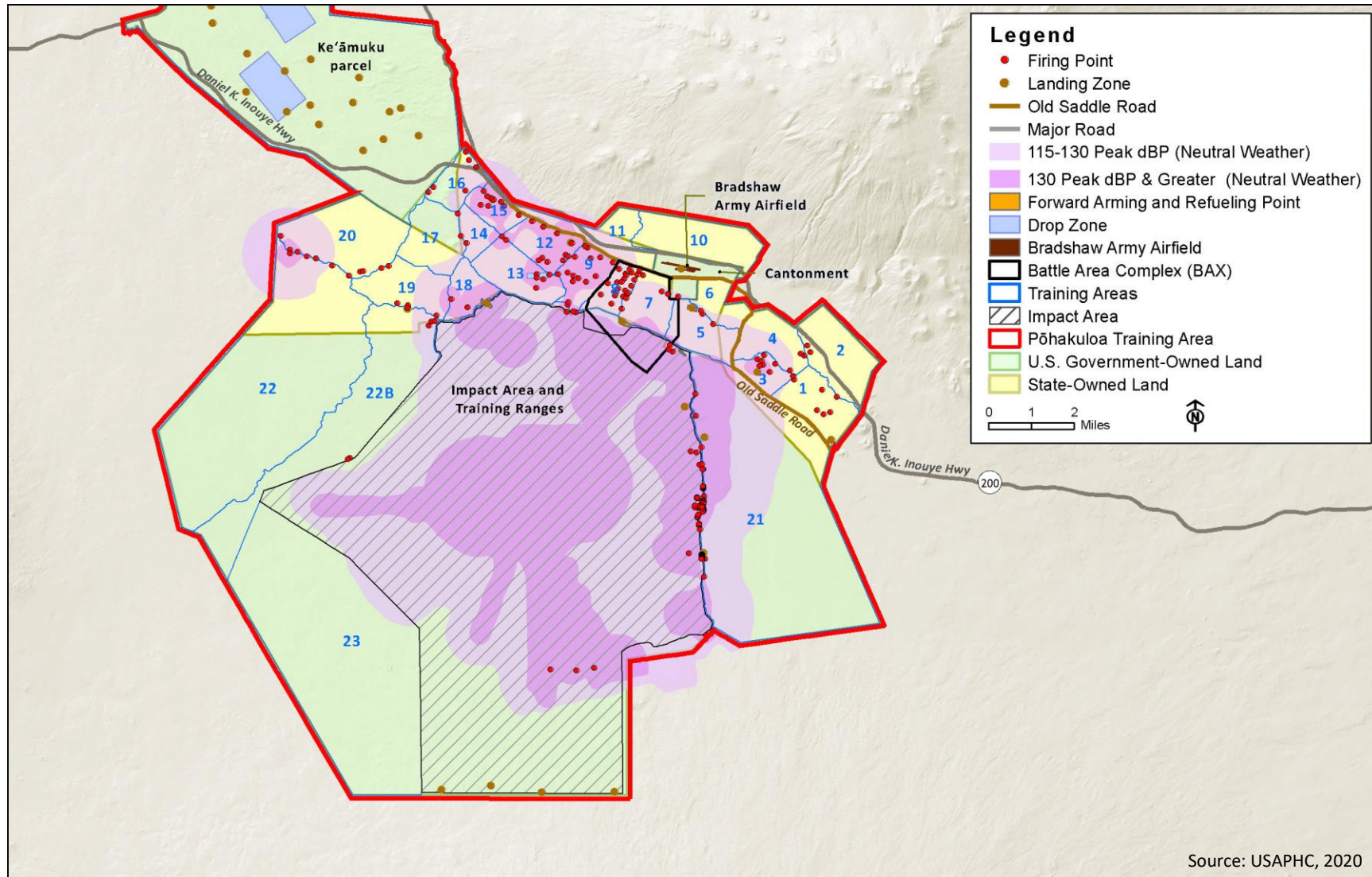


Figure 3-9: Pōhakuloa Training Area Military Munitions Single Event Peak Levels: Neutral Weather Conditions

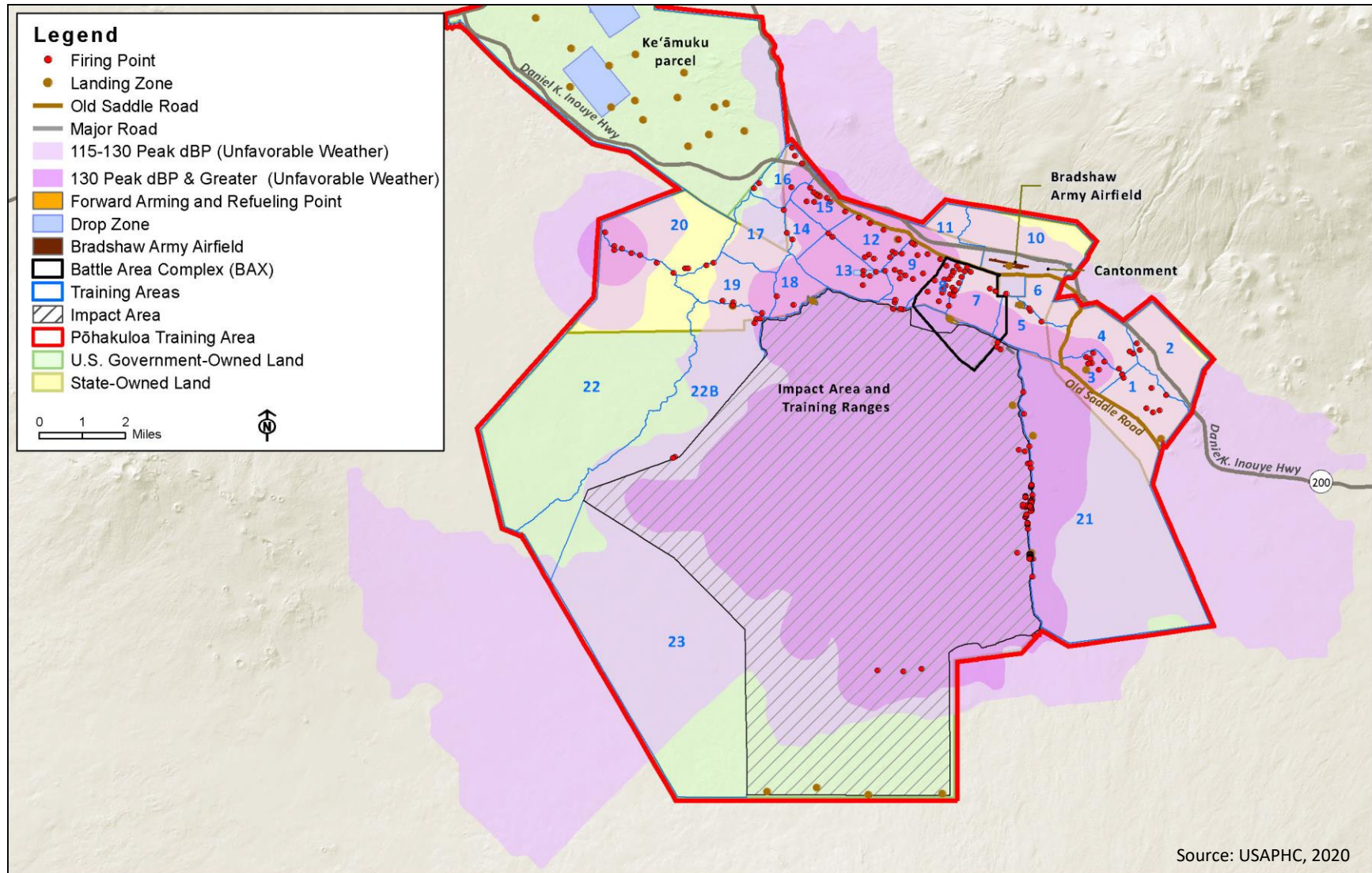


Figure 3-10: Pōhakuloa Training Area Single Event Peak Levels: Weather Conditions That Enhance Sound Propagation

3.7.6 Environmental Analysis

3.7.6.1 *Alternative 1: Full Retention*

Alternative 1 would result in no new noise impacts. The Army would continue ongoing activities, which would mean LUPZ and Zone II noise levels would continue to extend slightly beyond the PTA boundary; however, the overlaps occur over uninhabited forest reserve areas and no noise-sensitive lands are impacted.

Alternative 1 would result in continued long-term, minor, adverse noise impacts from ongoing activities within the State-owned land. The Army would continue operations in accordance with federal and local noise ordinances and guidance, including the SONMP and ICUZ. Additionally, as discussed in **Section 3.7.4**, transiting aircraft pilots and crew would continue to receive a briefing from the BAAF Air Traffic and Airspace Chief designed to minimize noise impacts and disruption to local communities and neighborhoods as aircraft transit to and from PTA.

Summary of Impacts: Alternative 1 would result in no new noise impacts; however, long-term, minor, adverse noise impacts would continue from ongoing activities on the State-owned land. The impact would be less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.7.6.2 *Alternative 2: Modified Retention*

Land Retained

The Army would retain and continue ongoing activities on approximately 19,700 acres of the State-owned land. The State-owned land retained would include Cooper Air Strip, the BAX, MOUT, 104 FPs, six landing zones, one drop zone, and two FARPs. The Army would also continue to permit and coordinate ongoing activities by other PTA users on the State-owned land retained. Zone II and LUPZ noise levels would continue to extend slightly beyond the PTA boundary; however, the overlaps occur over uninhabited forest reserve areas, and no noise-sensitive lands are impacted.

Alternative 2 would result in no new noise impacts within the State-owned land retained but would result in continued long-term, minor, adverse noise impacts from ongoing activities within the State-owned land retained.

The Army would continue to operate in accordance with federal and local noise ordinances, as well as Army requirements and guidelines as discussed within Alternative 1.

Land Not Retained

By the lease expiration date, the Army would stop all training and other activities within the State-owned land not retained. The Army would lose three FPs within TA 16 in the land not retained, but because these FPs are north of DK1 Highway they are not used for live-fire and do not generate munitions noise. The State-owned land not retained is used minimally by PTA; therefore, the elimination of training and other

activities within this area would result in new long-term, negligible, beneficial impacts on noise. Additionally, there would be new short-term, negligible, adverse impacts to noise from completion of lease compliance actions and removal, investigation, and cleanup of hazardous and toxic materials and wastes, including MEC, within the State-owned land not retained. BMP options to minimize noise impacts may include, but are not limited to, construction of physical barriers to reduce sound travel or construction engines would be equipped, as per manufacturer specifications, with adequate mufflers, intake silencers, and engine enclosures.

Summary of Impacts: Alternative 2 would result in new long-term, negligible, beneficial impacts on noise from the elimination of training and other activities within the State-owned land not retained; new short-term, negligible, adverse impacts from completion of lease compliance actions and hazardous and toxic materials and wastes compliance actions in the State-owned land not retained; and continued long-term, minor, adverse noise impacts due to ongoing activities on the State-owned land retained. In total, the impact would be less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.7.6.3 Alternative 3: Minimum Retention and Access

Land Retained

The Army would retain and continue ongoing activities on approximately 10,100 acres within the State-owned land retained. The State-owned land retained would include Cooper Air Strip, the BAX, MOUT, approximately 78 FPs, four landing zones, one drop zone, and two FARPs.

Alternative 3 would result in no new noise impacts within the State-owned land retained but would result in continued long-term, minor, adverse noise impacts from ongoing activities within the State-owned land retained.

The Army would continue to operate in accordance with federal and local noise ordinances, as well as Army requirements and guidelines as discussed within Alternative 1.

Land Not Retained

By the lease expiration date, the Army would stop all training and other activities within the State-owned land not retained, which includes approximately 12,900 acres, approximately 29 FPs, and two landing zones. The permanent loss of use of two landing zones and approximately 29 FPs within the State-owned land not retained would result in impacts on noise. These changes would result in long-term, negligible, beneficial impacts on noise impacts, with potential reduction of noise and disruptions to PTA wildlife. There would be new long-term, negligible, adverse impacts to State-owned land not retained. There would be a reduced noise buffer between ongoing activities within the land retained and public use areas (land not retained). In some instances, noises from ongoing activities, such as use of the FPs (and associated noises at the impact area) and aircraft operations, would extend onto the State-owned land not retained. Additionally, there would be new short-term, negligible, adverse impacts to noise from completion of lease compliance actions and removal, investigation, and cleanup of hazardous and toxic

materials and wastes, including MEC, within the State-owned land not retained. BMP options to minimize noise impacts would be similar to strategies discussed under Alternative 2.

Summary of Impacts: Alternative 3 would result in new long-term, negligible, beneficial impacts on noise from eliminating training and other activities within the State-owned land not retained; new long-term, negligible, adverse impacts due to reduced noise buffer between land retained and public use areas (land not retained); new short-term, negligible, adverse impacts from completion of lease compliance actions and hazardous and toxic materials and wastes compliance actions in the State-owned land not retained; and continued long-term, minor, adverse noise impacts due to ongoing activities within the State-owned land retained. In total, the impact would be less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.7.6.4 No Action Alternative

Under the No Action Alternative, the Army would not retain any State-owned land at PTA at lease expiration, which would result in long-term, minor to moderate, beneficial noise impacts from the elimination of ongoing activities within the State-owned land. This would result in potential reduction of noise disruptions to PTA wildlife. There would be new long-term, negligible, adverse impacts to State-owned land not retained. In some instances, noises from ongoing activities, such as aircraft operations, would extend onto the State-owned land not retained. Additionally, there would be new short-term, negligible, adverse impacts to noise generated from the operation of FARPs located on U.S. Government-owned land adjacent to State-owned land not retained and from completion of lease compliance actions and removal, investigation, and cleanup of hazardous and toxic materials and wastes, including MEC, within the State-owned land not retained. BMP options to minimize noise impacts would be similar to strategies discussed under Alternative 2.

Summary of Impacts: The No Action Alternative would result in new short-term, negligible, adverse impacts from completion of lease compliance actions and hazardous and toxic materials and wastes compliance actions; and new long-term, minor to moderate, beneficial impacts associated with decreased activities on State-owned land with potential reduction of noise and disruptions to PTA wildlife. In total, the impact would be less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.8 Geology, Topography and Soils

3.8.1 Definition

Geologic resources refer to all aspects of the soils and geological environments, including substrate types, composition and characteristics, physiography, topography, and soils. Discussions of geology and soils also cover geologic processes, such as erosion, faulting, and volcanic eruptions, and geologic hazards such as earthquakes and slope failure. These are presented in this section as they pertain to the Proposed Action.

3.8.2 Regulatory Framework

The Farmland Protection Policy Act (7 CFR Part 658) sets out criteria developed by the Secretary of Agriculture in cooperation with other federal agencies, pursuant to section 1541(a) of the Farmland Protection Act (7 U.S.C. Section 4202(a)). As required by section 1541(b) of the Act, 7 U.S.C. Section 4202(b), federal agencies are (a) to use the criteria to identify and take into account the adverse effects of their programs on the preservation of farmland, (b) to consider alternative actions, as appropriate, that could lessen adverse effects, and (c) to ensure that their programs, to the extent practicable, are compatible with the State and units of local government and private programs and policies to protect farmland. Guidelines to assist agencies in using the criteria are included in this part. The U.S. Department of Agriculture (USDA) may make available to states, units of local government, individuals, organizations, and other units of the federal government, valuable information in restoring, maintaining, and improving the quantity and quality of farmland.

HRS 205, Land Use Commission, establishes policy for Important Agricultural Lands in Hawai'i. Each county is to identify and map potential important agricultural land within its jurisdiction using an inclusive public involvement process. Landowner incentives, such as tax credits and loan guarantees, encourage voluntary designation of lands as important agricultural land where lands meet specific criteria.

USARHAW Regulation No. 350-19, *Installations Ranges and Training Areas*, provides policy and guidance for managing and operating U.S. Army Ranges and training lands to support their long-term viability. Core programs include the Range and Training Land Program and the ITAM. These programs are further discussed in **Section 3.8.4.3**.

In accordance with 32 CFR Part 651, Environmental Analysis of Army Actions (Army Regulations 200-2) and HRS Chapter 343, consideration of sea level rise is to be evaluated in an EIS based upon the best available scientific data. Sea level rise related to the State-owned land is discussed in **Section 3.8.4.3**. GHG emissions are discussed in **Section 3.6**.

3.8.3 Region of Influence

The ROI for areas of geology and/or soils that are disturbed or have potential vulnerabilities to natural hazards that the Proposed Action would impact includes all areas located within the State-owned land and the corridors of the military vehicle roads.

3.8.4 Existing Conditions

3.8.4.1 Geologic Setting and Topography

The island of Hawai'i consists of five volcanoes that formed as a result of the northwest movement of the Pacific tectonic plate at a speed of approximately 4 inches per year over a fixed thermal anomaly in the underlying mantle (a "hot-spot"). The island of Hawai'i, the largest and youngest of the islands in the Hawaiian Island chain, was formed by the lava flows of five progressively older volcanoes: Kohala (extinct for a little over 100,000 years); Mauna Kea (the tallest volcano and presently dormant); Hualālai (last eruption 1800 to 1801); Mauna Loa (the last eruption began in March 1984); and Kīlauea (active).

The State-owned land at PTA is in the Hamu'ula Saddle area between Mauna Loa to the south and Mauna Kea to the northeast. South of the DK1 Highway, the surface topography of the State-owned land gradually

rises from west to east, with an elevation of approximately 4,200 feet on the west and approximately 6,800 feet on the east (**Figure 3-11**). North of the DK1 Highway, Mauna Kea's slope rises from approximately 5,600 feet on the western edge of the State-owned land to an elevation of approximately 7,600 feet in the northern edge. Overall, the land within PTA gently slopes in a south-westerly direction at less than 5 percent with few trees or deep gullies present on the land (USAG-PTA, 2020c).

Mauna Loa is encroaching on Mauna Kea's southern flank, and, as a result, the southern portion of the State-owned land is made up of Mauna Loa lavas overlying and interspersed with, the older Mauna Kea surface (USGS, 2007). The surface contact between older (4,000 to 200,000 years before present Mauna Kea) lava flows (USGS, 1997) and younger, generally Holocene-era (750 to 5,000 years before present) lava flows originating from Mauna Loa's southwest-rift zone (USGS, 1996), runs through the State-owned land at PTA. Large portions of the State-owned land at PTA are covered by lava flows that erupted from Mauna Loa during the nineteenth and twentieth centuries. The Mauna Kea lava flows in the area were erupted during both the basaltic and hawaiitic post-shield eruptive stages of volcanism termed the Hamakua and Laupahoehoe Volcanics, respectively, while the basaltic flows from Mauna Loa that cover the southern portion of the property are termed the Kau Basalt (HGS, 1987) (**Figure 3-12**).

The Mauna Kea surface underlying the State-owned land at PTA consists of weathered 'a'ā lava flows, finely divided rock fragments derived from glacial weathering and outwash, and ash (USAG-HI & USARPAC, 2013). The prehistoric and historic Mauna Loa lava flows consist of pāhoehoe and 'a'ā lava types. Pāhoehoe lava is characterized by a smooth, billowy, and folded or ropy surface. The composition of 'a'ā lava is similar to pāhoehoe but is characterized by a rough, jagged, sharp, and uneven surface and forms steep-sided, jumbled piles of sharp plates and boulders (USDA & UH, 1973). Small to large cinder cones associated with individual eruptive events of Laupahoehoe Volcanics are also present across the State-owned land.

3.8.4.2 Soils

Soils in the State-owned land are poorly developed due to the low rainfall that falls on the area and the relatively young geologic age of the lava flow units. Much of the land surface is covered by the sparsely vegetated basaltic rock in the early stages of decomposition and soil formation. Soils on State-owned land are generally coarse to medium textured and excessively drained. The soils that developed atop the Mauna Kea lavas were initially classified by USDA as Ke'eke'e loamy sand with 0 to 6 percent slopes, Huikau Extremely Stony Loamy Sand, 12 to 20 percent slopes, and Very Stony Land (USDA & UH, 1973). The areas classified by USDA as Very Stony Land are associated with the alluvial fans that developed at the base of Mauna Kea. The Huikau Extremely Stony Loamy Sand and Ke'eke'e Loamy Sand soils are characterized by slow runoff, rapid permeability, and low shrink-swell potential. The southern portion of the State-owned land is primarily covered by 'a'ā and pāhoehoe lava types with little or no soil cover and isolated Cinder Land pockets (USDA & UH, 1973). An extensive lava tube system (System C) underlies the site (Godby, 2003).

Several quarries are located within the State-owned land (**Figure 3-13**). PTA maintains the Ahi Quarry site near the Ahi Pu'u in TA 13 on State-owned land. The Ahi Quarry has a vein of "blue rock" that stretches to an unknown extent beneath surface lava flows. Blue rock has highly desirable characteristics of hardness, abrasion resistance, and tensile strength; therefore, it is an outstanding engineering and construction resource (USACE-POH & USAG-HI, 2019c). Other quarries located within the State-owned land include the Pu'u Ahi/Cinder Pit in TA 9, and the volcanic glass quarry complex. This Pre-Contact quarry has over 500 quarry features of cultural importance (**Table 3-8, Section 3.4**).

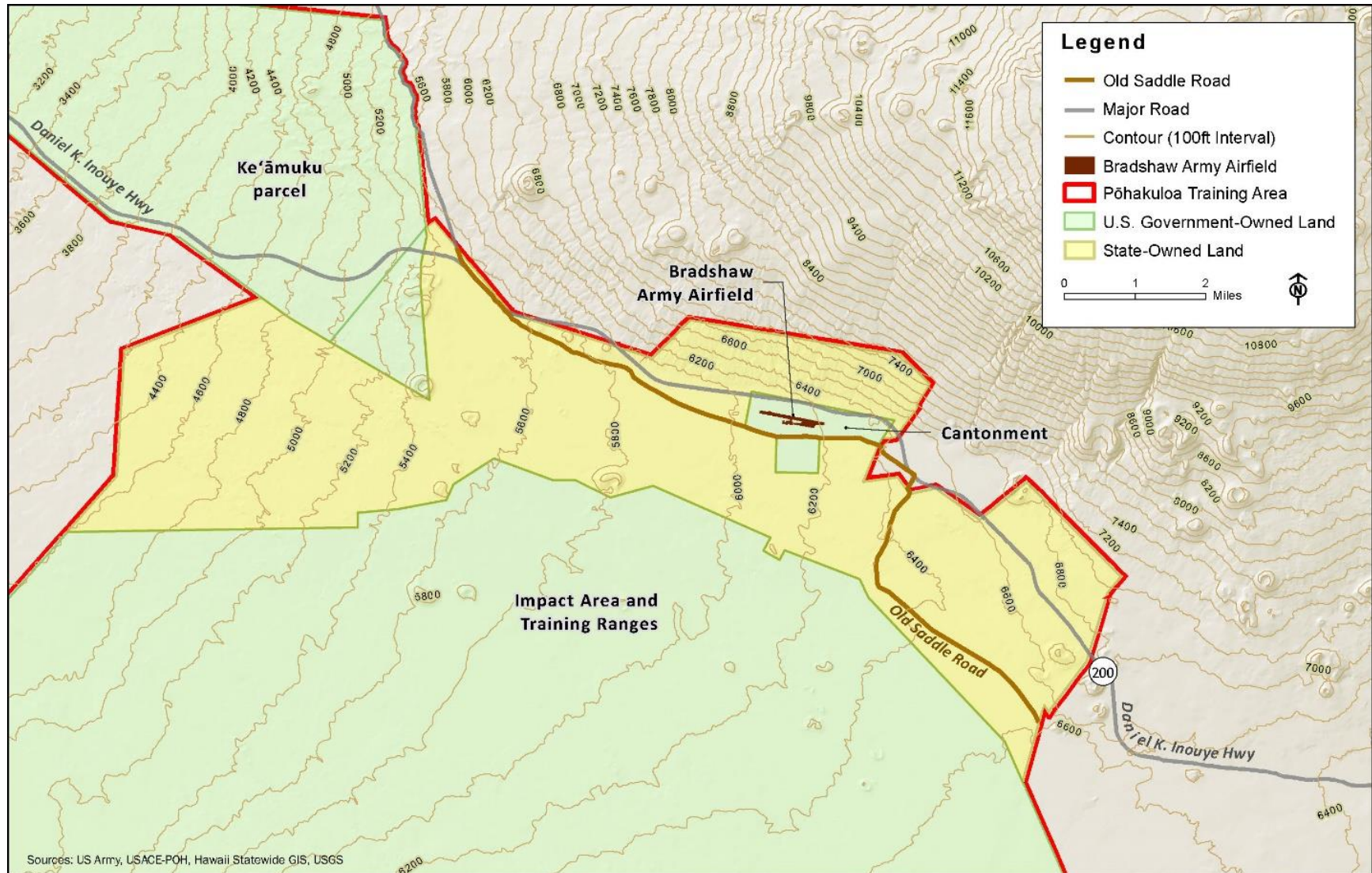


Figure 3-11: Topography of State-Owned Land

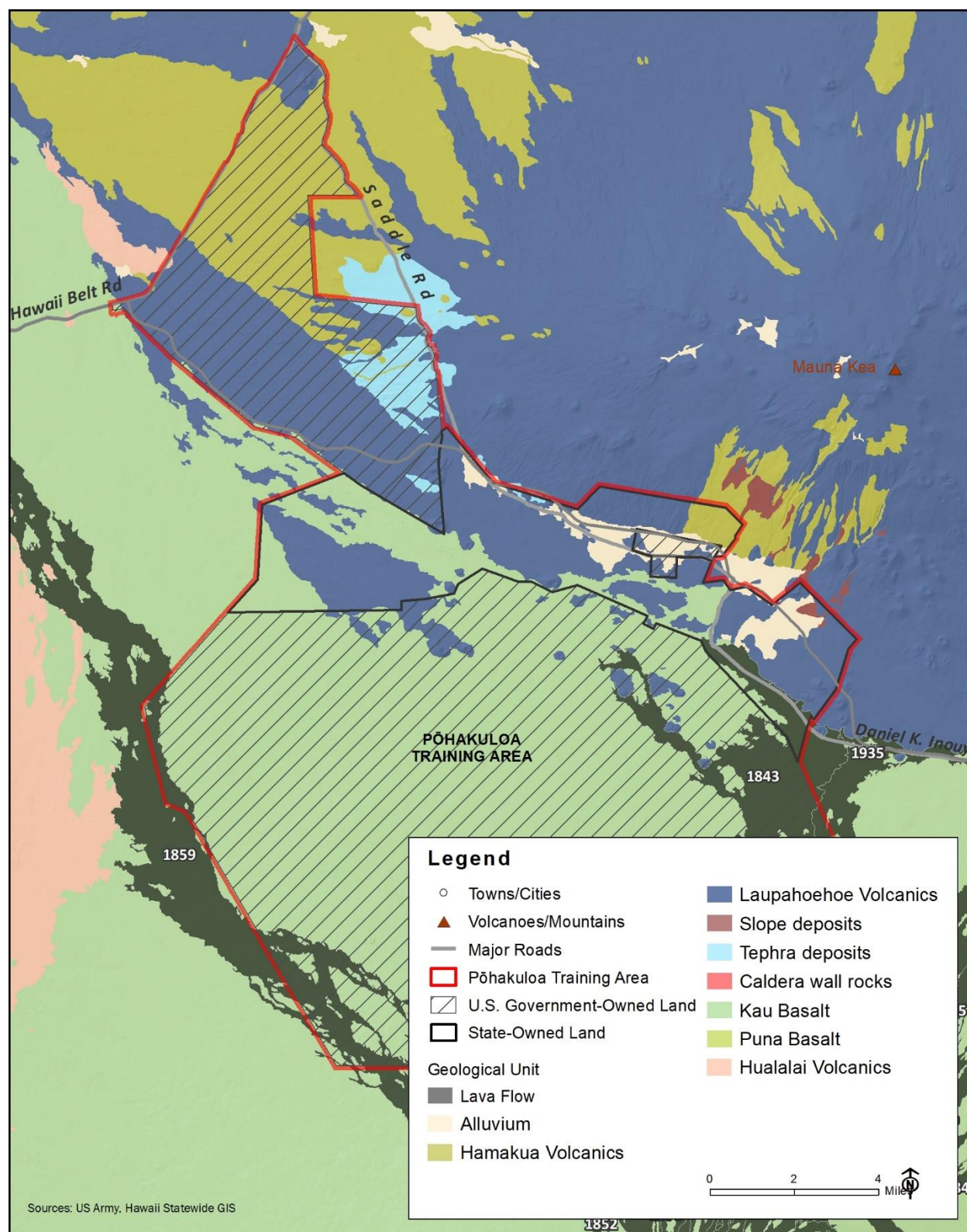


Figure 3-12: Surface Geology in Vicinity of State-Owned Land

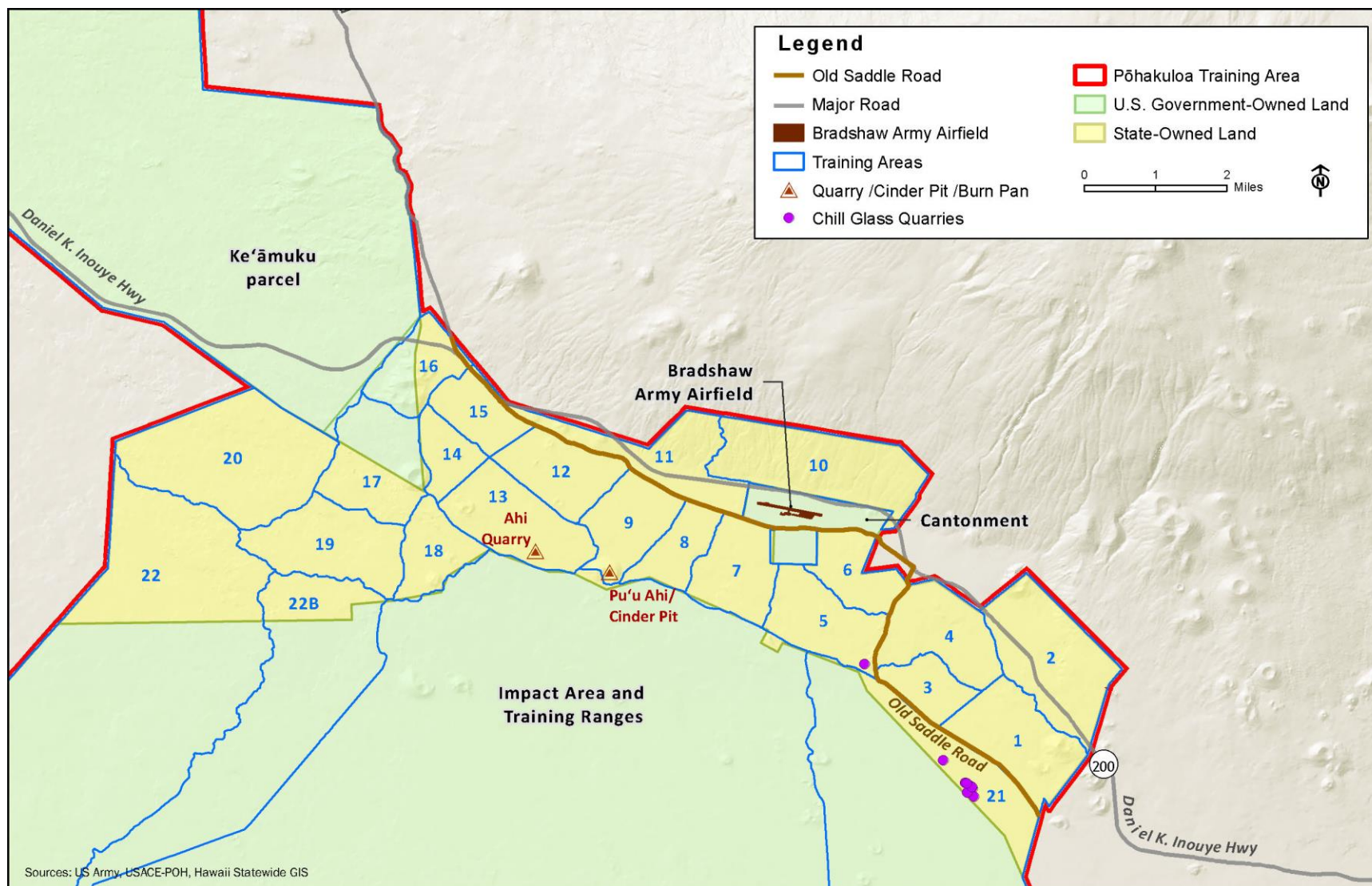


Figure 3-13: Quarries Located within the State-Owned Land

The lease for State-owned land permits the Army to use rock and similar materials from the premises for construction on site (**Section 3.2.4.1**). A BO prepared by the USFWS recommends rock from onsite locations be utilized to minimize inadvertent transport of invasive plant species. A 2010 amendment to General Lease No. S-3849 expressly allows the U.S. Government to use coral, rock and similar materials that occur naturally on the State-owned land, for specified, approved construction projects. The stone and cinder quarries used by the Army do not include the archeological quarry sites (**Table 3-8**).

Table 3-16 contains a breakdown of the relative acreage of the 24 refined soil units present within the State-owned land at PTA obtained from the USDA Natural Resources Conservation Service “Web Soil Survey” (**Figure 3-14**). The top seven lava units present within the State-owned land (covering 85 percent of the land) consist of either ‘a‘ā lava types or ‘a‘ā lava forms that are either well-drained or excessively drained lands.

The USDA Natural Resources Conservation Service classifies these lands as “Not Prime Farmland.” There is no unique farmland or farmland of statewide importance listed for the State-owned land. The Proposed Action would continue to comply with 7 CFR Part 658 and 7 U.S.C. Section 4202(a).

According to the Statewide GIS for important agricultural land last updated October 2020, the State-owned land at PTA is not designated as important agricultural land under HRS 205.

3.8.4.3 Natural Hazards

Volcanic and Earthquake Hazards

The island of Hawai‘i is geologically active, with historic volcanic eruptions recorded on three of the five volcanoes that comprise the island. Mauna Loa and Kīlauea are both considered active volcanoes. Hualālai last erupted in 1800 to 1801. Mauna Kea last erupted about 4,000 years ago and is considered dormant (USGS, 2021a). Flows from Mauna Loa that have entered the PTA boundary last occurred in 1935. Potential hazards related to volcanic activity include lava flows, tephra falls, volcanic gases, pyroclastic surges, ground fractures and subsidence, earthquakes, and tsunamis (Mullineaux et al., 1987). The 1868 and 1975 earthquakes generated destructive tsunamis along the coast (Mullineaux et al., 1987; USGS, 1997); however, tsunamis would not be expected to reach PTA due to its elevation.

Table 3-16 Breakdown of Soil Units Present Within the State-Owned Land

Map Unit Symbol	Unit Name	Acres in State-owned Land	Percent on State-owned Land
816	Kemole-Waimea complex, dry, 2 to 12% slopes	4,419	18.9
802	Puu Pa complex, 2 to 20% slopes	4,054	17.4
10	Lava flows, 'a'ā, 2 to 20% slopes	3,630	15.6
832	Keekee ashy loamy sand, 0 to 6% slopes	3,074	13.2
840	Pohakulehu-Lanapohaku complex, 12 to 20% slopes	1,824	7.8
177	Lava flows-Kamawai complex, 2 to 20% slopes	1,570	6.7
828	Kemole-Waimea extremely cobbly substratum complex, 12 to 20% slopes	1,252	5.4
12	Lava flows, pāhoehoe, 2 to 20% slopes	638	2.7
817	Kemole extremely stony medial very fine sandy loam, cry, 35 to 70% slopes	530	2.3
814	Lapa extremely cobbly medial fine sandy loam, 20 to 40% slopes	454	1.9
357	Akahipuu very cobbly medial silt loam, 10 to 20% slopes	334	1.4
839	Huikau very gravelly ashy sandy loam, 30 to 50% slopes	264	1.1
167	Lava flows-Puuiki complex, 2 to 20% slopes	203	0.9
332	Lava flows-Kahaumanu complex, 2 to 20% slopes	201	0.9
158	Lava flows-Napuu complex, 2 to 20% slopes	191	0.8
841	Alaone-Keekee complex, 2 to 6% slopes	198	0.8
805	Kemole extremely stony medial very fine sandy loam, dry 2 to 12% slopes	144	0.6
812	Kemole extremely stony medial very fine sandy loam, dry, 12 to 20% slopes	131	0.6
823	Pohakulehu-Lapa complex, 20 to 40% slopes	133	0.6
165	Puuiki-Lava flows complex, 2 to 10% slopes	46	0.2
164	Lava flows-Kekake complex, 2 to 20% slopes	21	0.1
813	Kilohana medial very fine sandy loam dry, 10 to 20% slopes	23	0.1
806	Kilohana medial very fine sandy loam, 10 to 20% slopes	6	0.0
807	Kilohana medial loamy sand, 20 to 40% slopes	1	0.0
	TOTAL	23,341	100.0



Figure 3-14: Soil Units Within State-Owned Land

U.S. Geological Society (USGS) recognizes nine Lava Hazard Zones on the island of Hawai'i, based on historical records of eruptions and seismic events (USGS, 1992). **Figure 3-15** shows the various Lava Hazard Zones, numbered from one to nine, in order of decreasing relative risk present on the island of Hawai'i. Zone 1 is the hazard zone with the highest volcanic risk and includes those areas where lava covers more than 25 percent of the land since 1800. Zone 1 areas occur adjacent to major rift zones of Mauna Loa and Kīlauea. Zone 2 represents lava flow inundations of 15 to 25 percent coverage since 1800, and 25 to 75 percent coverage in the last 750 years. Zone 3 represents inundations of areas with 1 to 5 percent lava cover since 1800, and 15 to 75 percent cover in the last 750 years. Zone 2 occurs adjacent to and downslope from active rift zones. In contrast, Zone 3 is slightly less hazardous because of its greater distance from recently active vents or due to the area's topography, which reduces the inundation risk of the area. Zone 4 represents areas with approximately 5 percent lava cover since 1800, and less than 15 percent cover in the last 750 years and includes all of Hualālai and portions of Mauna Loa that are not classified as Zone 1 to 3. Zones 5 to 9 are areas that have not been covered by lava since 1800 and are protected by topography or covered by very little lava in the last 750 years (Mullineaux et al., 1987). The State-owned land at PTA is located in Lava Hazard Zones 2, 3, and 8. The southeastern portion of the property is located in Zone 2; the southwestern portion of the property is located in Zone 3; and the northern portions of the property located on the upslope of Mauna Kea are located in Zone 8 (USGS, 1992).

USGS has recently prepared a more detailed lava inundation zone map for Mauna Loa Volcano, which combines more detailed geologic mapping and modeling of lavas movement across the existing surface topography on the volcano to predict areas that could be overrun by erupted lava from various probable source vent locations on Mauna Loa (USGS, 2017). These more detailed maps suggest that PTA would be affected by the Puako Inundation Zone, which extends within a half-mile of the Cantonment and crosses the shoreline south of Kawaihae Harbor.

The earthquake record since 1823 shows that each year Hawai'i averages about one magnitude of 5.0 or greater earthquake (USGS, 2021b). There have been some 40 earthquakes over greater than 6.0 magnitude in the Hawai'i since 1823, with 35 of these earthquakes occurring on or just offshore the island of Hawai'i (Klein et al., 2001). Earthquakes of greater than 6.0 magnitude can cause considerable localized damage while quakes with magnitudes of 7.0 or above typically cause widespread property damage. Hazards associated with earthquakes include ground shaking, fractures, liquefaction, landslides and tsunamis (Mullineaux et al., 1987).

The majority of seismic activity on the island of Hawai'i is concentrated around the rift zones of the active volcanoes of Kīlauea and Mauna Loa. Earthquakes in the rift zones often occur just before or during volcanic eruptions in response to magma movement beneath the Earth's surface. The two largest recent earthquakes in Hawai'i with magnitudes greater than 7.0 occurred in 1868 (the great Ka'ū earthquake, magnitude 7.9) and 1975 (the Kalapana earthquake, magnitude 7.4) and are believed to have been caused by the movement of magma into the rift zones of Mauna Loa and Kīlauea (PTWC, 2018). One relatively recent quake of 6.9 in magnitude occurred in the Hawai'i Eastern rift zone near the south flank of Kīlauea on May 4, 2018, and according to USGS, was related to the new lava outbreaks at the volcano and resulted in the Hilina Slump, the south flank of the Kīlauea Volcano on the southeast coast of the island of Hawai'i, moving approximately 2 feet. The earthquake produced a minor tsunami that reached a maximum height of 15.7 inches in Kapoho, 7.9 inches in Hilo, and 5.9 inches in Honuapo (PTWC, 2018). There have been no historic earthquakes of greater than 6.0 magnitude in the Saddle Region between Mauna Loa and Mauna Kea. However, the State-owned land (along with much of the island of Hawai'i) is located within the highest-rated seismic hazard area delineated by USGS in their National Seismic Hazard Map.

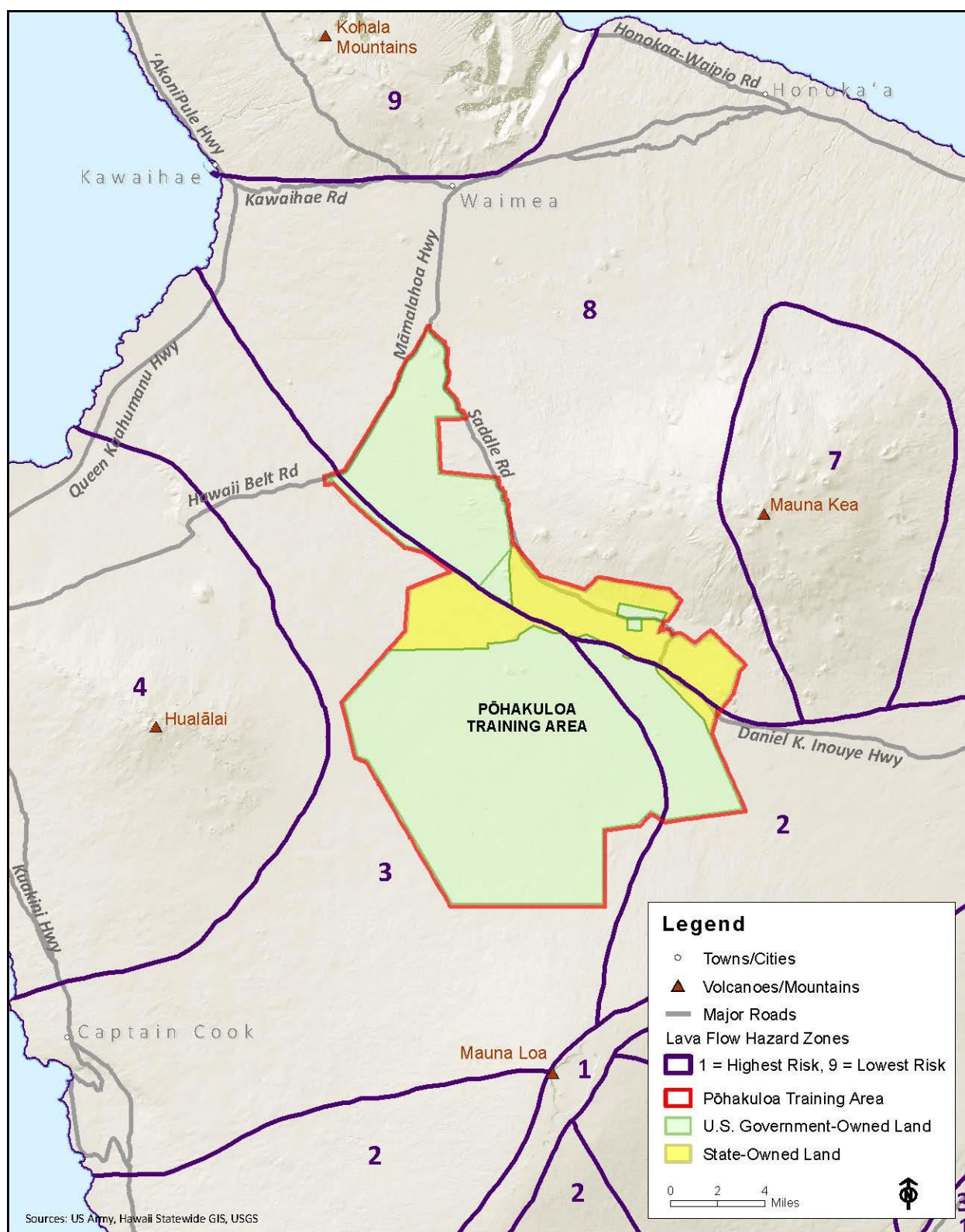


Figure 3-15: Lava Flow Hazard Zone Map, Island of Hawai'i

USGS has prepared maps showing the horizontal ground acceleration in firm rock, as a percentage of the acceleration of gravity, for a given probability of exceedance within a given number of years. Acceleration is the rate of change in speed or direction of an object, and it is what makes buildings come apart in a strong earthquake. A 10 percent probability of exceedance in the next 50 years means there is a 10 percent chance that a more significant event would occur in the next 50 years. PTA is in an area in which there is a 10 percent probability that an earthquake would cause a ground acceleration of more than 40 to 60 percent of gravity in the next 50 years, with the likely size of the earthquake increasing to the south, in the direction of Kīlauea and the south coast (USGS, 1997). The probability of earthquakes within the State-owned land is similar to that of the other installations on O‘ahu because most earthquakes are centered in the active volcanic areas beneath the island of Hawai‘i. The intensity of ground shaking, which is influenced by the underlying geologic materials, would be lowest in rocky uplands areas and would probably increase somewhat on the lower slopes, where the alluvial deposits are the thickest.

Sometimes a few large regional earthquakes (greater than magnitude 6.0) are considered to be related to a subsequent eruption or to some type of unrest at a nearby volcano if the volcano is already poised to erupt and meeting two fundamental conditions: (1) enough “eruptible” magma within the volcanic system, and (2) considerable pressure within the magma storage region (USGS, 2021c).

Several existing small structures, constructed mainly between 1984 and 1987 with a maximum square footage of 1,056, located on the State-owned land, would remain vulnerable to earthquake hazards because they are noncompliant with the newest building codes with regard to structural and seismic resistance recently updated.

Slope Failure

Slope failure occurs when the critical slope angle (angle of repose) is exceeded. The angle depends on the frictional properties of the slope material and increases slightly with the fragments' size and angularity. Dry, cohesionless material will come to rest on similar material when the angle of repose generally ranges between 33 and 37 degrees (NPS, 2010). At PTA, areas with slopes greater than 30 percent within the State-owned land are primarily limited to Mauna Kea Volcano's slopes north of Saddle Road. No prominent areas of large-scale slope failure are present within the State-owned land. Earthquakes or vibrations from sonic booms may also trigger these slides (Jibson & Baum, 1999). The rock rubble from these failures accumulates on the floors of the gulches and is ultimately carried downstream by runoff.

Soil resource management is mandated by and detailed in the USAG-HI INRMP and ITAM Five-Year Management Plan (DA, 2019b).

Soil Erosion

Soil erosion in the Hawaiian Islands typically occurs in two forms, sheet erosion and gullying (Zschokke, 1931). Sheet erosion is the washing of soil from the ground surface during storm events. The amount of soil erosion depends on the looseness of the soil, the intensity of the rainfall, and the steepness of the slope. Gullying is caused by water flowing downhill in channels, with enough force to make the channels deeper and broader by washing away the soil. Gullies start wherever there is a stream of water flowing over the ground surface. Soil erosion within the lower portions of the State-owned land is low due to the following characteristics of the area: the general lack of soil (HQDA, 2010), the overall gently sloping topography at the site, the low overall rainfall and rainfall intensities that fall on the area, and the low

erodibility of the dominant surface material present at the site (e.g., extensive lava fields, stony rocklands, and cinderlands) (USAG-PTA, 2020c). Soil erosion does occur in the steep northern portion of the State-owned land, as evidenced by the presence of alluvial deposits overlying the contact between the older Mauna Kea lavas and the younger Mauna Loa lavas (USGS, 1997). Dust generation is a problem at FPs where vegetative cover is less than 12 percent (USAG-PTA, 2020c).

One landfill POTA-06 (Type A; low-risk, municipal type category) is located within State-owned land on the eastside of Menehune in TA 6. The POTA-06 landfill was opened in 1979 and closed in October 1993 in accordance with HAR Chapter 11-58.1-17 (USAEC & USAG-HI, 2010). The landfill remains closed to the public. A Preliminary Assessment/Site Investigation was conducted from 1993 to 1996 based on a review conducted in 1992 and PTA's inclusion into Comprehensive Environmental Response, Compensation, and Liability Information System under USEPA Identification No. HI32 14522234 (USAEC & USAG-HI, 2010). The closure of the POTA-06 was completed in accordance with HAR Chapter 11-58.1-17 (USAEC & USAG-HI, 2010). The landfill cap at POTA-06 consists of (from top to bottom): 4 inches of soil erosion layer; 9 inches of armor layer comprised of aa lava rock; a 12-inch protective layer of native soil; an impermeable synthetic liner; and grading/daily cover consisting of 18 to 24 inches of native soil. Since an impermeable liner was used, gas produced from the breakdown of the waste would not be able to be released naturally; therefore, a gas collection and venting system was needed. Seven landfill gas monitoring points were installed to vent and monitor the amount of methane that the solid waste in the landfill may produce (USAEC & USAG-HI, 2010). The cap was designed with an impermeable liner to prevent considerable infiltration into the landfill wastes and prevent any erosion from washing soils off the site (USAEC & USAG-HI, 2010). The landfill based on the Decision Document is under a Long-Term Management Plan and subject to 5-year review under CERCLA (USAEC & USAG-HI, 2010).

The erosion potential at the landfill POTA-06 within the State-owned land is controlled with a cap designed with an impermeable liner to prevent considerable infiltration into the landfill wastes and prevent any erosion from washing contaminated soils off the site (USAEC & USAG-HI, 2010). **Figure 3-16** shows the location of the landfill.

Soil resource management is mandated by and detailed in the USAG-HI INRMP and ITAM Five-Year Management Plan (DA, 2019b). PTA has BMPs and SOPs to prevent, monitor, and control erosion and stormwater mitigation to meet training mission requirements and protect the environment. In addition, the landfill has a Long-Term Management Plan in place, and 5-year reviews under CERCLA are conducted.

Erosion Management

Mission Support Element - Hawai'i manages and maintains the training lands on PTA through its ITAM program, which integrates mission and training requirements with environmental requirements and environmental management practices (DA, 2019b). The ITAM goal is to achieve optimum, sustainable use of training lands by implementing an effective land management program. Data collected by the program includes topographic features, soil characteristics, and surface disturbances, which are used to estimate soil erosion, ground cover, and disturbance and monitoring for the land restoration program. USAG-HI has developed an ITAM 5-year plan with specific goals and objectives, and annually develops an integrated ITAM Work Plan with individual projects and resource requirements.

The ITAM has four major components: Range and Training Land Assessment, Land Rehabilitation and Maintenance (LRAM), Training Requirement Integration, and Environmental Awareness. The LRAM

component guides repairs, maintenance, and reconfiguration of Army lands to meet maneuver training requirements. It is the crucial enabler for sustaining realistic training conditions and supporting unit mission requirements. One example of an LRAM project includes erosion control and soil stabilization through use of cost-effective technologies such as revegetation, erosion control structures, site hardening, and dust palliatives. Site hardening includes the application of crushed lava on a range or TA to prevent degradation of the surrounding area. Restoration of artillery FPs has been the major area of emphasis for the LRAM program on PTA.

One primary method of dust control at PTA and within the State-owned land consists of lignin sulfonate dust palliative. This non-toxic material is derived from tree sap and is a by-product from wood pulping. It is formulated as a liquid and applied topically to surfaces, using standard 1,000- to 3,000-gallon water trucks (USAG-HI, 2018). Depending on traffic volume and site conditions, the dust palliative is applied, as necessary, approximately one to two times per year (USAG-HI, 2018). USAG-HI implements a Dust and Soils Management and Monitoring Plan (USAG-HI, 2006) to minimize environmental issues from soil erosion or compaction. This plan includes the monitoring of actual fugitive dust levels during training. Fugitive dust is further discussed in **Section 3.6**.

Sea Level Rise

According to the U.S. Global Change Research Program, the rising global atmospheric GHG emission concentrations are considerably affecting the Earth's climate, average temperatures and sea levels have risen, and changes in the frequency or intensity of precipitation, wind patterns, and other climate conditions have changed (CEQ, 2021). The Hawai'i Sea Level Rise Vulnerability and Adaptation Report, mandated by the Hawai'i Climate Change Mitigation and Adaptation Initiative, provides a statewide assessment of Hawaii's vulnerability to sea level rise and recommendations to reduce exposure to sea level rise (HCCMAC, 2017). The report presents results of modeling studies conducted to determine the potential future exposure of the main Hawaiian Islands to coastal hazards and recommends that a planning benchmark of six feet of sea level rise is appropriate for projects with a lifespan beyond mid-century.

The State Sea Level Rise Viewer provides detailed information to view impacted areas at different levels of sea level rise, including 0.5, 1.1, 2.0, and 3.2 feet, as well as 6 feet sea level rise exposure areas (HCCMAC, 2021). These scenarios relate to global sea level rise predictions based on GHG emissions continuing at current levels of increase, and which published scenarios suggest could occur between 2060 and 2100. Ground elevations at the State-owned land is approximately 4,200 feet on the west boundary and approximately 7,600 feet on the north boundary (**Figure 3-11**). These lands are not vulnerable to sea level rise during the next century.

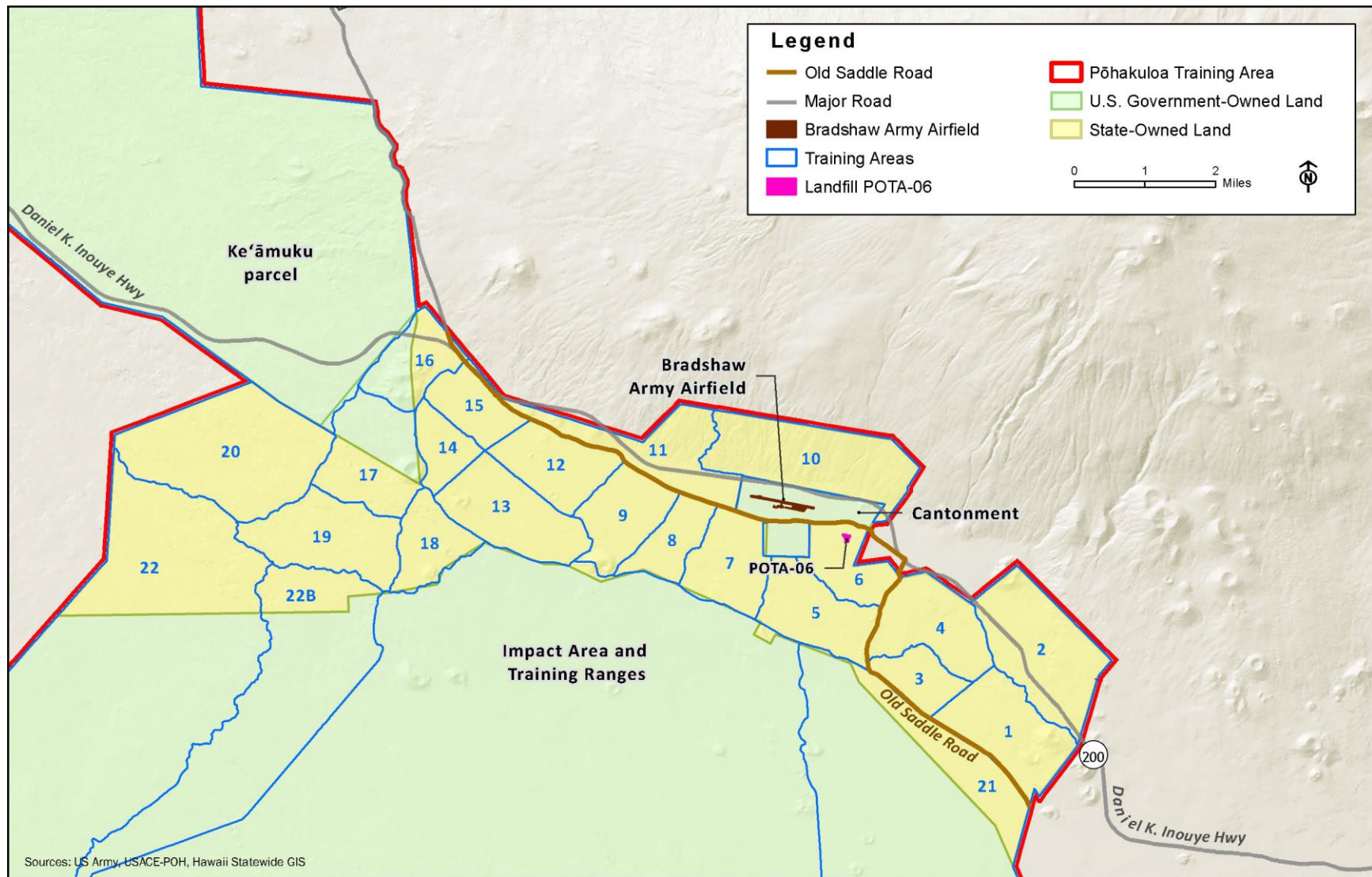


Figure 3-16: Landfill POTA-06 Location

3.8.5 Methodology and Significance Criteria

This section outlines the methods and criteria used in **Section 3.8.6** to assess potential significant impacts on geology, topography, soils, and natural hazards. The analysis of natural hazards, geology, and soils focuses on the areas of geology and/or soils that would be disturbed and have potential vulnerabilities to natural hazards. The State-owned land is subject to volcanic eruptions, lava flows, occasional explosive eruptions, volcanic gas venting, and earthquakes due to natural processes. The elevation of the State-owned land is approximately 4,200 feet on the west boundary and approximately 7,600 feet on the north boundary; the State-owned land is not within the 6-foot sea level rise exposure area. Therefore, it is not vulnerable to sea level rise during the next century and is not further discussed, as no impact under any alternative is anticipated. No tsunami impacts are anticipated on the State-owned land due to the distance from the shoreline and elevation. The soil within the State-owned land is not considered Prime Farmland and is not further discussed in this EIS.

The criteria considered to assess whether an alternative would result in potential significant impacts on geology, topography, soils, and natural hazards include the extent or degree to which an alternative would result in the following:

- Impact(s) to soils or geological features that cause substantial soil erosion or loss; and/or
- An increase of risk to humans or the built environment from natural hazards.

3.8.6 Environmental Analysis

3.8.6.1 *Alternative 1: Full Retention*

Under Alternative 1, there would be no changes and no new impacts to the geological and soil resources in the ROI. Continued long-term, minor, adverse impacts on geologic and soil resources would continue due to ongoing activities within the retained land.

While the Proposed Action would not change the rate of volcanic eruptions and seismic hazards, long-term, adverse impacts associated with these natural hazards would continue to threaten infrastructure within the State-owned land. According to the USGS National Seismic Hazard Map Project, there is only approximately a 10 percent chance that ground accelerations of more than 120 percent of gravity would occur in firm rock areas within the State-owned land, assuming firm rock soil conditions at 2,493 feet per second, are available (USGS, 1998). Under Alternative 1, the level of runoff, erosion, and sedimentation would continue from soil disturbances from ongoing activities. Potential exposure to lava inundation, considered to be low, would remain unchanged. The soil substrates within the State-owned land are primarily fine, volcanic ash prone to wind erosion and dust generation; however, the soil erosion potential would remain low due to low overall rainfall and rainfall intensities that fall on the area, and the low erodibility of the dominant surface material present. The erosion potential at landfill POTA-06 is low as it would remain capped and subject to a Long-Term Management Plan and 5-year reviews under CERCLA.

The Army would continue ongoing mitigation on the land retained under the INRMP (USAG-PTA, 2020c), Dust and Soils Management and Monitoring Plan (USAG-HI, 2006), and PTA External Standard Operating Procedures that include site-specific BMPs (USAG-PTA, 2018a). **Sections 3.5** and **3.6**, respectively, contain further details on fugitive dust and hazardous and toxic materials and waste impacts to soil resources.

Summary of Impacts: No changes in use or impact to the geological or soil resources in the ROI would result from Alternative 1. Long-term, minor, adverse impacts to geologic and soil resources would continue to occur from ongoing activities related to soil disturbances; however, impacts would be minimized through established programs including the ITAM.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.8.6.2 Alternative 2: Modified Retention

Land Retained

USAG-HI would continue to conserve and manage soil resources on the land retained by managing natural rates of runoff, erosion, and sedimentation; erosion management strategies that include site hardening by putting down crushed lava to allow use of the area without degradation of the surrounding area; and restoration of FPs under the LRAM program. In addition, the Army would continue to follow the safety protocols in the PTA SOPs and PTA BMPs designed to identify, evaluate, protect, and minimize impacts to geological and soil resources through road grading, target repair, and berm recontouring. The quarries and POTA-06 landfill cap would be retained under Alternative 2. For these reasons, impacts for the State-owned land retained would be the same as under Alternative 1.

Land Not Retained

Long-term, minor, beneficial impacts would occur from the elimination of ongoing activities, which create ground disturbances, on the State-owned land not retained. The State-owned land not retained is rarely used for military training purposes; therefore, the elimination of ground disturbances would be a minor, beneficial impact. Lease compliance actions (e.g., reforestation) would also contribute to long-term, minor, beneficial impacts due to decreased erosion potential. New short-term, negligible, adverse impacts would occur from lease compliance actions.

Summary of Impacts: Impacts for land retained would be the same as Alternative 1. New long-term, minor, beneficial impacts would occur from elimination of ground disturbances from ongoing activities and lease compliance actions on land not retained. New short-term, negligible, adverse impacts would occur from lease compliance actions. The overall impact would be beneficial and less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.8.6.3 Alternative 3: Minimum Retention and Access

Land Retained

Under Alternative 3, impacts and management practices for the land retained would be the same as under Alternative 1, as the stone and cinder quarries and the POTA-06 landfill cap would be retained under Alternative 3. Alternative 3 impacts for the State-owned land retained would be continued long-term,

minor, adverse impacts on geologic and soil resources due soil disturbance from ongoing activities within the retained land.

Land Not Retained

Long-term, moderate, beneficial impacts to geologic and soil resources would occur from the elimination of ongoing activities, which create ground disturbances, on the State-owned land not retained. The State-owned land not retained is moderately used for military training purposes; therefore, the elimination of ongoing activities would be a moderate, beneficial impact. Lease compliance actions (e.g., reforestation) would also contribute to long-term, beneficial impacts due to decreased erosion potential.

Summary of Impacts: Alternative 3 would not result in new adverse impacts to the geologic or soil resources or change conditions that affect the frequency or intensity of natural hazards in the ROI. Impacts for land retained would be the same as Alternative 1. For the land not retained, continued long-term, moderate, beneficial impacts would occur from elimination of ground disturbances from ongoing activities in the land not retained. The overall impact under Alternative 3 would be beneficial and less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.8.6.4 No Action Alternative

Under the No Action Alternative, the Army would cease operations and training resulting in the elimination of ground disturbance activities on the State-owned land. New long-term, moderate, beneficial impacts would occur for the geologic and soil resources from the elimination of ongoing activities, as well as lease compliance actions such as reforestation that would result in less soil erosion. New short-term, negligible, adverse impacts would occur from lease compliance actions.

Summary of Impacts: Long-term, moderate, beneficial impacts would occur for the geologic and soil resources from the Army ceasing land disturbing activities and performing lease compliance actions on the State-owned land. Short-term, negligible, adverse impacts would occur from lease compliance actions. The overall impact under the No Action Alternative would be beneficial and less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.9 Water Resources

3.9.1 Definition

Water resources include groundwater, surface water (i.e., streams, lakes, rivers), wetlands, floodplains, marine waters, and coastal resources, and their relationship to the area of a particular proposed action. These resources are described in terms of occurrence, distribution, movement, and properties through the processes of precipitation, subsurface flow, evapotranspiration, and surface runoff. No perennial

streams, rivers, wetlands, marine waters, or coastal resources occur within or with a relationship to the State-owned land; thus, these are not discussed further in existing conditions or analyzed in this section.

Groundwater is water that collects or flows beneath the Earth's surface within aquifers. Groundwater is described in terms of depth from the surface, aquifer or well capacity, quality, recharge rate, and surrounding geologic formations.

Surface water includes natural, modified, and constructed water confinement and conveyance features. These features are generally classified as streams, springs, lakes, wetlands, natural and artificial impoundments (e.g., ponds), and constructed drainage canals and ditches. Surface water systems are typically defined in terms of watersheds. A watershed is a land area bounded by topography that drains water to a common destination. Watersheds divide the landscape into hydrologically defined areas, and serve to drain, capture, filter, and store water and determine its subsequent release. Stormwater is surface water generated by precipitation events that may percolate into permeable soils or runoff, which occurs when the stormwater flows across the top of impervious or saturated surficial areas.

Floodplains are areas of low-level ground present along rivers, stream channels, or coastal waters subject to periodic or infrequent inundation from rainfall. Risk of flooding typically depends on local topography, the frequency of precipitation events, and the size of the watershed above the floodplain. Flood potential is evaluated by the Federal Emergency Management Agency (FEMA), which defines the 100-year floodplain as an area that has a 1 percent chance of inundation by a flood event in a given year.

3.9.2 Regulatory Framework

The CZMA of 1972 (as amended) (16 U.S.C. Section 1451 *et seq.*) is the federal law that protects the coastal environment from growing demands associated with residential, recreational, commercial, and industrial uses. CZMA provisions help states develop coastal management programs to manage and balance the coastal zone's competing uses. The State CZM Program was established in 1977 by HRS Chapter 205A, which requires that projects with federal involvement must undergo review for consistency with the State CZM Act of 1977 (15 CFR Part 930). Under this program, all of the State's lands are considered subject to consistency review. The CZM objectives are to ensure effective management, beneficial use, protection, and development of the Hawai'i coastal zone. **Section 5.3** analyzes the Proposed Action's consistency with the CZMA and the State's CZM law.

The Safe Drinking Water Act (SDWA) (42 U.S.C. Section 300f to 300j *et seq.*) is the federal law that protects public drinking water supplies throughout the United States. Under the SDWA, USEPA sets standards for drinking water quality. USEPA's regulations implementing the SDWA requirements are found in 40 CFR Parts 141–149. Federal standards promulgated under the SDWA are also typically used to evaluate or assess groundwater quality. Any federally funded project with the potential to contaminant a designated sole-source aquifer is subject to review by USEPA. Federal SDWA groundwater protection programs are generally implemented at the state level. In Hawai'i, the Groundwater Protection Program is managed by the Safe Drinking Water Branch (SDWB), who has prepared groundwater contamination maps for the State. **Section 3.9.4.1** describes existing conditions of groundwater and watersheds and **Section 3.9.4.2** describes existing conditions for groundwater quality the ROI. The ongoing activities facilitated by implementation of the Proposed Action would continue to comply with SDWA and the implementation of SOPs are considered appropriate and reasonable for effective groundwater protection.

The CWA, 33 U.S.C. Sections 1251 to 1387 *et seq.* (1972), establishes federal limits, through the National Pollutant Discharge Elimination System (NPDES) program, on the amounts of specific pollutants that can be discharged into surface waters to restore and maintain the chemical, physical, and biological integrity of the water. The NPDES is a permit program that regulates the discharge point (i.e., end of pipe) and nonpoint sources (i.e., stormwater) to waters of the United States. The State DOH administers the NPDES program in Hawai'i under HAR Chapter 11-55. HAR Chapter 11-54 regulations specify the water quality condition for "State waters," as defined by HRS Chapter 342D-1 Water Pollution, including coastal waters streams and rivers, and HRS Chapter 342E Nonpoint Source Pollution Management and Control. The HRS Chapter 342E Nonpoint Source Pollution Management and Control, is implemented to reduce, control, and mitigate nonpoint source pollution in the State. **Section 3.9.4.3** describes existing conditions for surface water and **Section 3.9.4.4** describes existing conditions for surface water quality in the ROI. Industrial activities (e.g., mining at the Ahi Quarry) conducted within the State-owned land are subject to NPDES permitting requirements. The ongoing activities facilitated by implementation of the Proposed Action would continue to comply with the CWA, HAR Chapter 11-54, HRS Chapter 342D1, and HRS Chapter 342E as a drainage report prepared for the PTA concluded stormwater infrequently flows and is only generated within developed portions of the site and does not exit the installation.

Section 404 of the CWA, Water Quality Certifications, authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredge or fill into wetlands and other waters of the United States. Any discharge of dredge or fill into waters of the United States requires a permit from USACE. Section 404 does not apply to the ongoing Army activities or the Proposed Action, as no perennial streams, rivers, wetlands, lakes, or other surface water bodies are located within the State-owned land.

Under Section 401 of the CWA, the DOH Clean Water Branch is responsible for issuing or denying Section 401 Water Quality Certifications for any project or activity that requires a federal license or permit and may result in a water pollutant discharge to State surface waters. The ongoing activities facilitated by implementation of the Proposed Action would continue to comply with the Section 401 of the CWA, HAR Chapter 11-54, and HRS Chapter 342D-1.

Section 10 of the Rivers and Harbors Act provides for USACE permit requirements for any in-water construction. USACE and some states require a permit for any in-water construction. Permits are required for construction of piers, wharfs, bulkheads, pilings, marinas, docks, ramps, floats, moorings and like structures; construction of wires and cables over the water, and pipes, cables, or tunnels under the water; dredging and excavation; any obstruction or alteration of navigable waters; depositing fill and dredged material; filling of wetlands adjacent or contiguous to waters of the United States; construction of riprap, revetments, groins, breakwaters, and levees; and transportation of dredged material for dumping into ocean waters. Section 10 does not apply to the ongoing Army activities or the Proposed Action as no perennial streams, rivers, wetlands, lakes, or other surface water bodies are located within the State-owned land.

The National Flood Insurance Act (42 U.S.C. Chapter 4001 *et seq.*) establishes the National Flood Insurance Program (NFIP), a voluntary floodplain management program for communities which is implemented by FEMA. Any action within a FEMA-mapped floodplain in a participating community must follow the community's FEMA-approved floodplain management regulations. EO 11988 (42 FR 26951), *Floodplain Management*, requires federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect

support of floodplain development unless it is the only practicable alternative. Flood potential of a site is usually determined by the 100-year floodplain, which is defined as the area that has a 1 percent chance of inundation by a flood event in a given year. The FEMA floodplain classification for the State-owned land is documented in **Section 3.9.4.5**.

As described in **Section 3.8.2**, SOP procedures are also used to review applications for Department of the Army permits under Section 404 of the CWA, Section 10 of the Rivers and Harbors Act of 1899, and Section 103 of the Marine Protection, Research, and Sanctuaries Act of 1972. PTA External Standard Operating Procedures have been developed to identify cultural and biological resources restricted areas, as well as a variety of general restrictions including vehicle restrictions, excavation restrictions, and mechanical equipment excavation restrictions (USAG-PTA, 2018a). The Army follows strict SOPs for BMPs designed to minimize impacts on the environment. The ongoing activities facilitated by implementation of the Proposed Action would continue to comply with the SOPs.

The ITAM has four major component programs: Range and Training Land Assessment, LRAM, Training Requirement Integration, and Environmental Awareness. Data collected by the program include topographic features, soil characteristics, and surface disturbance, which are used to estimate soil erosion, ground cover, and disturbance and monitoring for land restoration program. The Army continually funds and implements USAG-HI-wide land management practices and procedures described in the ITAM annual work plan to minimize impacts on the land. Restoration of artillery FPs has been the major area of emphasis for the LRAM program on PTA. The ongoing activities facilitated by implementation of the Proposed Action would continue to comply with the ITAM.

The State Water Code, HRS Chapter 174, was enacted into law by the 1987 State Legislature for the purpose of protecting Hawaii's water resources. It provides for the legal basis and establishment of the Commission on Water Resource Management (CWRM). The CWRM administers the State Water Code and is the primary steward of the public trust for water resources within Hawai'i and has broad powers and responsibilities to protect and manage water resources. This includes the authority and duty to develop plans and programs to conserve and manage water use within the State's aquifer sectors and systems in which water consumption approaches the aquifer's sustainable yield. The ongoing activities facilitated by implementation of the Proposed Action would continue to comply with HRS Chapter 174.

The SDWB of DOH is responsible for safeguarding public health by protecting Hawaii's drinking water sources (surface water and groundwater) from contamination and to assure that owners and operators of public water system provide safe drinking water to the community. The SDWB administers these programs through Underground Injection Control (UIC) and groundwater protection. The UIC program serves to protect the quality of Hawaii's underground sources of drinking water from chemical, physical, radioactive, and biological contamination that could originate from injection well activity. Section 4 of the Administrative Rules identifies the criteria used to classify aquifers into those that are designated as underground sources of drinking water is generally referred to as the "UIC line." Restrictions on injection wells differ, depending on whether the area is inland or seaward of the UIC line. The State-owned land is located above the UIC line indicating that the site overlies a potential drinking water source. The ongoing activities facilitated by implementation of the Proposed Action would continue to comply with the DOH UIC Program.

3.9.3 Region of Influence

The ROI for water resources includes the aquifers and watersheds that contribute groundwater and surface water to the State-owned land and downstream waters that drain from the State-owned land. The contributory aquifers to the State-owned land within PTA are in the Northwest Mauna Loa aquifer sector and the West Mauna Kea aquifer sector, as defined by CWRM. The contributory watersheds are the surface waters that ephemerally occur in the northern portions of the State-owned land during periods of heavy rainfall.

CWRM has established groundwater hydrologic units to provide a consistent basis for managing groundwater resources in Hawai'i. Each island was divided into regions that reflect broad hydrogeological similarities while maintaining hydrographic, topographic, and historical boundaries where possible. Smaller sub-regions were then delineated based on hydraulic continuity and related characteristics. In general, these units allow for optimized spreading of island-wide groundwater withdrawal on an aquifer-system-area scale. There are nine Aquifer Sector Areas on the island of Hawai'i, which are further subdivided into Aquifer System Areas (i.e., Anaehoomalu and Waimea) (Mink & Lau, 1993).

3.9.4 Existing Conditions

The following sections describe the occurrence and quality of groundwater, surface water (i.e., intermittent streams, stormwater), and flooding in the ROI of the State-owned land at PTA.

3.9.4.1 Groundwater and Watershed

Watersheds on the island of Hawai'i are small and generally underlain by permeable volcanic rock and soils. Groundwater develops from the infiltration of rainfall that falls on the ground surface and the infiltration of surface water flowing through watersheds, where streams exist. On young volcanic surfaces, the permeability of basalts is generally high, and rainfall of sufficient intensity will strike the ground, infiltrate, and slowly percolate downward to an underlying standing water table or basal lens. In areas such as the State-owned land, where buried low-permeability ash layers or volcanic dike systems impede vertical and lateral groundwater flow, groundwater bodies will develop at higher elevations than in the more coastal portions where basal aquifers exist. These high-level aquifers are somewhat isolated from the coastal basal lens systems and have a more restricted aerial extent and lower reserves than the basal lens systems that develop in the coastal portions of the island.

Mink and Lau developed a classification scheme for the principal aquifers in the State to serve as a framework for groundwater protection; the classification scheme includes Aquifer Codes and Status Codes. The Aquifer Codes developed incorporate locational and descriptive indices, whereas the Status Codes indicate the developability, utility, quality, uniqueness, and vulnerability to contamination of the groundwater resources. The southern part of the State-owned land at PTA is underlain by the Northwest Mauna Loa aquifer sector and the Anaehoomalu aquifer system, while the northern part is underlain by the West Mauna Kea aquifer sector and Waimea aquifer system. The surficial contact between lava flow units originating from Mauna Loa and Mauna Kea that runs through the State-owned land is the boundary between these two aquifer sectors/systems (**Figure 3-17**).

The Aquifer Codes for the Anaehoomalu and Waimea aquifer systems classify these systems as high-level, unconfined, dike-impounded aquifers. The Status Codes for both aquifers is as follows: the development state is "Potential Use"; the utility is "Drinking"; the salinity of groundwater is "fresh," which indicates

that the groundwater contains less than 250 milligrams per liter of chloride; the uniqueness is “irreplaceable”; and the vulnerability to contamination is classified as “High,” due to the classification of both aquifers as unconfined (Mink & Lau, 1993).

The State-owned land at PTA is underlain by high-level and confined groundwater physically isolated from the basal portions of both the Northwest Mauna Loa and West Mauna Kea aquifer sectors that ultimately discharge along the coastline roughly 17 miles to the west of PTA. The basal portions of these aquifer sectors are estimated to extend roughly 4 to 5 miles inland (Mink & Lau, 1993).

Groundwater has never been extracted from the aquifers underlying the State-owned land of PTA. Potable water supplies required for operations at PTA are trucked from wells located within the Waimea and Hilo areas. The closest water production wells to the State-owned land at PTA are located at Waikiʻi Ranch, approximately 5 miles to the north (**Figure 3-18**). The two Waikiʻi Ranch wells (5239-01, drilled in 1983; 5239-02, drilled in 1989, 120 feet to the north of 5239-01) were installed at elevations of 4,260 and 4,280 feet above mean sea level (amsl) on the southwestern slope of Mauna Kea (BCG & Mink, 1989). Waikiʻi #1 encountered water at 1,509 feet depth (2,740 feet amsl) and was drilled to a total depth of 4,325 feet (an elevation of 65 feet below sea level). A temperature log of Waikiʻi #1 showed an anomalously large increase in temperature from 26.1 degrees Celsius (°C) (79 degrees Fahrenheit [°F]) at the water table to 43.3°C (110°F) at the bottom of the boring, likely due to residual heat present in the basement of the volcano. The Waikiʻi #1 well is a production well and has reliably supplied potable water (162 gallons per minute to a small residential subdivision on the former Waikiʻi Ranch lands since 1983. Waikiʻi #2 well encountered water at a depth of 1,509 feet (3,000 feet amsl) and was drilled to a total depth of 3,300 feet (980 feet amsl). These wells are located within an area that is believed to be underlain by Mauna Kea’s western rift system; hence, the groundwater in this area is believed to be associated with dike-confined aquifers in the now-buried rift and isolated from the high-level and perched aquifer systems that underlie the State-owned land.

Under the State’s exploratory well drilling program, in partnership with the Army, two shallow boreholes were drilled within PTA-controlled properties in the 1960s for the purpose of investigating potential water resources present within the boundaries of PTA lands (USARHAW, 1965). Pōhakuloa Test Hole #1 was drilled in 1965 at a location approximately 0.5 mile to the west of the Gilbert Kahele Recreation Area. This test hole was drilled from an elevation of 6,375 to 5,380 feet amsl. A second test hole, Pōhakuloa Test Hole #2, was drilled from an elevation of 6,000 to 5,650 feet amsl. Neither test hole encountered groundwater.

The University of Hawaiʻi, Hawaiʻi Institute of Geophysics and Planetology, in partnership with the Army, initiated the Humuʻula Groundwater Research Project in 2012 to develop an improved understanding of the County of Hawaiʻi groundwater system to improve management practices of the island’s groundwater resource. The project involved drilling two, small diameter boreholes on U.S. Government-owned land to investigate the subsurface hydrogeologic conditions present in the Humuʻula Saddle area (**Figure 3-18**). Borehole PTA-2 was drilled in 2013 to a total depth of 5,786 feet at an approximate surface elevation of 6,300 feet in the Cantonment at PTA. Borehole KMA-1 was drilled in 2017 to a total depth of 5,024 feet near the intersection of Old Saddle Road and the newly constructed section of the DK1 Highway that heads towards Kailua-Kona. In 2018, concrete was injected behind the casing of the PTA-2 borehole which was then surface completed for potential future use as a monitoring well; borehole KMA-1 was sealed with concrete (USAG-HI, 2021b).

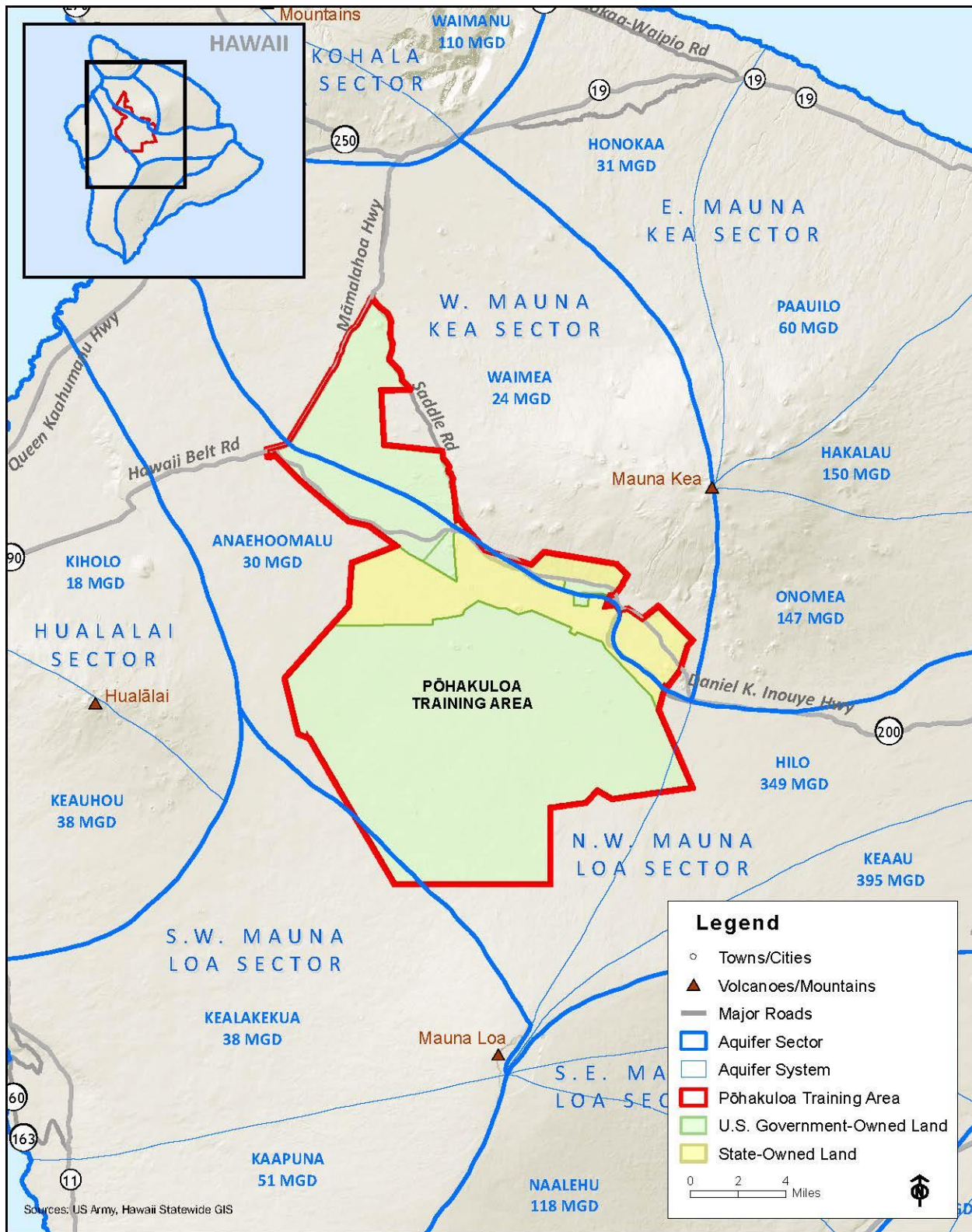


Figure 3-17: Aquifers

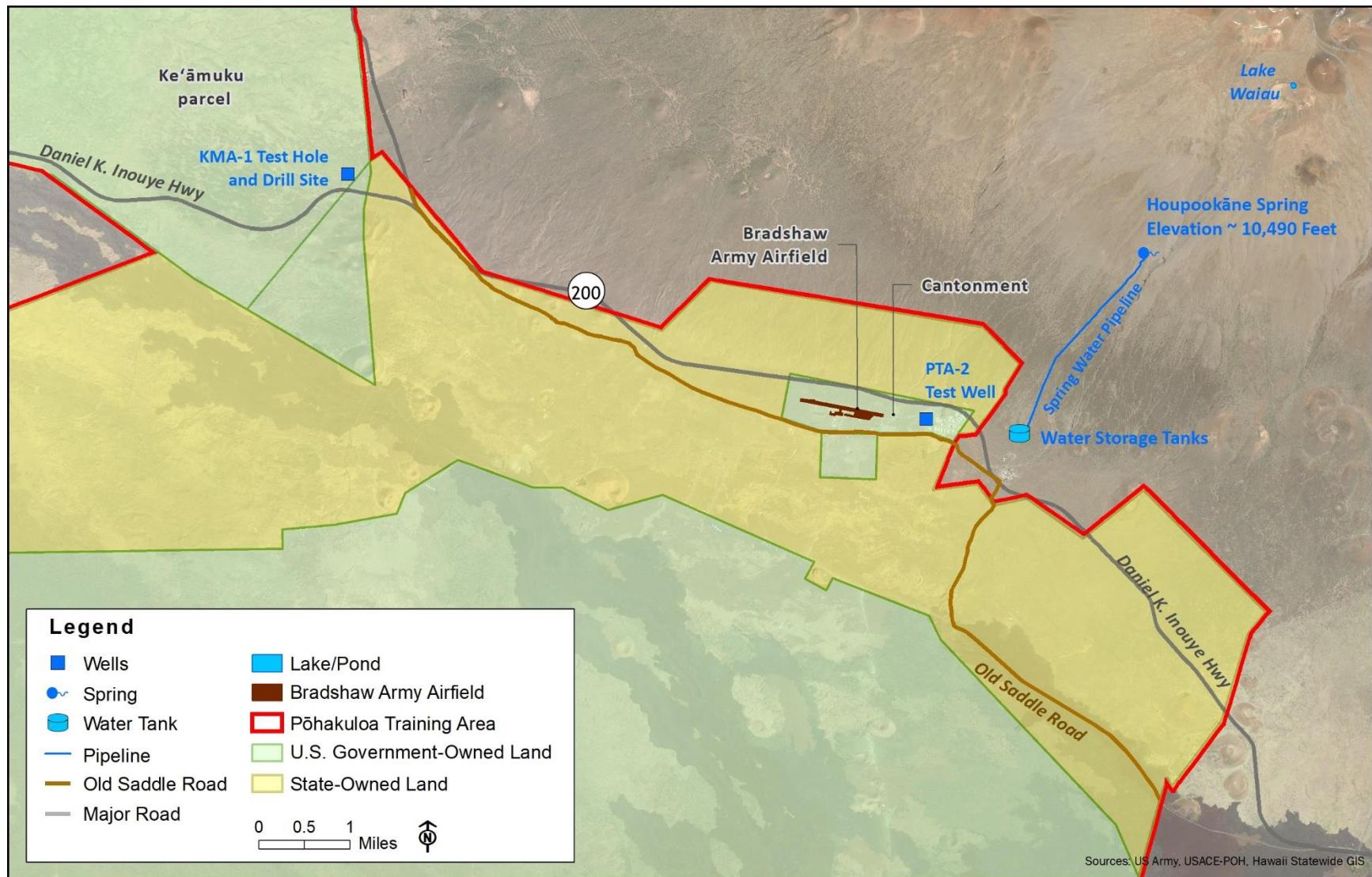


Figure 3-18: Wells and Springs

The PTA-2 borehole encountered a perched aquifer at approximately 5,600 feet above amsl, that extended between 700 and 1,181 feet bgs. Soil cores recovered from this depth interval found that the perching member was composed of a clay-rich ash layer. A second, deeper high-level aquifer was encountered in PTA-2 at an elevation of approximately 4,500 feet amsl, or roughly 1,800 feet bgs. Borehole PTA-2 was continuously saturated from 4,500 feet amsl down to the bottom of the test hole, drilled to an elevation of approximately 514 feet amsl. PTA-2 was originally going to be drilled to sea level, but increasingly hotter thermal water was encountered in this hole at depths of below approximately 3,000 feet bgs, necessitating termination of this test hole at a shallower depth than originally planned. The water temperature at the bottom of this test hole was approximately 120°C (248°F) (Hurwitz et al., 2021). The deeper high-level aquifer encountered in PTA-2 is believed to underlie much of the Saddle Region based on analysis of magnetotelluric geophysical survey data collected from the Mauna Loa/Mauna Kea Saddle Region (Pierce & Thomas, 2009). The lateral extent of the shallower, perched aquifer encountered in PTA-2 is unknown, but it is believed to be less aerially extensive than the underlying dike-impounded aquifer based on resistivity surveys conducted in the area by the USGS (USAG-HI, 2021b).

The KMA-1 test hole did not observe the upper perched and high-level aquifers encountered in the PTA-2 borehole. This test hole is apparently located just to the west of the high-level aquifer that underlies much of the Saddle Region (USAG-HI, 2021b). Instead, this test hole encountered multiple confined aquifers perched on ash layers during drilling, with hydrostatic pressures of up to 1,500 pounds per square inch measured. The confining layers were composed of ash and other types of explosive deposits (e.g., ignimbrite). These confining layers create a series of vertically segregated, confined aquifers isolated from one another in this region of the flank of Mauna Kea. During drilling of this test hole, water levels were observed to rise between 600 and 3,500 feet within the test hole upon entering the various confined aquifers encountered.

Carbon-14 age dating conducted on water retrieved from PTA-2 from the regional high-level aquifer that underlies the saddle area yielded an age of 5,000 years. A similar age of 5,000 years was measured in the groundwater pumped from the Waiki'i well to the northwest. The old age of the "fossil" high-level groundwater encountered at PTA and to the northwest at Waiki'i Ranch support the hypothesis that minimal direct recharge occurs to these aquifers from infiltration of rainfall that falls on these lands.

The main, laterally extensive perched groundwater aquifer below the State-owned land is believed to be present at approximately 1,800 feet bgs. A shallower, less laterally extensive perched aquifer was also encountered at between 700 and 1,181 feet bgs in the Cantonment.

Due to the depth of groundwater beneath the State-owned land and the minimal direct recharge from infiltration of rainfall that falls on the State-owned land, existing impacts to groundwater from training are less than significant. Limited surface water and groundwater pathways on State-owned land pose minor potential impact to soil and groundwater quality (**Section 3.5.4**).

3.9.4.2 Groundwater Quality

There are limited data for groundwater quality for PTA because of the absence of monitoring wells in the inland area of the island. In general, the quality of the natural fresh water in Hawai'i basaltic aquifers is considered good (HQDA, 2008). During the installation of Borehole PTA-2 (see **Section 3.9.4.1**), an opportunistic sample was collected from the underlying deep aquifer. None of the analytes tested

including organic compounds, inorganic chemicals, microbiological constituents and radiochemical parameters where in exceedance of laboratory method detection limits (USAG-HI, 2021b). A groundwater sample could not be collected from the shallower perched aquifer encountered in Borehole PTA-2, due to the unstable nature of the formation at this depth of the test hole (USAG-HI, 2021b).

Since August 1989, DOH SDWB has issued groundwater contamination maps for Hawai'i. According to these maps, most of the well locations where contamination is detected on the island of Hawai'i are located along the eastern coast of the island, and groundwater quality generally diminished towards the coasts due to increased saltwater intrusion. Detected contamination levels are below federal and state drinking water standards and do not pose a significant risk to humans (DOH-SDWB, 2021). Groundwater quality beneath PTA is likely of higher quality due to its distance inland from the coast and the analytical results obtained from Borehole PTA-2.

At PTA, surface water runoff that contains nonpoint source pollutants, such as contamination from military munitions use during training activities, has a less than significant impact on groundwater quality because the pollutants are typically highly diluted and tend to be adsorbed or biodegraded during infiltration through soils. Spills and other accidental releases occur infrequently and could have more significant local impacts on groundwater quality if not managed or remediated. Their occurrence cannot be predicted, but SOPs have been established [i.e., training spill response personnel, spill response equipment and supplies, reduction in the use of hazardous chemicals and other waste minimization procedures, and use engineering controls (such as secondary containment)] to reduce the potential for releases and reduce impacts from accidental spills and releases. Spills that occur within the State-owned land are fully investigated, characterized, and then remediated, in compliance with regulatory requirements. Limited surface water and groundwater pathways on State-owned land pose minor potential impact to soil and groundwater quality (**Section 3.5.4**).

3.9.4.3 Surface Water

There are three intermittent streams located within the far northern border of the State-owned land, the Waikahalulu Gulch (TA 2 and TA 4), Pōhakuloa Gulch (TA 10), and 'Auwaiakeakua Gulch (TA 15 and TA 16) that collect runoff from the southern flank of Mauna Kea (USACE-POH & USAG-HI, 2019c). Intermittent stream channels, such as those within the State-owned land, quickly dry after rainfalls. Rainfall, fog drip, and occasional frost are the sources of water that sustain plants and animals in the dryland habitat of the State-owned land.

There are no perennial streams, rivers, lakes or other surface water bodies within the State-owned land, due to the low annual rainfall that falls on the area and the highly porous nature of the relatively young volcanic rocks that cover the majority of the property. Mean annual rainfall recorded at Pōhakuloa (6510) station near the intersection of Calvary Road and DKI is 16.95 inches and at the PTA West station is 22.09 inches, with the maximum monthly rainfall typically occurring between January and March (Giambelluca et al., 2013). Water drains from the surface and flows short distances across the site via crevices in the lava. Significant rainfall events are associated with synoptic scale weather systems, locally referred to as Kona storms, that infrequently (i.e., couple times per year) impact the area. During significant rainfall events, runoff from the south slope of Mauna Kea could exceed the drainage capacity of the area and result in temporary flooding or localized ponding; however, the shallow soils in the area are permeable and the underlying lava flows contain sufficient secondary permeability that infiltration to the subsurface is rapid. Due to the low overall amount of rainfall that falls in the Saddle Region of the island, direct

recharge to the groundwater systems underlying the State-owned land at PTA is likely minimal and limited to recharge associated with these infrequent Kona storm events.

The nearest surface water downgradient of PTA is Popo'o Gulch, an intermittent stream, which converges with the 'Auwaiakeakua Gulch approximately 15 miles south of PTA (USACE-POH, 2017). Other surface water bodies in close proximity to PTA are a series of small springs that outcrop along canyon walls and the faces of dry waterfalls on the slopes of Mauna Kea in the Waihū branch of the Pōhakuloa Gulch at elevations of between approximately 8,900 and 10,500 feet (Wentworth & Powers, 1943). Named springs within this set include Hopukani (Houpookāne), Waihū (Waihū a Kāne) and Liloe springs. The closest spring is located a little over 2 miles to the north of the northern boundary of Parcel B of the State-owned land. These springs are believed to emanate from small groundwater bodies perched on or contained in sheets and lenses of glacial drift. Water from the uppermost spring is diverted into a roughly 2.5-mile-long water line that routes the spring flow into six storage tanks that supply water to Gilbert Kahele Recreation Area and the Cantonment at PTA (**Figure 3-18**). The volume of water supplied by this spring varies seasonally and is not a reliable source of water year-round. It is estimated that PTA annually uses approximately 1,500,000 gallons of water from this spring (approximately 4,100 gallons per day) for non-potable purposes (USACE-POH, 2012). The ability to use the spring water is provided to the Army through a separate lease with the state of Hawai'i.

Lake Waiau is located 4.5 miles north of PTA and is hydraulically upgradient at an elevation of 13,020 feet (**Figure 3-18**). The average surface area of this lake is approximately 19,685 square feet and the lake reaches a maximal depth of between 6.5 and 8.2 feet during the springtime. The lake is fed by precipitation, which falls within the 442,910 square feet catchment area of the Pu'u Waiau cinder cone that surrounds the lake. The exact nature of the impermeable layer beneath the lake is uncertain but has been attributed to the presence of either a layer of permafrost, glacial sedimentary deposits, or clay-rich ash beds. The water in Lake Waiau is not used by PTA.

The Hawai'i Emergency Management Agency Tsunami Evacuation Map in the area of Kiholo Bay, hydraulically downgradient from the State-owned land, shows the evacuation area as extending inland between the shoreline and the Hawai'i Belt Road (Highway 19) (HEMA, 2021). The State-owned land is located well beyond the limits of the Tsunami Evacuation Map, and no impacts are anticipated from the Proposed Action.

Stormwater runoff infrequently occurs within the State-owned land of PTA because runoff tends to rapidly infiltrate into crevices in the highly permeable lava flows. There are at least seven intermittent streams that drain surface water off the southwestern flank of Mauna Kea that lie within the same drainage area as PTA. Three of these intermittent streams are located north of the Cantonment and the northern border of the State-owned land of PTA: Waikahalulu Gulch, Pōhakuloa Gulch, and 'Auwaiakeakua Gulch. These gulches can transmit significant volumes of stormwater runoff generated during infrequent large storm events that reach the site. The northern portion of the State-owned land is covered by alluvial deposits associated with the transport of sediments from these southern facing, steeply plunging (approximately 24 percent grade) gulches on the slopes of Mauna Kea. The presence of these alluvial deposits is testament to the volume of stormwater runoff and sediment transported down the slopes of Mauna Kea during these infrequent runoff events.

A drainage report prepared for PTA concluded that most of the area is composed of lava flow and cinder, with very high percolation rates (Mitsunaga, 2010). This report concluded that stormwater infrequently

flows within PTA and sheet flows over land, with the presence of impervious surface areas due to development of the area contributing an additional 1 cubic foot per second of runoff. The stormwater that enters or is generated within the developed portions of PTA does not exit the installation.

Existing maneuver training activities have the potential to increase soil erosion, resulting in a corresponding increase in suspended sediment in the intermittent streams. However, implementation of the ITAM program reduces water quality impacts from sediment loading to less than significant.

3.9.4.4 Surface Water Quality

There are limited data for surface water quality for the streams within State-owned land, as these streams are intermittent and cannot be regularly sampled. According to the 303(d) List of Impaired Waters in Hawai'i prepared under the CWA, none of the streams within the State-owned land are listed as impaired (DOH-SDWB, 2021). In addition, there is little or no water quality information available for the water in Lake Waiau or the spring water on the slopes of Mauna Kea above PTA.

Maneuver training activities conducted on the State-owned land have the potential to affect surface water by localized increases in erosion and runoff, increasing overland flow and potentially decreasing percolation to groundwater. These existing impacts are managed through implementation of the ITAM program, which includes use of BMPs to reduce erosion and runoff. Limited surface water and groundwater pathways on State-owned land pose minor potential impact to soil and groundwater quality (Section 3.5.4).

3.9.4.5 Floodplains

Flood potential of a site is usually determined by the 100-year floodplain, which is defined as the area that has a 1 percent chance of inundation by a flood event in a given year. The FEMA Flood Insurance Rate Map (Panel 4 1551660850F; FIRM index date: September 29, 2017) did not include an updated study to determine flood hazard for the State-owned land. A 2010 FEMA survey classified the State-owned land at PTA to be located in Zone X, which corresponded to an area determined to be outside the 0.2 percent annual chance floodplain. As the State-owned land is not located within a floodplain, impacts on floodplains are not analyzed further in this section.

3.9.5 Methodology and Significance Criteria

This section outlines the methods and criteria used in **Section 3.9.6** to assess potential significant impacts on water resources. The analysis of water resources examines the potential direct and indirect impacts on groundwater, surface water, and floodplains. The criteria considered to assess whether an alternative would result in potential significant impacts on water resources include the extent or degree to which an alternative would result in the following:

- Degradation of the water quality standards of a surface or marine water body
- Reduction in the availability of, or accessibility to, one or more of the beneficial uses of a water resource
- Contamination of a drinking water source
- Non-compliance with the CWA

- Alternation of floodplain extents or a floodway if the impacts cannot be mitigated
- Increased hazards of flooding or the amount of damage that could result from flooding, including from runoff or from a tsunami

3.9.6 Environmental Analysis

3.9.6.1 Alternative 1: Full Retention

Under Alternative 1, no changes in use or impact to the water resources in the ROI would occur. Continued long-term, minor, adverse impacts on water resources would occur due to ongoing activities within the State-owned land. Impacts would continue to be addressed through established programs including the ITAM Monitoring System as well as other programs such as the CZM, NPDES, UIC, and the CWRM. In addition, the Army would continue to follow the safety protocols in the PTA SOPs, and BMPs designed to identify, evaluate, protect, and minimize impacts to water resources. BMPs for dust minimization would continue to be implemented, especially in areas where the vegetative cover is less than 12 percent. **Sections 3.5 and 3.6**, respectively, contain further details on fugitive dust and hazardous and toxic materials and waste impacts to water resources.

Due to the depth of groundwater beneath the retained land, impacts to groundwater from infiltrating surface water containing nonpoint source pollutants from ongoing activities would continue to be less than significant. No groundwater is developed for potable use from the underlying aquifer and PTA would continue to import potable water and to share non-potable water with Gilbert Kahele Recreation Area captured from a spring located on the upper slopes of Mauna Kea Volcano outside the State-owned land. Alternative 1 would not increase the potential for spills that could affect groundwater quality. The Army would continue implementing best management practices on the land retained under the INRMP (USAG-PTA, 2020c), Dust and Soils Management and Monitoring Plan (USAG-HI, 2006), and the PTA External Standard Operating Procedures that include site-specific BMPs (USAG-PTA, 2018a). Nonpoint source pollutants are not likely to interact with or accelerate any decreases in groundwater quality due to industrial releases.

Stormwater events would continue to have the capacity to carry nonpoint source pollution off-site. With the lack of vegetation, ground disturbance from live-fire training activities coupled with a storm event have the potential to carry contamination from military munitions. Less than significant impacts on water resources would continue to be minimized through regular range maintenance procedures and implementation of BMPs. Impacts on surface water from erosion and runoff from maneuver training would continue to have a less than significant impact on the watersheds that are supported by PTA as the Army has management action plans for reducing impacts on the environment.

Summary of Impacts: No new impacts to water resources would occur under Alternative 1. Alternative 1 would result in continued long-term, minor, adverse impacts on water resources. Impacts would be minimized through established programs including the ITAM.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.9.6.2 Alternative 2: Modified Retention

Land Retained

Under Alternative 2, long-term, minor, adverse impacts on water resources would continue due to ongoing activities within the State-owned land retained. Impacts would continue to be reduced through established programs. Impacts for the land retained would be the same as under Alternative 1.

Land Not Retained

Under Alternative 2, new long-term, negligible, beneficial impacts on water resources would occur from ceasing ongoing activities in the land not retained that could impact water resources, such as soil erosion or hazardous material spills. Additionally, new long-term, minor, beneficial impacts on water resources would be expected from lease compliance actions within the State-owned land not retained. Lease compliance actions such as reforestation would minimize the land area subject to erosion, which would decrease the sediment load in stormwater runoff.

Summary of Impacts: Alternative 2 would result in new long-term, minor, beneficial impacts on water resources from lease compliance actions such as reforestation, new, long-term, negligible, beneficial impacts from ending ongoing activities in the land not retained, and continued long-term, minor, adverse impacts from Army activities in the land retained. Continued adverse impacts would continue to be minimized through established programs including the ITAM Monitoring System and the Range and Training Land Program.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.9.6.3 Alternative 3: Minimum Retention and Access

Land Retained

Under Alternative 3, long-term, minor, adverse impacts on water resources would continue due to ongoing activities within the State-owned land retained. Impacts would continue to be reduced through established programs. Impacts for the land retained would be the same as under Alternative 1.

Land Not Retained

Under Alternative 3, new long-term, minor, beneficial impacts on water resources would occur from ceasing ongoing activities in the land not retained that could impact water resources, such as soil erosion or hazardous material spills. Additionally, new long-term, minor to moderate, beneficial impacts on water resources would be expected from lease compliance actions within the State-owned land not retained. Beneficial impacts would be similar to, but greater than, those under Alternative 2, as more land would be restored under Alternative 3.

Summary of Impacts: Alternative 3 would result in new long-term, minor, beneficial impacts from ending ongoing activities in the land not retained, and new long-term, minor to moderate, beneficial impacts from lease compliance actions in the land not retained. Continued impacts would be the same as

Alternative 1 – long-term, minor, adverse impacts on water resources due to ongoing ground disturbance within the State-owned land retained.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.9.6.4 No Action Alternative

Under the No Action Alternative, there would be new long-term, minor to moderate, beneficial impacts on water resources with less erosion from ceased ground disturbance associated with ongoing activities, both on State-owned land and on U.S. Government-owned land (impact area and training ranges) due to lack of ground access. Additionally, new long-term, minor to moderate, beneficial impacts on water resources would be expected from lease compliance actions within the State-owned land. These beneficial impacts would be similar to, but greater than, those under Alternative 3, as more land would be restored under the No Action Alternative. A substantial reduction in training would likely decrease demand on the need for non-potable water, including the spring water that is shared with the State for use at Gilbert Kahele Recreation Area, which would result in long-term, minor, beneficial impacts.

Summary of Impacts: The No Action Alternative would result in long-term, minor to moderate, beneficial impacts to the water resources within the ROI.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.10 Socioeconomics

3.10.1 Definition

Socioeconomics is the relationship between economics and social elements such as population levels and economic activity. There are several factors that can be used as indicators of socioeconomic conditions for a geographic area such as population, median household income, unemployment rates, and employment. Data on employment identify gross numbers of employees, employment by industry or trade, and unemployment trends. Data on industrial, commercial, and other sectors of the economy provide baseline information about the economic health of a region. Housing, infrastructure, and public services are also influenced by socioeconomic factors. The U.S. Census Bureau is the principal agency in the United States that collects and provides demographic and economic data.

3.10.2 Regulatory Framework

NEPA, CEQ's Regulations for Implementing NEPA [40 CFR Part 1502.16(b)], HRS Part 92F-13(1), and HAR Chapter 11-200.1 require an approach for planning and decision-making that involves evaluation of actions that may have an impact on the human environment, including on social and economic resources. When it is determined that social, economic, physical, or natural environmental effects are interrelated with a proposed action, analysis under NEPA and HEPA must discuss and give appropriate consideration to those effects on the human environment. There are no specific regulations for managing or evaluating

socioeconomic impacts; however, socioeconomic sustainability is considered an important factor in federal decisions.

3.10.3 Region of Influence

The ROI for potential impacts related to socioeconomics is PTA and the surrounding area in the County of Hawai'i, because the entire County of Hawai'i benefits from activities conducted at PTA. The County of Hawai'i encompasses the entire island of Hawai'i.

3.10.4 Existing Conditions

Population. In 2019, the estimated population of the County of Hawai'i was 199,459, representing approximately 14 percent of the total population for the State. The population of the County of Hawai'i grew 7.7 percent from 2010 to 2019. Over the same time period, this growth rate was greater than the growth rates of the State (4.5 percent) and the United States (5.2 percent). **Table 3-17** presents 2010 and 2019 population data for the United States, Hawai'i, and the County of Hawai'i (USCB, 2010; USCB, 2019a).

Table 3-17 Population in the County of Hawai'i, State, and the United States (2010 and 2019)			
Location	2010	2019	Percent Change
United States	308,745,538	324,697,795	5.2%
Hawai'i	1,360,301	1,422,094	4.5%
County of Hawai'i	185,079	199,459	7.7%

Source: USCB, 2010; USCB, 2019a

Employment Characteristics. In 2019, an estimated 88,098 individuals in the County of Hawai'i were employed. Additionally, the median household income for the county was estimated at \$62,409, compared to the statewide median household income of \$81,275. The three largest industries in the County of Hawai'i in terms of percentage of the workforce employed were educational services, health care, and social assistance (20 percent); arts, entertainment, and recreation, and accommodation and food services (17 percent); and retail trade (12 percent) (USCB, 2019b). Of these, the arts, entertainment, and recreation, and accommodation and food services and retail trade industries are tourism driven. In December 2020, the Bureau of Labor Statistics reported an 8.9 percent unemployment rate in the County of Hawai'i, which is comparable to that of the State (9.0 percent) and higher than that of the United States (6.5 percent) (USBLS, 2021). PTA employs two active-duty personnel, approximately 120 full-time civilians, and several contractors (USACE-POH, 2019).

Military Activity in the State and County. Military activity has been an important contributor to the State's economy for decades. The DoD Office of Economic Adjustment ranks Hawai'i as second in the United States for defense spending (DBEDT, 2021a). In 2021, the DoD had 71,323 personnel (i.e., military and civil service personnel) in Hawai'i (DMDC, 2021). In fiscal year 2019, the DoD spent a total of \$7.5B in Hawai'i, which included \$5B in labor income and \$2.5B in DoD-funded contracts. DoD personnel represent 16.5 percent of the State's total workforce, making it the largest employer in the State (OLDCC, 2019). Defense spending in Hawai'i has remained stable during the COVID-19 pandemic, which has helped to buffer some of the negative impact to the State's economy from the associated reduction in tourism (DBEDT, 2020).

The Hawai‘i Department of Business, Economic Development and Tourism developed an action plan identifying the strengths, weaknesses, opportunities and threats to Hawaii’s defense sector. The plan proposes initiatives to expand opportunities for local businesses and contractors to engage in and benefit from military contract spending (DBEDT, 2021b).

Of the 71,323 DoD personnel in Hawai‘i in 2021, the Army accounts for 20,524 personnel (i.e., military and civil service personnel) (DMDC, 2021). Of the \$2.5B in DoD-funded contracts within the State, approximately \$700M was funded by the Army (OLDCC, 2019). Recent Army-specific economic impacts represented 6.7 to 8.5 percent of the State’s economy and 0.9 to 2.7 percent of the County of Hawai‘i’s economy. Army expenditures supported 75,920 employees (i.e., military personnel and civilians, to include contractors) in the State, 1,962 of which were in the County of Hawai‘i. Army expenditures accounted for approximately \$4.4B in labor income (i.e., military personnel and civilians, to include contractors) in the State, \$92M of which was in the County of Hawai‘i (USACE-POH, 2019). Army expenditures in the County of Hawai‘i also include local purchases of potable water, equipment, and other services such as solid waste disposal, porta johns, and custodial services. Additionally, various DoD, state, and local agencies and groups contribute to the local economy by traveling to PTA for training and spending in the County of Hawai‘i. In fiscal year 2019, approximately 12,000 military personnel trained at PTA during approximately 200,000 troop training days (USAG-PTA, 2020a).

As discussed in **Section 3.12.4**, the Army uses the regional airports on the island of Hawai‘i to transport troops to PTA from O‘ahu. Additionally, the Army invests over \$12M annually in biological and cultural resources management actions on Hawaiian training lands that support and enable military training (USAG-HI, 2020b). Within the State-owned land at PTA, the Army manages cultural resources, approximately 5,095 acres of Palila critical habitat, and approximately 8,500 acres (28 miles) of conservation fence units that protects federally listed plant species from ungulates.

Housing. Troops training at PTA are housed in troop billeting (i.e., Quonset huts) within the Cantonment of the installation; therefore, troops coming to PTA for training do not count towards housing statistics for the County of Hawai‘i. Full-time personnel at PTA are residents of the County of Hawai‘i and commute to PTA (USACE-POH, 2019). **Table 3-18** presents occupied and vacant housing units in the State and the County of Hawai‘i (USCB, 2019c). The County of Hawai‘i has a higher percentage of vacant units than the State.

Table 3-18 Housing Units in Hawai‘i and County of Hawai‘i (2019)				
Location	Occupied	Vacant	Total Units	Percent Vacant
Hawai‘i	459,424	69,543	542,674	12.8%
County of Hawai‘i	69,453	18,371	87,824	20.9%

Source: USCB, 2019c

Public Service, Public Use, and Community Outreach. State and county agencies such as Hawai‘i Emergency First Responders, Hawai‘i Emergency Management, and the Hawai‘i Police Department periodically use PTA for training. PTA is also used by non-profit organizations such as the Red Cross, Boy Scouts, Girl Scouts, and Youth Challenge. In addition, the State-owned land at PTA is periodically opened to public recreation activities, provided such activities are consistent with use of lands and do not conflict with the military mission. Public use activities conducted at PTA include archery in TAs 5 and 6; guided

hikes; and hunting for birds, pigs, sheep, and goats within specific areas. Additionally, multiple community and regional initiatives are supported by the installation and the USAG-HI Environmental Division. PTA personnel cooperate and coordinate with approximately two dozen groups and agencies.

During scoping, members of the public highlighted various community outreach and volunteer activities conducted by personnel at PTA. These activities include providing opportunities for local fire, police, and national guard training; being first/secondary responders to car accidents, brush fires, and emergency incidents outside the PTA boundary; maintaining adjacent properties (e.g., Girl Scout Camp Kilohana) by keeping grass and other materials that pose a risk of fire cleared and under control; assisting in cleanup after weather events; and donating manpower and food to the local communities.

3.10.5 Methodology and Significance Criteria

This section outlines the methods and criteria used in **Section 3.10.6** to assess potential significant impacts on socioeconomics. The criteria considered to assess whether an alternative would result in potential significant impacts on socioeconomics include the extent or degree to which an alternative would result in the following:

- Substantial change(s) in the local or regional population or demographic distribution
- Substantial change(s) in local or regional economic indicators such as employment, spending, or earning patterns
- Substantial indirect impact(s), such as impacts on housing availability and public facilities.

3.10.6 Environmental Analysis

3.10.6.1 Alternative 1: Full Retention

Under Alternative 1, the Army would retain all of the State-owned land and there would be no changes in the throughput (numbers) of troops training at PTA, and no changes to the existing management and maintenance programs (including funds to support Army resource management and public use programs such as biological resources management actions and public hunting access). Therefore, continued long-term, moderate, direct and indirect, socioeconomic benefits from the Army's and other PTA users' ongoing activities within the State-owned land would be maintained. No changes in employment at PTA would occur under Alternative 1; therefore, no changes in population, housing, and the associated indirect, beneficial impacts currently contributed from personnel spending in the local and regional economy would occur. Public service and community outreach activities conducted by PTA personnel would continue. Additionally, various DoD, state, and local agencies would continue to travel to PTA for training and spend in the local economy, which indirectly results in beneficial socioeconomic impacts.

Summary of Impacts: Alternative 1 would result in no new impacts but would enable the Army and other PTA users to continue to contribute long-term, moderate, direct and indirect, beneficial impacts on socioeconomic resources in the region from ongoing activities.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant (beneficial).

3.10.6.2 Alternative 2: Modified Retention

Land Retained

The training throughput and the benefits described under Alternative 1 would continue on the State-owned land retained. Public service and community outreach activities conducted by PTA personnel would continue. The Army would continue to fund and manage ongoing resource management and public use programs for the State-owned land retained. The Army and other PTA users would continue to contribute long-term, moderate, direct and indirect, beneficial impacts on socioeconomic resources in the region from ongoing activities within the State-owned land retained.

Land Not Retained

By the lease expiration date, the Army would stop all training on the State-owned land not retained. No change in personnel and housing is anticipated. Less training at PTA would result in fewer local purchases of potable water, equipment, and other services by the Army and other PTA users, as well as fewer indirect benefits associated with local spending by units that train at PTA. The Army would no longer fund or manage resource management and public use programs for the State-owned land not retained. The State would be responsible for funding and managing resource management and public use programs within the State-owned land not retained. These changes would result in long-term, negligible, direct and indirect, adverse impacts from reduction of the socioeconomic (e.g., local spending) benefits currently contributed by military operators at PTA.

Summary of Impacts: Alternative 2 would result in new long-term, negligible, direct and indirect, adverse impacts from reduction of the socioeconomic benefits related to military training within the State-owned land not retained. The Army and other PTA users would continue to contribute long-term, moderate, direct and indirect, beneficial impacts on socioeconomic resources in the region from ongoing activities within the State-owned land retained. The overall impact from Alternative 2 would be less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.10.6.3 Alternative 3: Minimum Retention and Access

Land Retained

Because less of the State-owned land would be retained, beneficial impacts for the land retained would be slightly less than those described under Alternative 2. Public service and community outreach activities conducted by PTA personnel would continue. The Army would continue to fund and manage resource management and public use programs within the State-owned land retained, including maintenance of the firebreaks/fuel breaks located along most of the approximately 11 miles of select roads and training trails proposed for retention. The Army and other PTA users would continue to contribute long-term, minor to moderate, direct and indirect, beneficial impacts on socioeconomic resources in the region from ongoing activities within the State-owned land retained.

Land Not Retained

By the lease expiration date, the Army would stop all training on the State-owned land not retained. Relinquishing approximately 12,900 acres of State-owned land back to the State would moderately reduce the capacity to support training at PTA. Reduced training would result in fewer DoD agencies traveling to PTA to train and a potential reduction in support personnel at PTA. These changes would result in a reduction in personnel at PTA and indirect, adverse impacts on population, housing, and less spending in the local economy. The Army would no longer fund or manage resource management and public use programs within the State-owned land not retained. The State would be responsible for funding and managing resource management and public use programs within the State-owned land not retained. These changes would result in long-term, minor to moderate, direct and indirect, adverse impacts from reduction of the socioeconomic (e.g., local spending) benefits currently contributed by military operators at PTA.

Summary of Impacts: Alternative 3 would result in new long-term, minor to moderate, direct and indirect, adverse impacts from reduction of the socioeconomic benefits related to military training and resource management and public use programs within the State-owned land not retained. The Army and other PTA users would continue to contribute long-term, minor to moderate, direct and indirect, beneficial impacts on socioeconomic resources in the region from ongoing activities within the State-owned land retained. The overall impact from Alternative 3 would be less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.10.6.4 No Action Alternative

By the lease expiration date, the Army would stop all training and activities on the State-owned land and would have no land access to the impact area and training ranges to the south of the State-owned land. The No Action Alternative would result in a substantial reduction in training from loss of the State-owned land and loss of land access to the impact area and training ranges. Under the No Action Alternative, the Army would have no ability to train in or access the State-owned land; limited to no ability to train in or access the impact area and training ranges due to lack of land access; limited use of the Cantonment due to loss of the U.S. Government-owned potable water facility and electrical substation located within the State-owned land; and no ability to operate, maintain, or repair utilities and infrastructure in the State-owned land that serve the U.S. Government-owned land at PTA. The Army would no longer fund and manage resource management and public use programs within the State-owned land or impact area and training ranges. Additionally, the Army likely would no longer be able to provide community services that extend beyond the installation such as local firefighting support, local emergency services, and community relations events (indirect benefits) due to decreased support staff. Due to the substantially reduced training and operational capabilities at PTA, fewer DoD agencies would travel to PTA to train and fewer support personnel would be required at PTA, resulting in new long-term, significant, direct and indirect, adverse impacts on socioeconomic resources from population and housing loss and a significant reduction in spending in the local economy in the County of Hawaii (e.g., labor [approximately \$92M], utilities, equipment, construction, travel, local shopping). USARHAW expenditures support 75,920 employees and account for approximately \$4.4B annually in labor costs in the State (USACE-POH, 2019). If the No Action Alternative were to result in the need to restation USARHAW and/or other military units that rely on PTA, the economic costs would be significant.

New short-term, negligible, beneficial impacts would occur from conducting lease compliance actions and investigation, removal, and cleanup of hazardous and toxic materials and wastes within the State-owned land.

Summary of Impacts: Under the No Action Alternative, new long-term, significant, direct and indirect, adverse impacts on socioeconomics would occur from total loss of ongoing activities on the State-owned land, as well as a loss of ongoing activities within the impact area and training ranges and limited use of the Cantonment. Additionally, the Army would no longer be able to provide community services that extend beyond the installation such as local firefighting support, local emergency services, and community relations events. New short-term, negligible, beneficial impacts would occur from conducting lease compliance actions within the State-owned land. Overall, the impact would be significant and adverse.

Potential Mitigation Measures: None recommended.

Level of Significance: Significant.

3.11 Environmental Justice

3.11.1 Definition

The USEPA defines environmental justice as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies” and indicates that “each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the U.S. and its territories” (USEPA, 2021d). A USEPA (1996) memorandum on evaluating health risks to children states, “In these cases where there may be an impact on children you should specifically address the question (of whether there are potential disproportionate effects on children) even if it turns out that effects (on children) are not significant. However, if it is reasonably clear from the nature of the Proposed Action that there will be no disproportionate impact, there is no reason to require any discussion” (USEPA, 1996).

3.11.2 Regulatory Framework

The Army implements environmental justice analysis requirements in accordance with NEPA, the EOs listed in this section, and existing DoD and Army policies. Two EOs dealing specifically with environmental justice and protection of children guide the NEPA analysis in this section. Environmental Justice EO 12898 directs federal agencies to identify and address the disproportionately high and adverse human health or environmental effects of their actions on minority and low-income populations. The protection of children EO (13045) specifically indicates that analysis should consider environmental risks to health or safety that are attributable to products or substances that the child is likely to come into contact with or ingest. Additionally, EO 14008 amends EO 12898 to create, within the Executive Office of the President, a White House Environmental Justice Interagency Council (Interagency Council) and calls for the Interagency Council to provide recommendations for further updating EO 12898:

- EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*
- EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*.

3.11.3 Region of Influence

The ROI for environmental justice includes census block groups that abut PTA (**Figure 3-19**), which are most likely to be affected by Army actions. These census block groups include: Census Tract 220 Block Group 1, Census Tract 217.02 Block Group 3, Census Tract 215.02 Block Groups 1 and 2, Census Tract 221.02 Block Group 1, and Census Tract 217.04 Block Groups 2, 3, and 4, which constitute most of the northern portion of the County of Hawai‘i. The population density within these areas is low, and the total population of the ROI, as of 2019, included 17,541 people and comprised only 8.7 percent of the island’s population. In addition to the population residing in those census block groups that abut PTA, others are considered, such as Native Hawaiian populations that may not even live in Hawai‘i. These populations may not be affected by, for example, impacts related to noise or traffic around PTA but may be affected by, for example, impacts to cultural resources that they may hold dear to them.

3.11.4 Existing Conditions

The affected environment for environmental justice identifies the presence and proximity of low-income and minority populations in relation to locations that may be adversely affected by the Proposed Action. The U.S. Census Bureau’s 2015–2019 American Community Survey provides 5-year estimates of the percentage of the population in each census block group in the ROI that is considered either minority or low-income. The percentages were compared to thresholds and County of Hawai‘i averages to determine whether the respective census block groups should be considered environmental justice minority or low-income areas. Geographic Information System analysis was used to map census block groups and illustrate the location of environmental justice areas.

The U.S. Census Bureau defines low-income area thresholds as “census tracts or block numbering areas where at least 20 percent of residents were below the poverty level,” and this analysis also compares census block groups in the ROI to the County of Hawai‘i average of 16.0 percent (a more stringent criteria than the 20 percent threshold). Minority population thresholds are “identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis” (CEQ, 1997). “Meaningfully greater” is applied in the analysis as any percentage greater than the reference area. Minority populations include populations that report their ethnicity as something other than exclusively non-Hispanic White, and may include Native Hawaiian or other Pacific Islander, Asian, Black or African American, Hispanic or Latino, American Indian, or Alaska Native (USCB, 2011).

Children are defined as individuals under the age of 18 years old. Areas with high concentrations of children are identified where children tend to gather or spend substantial amounts of time, such as schools. Because EO 13045 is more specific in concerning environmental risks to health or safety that are attributable to products or substances that children are likely to come into contact with or ingest, assessment of impacts to children relates to fewer resource areas than the environmental justice assessment. As such, consistent with the USEPA (1996) memorandum, the assessment of protection of children is conducted with focus on air quality, hazardous materials and waste, public health and safety, noise, and water resources only. For clarity, the assessment of protection of children is presented in a separate subsection, as opposed to within discussion of specific resource areas.

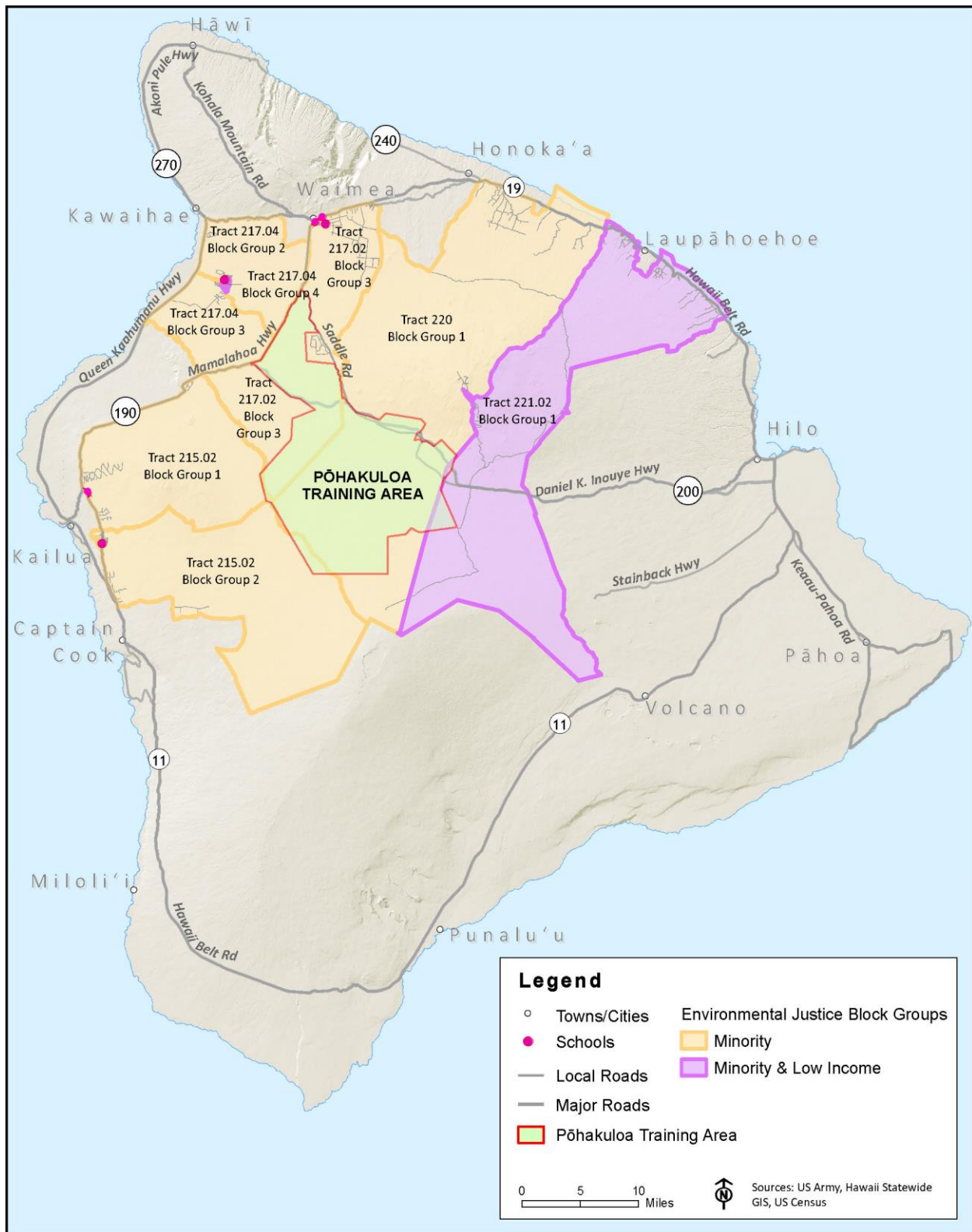


Figure 3-19: Environmental Justice and Protection of Children Areas in the Region of Influence

Tables 3-19 and **3-20** provide an analysis on whether particular census block groups in the ROI are classified as minority and low-income population areas, and **Table 3-21** provides analysis on Native Hawaiian populations. All of the census block groups in the ROI are classified as minority population areas because the population of each block group has a minority population that exceeds the 50 percent threshold; none of the block groups, however, have minority population percentages that exceed the County of Hawai'i. Only two of the eight census block groups in the ROI are classified as low-income population areas—Census Tract 221.02 Block Group 1 and Census Tract 217.04 Block Group 4, which are located to the east and west of PTA, respectively. **Figure 3-19** depicts PTA and the surrounding ROI and indicates census block groups and their environmental justice categorization. Additionally, the locations of schools are presented in **Figure 3-19** to support impact analysis for protection of children.

Table 3-19 Environmental Justice Minority Areas in the ROI (2019)					
	Population	Minority Population Percent	Exceed Reference Area Minority Percent?	Meets or Exceeds 50% Criteria?	Environmental Justice Minority Area?
Reference Area - County of Hawai'i	201,513	72.7%	NA	Yes	Yes
Census Tract 215.02, Block Group 1	3,132	61.8%	No	Yes	Yes
Census Tract 215.02, Block Group 2	1,455	63.8%	No	Yes	Yes
Census Tract 217.02, Block Group 3	6,003	79.8%	Yes	Yes	Yes
Census Tract 217.04, Block Group 2	1,643	58.6%	No	Yes	Yes
Census Tract 217.04, Block Group 3	2,342	53.8%	No	Yes	Yes
Census Tract 217.04, Block Group 4	1,256	51.0%	No	Yes	Yes
Census Tract 220, Block Group 1	1,244	67.4%	No	Yes	Yes
Census Tract 221.02, Block Group 1	466	55.8%	No	Yes	Yes

Source: USCB, 2019d

Table 3-20 Environmental Justice Low-income Areas in the ROI (2019)

	Households	Percent of Households with Incomes below the Poverty Level	Exceed Reference Area Poverty Percent?	Exceed 20% Criteria?	Environmental Justice Low-income Area?
Reference Area - County of Hawai'i	69,453	16.0%	NA	No	No
Census Tract 215.02, Block Group 1	1,150	13.9%	No	No	No
Census Tract 215.02, Block Group 2	573	5.2%	No	No	No
Census Tract 217.02, Block Group 3	1,551	11.3%	No	No	No
Census Tract 217.04, Block Group 2	363	4.7%	No	No	No
Census Tract 217.04, Block Group 3	1,088	3.7%	No	No	No
Census Tract 217.04, Block Group 4	557	16.7%	Yes	No	Yes
Census Tract 220, Block Group 1	446	7.8%	No	No	No
Census Tract 221.02, Block Group 1	224	27.7%	Yes	Yes	Yes

Source: USCB, 2019d

Table 3-21 Native Hawaiian Population in the ROI (2015)

	Total Population	Native Hawaiian Alone or in Any Combination	Percent Native Hawaiian Alone or in Any Combination	Exceeds Reference Area Native Hawaiian Percent?
County of Hawai'i	196,428	58,647	29.9%	NA
Census Tract 215.02	4,445	1,373	30.9%	Yes
Census Tract 217.02	11,118	4,086	36.8%	Yes
Census Tract 217.04	7,713	1,769	22.9%	No
Census Tract 220	3,270	523	16.0%	No
Census Tract 221.02	1,661	ND	ND	ND

Note: Data on Native Hawaiian Alone or in Any Combination are only available at the Census Tract level of detail, and the most recent data available are for 2015.

ND = No data available

NA = Not applicable

Source: USCB, 2015

3.11.5 Methodology and Significance Criteria

The environmental justice analysis focused on whether there would be impacts on the natural or physical environment (as indicated in the respective resource sections) that would result in adverse impacts on low-income or minority populations in the ROI, or on Native Hawaiian populations. To make these determinations, each resource area that has the potential to adversely affect environmental justice populations is analyzed. In the case that no adverse impacts are identified, a determination of no impact on environmental justice populations is made.

When potential adverse impacts to environmental justice populations are identified, the analysis focuses on whether those adverse impacts would disproportionately affect low-income or minority populations (i.e., would adverse impacts affect these populations to a greater extent than the overall population). If an adverse impact would disproportionately impact low-income or minority populations, then the impact, as described in the pertinent resource area, is reviewed to determine whether the severity of the impact would represent a significant impact to environmental justice. If the disproportionate adverse impact would be particularly severe (or 'high' as stated in EO 12898) in terms of effects on the health or environment of the affected population, then a determination is made that there is a significant impact on environmental justice. If the impact would not be particularly severe then the disproportionate adverse impact is considered a less than significant impact on environmental justice.

Context on severity is gathered from results of impact analysis in other resource sections, with additional focus, as applicable, on effects to the health and environment of the affected populations. Because resource area significance criteria are not always specifically focused on the health or environment of populations, there may be cases where, for example, there is a less than significant impact identified in the resource area but a significant impact on environmental justice. Other factors may be considered as well, such as moderating beneficial impacts or mitigations that reduce the severity of overall impacts, and, as such, there may be cases where, for example, a significant impact is identified in a resource area but, due to concurrent beneficial impacts, the overall impact to environmental justice would be less than significant.

A similar analysis was conducted for protection of children; however, only resources relevant specifically to health and safety risks are addressed. These resources include air quality, hazardous materials and waste, public health and safety, noise, and water resources.

3.11.6 Environmental Analysis

3.11.6.1 Alternative 1: Full Retention

Land Use

Alternative 1 would result in continuing adverse impacts to recreation due to continued restricted public access associated with ongoing activities within the State-owned land. The access restrictions reduce the capability, and tend to increase the cost, for the public to recreate. Because the population near PTA and the overall population of the County of Hawai'i are classified as minority, and it is this population who would be most affected, the impact to recreation would be considered disproportionate. Based on the assessment presented in **Section 3.2**, there would be no new impacts and the continued impacts would be considered minor, as ongoing hunting programs would continue at the installation. Because the

disproportionate adverse impact would be minor, the impact on environmental justice would be considered less than significant under Alternative 1.

Biological Resources

Section 3.3 does not identify any adverse impacts to populations including low-income or minority populations. Because there would not be adverse impacts to populations, there would be no impact on environmental justice related to biological resources under Alternative 1.

Cultural Resources

Under Alternative 1, there would be adverse impacts to archaeological sites including damage from subsurface excavations related to troop training (e.g., field fortifications, emplacement of obstacles), off-road mounted maneuvers with tactical vehicles and other routine vehicular traffic, increased access by ground troops into the ranges, possible damage from live fire and cleanup of UXO within or adjacent to resources, and through accidental damage or vandalism. Additionally, there would be continued impacts related to ongoing limitations on access to areas used for traditional and customary practices. These adverse impacts would pertain to cultural resources that are most important to Native Hawaiian populations and would thus represent disproportionate impacts on Native Hawaiian populations. **Section 3.4** indicates that, given continued compliance with existing regulations and agreements, impacts related to archaeological sites would be less than significant; therefore, these impacts would constitute a less than significant impact to environmental justice. **Section 3.4** determined that impacts related to limitations on access for traditional and customary practices would be significant but mitigable through consultation with Native Hawaiians, and/or other ethnic groups as appropriate, to provide access to promote and protect cultural beliefs, practices, and resources. With this mitigation, impacts to environmental justice related to access to traditional and customary practice would be less than significant.

Hazardous and Toxic Materials and Wastes

Section 3.5 indicates that adverse impacts would be limited to areas within PTA and does not identify any adverse impacts to populations including low-income or minority populations. Because there would not be adverse impacts to populations, there would be no impact on environmental justice related to hazardous and toxic materials and wastes under Alternative 1.

Air Quality and Greenhouse Gases

As noted in **Section 3.6**, there would be continuing adverse impacts related to air quality under Alternative 1. Given the distances between PTA and residential areas in the ROI, air quality impacts would not adversely affect any populations, including low-income and minority populations. Because there would not be adverse effects on populations, there would not be a significant impact to environmental justice related to air quality under Alternative 1.

Noise

There would be continuing adverse impacts related to noise under Alternative 1. However, **Section 3.7** indicates that impacts would not adversely affect any populations, including low-income and minority

populations. Because there would not be adverse impacts on populations, there would not be a significant impact to environmental justice related to noise under Alternative 1.

Geology, Topography and Soils

Section 3.8 does not identify any adverse impacts to populations, including low-income or minority populations. Because there would not be impacts to populations, there would be no impact on environmental justice related to geological resources under Alternative 1.

Water Resources

As described in **Section 3.9**, Alternative 1 would constitute a less than significant impact to water quality. Due to the depth of groundwater beneath PTA and a lack of surface water and groundwater pathways (i.e., potentially adversely affected water does not travel easily below or off of PTA land), no populations, including low-income and minority populations, would be adversely impacted. Because there would be no adverse impacts on populations, there would be no significant impact on environmental justice related to water resources under Alternative 1.

Socioeconomics

Section 3.10 indicates that there would be no change to economic activity and continued economic benefits would continue under Alternative 1. Because there would be no impact to economic activity, there would not be an impact to environmental justice related to socioeconomics under Alternative 1.

Transportation and Traffic

Under Alternative 1, there would be adverse impacts on the regional transportation system related to PTA inbound and outbound traffic. These impacts would affect residents of the ROI (a minority population area) more than others and are, therefore, considered disproportionate. Based on the assessment presented in **Section 3.12**, there would be no new impacts and the continued impacts would be considered minor. Because the disproportionate adverse impact would be minor, the impact on environmental justice would be considered less than significant under Alternative 1.

Airspace

Alternative 1 would result in continuing adverse impacts on civilian air traffic due to ongoing activities within the State-owned land. The minor impacts on air traffic may have some continuing minor adverse impacts on low-income and minority populations; however, the impacts would be unlikely to disproportionately affect these populations. Because there would not be a disproportionate impact related to civilian air traffic, impacts to environmental justice related to airspace would be less than significant under Alternative 1.

Electromagnetic Spectrum

There would be continuing adverse impacts related to EMS emissions under Alternative 1. However, **Section 3.14** indicates that impacts would not adversely affect any residential populations, including low-income and minority populations. Because there would not be adverse effects, there would not be a significant impact to environmental justice related to EMS under Alternative 1.

Utilities

Section 3.15 does not indicate that there would be any effect on local public utility capacity or prices paid by the public under Alternative 1. As such, low-income or minority populations would not be adversely affected. Because there would not be adverse effects on populations, there would not be a significant impact on environmental justice related to utilities under Alternative 1.

Human Health and Safety

Section 3.16 indicates that there would be no effect on the health and safety of the public that could adversely affect low-income or minority populations under Alternative 1. Because there would be no impacts to populations, there would not be a significant impact on environmental justice related to human health and safety under Alternative 1.

Protection of Children

Primarily due to the substantial distances between PTA and areas with high concentrations of children (e.g., schools), adverse impacts related to noise, human health and safety, hazardous and toxic materials would not be harmful to the health or safety of children. Because there would not be adverse impacts on the health or safety of children, there would be no impact on the protection of children under Alternative 1.

Summary of Impacts: Adverse impacts related to land use, cultural resources, and transportation and traffic would disproportionately affect low-income and minority populations, including Native Hawaiians. The respective resource sections, however, indicated that the impacts would be minor or mitigated, and there was no indication that the impacts would be harmful to the health or environment of the environmental justice populations. Because the disproportionate impacts would be minor or mitigated, they were determined to be less than significant in the context of environmental justice. Overall, impacts to environmental justice from Alternative 1 would be less than significant.

Potential Mitigation measures: None recommended.

Level of Significance: Less than significant.

3.11.6.2 Alternative 2: Modified Retention

Land Use

Alternative 2 would result in continuing adverse impacts to recreation due to continued restricted public access associated with ongoing activities within the State-owned land retained. While these restrictions would be reduced relative to Alternative 1, the access restrictions reduce the capability, and increase the cost, for the public to recreate. Because the population near PTA and the overall population of the County of Hawai'i are classified as minority, and it is this population who would be most affected, the impact to recreation would be considered disproportionate. Based on the assessment presented in **Section 3.2**, there would be no new impacts and the continued impacts would be considered minor, as ongoing hunting programs would continue at the installation. Because the disproportionate adverse impact would be minor, the impact on environmental justice would be considered less than significant under Alternative 2.

Biological Resources

Section 3.3 does not identify any adverse impacts to populations including low-income or minority populations. Because there would not be adverse impacts to populations, there would be no impact on environmental justice under Alternative 2.

Cultural Resources

Similar impacts discussed under Alternative 1 would occur under Alternative 2. These adverse impacts would pertain to cultural resources that are most important to Native Hawaiian populations and would thus represent disproportionate impacts on Native Hawaiian populations. **Section 3.4** indicates that impacts to traditional and customary practices under Alternative 2 would be the same as under Alternative 1 and would be significant but mitigable through consultation with Native Hawaiians, and/or other ethnic groups as appropriate, to provide access to promote and protect cultural beliefs, practices, and resources. With this mitigation, impacts to environmental justice related to access to traditional and customary practice would be less than significant.

Hazardous and Toxic Materials and Wastes

Section 3.5 indicates that adverse impacts would be limited to areas within PTA, and does not identify any adverse impacts to populations including low-income or minority populations. Because there would not be adverse impacts to populations, there would be no impact on environmental justice under Alternative 2.

Air Quality and Greenhouse Gases

As noted in **Section 3.6**, there would be continuing adverse impacts related to air quality with Alternative 2. Given the distances between PTA and residential areas on Hawai'i, along with other natural factors that mitigate air quality effects on residential locations, air quality impacts would not adversely affect any populations, including low-income and minority populations. Because there would not be adverse effects on populations, there would not be a significant impact to environmental justice under Alternative 2.

Noise

There would be continuing adverse impacts related to noise under Alternative 2. However, **Section 3.7** indicates that impacts would not adversely affect any populations, including low-income and minority populations. Because there would not be adverse effects on populations, there would not be a significant impact to environmental justice under Alternative 2.

Geology, Topography and Soils

Section 3.8 does not identify any adverse impacts to populations including low-income or minority populations. Because there would not be impacts to populations, there would be no impact on environmental justice under Alternative 2.

Water Resources

As described in **Section 3.9**, Alternative 2 would constitute a less than significant impact to water quality. Due to the depth of groundwater beneath PTA and a lack of surface water and groundwater pathways (i.e., potentially adversely affected water does not travel easily below or off of PTA land), no populations, including low-income and minority populations, would be adversely impacted. Because there would be no adverse impacts on populations, there would be no significant impact on environmental justice related to water resources under Alternative 2.

Socioeconomics

Section 3.10 indicates that there would be a negligible, adverse impact to economic activity under Alternative 2. This adverse impact would tend to affect direct suppliers of the Army and, indirectly, the economy at large, and not have a disproportionate focus on low-income or minority residents. Because adverse impacts would not be disproportionate, impacts to environmental justice would be less than significant under Alternative 2.

Transportation and Traffic

Under Alternative 2 there would be adverse impacts on the regional transportation system related to PTA inbound and outbound traffic (though less than under Alternative 1). These impacts would affect residents of the ROI (a minority population area) more than others and are, therefore, considered disproportionate. Based on the assessment presented in **Section 3.12**, there would be no new impacts and the continued impacts would be considered minor. Because the disproportionate adverse impact would be minor, the impact on environmental justice would be considered less than significant under Alternative 2.

Airspace

Alternative 2 would result in continuing long-term, minor, adverse impacts on civilian air traffic due to ongoing activities within the State-owned land. The minor impacts on air traffic may have some continuing minor, adverse impacts on low-income and minority populations; however, the impacts would be unlikely to disproportionately affect these populations. Because there would not be a disproportionate impact related to civilian air traffic, impacts to environmental justice would be less than significant under Alternative 2.

Electromagnetic Spectrum

There would be continuing adverse impacts related to EMS emissions under Alternative 2. However, **Section 3.14** indicates that impacts would not adversely affect any residential populations, including low-income and minority populations. Because there would not be adverse effects, there would not be a significant impact to environmental justice under Alternative 2.

Utilities

Section 3.15 does not indicate that there would be any effect on local public utility capacity or prices paid by the public under Alternative 2. As such, low-income or minority populations would not be adversely affected. Because there would not be adverse effects on populations, there would not be a significant impact on environmental justice related to utilities under Alternative 2.

Human Health and Safety

There would be adverse impacts related to human health and safety under Alternative 2. However, **Section 3.16** indicates that these impacts would only have the potential to occur in non-populated areas and would not adversely affect any populations, to include low-income and minority populations. Because there would not be adverse effects there would not be a significant impact to environmental justice under Alternative 2.

Protection of Children

Primarily due to the substantial distances between PTA and areas with high concentrations of children (e.g., schools), adverse impacts related to noise, human health and safety, hazardous and toxic materials would not be harmful to the health or safety of children. Because there would not be adverse impacts on the health or safety of children, there would be no impact on the protection of children under Alternative 2.

Summary of Impacts: Adverse impacts related to land use, cultural resources, and transportation and traffic would disproportionately affect low-income and minority populations, including Native Hawaiians. The respective resource sections, however, indicated that the impacts would be less severe than under Alternative 1, and there was no indication that the impacts would be harmful to the health or environment of the environmental justice populations. Because the disproportionate impacts would be minor, they were determined to be less than significant in the context of environmental justice. Overall, impacts to environmental justice from Alternative 2 would be less than significant.

Potential Mitigation measures: None recommended.

Level of Significance: Less than significant.

3.11.6.3 Alternative 3: Minimum Retention and Access

Land Use

Alternative 3 would result in continuing adverse impacts to recreation due to continued restricted public access associated with ongoing activities within the State-owned land. While these restrictions would be reduced relative to Alternative 2, the access restrictions reduce the capability, and tend to increase the cost, for the public to recreate. Because the population near PTA and the overall population of the County of Hawai'i are classified as minority, and it is this population who would be most affected, the impact to recreation would be considered disproportionate. Based on the assessment presented in **Section 3.2**, there would be no new impacts and the continued impacts would be considered minor, as ongoing hunting programs would continue at the installation. Because the disproportionate adverse impact would be minor, the impact on environmental justice would be considered less than significant under Alternative 3.

Biological Resources

Section 3.3 does not identify any adverse impacts to populations including low-income or minority populations. Because there would not be adverse impacts to populations, there would be no impact on environmental justice under Alternative 3.

Cultural Resources

Similar impacts discussed under Alternative 2 would occur under Alternative 3. These adverse impacts would pertain to cultural resources that are most important to Native Hawaiian populations and would thus represent disproportionate impacts on Native Hawaiian populations. **Section 3.4** indicates that impacts to traditional and customary practices under Alternative 3 would be the same as under Alternatives 1 and 2 and would be significant but mitigable through consultation with Native Hawaiians, and/or other ethnic groups as appropriate, to provide access to promote and protect cultural beliefs, practices, and resources. With this mitigation, impacts to environmental justice related to access to traditional and customary practice would be less than significant.

Hazardous and Toxic Materials and Wastes

Section 3.5 indicates that adverse impacts would be limited to areas within PTA and does not identify any adverse impacts to populations, including low-income or minority populations. Because there would not be adverse impacts to populations, there would be no impact on environmental justice under Alternative 3.

Air Quality and Greenhouse Gases

As noted in **Section 3.6**, there would be continuing adverse impacts related to air quality with Alternative 3. Given the distances between PTA and residential areas on Hawai'i, along with other natural factors that mitigate air quality effects on residential locations, air quality impacts would not adversely affect any populations, including low-income and minority populations. Because there would not be adverse effects on populations, there would not be a significant impact to environmental justice under Alternative 3.

Noise

There would be continuing adverse impacts related to noise under Alternative 3. However, **Section 3.7**, indicates that impacts would not adversely affect any populations, to include low-income and minority populations. Because there would not be adverse effects on populations there would not be a significant impact to environmental justice under Alternative 3.

Geology, Topography and Soils

Section 3.8, does not identify any adverse impacts to populations, including low-income or minority populations. Because there would not be impacts to populations, there would be no impact on environmental justice under Alternative 3.

Water Resources

As described in **Section 3.9**, Alternative 3 would constitute a less than significant impact to water quality. Due to the depth of groundwater beneath PTA and a lack of surface water and groundwater pathways (i.e., potentially adversely affected water does not travel easily below or off of PTA land), no populations, including low-income and minority populations, would be adversely impacted. Because there would be no adverse impacts on populations, there would be no significant impact on environmental justice related to water resources under Alternative 3.

Socioeconomics

Section 3.10 indicates that there would be a negligible, adverse impact to economic activity under Alternative 3 (although greater than under Alternative 2). This adverse impact would affect direct suppliers of the Army and, indirectly, the economy at large, and not have a disproportionate focus on low-income or minority residents. Because adverse impacts would not be disproportionate, impacts to environmental justice would be less than significant under Alternative 3.

Transportation and Traffic

Under Alternative 3, there would be continued minor adverse impacts on the regional transportation system related to PTA inbound and outbound traffic (though less than under Alternative 2). These impacts would affect residents of the ROI (a minority population area) more than others and are, therefore, considered disproportionate. Based on the assessment presented in **Section 3.12**, there would be no new impacts and the continued impacts would be considered minor. Because the disproportionate adverse impact would be minor, the impact on environmental justice would be considered less than significant under Alternative 3.

Airspace

Alternative 3 would result decreased R-3103 activation and airspace training which would result in long-term, minor, beneficial impacts from reduced requirements for civilian aircraft detours. Because there would not be adverse impacts to civilian air travel, there would be no impact on environmental justice related to airspace under Alternative 3.

Electromagnetic Spectrum

There would be continuing adverse impacts related to EMS emissions under Alternative 3. However, **Section 3.14**, indicates that impacts would not adversely affect any residential populations, including low-income and minority populations. Because there would not be adverse effects, there would not be a significant impact to environmental justice under Alternative 3.

Utilities

Section 3.15 does not indicate that there would be any effect on local public utility capacity or prices paid by the public under Alternative 3. As such, low-income or minority populations would not be adversely affected. Because there would not be adverse effects on populations, there would not be a significant impact on environmental justice related to utilities under Alternative 3.

Human Health and Safety

There would be adverse impacts related to human health and safety under Alternative 3. However, **Section 3.16**, indicates that these impacts would only have the potential to occur in non-populated areas and would not adversely affect any populations, including low-income and minority populations. Because there would not be adverse effects, there would not be a significant impact to environmental justice under Alternative 3.

Protection of Children

Primarily due to the substantial distances between PTA and areas with high concentrations of children (e.g., schools), adverse impacts related to noise, human health and safety, hazardous and toxic materials would not be harmful to the health or safety of children. Because there would not be adverse impacts on the health or safety of children, there would be no impact on the protection of children under Alternative 3.

Summary of Impacts: Adverse impacts related to land use, cultural resources, and transportation and traffic would disproportionately affect low-income and minority populations, including Native Hawaiians. The respective resource sections, however, indicated that the impacts would be less severe than under Alternative 2, and there was no indication that the impacts would be harmful to the health or environment of the environmental justice populations. Because the disproportionate impacts would be minor, they were determined to be less than significant in the context of environmental justice. Overall, impacts to environmental justice from Alternative 3 would be less than significant.

Potential Mitigation measures: None recommended.

Level of Significance: Less than significant.

3.11.6.4 No Action Alternative

Land Use

The No Action Alternative would result in reduced restrictions to recreation areas, which would be a beneficial impact to nearby populations. Because there would be beneficial impacts to recreation, there would be a less than significant, beneficial, impact on environmental justice under the No Action Alternative.

Biological Resources

Section 3.3 does not identify any adverse impacts to populations including low-income or minority populations. Because there would not be impacts to populations, there would be no impact on environmental justice under the No Action Alternative.

Cultural Resources

Under the No Action Alternative, adverse impacts related to training would cease. While there would be a reduction in Army sponsored conservation programs, it is anticipated that the State would continue these efforts over the long term. Because the adverse impacts associated with training and access would no longer occur, there would be a less than significant, beneficial, impact on environmental justice related to cultural resources under the No Action Alternative.

Hazardous and Toxic Materials and Wastes

Section 3.5, does not identify any adverse impacts to populations, including low-income or minority populations. Because there would not be impacts to populations, there would be no impact on environmental justice under the No Action Alternative.

Air Quality and Greenhouse Gases

As noted in **Section 3.6**, under the No Action Alternative, the continuing adverse effects on air quality identified under the action alternatives would cease. However, those adverse impacts were not harmful to populations, including low-income and minority populations, and, as such, the No Action Alternative would lead to no change in air quality for the local population. Because there would be no change to air quality with respect to populations, there would be no impact to environmental justice under the No Action Alternative.

Noise

Under the No Action Alternative, the continuing adverse effects related to noise identified under the action alternatives would cease. However, those adverse impacts did not affect populations in the ROI, and, as such, the No Action Alternative would lead to no change in noise for the local population. Because there would be no change in noise with respect to populations, there would be no impact to environmental justice under the No Action Alternative.

Geology, Topography and Soils

Section 3.8, does not identify any adverse impacts to populations including low-income or minority populations. Because there would not be impacts to populations, there would be no impact on environmental justice under the No Action Alternative.

Water Resources

As described in **Section 3.9**, the No Action Alternative would not substantially affect water quality. As such, no populations, including low-income and minority populations, would be adversely impacted. Because there would be no adverse impacts on populations, there would be no significant impact on environmental justice related to water resources under the No Action Alternative.

Socioeconomics

Section 3.10 indicates that there would be a substantial adverse impact to economic activity under the No Action Alternative. This adverse impact would affect direct suppliers of the Army and, indirectly, the economy at large, and not have a disproportionate focus on low-income or minority residents. Because adverse impacts would not be disproportionate, impacts to environmental justice would be less than significant under the No Action Alternative.

Transportation and Traffic

The No Action Alternative would result in a minor improvement to regional transportation, which would be a beneficial impact to nearby populations. Because there would be beneficial impacts to regional transportation under the No Action Alternative, there would be a less than significant beneficial impact, on environmental justice under the No Action Alternative.

Airspace

The No Action Alternative would result in decreased restricted area R-3103 activation and airspace training, which would result in long-term, minor, beneficial impacts from reduced requirements for civilian aircraft detours. Because there would not be adverse impacts to civilian air travel, there would be no impact on environmental justice under the No Action Alternative.

Electromagnetic Spectrum

Under the No Action Alternative, the continuing adverse effects related to EMS emissions identified under the action alternatives would cease. However, those adverse impacts were not harmful to residential populations, including low-income and minority populations, and, as such, the No Action Alternative would lead to no change in EMS emissions for the local population. Because there would be no change in EMS emissions with respect to populations, there would be no impact to environmental justice under the No Action Alternative.

Utilities

Section 3.15 does not indicate that there would be any effect on local public utility capacity or prices paid by the public that could adversely affect low-income or minority populations under the No Action Alternative. Because there would be no impacts to populations, there would not be a significant impact on environmental justice under the No Action Alternative.

Human Health and Safety

There would be adverse impacts related to human health and safety under the No Action Alternative. However, **Section 3.16**, indicates that these impacts would only have the potential to occur in non-populated areas and would not adversely affect any populations, including low-income and minority populations. Because there would not be adverse effects, there would not be a significant impact to environmental justice under the No Action Alternative.

Protection of Children

Primarily due to the substantial distances between PTA and areas with high concentrations of children (e.g., schools), adverse impacts related to noise, human health and safety, hazardous and toxic materials would not be harmful to the health or safety of children. Because there would not be adverse impacts on the health or safety of children, there would be no impact on the protection of children under the No Action Alternative.

Summary of Impacts: Under the No Action Alternative, none of the resources that were analyzed would result in a significant impact on environmental justice.

Potential Mitigation measures: None recommended.

Level of Significance: Less than significant.

3.12 Transportation and Traffic

3.12.1 Definition

Transportation is a system or means of transporting people or goods. Roads, public transit, rail, air, pedestrian, and marine-related systems are all elements of transportation. Traffic refers to the movement of vehicles and pedestrians along and adjacent to roadways. Highway operations in Hawai'i are regulated by the Federal Highway Administration and implemented by the Hawai'i DOT. Street operations on the island of Hawai'i are managed by Hawai'i DOT and the County of Hawai'i Department of Public Works. Roads and training trails on PTA are managed by the Army.

Roadway transportation conditions are evaluated using capacity estimates that depend on several factors, including number of lanes, width of lanes, roadway gradient, obstructions, vehicle volumes, and other physical characteristics of the roadway network. Annual Average Daily Traffic (AADT) is a measure of the average number of vehicles that travel on a section of roadway in a given day. Hawai'i DOT gathers AADT through a combination of permanent, in-ground traffic counting stations, overhead cameras, and temporary traffic counters or tubes (HDOT-HD, 2017a).

Operation of roadway segments and intersections are expressed in terms of Level of Service (LOS), which range from LOS A, or best operating conditions, to LOS F, or worst operating conditions. LOS is an ordinal measure of operational conditions within a traffic stream based on service measures such as speed, travel time, freedom to maneuver, traffic interruptions, delays, and convenience. **Figure 3-20** presents the criteria for each LOS designation and associated delay factors.

Level of Service	Description	Delay (sec)	
		Signalized	Unsignalized/ Roundabout
A	Primarily free-flow operation.	0-10	0-10
B	Reasonably unimpeded operation.	>10-20	>10-15
C	Stable operation. The ability to maneuver is more restricted than LOS B.	>20-35	>15-25
D	Less stable operation. Small increases in flow may cause large increases in delay and reduced speeds.	>35-55	>25-35
E	Unstable operation. Low speeds and considerable delay.	>55-80	>35-50
F	Congested operation. High delay and extensive queuing.	>80	>50

Source: TRB, 2010

Figure 3-20: Level of Service Illustration

3.12.2 Regulatory Framework

The Hawai'i DOT Highways Division and the County of Hawai'i Department of Public Works implement national standards for roadways and circulation in accordance with the *Statewide Federal-Aid Highways 2035 Transportation Plan* (HDOT-HD, 2014a) and the *Federal-Aid Highways 2035 Transportation Plan for District of Hawai'i* (HDOT-HD, 2014b), which are regional long-range land transportation plans. Other regulatory policies and procedures related to the construction, operation and management of roadways include the Transportation Research Board's *Highway Capacity Manual, 2010 Edition*, the American Association of State Highway and Transportation Officials' *Policy on Geometric Design of Highways and Streets* and *Highway Safety Manual*, and the Hawai'i DOT Highway Division's *2005 Standard Specifications and Special Provisions*. State highways, such as DK1 Highway (formerly Saddle Road), Māmalahoa Highway, Queen Ka'ahumanu Highway, and 'Akoni Pule Highway are under the jurisdiction of the Hawai'i DOT Highways Division. County roadways, such as Waikōloa Road, are under the jurisdiction of the County of Hawai'i Department of Public Works. The roads within PTA, including those on State-owned land, are under the jurisdiction of the Army (USACE-POH & USAG-HI, 2019b).

The Hawai'i DOT Harbors Division is responsible for control, management, use, and regulation of all State-owned harbor facilities used by commercial cargo, passenger, and fishing operations [Hawai'i Revised Statutes Section 266-1 (2012)]. Hawai'i DOT implements the *Hawai'i Island Commercial Harbors 2035 Master Plan* as a strategic planning guide for ensuring continuous and effective management and operations of Hilo and Kawaihae Harbor. The 2035 Master Plan was completed in August 2011 and updated two earlier plans, the *Hawai'i Commercial Harbors 2020 Master Plan* (1998) and the *Hilo and Kawaihae Harbors 2010 Master Plan* (1989). The U.S. Government owns and operates a landing ramp and has an easement authorized by a series of Governor EOs, including EO 1759 (1956), EO 1904 (1960), EO 2142 (1964), and EO 4523 (2016), which allows them to conduct military operations and transfer troops, vehicles, military munitions, and other goods at Kawaihae Harbor (HDOT-H, 2011).

All commercial airports in Hawai'i fall under the jurisdiction of the Hawai'i DOT Airports Division. The Hawai'i District, a subset of the Hawai'i DOT Airports Division, manages, operates, and maintains four State airports on the island of Hawai'i in accordance with State and federal laws. The Army has jurisdiction over BAAF. The FAA is the federal governing agency for commercial, military, and general aviation airports.

3.12.3 Region of Influence

The ROI for transportation and traffic includes the transportation networks on State-owned land at PTA, PTA transportation networks used to conduct ongoing activities within the State-owned land, and regional transportation networks used to access PTA to conduct ongoing activities within the State-owned land, including the transportation corridor between Kawaihae Harbor and PTA and the transportation corridors between Hilo International Airport (ITO) and Ellison Onizuka Kona International Airport (KOA) and PTA.

3.12.4 Existing Conditions

The Army uses ground, ocean, and air transportation, and various modes of travel (e.g., planes, ships, trucks) to transport troops, vehicles, equipment, and military munitions from various locations (primarily O'ahu) to PTA. Transportation facilities used by the Army include roadways (e.g., DK1 Highway, Māmalahoa Highway), harbors (i.e., Kawaihae Harbor), regional airports (i.e., ITO and KOA), and BAAF.

PTA Transportation

PTA Roads and Trails

Several types of vehicular traffic are generated by activities at PTA including traffic associated with military exercises, permanent party personnel employed at the Cantonment, commercial vehicles (i.e., water, food, and fuel deliveries) and guests, and construction vehicles. PTA contains a network of roads and training trails that provide access for ongoing activities.

The State-owned land includes approximately 65 miles of roads and 94 miles of training trails (see **Figure 3-21**). One of the primary roads used to access the training and support facilities and maneuver area on the State-owned land is Old Saddle Road, which travels in a northwest-southeast direction through TAs 1, 3, 4, 5, 6, 7, 8, 9, 11, 12, 15, 16, and the southern portion of the Cantonment (see **Figure 3-21**). Old Saddle Road is not part of the State-owned land. It is administered by the County of Hawai'i, which has granted PTA exclusive use of the approximately 11-mile segment of Old Saddle Road within PTA, following its closure to the public after realignment of the DK1 Highway (USACE-POH & USAG-HI, 2019b). A network of roads and training trails, most of which are single-lane and unimproved, are also used to access areas throughout the State-owned land, as well as to the Cantonment, Ke'āmuku parcel, impact area, and training ranges. Lightning Trail, which runs parallel to and along the south side of Old Saddle Road, and Lava Road, which partially runs along the southern boundary of the State-owned land, are two primary east-west roadways that provide access to most of the live-fire training ranges on the State-owned land.

PTA Airfields

Airfields at PTA include BAAF and Cooper Air Strip. BAAF is just west of the Cantonment and is the highest elevation airfield in consistent use in the Hawaiian Islands. The airfield consists of a 3,705-foot runway and is used for training operations and delivery of materials and personnel from O'ahu (USACE-POH & USAG-HI, 2020a). BAAF is restricted to military activities. Cooper Air Strip is the only airfield on State-owned land at PTA. It accommodates unmanned aerial systems during training operations and is used for approximately 8,500 operations annually (USAG-PTA, 2020b; USARHAW, undated). Cooper Air Strip is not used for transportation purposes; therefore, transportation related to airfields on the State-owned land is not discussed further (USARHAW, undated).

Pedestrian Networks

Soldiers who train at PTA rely on walking within the Cantonment and are transported in tactical vehicles to TAs on the State-owned land. Training operations, such as maneuver training, require Soldiers to transit in vehicles and on foot within the State-owned land using existing roads, training trails, and maneuver area on TAs 1 through 20 (USARHAW, undated). During training periods, there are more than 1,000 pedestrians and military vehicles at the Cantonment (USACE-POH & USAG-HI, 2020a). There are no pedestrian-only networks within the State-owned land.

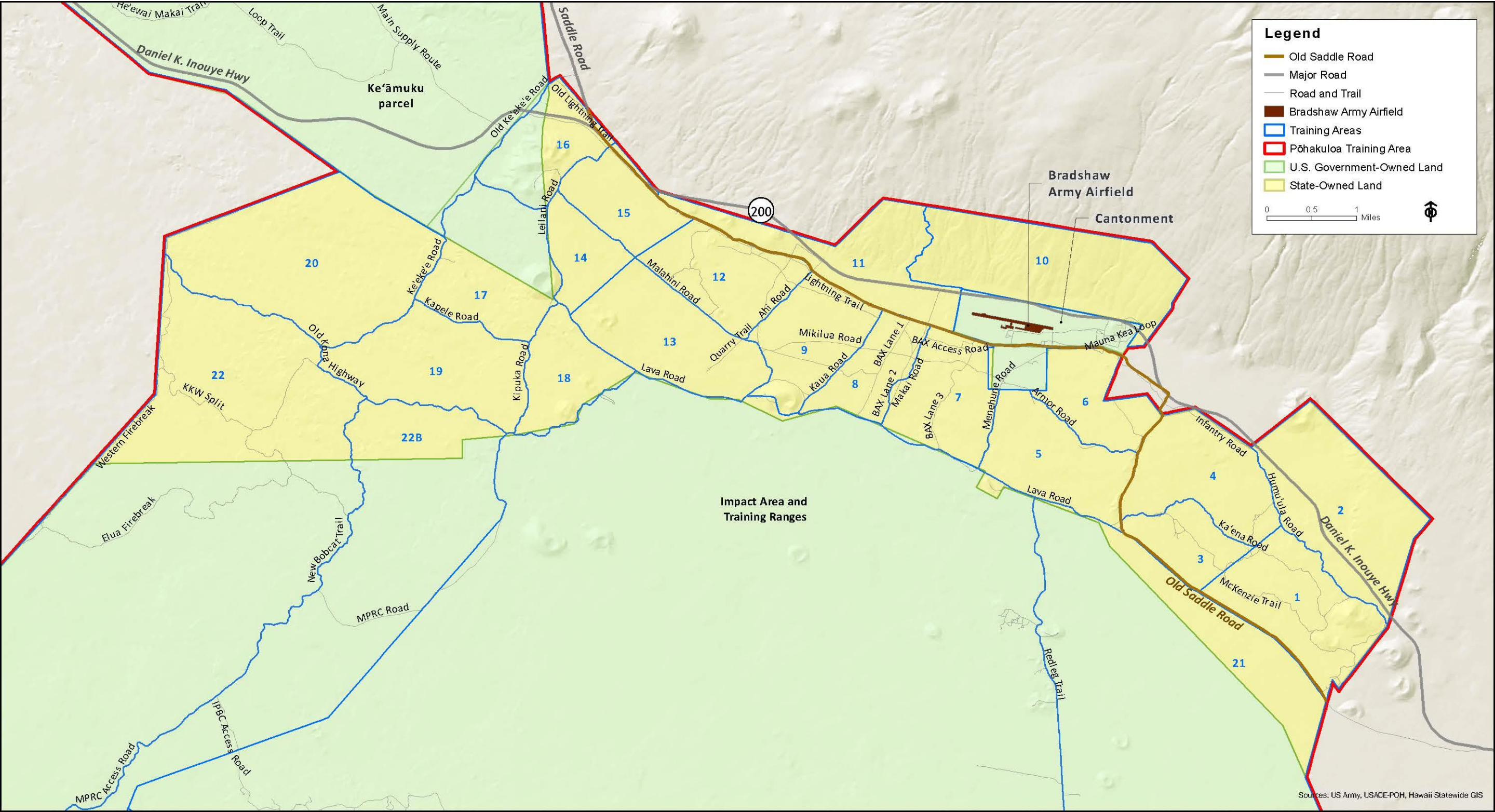


Figure 3-21: Pōhakuloa Training Area Roads and Training Trails



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Regional Transportation

The Army uses several regional roadways to transport military materiel, civilian personnel, and Soldiers to and from PTA. Soldiers permanently stationed at PTA and civilian personnel employed at the Cantonment commute daily from Hilo, Kailua-Kona, Waikōloa, Waimea, and other island of Hawai'i residential communities via DK1 Highway and other public roadways.

Commuting PTA personnel, deliveries, and visitors are directed to the PTA main gate near milepost 35 along DK1 Highway. In 2019, DK1 Highway had an AADT volume of 5,600 vehicles on the segment that includes access to the PTA main gate (**Table 3-22**) (HDOT-HD, 2021). AADT volume on DK1 Highway is projected to increase to 19,400 vehicles by 2035 due to anticipated statewide growth in population and employment. Traffic counts conducted by Hawai'i DOT indicate over 50 percent of traffic on DK1 Highway is between Hilo (and/or destinations on DK1 Highway) and Kona, approximately 25 percent of traffic is between Hilo and Waikoloa Village or the South Kohala Resorts, and approximately 20 percent of traffic is between Hilo and Waimea (HDOT-HD & USDOT-FHWA, 2017). In fiscal year 2019, PTA employed 129 personnel and approximately 45 contractors; therefore, traffic volumes associated with PTA commuting personnel are small (approximately 3 percent) compared with the total AADT for DK1 Highway (USACE-POH & USAG-HI, 2020a).

Soldiers arriving at KOA are transported by bus to PTA via Queen Ka'ahumanu Highway, Waikōloa Road, Māmalahoa Highway, and DK1 Highway. Soldiers arriving at ITO are transported to PTA via DK1 Highway. Military materiel is transported from Kawaihae Harbor to PTA via military convoy. The primary route for military convoys traveling between Kawaihae Harbor and PTA is via 'Akoni Pule Highway, Queen Ka'ahumanu Highway, Waikōloa Road, Māmalahoa Highway, and DK1 Highway (USACE-POH & USAG-HI, 2019b). Regional roadways used for ground transportation are depicted in **Figure 3-22**. AADT and pavement condition are routinely monitored by Hawai'i DOT. Data from 2019 for roadway segments on the island of Hawai'i used by the Army are provided in **Table 3-22**. **Table 3-22** also includes LOS for roadways used by the Army, as presented in the *Statewide Federal-Aid Highways 2035 Transportation Plan* (HDOT-HD, 2014a).

Table 3-22 AADT, LOS, and Pavement Condition for Roadways Used by the Army				
Roadway	Segment	AADT	LOS	Pavement Condition
DK1 Highway	MP 0 – MP 20	330	C or Higher	Good
DK1 Highway	MP 20 – MP 43	5,600	C or Higher	Good
Māmalahoa Highway	MP 11 – MP 14	6,200	C or Higher	Fair to Poor
Waikōloa Road	MP 0 – MP 6	5,200	C or Higher	N/A
Waikōloa Road	MP 6 – MP 12	10,400	C or Higher	N/A
Queen Ka'ahumanu Highway	MP 67 – MP 75	12,700	E or Higher	Good to Fair
Queen Ka'ahumanu Highway	MP 75 – MP 93	15,000	D or Higher	Good to Fair
'Akoni Pule Highway	MP 0 – MP 1	7,400	C or Higher	Fair

Notes: MP = milepost; N/A = data not available.

Source: HDOT-HD, 2014a; HDOT-HD, 2021

Convoys typically access PTA via the convoy gate, which is in TA 16 at the western intersection of Old Saddle Road and DKI Highway (near milepost 41), approximately 6 miles west of the PTA main gate (USACE-POH & USAG-HI, 2020a). The convoy entrance has a designated right turning lane onto PTA for eastbound vehicles and a designated merge lane for vehicles entering westbound onto DKI Highway. Once through the convoy gate, convoys travel approximately 5.5 miles on Old Saddle Road to reach the Cantonment. Vehicles transporting military munitions travel an additional 2 miles (approximately) along PTA roads and training trails on State-owned land to reach the ASP.

During the public scoping process (summarized in **Section 1.6**), members of the public raised concerns regarding the effects of military convoys on transportation and traffic, including degradation of roadway pavements and increases in traffic on routes to and from PTA. Convoy traffic associated with periodic training exercises at PTA is closely coordinated with local authorities to minimize congestion-related impacts on public roadways. Military convoys consist of no more than 30 vehicles and are typically accompanied by a military police escort. Per Army guidance, convoys are required to maintain a gap of at least 30 minutes between serials (a group of military vehicles moving together), 330 feet between vehicles on highways, and 25 to 50 feet while in town traffic (USACE-POH & USAG-HI, 2019b). Because convoys between Kawaihae Harbor and PTA consist of 30 or less vehicles, traffic volumes associated with convoys are small when compared to the total AADT for roadways used by the Army (**Table 3-22**), and these convoys generally do not increase the rate of pavement degradation on these roads when compared to typical traffic (HDOT-HD, 2021).

Hawai'i DOT regulations prohibit military convoys from traveling on State highways during peak weekday traffic hours, which are from 6:00 a.m. to 8:30 a.m., and 3:00 p.m. to 6:00 p.m. DOT regulations also prohibit convoy travels on weekends and weekday holidays. Special permission can be acquired for weekend, holiday, or non-standard hour convoy activities (USACE-POH & USAG-HI, 2019b; USAG-HI & USARPAC, 2013). Convoys and transportation of military munitions are not allowed to occur through school zones between Monday and Friday during the hours that students are in transit; however, there are no school zones along the military convoy route between Kawaihae Harbor and PTA (USACE-POH & USAG-HI, 2019b). Because convoys travel at much slower than normal speeds, convoy leaders are instructed to be cognizant of civilian motorists and are advised to pull over to a safe location when several motorists are trailing behind the convoy to allow them to pass (West Hawai'i Today, 2020). Military munitions, when not transported via air (i.e., by helicopter), are transported on roads in accordance with Hawai'i DOT regulations for transporting explosive material (USAG-HI & USARPAC, 2013).

To mitigate potential traffic congestion and safety hazards for civilians when military units travel to PTA, USAG-HI publishes media releases to local newspapers, radio stations, and online (via the PTA website) to provide advanced notice of upcoming convoys and training activities occurring at PTA. The PTA Public Affairs Office also provides routine community updates and FLASH alerts regarding training and convoys via email (upon the individual's request) (USAG-PTA, 2021d). Since 2012, media releases to the public about convoy transport between PTA and Kawaihae Harbor have varied from 11 to 25 releases per year (USACE-POH & USAG-HI, 2020a).

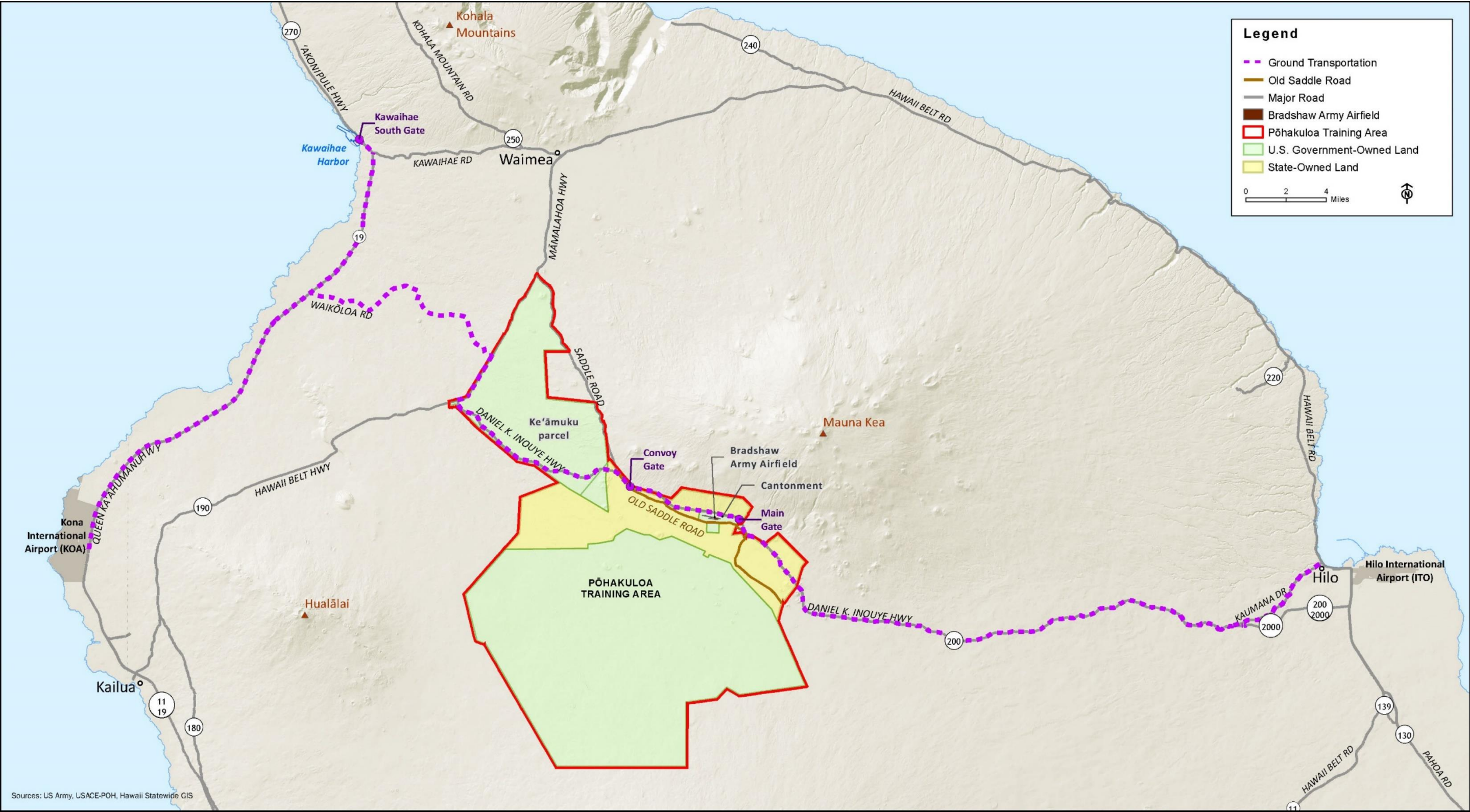


Figure 3-22: Regional Ground Transportation Routes



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DKI Highway

DKI Highway (State Route 200), originally named Saddle Road, was constructed as a one-lane roadway in 1942 to support military training activities. Over time, the road was widened and became a public route used to traverse the island. Substantial improvements to DKI Highway were completed in 2017 and included renovations, resurfacing, and realignment in some areas, and a redesign to the PTA main gate that included right and left turning lanes onto PTA to ease traffic congestion where military and civilian traffic enters PTA. The roadway had previously intersected PTA south of the Cantonment. Following realignment of DKI Highway, the portion of the roadway that intersected PTA south of the Cantonment, referred to as Old Saddle Road, was transferred to the County of Hawai'i, which granted PTA exclusive use. Today, DKI Highway is a two-lane State highway that extends 48 miles from the Hawai'i Belt Road (State Route 19) on the east side of the island to Māmalahoa Highway on the west side of the island. The highway is the only road that crosses the central part of the island, connecting Hilo to the east and Waimea to the north. The highway also connects PTA to the surrounding area and is used by the Army to travel between PTA and Kawaihae Harbor, ITO, and KOA.

DKI Highway consists of different sections that include Section I from milepost 42 to the highway's eastern terminus at Māmalahoa Highway, Section II from mileposts 28 to 42, Section III from mileposts 19 to 28, and Section IV from mileposts 0 (western terminus) to 19 (HDOT-HD, 2017b). Section I of the DKI Highway traverses the southern portion of the Ke'āmuku parcel and the northern portion of TA 16, which is partially on State-owned land. Section II of the DKI Highway travels in a northwest-southeast direction through TAs 2, 10, 11, 15, and 16 on State-owned land. Section II is used to access the PTA main gate. The posted speed limit on DKI Highway ranges from 60 miles per hour (mph) for most of the highway, to 45 mph near PTA and the Mauna Kea Recreation Area (USACE-POH & USAG-HI, 2019b). The portions of DKI Highway used by the Army operate at LOS C or higher (HDOT-HD, 2014a).

DKI Highway separates portions of TAs 2, 10, 11, 15, and 16 north of the highway from the rest of the State-owned land south of the highway. To access State-owned land north of DKI Highway, vehicles and PTA personnel cross DKI Highway at unsignalized intersections along the highway; however, the State-owned land north of DKI Highway has limited infrastructure and is not routinely used for training. PTA personnel use DKI Highway and roads that intersect DKI Highway to access the Ke'āmuku parcel.

Māmalahoa Highway

Māmalahoa Highway (consisting of State Routes 11, 19, and 190), also referred to as Hawai'i Belt Road, is a two-lane undivided State highway that encircles the island of Hawai'i and connects DKI Highway to Waikōloa Road. The posted speed limit on the portion of Māmalahoa Highway traversed by the Army is 50 mph and, in 2019, Hawai'i DOT assigned the roadway segment an overall pavement condition of fair to poor (HDOT-HD, 2021). The portions of Māmalahoa Highway used by the Army operate at LOS C or higher (HDOT-HD, 2014a).

Waikōloa Road

Waikōloa Road (County Route 191) is a mainly two-lane undivided highway with a four-lane divided section near Waikōloa Village. The approximately 12-mile roadway connects Māmalahoa Highway to Queen Ka'ahumanu Highway. The posted speed limit on Waikōloa Road ranges from 35 mph to 55 mph. Waikōloa Road operates at LOS C or higher (HDOT-HD, 2014a).

Queen Kaʻahumanu Highway

Queen Kaʻahumanu Highway (State Route 19) is a two-lane State highway that connects Waikōloa Road to Kawaihae Harbor and ITO. The approximately 26 miles of Queen Kaʻahumanu Highway that the Army uses to transport materials and personnel from Kawaihae Harbor and ITO operates at LOS E or better (HDOT-HD, 2014a). The posted speed limit on the highway is 55 mph (USAG-HI & USARPAC, 2013).

ʻAkoni Pule Highway

The Army uses a 1-mile segment of ʻAkoni Pule Highway (State Route 270) to access Kawaihae Harbor from Queen Kaʻahumanu Highway. The Kawaihae Harbor South Gate provides direct access to a roadway easement held by the Army, which extends from ʻAkoni Pule Highway to the Army's Kawaihae Harbor facility. The Army is the primary user of the Kawaihae South Gate, while the public and commercial harbor users enter through the PTA main gate, approximately 0.3 mile north of the Kawaihae South Gate along ʻAkoni Pule Highway. The posted speed limit on the portion of ʻAkoni Pule Highway used by the Army is 35 mph, and the roadway segment operates at LOS C or higher (HDOT-HD, 2014a).

Kawaihae Harbor

The port at Kawaihae Harbor, on the northwest side of the island of Hawaiʻi, is used by the Army and other DoD service branches to ship materials to and from Oʻahu. Kawaihae Harbor is approximately 132 nautical miles from Honolulu Harbor and offers facilities for handling international and interisland cargo (HDOT-H, 2008). The U.S. Government owns and operates a landing ramp for overseas transportation of troops, vehicles, and military munitions at the coral stockpile area, also referred to as the Coral Flats, which is active up to four times a month (HDOT-H, 2011). During transfer of military munitions, public access to the Coral Flats and unsupervised cross-traffic is restricted. Passage of military vehicles through the DoD-controlled area of the Coral Flats is staggered to minimize disruptions to traffic on public roadways (USACE-POH & USAG-HI, 2019b). In addition, when military munitions are off-loaded and stored at the Coral Flats, DoD activates an explosives safety quantity distance arc that restricts public and commercial use of the harbor (HDOT-H, 2011).

Regional Airports

Regional airports on the island of Hawaiʻi include KOA, ITO, and the Waimea-Kohala Airport. KOA is on the west side of the island of Hawaiʻi, approximately 40 miles west of the Cantonment, and ITO is on the east side of the island of Hawaiʻi, approximately 36 miles east of the Cantonment. KOA accommodates transpacific and interisland air travel, while ITO accommodates interisland air travel only. The DoD uses ITO and KOA to transport military personnel to PTA from Oʻahu (USACE-POH & USAG-HI, 2019b). The closest airport to PTA is the Waimea-Kohala Airport, which is owned and operated by the State and is approximately 18 miles northwest of the Cantonment. The airport is primarily used for freight transportation and limited commercial passenger services (USACE-POH & USAG-HI, 2019b). In 2020, military aircraft operations, which includes all DoD landings and takeoffs from aircraft and helicopters, included 6,278 operations at KOA and 3,061 operations at ITO, which is approximately 6 percent of all aircraft operations at KOA and approximately 11 percent of all aircraft operations at ITO (HDOT-AD, 2021).

Public Transportation

The County of Hawai'i provides mass public transit via the Hele-On bus and shuttle service. Bus and shuttle routes are primarily present within populated towns and tourist destinations including Hilo, Kona, Waimea, and Kohala resorts. A direct route between Hilo and Kona is offered via Māmalahoa Highway and circles the northern and western portions of the island. There are no public rail, bus, or shuttle routes with stops at PTA; therefore, public transportation is not discussed further (COH-MTA, 2021).

3.12.5 Methodology and Significance Criteria

This section outlines the methods and criteria used in **Section 3.12.6** to assess potential significant impacts on transportation and traffic. The evaluation of impacts on transportation and traffic is based on the capacity of the transportation network in an area and the compatibility of the Proposed Action with existing conditions. The criteria considered to assess whether an alternative would result in potential significant impacts on transportation and traffic, include the extent or degree to which an alternative would result in the following:

- Increase traffic volumes or delays to levels that impair a roadway's handling capacity or increase traffic safety hazards
- Degradation of intersection or roadway function from LOS A through D to LOS E or F
- Exceedance of the operational capacity of regional airports or harbors

3.12.6 Environmental Analysis

3.12.6.1 Alternative 1: Full Retention

PTA Transportation

Alternative 1 would not affect the number of personnel at PTA or ongoing activities on the State-owned land; therefore, there would be no change to PTA transportation systems or PTA-generated traffic. The Army would maintain full access to all roads and training trails within the State-owned land, which would enable continued access between the Cantonment and BAAF, impact area and training ranges, and Ke'āmuku parcel. The Army would continue to maintain and repair roads and training trails within the State-owned land. Therefore, no new impacts on PTA ground transportation routes and traffic would occur under Alternative 1. Long-term, minor, adverse impacts on PTA transportation systems and traffic would continue due to ongoing activities within the State-owned land that cause roadway degradation and traffic (during busy training events) on the PTA roads and training trails.

Regional Transportation

Under Alternative 1, ground transportation routes used by military personnel, vehicles, and equipment between Kawaihae Harbor, ITO, KOA, and PTA; the frequency, timing, and duration of military convoys; and PTA personnel daily commuter routes would remain the same as noted in **Section 3.12.4**. The Army would continue to implement measures to reduce congestion-related impacts on public roadways from military convoys, including close coordination with local authorities, adherence to Army and Hawai'i DOT regulations, and issuance of media releases to local newspapers, radio stations, and online (via the PTA website) to provide advanced notice of upcoming convoys and training activities occurring at PTA. In

addition, Alternative 1 would not affect the type or frequency of DoD's activities at Kawaihae Harbor and regional airports or the demand for these facilities and would not disrupt or displace harbor and airport operations. Therefore, regional PTA-generated ground traffic would not change; no new impacts on traffic volume, traffic safety hazards, LOS, or regional ground transportation routes would occur; and no changes to DoD use of regional airports and harbors would occur under Alternative 1. Long-term, minor, adverse impacts on regional transportation systems and traffic would continue due to ongoing activities within the State-owned land.

Summary of Impacts: Alternative 1 would result in no new impacts on PTA and regional transportation systems and traffic; however, continued long-term, minor, adverse impacts on PTA and regional transportation systems and traffic would occur due to ongoing activities within the State-owned land.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.12.6.2 Alternative 2: Modified Retention

PTA Transportation

Land Retained

The approximately 19,700 acres that would be retained under Alternative 2 include the majority of roads and training trails on the State-owned land. The Army would continue to use, maintain, and repair all roads and training trails on the State-owned land retained as well as have access between the Cantonment and BAAF, impact area and training ranges, and the Ke'āmuku parcel via the roads and training trails in the State-owned land retained.

As noted in **Section 2.2.2**, Alternative 2 would slightly reduce training conducted in the State-owned land; therefore, traffic within the State-owned land retained and the Cantonment would be reduced on some roads and training trails because they would no longer be used to access activities within the State-owned land not retained. The condition of these roads and trails would not deteriorate as quickly and would require less maintenance. Consequently, Alternative 2 would result in new long-term, negligible, beneficial impacts on PTA ground transportation routes and traffic. Long-term, minor, adverse impacts on PTA transportation systems and traffic would continue due to ongoing activities within the State-owned land retained that cause roadway degradation and traffic (during busy training events) on the PTA roads and training trails.

Land Not Retained

The Army would no longer use, maintain, or repair approximately 10 miles of roads and training trails in the State-owned land not retained. The Army rarely uses the roads and training trails in the land not retained, and it is assumed the State also would rarely use them. It also is assumed the State would maintain and repair the roads and training trails on the State-owned land not retained consistent with its use (i.e., rarely used roads and training trails would be maintained and repaired as needed). Therefore, use, traffic, condition, and maintenance and repair of the roads and training trails would largely continue unchanged, and no new impacts would occur. Long-term, negligible, adverse impacts on the roads and training trails within the State-owned land not retained would continue due to State use.

Regional Transportation

Long-term, negligible, beneficial impacts on regional transportation and traffic would be expected under Alternative 2. The Army would not retain State-owned land north of DK1 Highway; therefore, vehicles and PTA personnel would no longer be required to cross DK1 Highway to access these areas, which would reduce potential PTA-related traffic on DK1 Highway proximal to those areas.

Under Alternative 2, ground transportation routes used by military personnel, vehicles, and equipment between Kawaihae Harbor, ITO, KOA, and PTA; the frequency, timing, and duration of military convoys; and PTA personnel daily commuter routes would remain the same as existing conditions and regional PTA-generated ground traffic would not change. The Army would continue to implement measures to reduce congestion-related impacts on public roadways from military convoys including close coordination with local authorities, adherence to Army and Hawai'i DOT regulations, and issue of media releases to local newspapers, radio stations, and online (via the PTA website) to provide advanced notice of upcoming convoys and training activities occurring at PTA. In addition, Alternative 2 would not affect the type or frequency of the Army's activities at Kawaihae Harbor and regional airports or the demand for these facilities and would not disrupt or displace harbor and airport operations. Therefore, regional PTA-generated ground traffic would not change; no new impacts on traffic volume, traffic safety hazards, LOS, or regional ground transportation routes would occur; and no changes to DoD use of regional airports and harbors would occur under Alternative 2. Long-term, minor, adverse impacts on regional transportation systems and traffic would continue due to ongoing activities within the State-owned land retained.

Summary of Impacts: Alternative 2 would result in new long-term, negligible, beneficial impacts on PTA and regional transportation and traffic. Additionally, long-term, negligible to minor, adverse impacts on PTA transportation systems and traffic and long-term, minor, adverse impacts on regional transportation systems and traffic would continue due to ongoing activities and State activities within the State-owned land. In total, the impact would be less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.12.6.3 Alternative 3: Minimum Retention and Access

PTA Transportation

Land Retained

The approximately 10,100 acres of State-owned land that would be retained under Alternative 3 includes vital training and support facilities and approximately 115 miles of roads and training trails. Additionally, the Army would retain approximately 11 miles of select roads and training trails within the western portion of the State-owned land to maintain vital access to the Ke'āmuku parcel to the northwest and the impact area and training ranges to the southwest. The Army would continue to use, maintain, and repair all roads and training trails in the State-owned land retained, and would continue to have access between the Cantonment and BAAF, impact area and training ranges, and the Ke'āmuku parcel via the roads and training trails in the State-owned land retained.

As noted in **Section 2.2.3**, Alternative 3 would moderately reduce the level of training conducted in the State-owned land; therefore, traffic within the State-owned land retained and the Cantonment would be reduced on some roads and training trails because they would no longer be used to access activities within the State-owned land not retained. The condition of these roads and trails would not deteriorate as quickly and would require less maintenance. Consequently, Alternative 3 would result in new long-term, negligible, beneficial impacts on PTA ground transportation systems and traffic. Long-term, minor, adverse impacts on PTA transportation systems and traffic would continue due to ongoing activities within the State-owned land retained that cause roadway degradation and traffic (during busy training events) on the PTA roads and training trails.

Land Not Retained

The Army would no longer use, maintain, or repair approximately 45 miles of roads and training trails within State-owned land not retained. It is assumed the State would use these roads and training trails less than the Army and maintain and repair the roads and training trails consistent with the State's need (i.e., actively used roads and training trails would be regularly maintained and repairs and unused/rarely used roads and training trails would be maintained and repaired less or not at all). Therefore, roadway condition would stay the same but use, traffic, and maintenance and repair of the roads and training trails in the State-owned land not retained would be reduced, which would result in new long-term, negligible, beneficial impacts on the PTA transportation system and traffic.

Regional Transportation

New long-term, negligible, beneficial impacts on regional transportation and traffic would be expected under Alternative 3 because minimum retention of State-owned land would result in decreased use of regional transportation systems by the DoD and improve traffic conditions on regional roadways due to no training and other activities on State-owned land not retained. Similar to Alternative 2, the Army would not retain State-owned land north of DK1 Highway; therefore, vehicles and PTA personnel would no longer be required to cross DK1 Highway to access these areas, which would reduce potential PTA-related traffic on DK1 Highway proximal to those areas.

Under Alternative 3, ground transportation routes used by military personnel, vehicles, and equipment between Kawaihae Harbor, ITO, KOA, and PTA, and PTA personnel daily commuter routes would remain the same as existing conditions. Because training capabilities at PTA would be moderately reduced under Alternative 3, a reduction in training operations at PTA would occur, which would decrease the frequency of military convoys; however, the timing and duration of military convoys would not change from existing conditions. In addition, the frequency of military personnel being bussed between regional airports and PTA would decrease due to reduced training; however, the route, duration, and timing for regional ground transportation of military personnel would not change. Reductions in PTA-related regional ground transportation operations would result in beneficial impacts through reduced congestion and traffic, and improved condition (i.e., reduction of future rate of pavement degradation) of regional roadways, which would have long-term, negligible, beneficial impacts for LOS on affected roadways; however, existing traffic volumes associated with military convoys are small in relation to the total AADT for regional roadways used by the Army. The Army would continue to implement measures to reduce congestion-related impacts on public roadways from military convoys including close coordination with local authorities, adherence to Army and Hawai'i DOT regulations, and issue of media releases to local newspapers, radio stations, and online (via the PTA website) to provide advanced notice of upcoming

convoys and training activities occurring at PTA. Alternative 3 would also reduce the frequency of DoD's activities at Kawaihae Harbor and regional airports, which would decrease the demand for these facilities.

Despite the reduced training, long-term, minor, adverse impacts on regional transportation systems and traffic would continue from use to support ongoing activities within the State-owned land retained.

Summary of Impacts: Alternative 3 would result in new long-term, negligible, beneficial impacts on PTA and regional transportation systems and traffic. Additionally, long-term, minor, adverse impacts on regional transportation systems and traffic would continue due to continuation of the ongoing activities within the State-owned land retained. In total, the impact would be less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.12.6.4 No Action Alternative

PTA Transportation

The Army would not use, maintain, or repair any roads or training trails within the State-owned land. Additionally, the Army would no longer have access between the Cantonment and BAAF, impact area and training ranges, and Ke'āmuku parcel. Due to less training, PTA-generated traffic would be substantially reduced within the U.S. Government-owned land, particularly within the impact area and training ranges that would no longer be accessible via land and might have to be abandoned. Due to training reductions, the No Action Alternative also could result in reductions to permanent party personnel, commercial vehicles and guests, and construction vehicles, which would further reduce use of the PTA ground transportation system. It is assumed the State would use these roads and training trails less than the Army and maintain and repair the roads and training trails consistent with the State's need (i.e., actively used roads and training trails would be regularly maintained and repaired and unused/rarely used roads and training trails would be maintained and repaired less or not at all). Therefore, roadway condition would stay the same but use, traffic, and maintenance and repair of PTA ground transportation systems would decrease, resulting in new long-term, minor, beneficial impacts on the PTA transportation system and traffic.

Regional Transportation

New long-term, negligible, adverse and beneficial impacts on regional transportation and traffic would be expected under the No Action Alternative. Loss of the State-owned land would result in decreased use of regional transportation systems by the DoD, improved traffic conditions on regional roadways, and elimination of vehicles and PTA personnel crossing DK1 Highway to State-owned land north of DK1 Highway due to less training. However, loss of access to the Ke'āmuku parcel via roads and training trails within the State-owned land would require that all DoD personnel use a 6-mile segment of DK1 Highway to access the Ke'āmuku parcel from the PTA main gate, which would slightly increase military traffic on DK1 Highway. Despite the loss of the State-owned land, it is assumed that the County of Hawai'i would continue to grant PTA exclusive use of the approximately 11-mile segment of Old Saddle Road and it would continue to be used by military convoys to access the Cantonment.

Under the No Action Alternative, ground transportation routes used by military personnel, vehicles, and equipment between Kawaihae Harbor, ITO, KOA, and PTA, and PTA personnel daily commuter routes would remain the same as existing conditions. Because training capabilities at PTA would be greatly reduced under the No Action Alternative, a reduction in training operations at PTA would occur, which would decrease the frequency of military convoys and bussing of military personnel on regional roadways between Kawaihae Harbor, regional airports, and PTA; however, the route, duration, and timing of these military convoys and buses would not change from existing conditions. Reductions in PTA-related regional ground transportation operations would result in beneficial impacts and would reduce congestion on regional roadways; however, existing traffic volumes associated with military convoys are small in comparison to the total AADT for regional roadways used by the Army. The Army would continue to implement measures to reduce congestion-related impacts on public roadways from military convoys, including close coordination with local authorities, adherence to Army and Hawai'i DOT regulations, and issue of media releases to local newspapers, radio stations, and online (via the PTA website) to provide advanced notice of upcoming convoys and training activities occurring at PTA.

The No Action Alternative would also decrease the frequency of the Army's activities at Kawaihae Harbor and regional airports, which would decrease DoD use of these facilities.

Summary of Impacts: The No Action Alternative would result in new long-term, minor, beneficial impacts on the PTA transportation system due to less use of the PTA transportation system. Long-term, negligible, adverse and beneficial impacts on regional transportation systems and traffic would occur from changes in military use of regional roadways. In total, the impact would be less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.13 Airspace

3.13.1 Definition

Airspace management is the integration, coordination, and regulation of defined airspaces to accommodate the safe flow of air traffic, which includes times of usage and horizontal and vertical boundaries of airspace zones and classes. The FAA is responsible for the control and use of the National Airspace System in the United States. The National Airspace System is a network of controlled and uncontrolled airspace, both domestic and oceanic. FAA jurisdiction applies to all airspace users including the U.S. military.

Generally, aircraft operate under two categories of operational flight rules: VFR and Instrument Flight Rules (IFR), which are linked to visual meteorological conditions (VMC) and instrument meteorological conditions (IMC). VMC are used when weather conditions are fair or good, and IMC is used when visual ability may be impaired. During VMC, aircraft may operate under VFR; the pilot is responsible for seeing other aircraft and maintaining aircraft safety. During IMC, aircraft operate under IFR and Air Traffic Control (ATC) is primarily responsible for aircraft safety within controlled airspace (USDOT-FAA, 2020a). In addition, for VFR and IFR, there are specific instances where Special VFR (SVFR) are warranted. FAA Order JO 7110.65Z, ATC (effective June 17, 2021) authorizes SVFR operations in weather conditions when less than basic VFR minimums are authorized (USDOT-FAA, 2021a).

The FAA has four airspace categories: controlled, uncontrolled, SUA and “Other Airspace Areas.”

“Controlled Airspace” is a generic term that represents areas where ATC service is provided to flights using instrument and visual navigation systems; it is the airspace within which all aircraft operators are subject to certain pilot qualifications, operating rules, and equipment requirements as outlined in the FAA’s “General Operating and Flight Rules” (14 CFR Part 91). There are five different classifications of controlled airspace: Classes A, B, C, D, and E (**Figure 3-23**). When overlapping airspace designations apply for the same airspace, the operating rules associated with the more restrictive airspace apply. The following airspace classes are discussed in order from most restrictive to least restrictive (USDOT-FAA, 2016; USDOT-FAA, 2020a):

- Class A airspace includes airspace from 18,000 feet mean sea level (MSL) up to and including 60,000 feet MSL.
- Class B airspace typically extends from the surface up to 10,000 feet MSL and is often associated with major airport complexes.
- Class C airspace generally extends from the surface up to 4,000 feet MSL. It is designed to provide additional ATC into and out of primary and military airports where aircraft operations are periodically at high-density levels.
- Class D airspace is generally from the surface to 2,500 feet MSL. All traffic must maintain radio communication or have prior arrangements for operating within Class D airspace.
- Class E airspace, in most areas of the United States, is that which is not designated as Class A, B, C, or D. Class E airspace generally extends from 1,200 feet AGL up to but not including 18,000 feet MSL.

“Uncontrolled Airspace (Class G)” is airspace that has not been designated as Controlled Airspace (Class A, B, C, D, or E). Class G airspace is not subject to FAA or ATC control, or the restrictions that apply to Controlled Airspace. However, most regulations that affect pilots and aircraft still apply to Class G airspace, including VFR and IFR. The floor altitude of Class G airspace is dependent on the restrictions of airports, en routes and other airways in the area (USDOT-FAA, 2016; USDOT-FAA, 2020a).



Figure 3-23: Airspace Classification

“SUA” consists of airspace within which specific activities must be confined, or wherein limitations are imposed on aircraft not participating in those activities. SUAs are established in a coordinated effort with the FAA to maintain safety by separating military and civilian flights. At PTA, SUA is comprised of a restricted area and controlled firing areas (CFAs). FAA Order JO 7400.10C, *Special Use Airspace* (effective February 16, 2021), provides a compiled list and definition of each designated SUA within the U.S. (USDOT-FAA, 2020a; USDOT-FAA, 2021b).

- Restricted Areas are reserved for military operations and cannot be entered by private or commercial aircraft without permission from the controlling agency when that airspace area is active. Restricted areas denote the existence of unusual, often invisible, hazards to aircraft such as artillery firing, aerial gunnery, or guided missiles. Entry into restricted areas without authorization from the using or controlling agency may be extremely hazardous to the aircraft and its occupants. Restricted areas were established by 14 CFR Part 73 and are published in the FR (USDOT-FAA, 2021b).
- CFAs are designated to contain hazardous activities that need to be conducted in a controlled space for the safety of nonparticipating aircraft. Their distinguishing feature is that the CFA is designated when a restricted area is not warranted. The area can be turned off immediately and thus can only accommodate activities that can be immediately suspended if nonparticipating aircraft approach without impacting aviation activities. Because these areas are not charted, there is no requirement for the nonparticipating aircraft to avoid the area; the termination of activities is contingent upon the CFA user (USDOT-FAA, 2021c).

“Other Airspace Areas” refers to uses such as Military Training Routes, Temporary Flight Restrictions and published VFR routes (USDOT-FAA, 2020a).

Only controlled, uncontrolled and SUA exist within the PTA ROI.

3.13.2 Regulatory Framework

The management of airspace is governed by federal law and military regulations and procedures. Per 49 U.S.C. Section 40103, *Sovereignty and Use of Airspace*, the FAA has overall responsibility for managing airspace and assigning by regulation or order the use of the airspace necessary to ensure the safety of flight and that all users can operate in a safe, secure, and efficient manner. The FAA achieves this through administration of a system of flight rules and regulations, airspace management actions, and ATC procedures; as well as through close coordination with state aviation and airport planners, military airspace managers, and other entities to determine how airspace can be used most effectively to serve all interests. The FAA Administrator also establishes security provisions that encourage and allow maximum use of the navigable airspace by civilian aircraft consistent with national security in consultation with the Secretary of Defense. The FAA implements its authority in 49 U.S.C. Section 40103(b) via pronouncement of regulations in 14 CFR and associated procedures. Adherence to federal aviation regulations ensures that military and civilian aircraft operate safely in shared airspace. Title 14 CFR Part 91, *FAA General Operating and Flight Rules*, and the FAA Handbook H-8083-86, *Airplane Flying Handbook*, specify the flight standards for courses to be flown, obstacle clearance criteria, minimum safe altitudes and aircraft separation, navigation performance, and communications requirements for pilots operating in the national airspace system. All military aircraft fly in accordance with 14 CFR Part 91 when flying outside SUA. Respectively, 14 CFR Parts 77.21 and 77.23 define the standards for preserving airspaces at DoD airports and heliports. FAA Order JO 7400.2N, *Procedures for Handling Airspace Matters* (effective June

17, 2021), prescribes the airspace management actions and ATC procedures that allow military and civilian aircraft to operate in shared airspace safely. *FAA Aeronautical Information Manual: Official Guide to Basic Flight Information and ATC Procedures* (effective December 31, 2020) defines and provides the operational requirements for each of the various types or classes of airspace, including SUAs such as restricted areas (USDOT-FAA, 2021c).

3.13.3 Region of Influence

The ROI for airspace management includes the airspaces that overlie and are immediately proximal to PTA, including BAAF.

3.13.4 Existing Conditions

3.13.4.1 Airspace

PTA airspace includes Class D and Class G airspace, SUA and flight corridors.

Class D Airspace. The Class D airspace at BAAF is active Monday through Friday between 1715 and 0100Z (7:15 a.m. to 3:00 p.m. Hawai'i Standard Time) except for holidays; other times it is Class G airspace. When active, the Class D airspace extends from the ground surface (0 feet AGL) to 8,700 feet MSL within a 4.3-mile radius of the airfield and roughly overlaps the middle portion of the State-owned land (USDOT-FAA, 2021d; USDOT-FAA, 2020b; USACE-POH, 2012).

Class G Airspace. When neither R-3103 nor Class D airspace is active, the airspace at PTA operates under Class G airspace (USDOT-FAA, 2020b).

Special Use Airspace. Restricted area R-3103 (defined in FAA Order 7400.10C and documented in 70 FR 58607) encompasses 128 square nautical miles overlaying PTA and is managed locally by PTA Range Control and the FAA Honolulu Control Facility (HCF). R-3103 is an intermittent (or activated only when needed) SUA that extends from the ground surface (0 feet AGL) to 30,000 feet MSL. To activate the restricted area for military training, the Army contacts the HCF at least 12 hours prior the start of training and provides notification specifying when the training and associated airspace restriction would begin and end. To provide awareness of the airspace activation and restriction and facilitate early flight planning in the region, this notification is further publicized in a Notice to Airmen that informs the flying community. Notices to Airmen are available online at: <https://notams.aim.faa.gov/notamSearch/nsapp.html#/>. Pilots may also contact the HCF or the nearest airport ATC (which would direct flights and provide instructions for safe separation), or Flight Service Station (an air traffic facility that provides information and services to aircraft pilots before, during, and after flights) to learn of the airspace operating conditions for the area in real time. Civilian aircraft are prohibited from entering R-3103 airspace when active to maintain a safe separation from military aircraft flight and air-to-ground or ground-to-ground military munitions firing operations that require exclusive use of that airspace area (USAG-HI & USARPAC, 2013; USDOT-FAA, 2020b). When active, the restricted area encompasses approximately half of the BAAF Class D airspace. These SUA features are shown in **Figure 3-24**.

The PTA External Standard Operating Procedures specify that aircraft entry into and exit from R-3103 shall occur at altitudes higher than 2,000 feet AGL. Unless approved prior to planned operations, fixed-wing operations are generally conducted at altitudes no greater than 29,500 feet MSL and no lower than 750

feet AGL, while rotary- and tilt-wing operations occur between ground level and 500 feet AGL (USAG-PTA, 2018a).

Fixed-, rotary-, and tilt-wing aircraft activities conducted within R-3103 include live-fire aerial gunnery, air assault missions, medical evacuation training and real medical evacuations, sling load supply and delivery missions, firefighting water bucket support and training, aerial lasing, aerial mapping, CAS, high-altitude bombing and strafing, and unmanned aerial system certification. In 2019, R-3103 airspace was activated 291 days and supported 177,260 airspace sorties (USAG-PTA, 2019a); in 2020, R-3103 airspace was activated 201 days and supported 147,295 airspace sorties (USAG-PTA, 2020f).

Flight Corridors. PTA flight corridors are used to provide military aircraft using VFR or SVFR with safe and efficient routes between two points in R-3103 airspace during live-fire training. These routes are monitored by the BAAF ATC and are coordinated with range control to activate R-3103. The following seven flight corridors support flight training operations over the State-owned land (**Figure 3-24**). R-3103 is activated when training in one or more of these corridors is required:

1. Route Blue runs roughly along the northern portion of the State-owned land.
2. Route Purple runs roughly along the northern portion of the State-owned land and the DK1 Highway.
3. Route Red runs roughly along the southern portion of the State-owned land.
4. Route Alpha runs approximately north-south along the impact area, as well as north-south between TAs 18 and 19, east-west between TAs 17 and 19, and north-south between TAs 17 and 20 within the State-owned land.
5. Route Bravo runs approximately north-south between TAs 8 and 9 within the State-owned land.
6. Route Charlie runs approximately north-south between TAs 5 and 7 within the State-owned land.
7. Route Delta runs approximately north-south along the impact area then turns west along the southern border of the State-owned land (USAG-PTA, 2018a).

3.13.4.2 Airfields, Landing and Drop Zones, and Ranges

The Army's primary user of PTA is the 25th ID; however, there is considerable use of the installation by other Army units, Service Components (primarily USMC), DoD agencies, international partners, and local agencies. Aviation training at PTA includes flight proficiency training, air support exercises including CAS, strategic air support, Strike Warfare, live-fire exercise, Special Warfare Operations, Aircraft Operations support, Air-to-Surface Missile exercises, and joint live-fire training. Aviation training that requires activation and operation of SUA (restricted area R-3103) consists primarily of aerial gunnery and assault support for ground troops. These training activities include UAVs and fixed-, rotary-, and tilt-wing aircraft (DA, 2018c). Usage of PTA airspace requires either Class D airspace or activation of the R-3103 restricted airspace. Roughly 80 percent of training that occurs on State-owned land involves activation of R-3103 (USAG-PTA, 2021e).

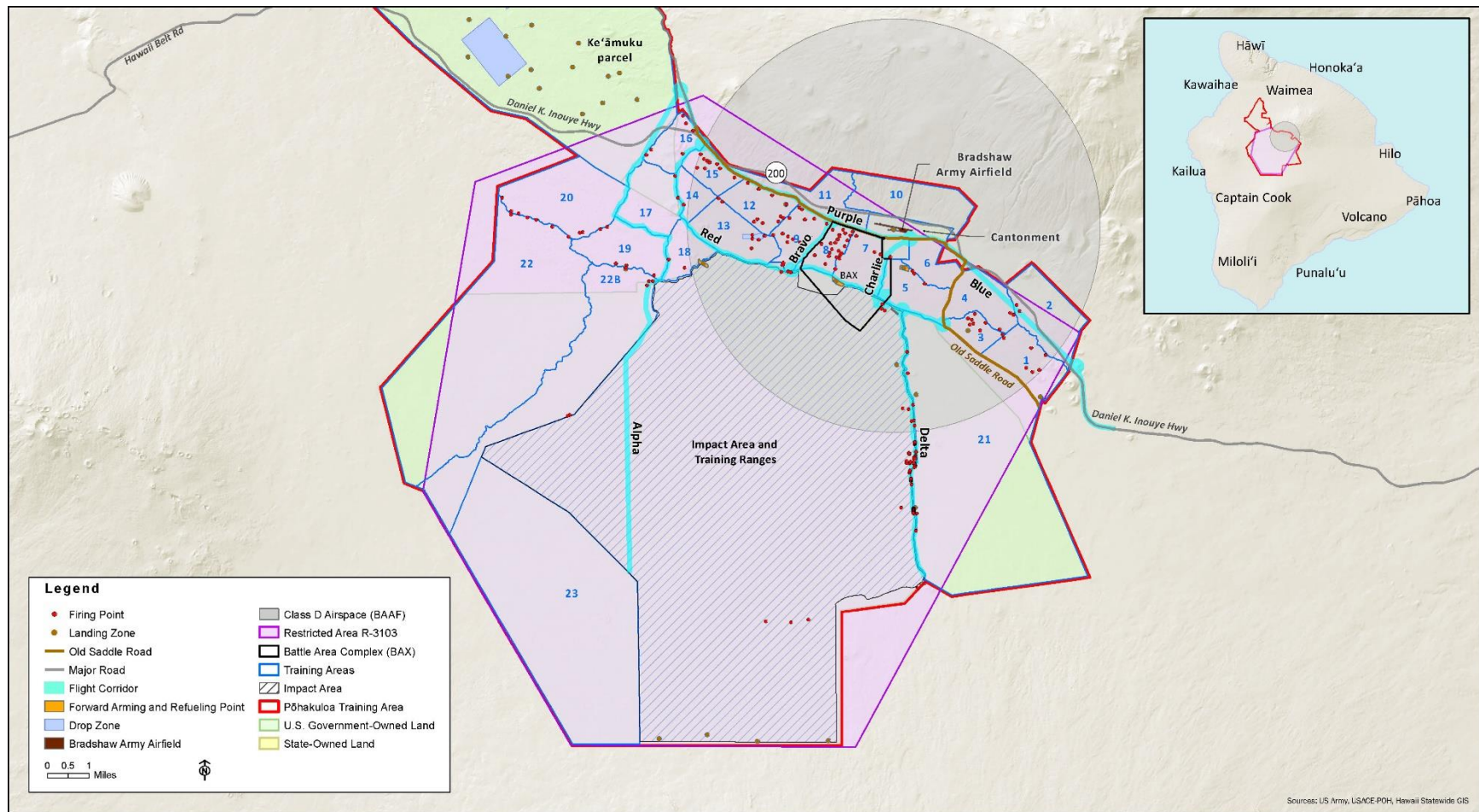


Figure 3-24: Airspace Features at Pōhakuloa Training Area and the Surrounding Area

Bradshaw Army Airfield

BAAF is located on U.S. Government-owned property. It has a 3,705-foot by 90-foot runway that primarily supports rotary- and tilt-wing aircraft operations. The BAAF can also support fixed-wing aircraft (i.e., C-130, C-17) operations, but aircraft are limited to 60 percent load to compensate for altitude and wind safety considerations (USAG-PTA, 2021e). ATC traffic statistics for aircraft that passed through BAAF airspace, either the Class D or Class E transition zone, in 2019 and 2020 are shown in **Table 3-23**.

Table 3-23 Bradshaw Army Airfield Tower Traffic Statistics		
Action	2019	2020
Civilian aircraft that passed through PTA airspace	13,900	6,800
Military aircraft landings	15,200	18,500
Military aircraft that passed through PTA airspace *	13,900	23,000

Note: * This number is not included in the associated annual SUA sortie calculation.

Source: Bradshaw ATC, 2021

In accordance with the PTA External Standard Operating Procedures, all visiting aircraft pilots and crew, including those conducting flights over the ocean, receive a briefing from the BAAF Air Traffic and Airspace Chief designed to minimize noise impacts and disruption to local communities. The briefing specifies the flight route to and from PTA devised specifically to avoid populated areas as much as possible. Additionally, aircraft are directed to fly at 2,000 feet AGL during transition to PTA airspace, unless low cloud cover necessitates flying lower for safety reasons (USAG-PTA, 2020e).

Cooper Air Strip

Cooper Air Strip is an asphalt landing strip approximately 1,000 feet long × 60 feet wide with two plywood storage buildings located on the State-owned land. The air strip was completed in 2010 and is used solely for UAV operations and is not shown on figures for security reasons (USAG-PTA, 2020b; USARHAW, undated). Cooper Air Strip is under restricted area R-3103 airspace, so the UAVs can be operated without conflicts with general aviation traffic and is used for approximately 8,500 operations annually (USAG-PTA, 2020b). An FAA certificate of authorization to operate UAVs allows take off from restricted airspace and operation outside of restricted airspace subject to conditions; however, UAVs do not fly outside of restricted airspace. UAV operations at PTA are conducted in accordance with the requirements set forth in AR 95-2, *Air Traffic Control, Airfield/Heliport, and Airspace Operations*.

Landing and Drop Zones

PTA has 27 landing zones and four drop zones that are used for rotary- and tilt-wing aircraft training activities that include personnel and equipment parachute drops. Six landing zones and one drop zone are located on State-owned land.

Firing Points

There are 118 FPs located on PTA to support live- and non-live-fire (inert) training with various Army weapons systems (e.g., long-range firing, artillery, and mortars). Approximately 107 (91 percent) of the

FPs on PTA are located on State-owned land (USARHAW, 2021) (see **Figure 1-2**). During live-fire or inert military munitions operations, R-3103 is activated for safety to restrict flights and other concurrent training activities within the airspace (DA, 2018c).

Battle Area Complex

The BAX is a digital (training is captured via computer), live-fire range used for aviation training as well as mounted and dismounted training. This facility is the only one within Hawai'i, and BAX operation requires R-3103 activation (USARHAW, 2019b). The BAX supports training of ground and air personnel in multiple capacities including live-fire convoys, gunnery lanes and aerial gunnery. The BAX integrates with TA-11 to provide complementary training (USARHAW, Undated). In fiscal year 2019, the BAX was utilized for 281 days to train approximately 8,000 personnel (USARHAW, 2019a; USARHAW, 2019b).

Forward Arming and Refueling Point

Two of the three PTA FARPs are located on State-owned land. FARPs are concrete pads designated to support loading and unloading of military munitions and fuel to rotary- and tilt-wing aircraft.

Helicopter Dip Tank

Eight of the ten mobile helicopter dip tanks that provide water to helicopters during firefighting operations are distributed throughout the State-owned land. The dip tanks are the primary water source for air operation firefighting (USAG-PTA, 2019a; USAG-PTA, 2019b).

Ongoing Training Impact Measures

The Army operates under measures to reduce the potential for impacts on resources from ongoing activities in the airspace. These measures include FAA's general flight safety protocols, Army flight safety protocols as outlined in AR 95-1, *Aviation Flight Regulations*, and other Army programs such as Bird/Wildlife Air Strike Hazards (BASH/WASH).

3.13.5 Methodology and Significance Criteria

This section outlines the methods and criteria used in **Section 3.13.6** to assess potential significant impacts on airspace. The criteria considered to assess whether an alternative would result in potentially significant impacts on airspace include the extent or degree to which an alternative would result in the following:

- Reduction in the amount of navigable airspace
- Assignment of a new SUA or require the modification of a SUA
- Substantial change to an existing or planned aviation training route
- Restriction of access to, or impact the use of, airports or airfields available for public use, or impact commercial or private airfield or airport arrival and departure traffic flows
- Creation of an obstruction to air navigation
- Increase of risks associated with flying activities or personnel safety (military, contractors or local community)

3.13.6 Environmental Analysis

As defined in **Section 3.13.1**, PTA airspace size and configuration would remain the same under all alternatives and the No Action Alternative.

3.13.6.1 Alternative 1: Full Retention

Under Alternative 1, the Army would continue current types and levels of aircraft and live-fire operations. There would be no changes to and therefore no impacts on airspace configuration, the types of operations conducted in the airspace, or usage of R-3103 or the Class D airspace at BAAF.

The Army would continue operations in accordance with FAA regulations and Army requirements and guidelines (e.g., AR 95-1, AR 95-2, and PTA External Standard Operating Procedures), as well as other programs such as BASH/WASH. The Army would continue to follow the airspace safety protocols in the PTA External Standard Operating Procedures, including range-specific authorized military munitions, familiarization with published radio frequencies, adhering to R-3103 ingress and egress altitude requirements, coordinating communications between indirect-fire and aviation units, and adhering to unmanned aerial system protocols (USAG-PTA, 2018a). Long-term, minor, adverse impacts on civilian air traffic would continue due to ongoing training activities within the State-owned land. Civilian air traffic would continue to need to avoid the military training operations being conducted in R-3103.

Summary of Impacts: Alternative 1 would result in no new impacts on the use, configuration, or management of airspace resources. Long-term, minor, adverse impacts on civilian air traffic would continue due to ongoing activities within the State-owned land. These impacts would be less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.13.6.2 Alternative 2: Modified Retention

Impacts on airspace under Alternative 2 would be the same as those identified under Alternative 1. Alternative 2 would not impact the activation or use of R-3103 or Class D airspace. R-3103 would continue to be activated via Notice to Airmen, specifying dates and hours of activation, in support of air and ground training operations.

Land Retained

The Army would retain and continue training on approximately 19,700 acres of the State-owned land. The State-owned land retained includes Cooper Air Strip, the BAX, 104 FPs, six landing zones, one drop zone, two FARPs, and eight helicopter dip tanks. The Army would continue to conduct the types of air- and ground-based training (e.g., live-fire training, fixed-wing, rotary-wing, tilt-wing, and UAV flight activities) that require the use of the restricted airspace at current operating levels. The Army would also continue to permit and coordinate ongoing training by other PTA users. Continuation of these training activities would not result in new impacts on airspace resources. Long-term, minor, adverse impacts on civilian air traffic associated with R-3103 activation would continue due to ongoing training within the State-owned land retained.

The Army would continue to operate in accordance with FAA regulations and Army requirements and guidelines as noted in Alternative 1.

Land Not Retained

The Army would not retain approximately 3,300 acres. Loss of access to the land not retained would not impact the overlaying airspace resources, including the flight corridors, R-3103, and Class D airspace. R-3103 activation would not change because there are no training features and infrastructure on the State-owned land not retained that require R-3103 activation. The FPs in TA 16 that would be lost are not used for live-fire training because military munitions are not permitted to be fired over DKI Highway.

Summary of Impacts: Alternative 2 would result in no new impacts on the use, configuration, or management of airspace resources. Long-term, minor, adverse impacts on civilian air traffic would continue ongoing training within the State-owned land retained. These impacts would be less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.13.6.3 Alternative 3: Minimum Retention and Access

Under Alternative 3, airspace size and configuration would not change; R-3103 would continue to be activated via Notice to Airmen, specifying dates and hours of activation, in support of air and ground training operations. R-3103 activation would decrease proportionately with the loss of ground training features associated with State-owned land not retained.

Land Retained

The Army would retain approximately 10,100 acres. The land retained includes Cooper Air Strip, the BAX, approximately 78 FPs, four landing zones, one drop zone, two FARPs and six helicopter dip tanks. Army airspace use associated with the land retained would continue, and there would be no new impacts. Long-term, minor, adverse impacts on civilian air traffic associated with R-3103 activation would continue based on ongoing training within the State-owned land retained.

The Army would continue to operate in accordance with FAA regulations and Army requirements and guidelines noted in Alternative 1.

Land Not Retained

The Army would not retain approximately 12,900 acres, including approximately 29 FPs, two landing zones, and two helicopter dip tanks.

Loss of State-owned land not retained would not alter the configuration or management of the overlying airspace resources, which include the flight corridors, R-3103, and the Class D airspace at BAAF. The permanent loss of two landing zones, two dip tanks, and approximately 29 FPs within the State-owned land not retained could reduce the number of times R-3103 would be activated by approximately 20 percent, which would result in long-term, negligible, beneficial impacts on airspace because there would

be a reduced requirement for VFR aircraft to detour or for ATC to reroute civilian aircraft around an active restricted area.

Summary of Impacts: Alternative 3 would result in no new impacts to the configuration or management of airspace resources. New long-term, minor, beneficial impacts from reduced requirements for civilian aircraft detours would occur due to the potential for decreased activations of R-3103; however, long-term, minor, adverse impacts on civilian air traffic would continue due to ongoing activities within the State-owned land retained. These impacts would be less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.13.6.4 No Action Alternative

Under the No Action Alternative, the Army would not retain any State-owned land at PTA after the lease expires. The No Action Alternative would eliminate the ability of the Army and other users to conduct aviation training associated with the two FARPs, the BAX, six landing zones, one drop zone, and Cooper Air Strip in the State-owned land. The loss of these training features, as well as the loss of the 107 FPs on the State-owned land, and loss of use of the impact area and training ranges (U.S. Government-owned land) due to lack of land access would decrease the Army's use and activation of R-3103 by approximately 80 percent. . These changes would also result in long-term, minor, beneficial impacts on airspace because there would be a reduced requirement for VFR aircraft to detour or for ATC to reroute civilian flights around R-3103.

Summary of Impacts: The No Action Alternative would result in no new impacts to the configuration or management of airspace resources. Decreased activation of R-3103 would result in long-term, minor, beneficial impacts on airspace usage due to reduced requirements for civilian aircraft detours. These impacts would be less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.14 Electromagnetic Spectrum

3.14.1 Definition

EMS is the range of waves of electromagnetic energy. It includes radio waves, microwaves, infrared light, visible light, ultraviolet light, X-rays, and gamma rays. EMS is the complete range of electromagnetic waves on a continuous distribution from a very low range of frequency and energy level, with a corresponding long wavelength (radio waves), to a very high range of frequency and energy level, with a corresponding short wavelength (gamma rays). The low-frequency end of the spectrum includes radio, short-wave radio, microwaves, and television signals.

3.14.2 Regulatory Framework

DoDI 6055.11, Protecting Personnel from Electromagnetic Fields, provides technical guidance to protect DoD personnel from accidental death, injury, and occupational illness and the public from the risk of death, injury, illness, or property damage from DoD activities involving EMS equipment. DoDI 4650.01, Policy and Procedures for Management and Use of the Electromagnetic Spectrum, outlines proper management and use of the EMS as an integral part of military planning, research, development, testing, and operations involving spectrum-dependent systems.

AR 5-12, Army Use of the Electromagnetic Spectrum, assigns responsibilities for Army management of the EMS and delineates the elements of the Army Spectrum Management Program. It describes the Army spectrum management functional processes necessary to achieve compliance with statutory provisions, regulations, and technical standards required by the International Telecommunication Union, the National Telecommunications and Information Administration's Manual of Regulations and Procedures for Federal Radio Frequency Management (47 CFR Part 300), and DoDI 4650.01.

3.14.3 Region of Influence

The ROI for potential impacts related to the EMS is the area within and adjacent to the State-owned land, including all of PTA.

3.14.4 Existing Conditions

Military personnel at PTA use radio systems to communicate across the installation. Retransmission sites are in TAs 1 and 9 within the State-owned land. A retransmission site contains electronic equipment that receives and resends electronic communications to overcome a physical or operational issue, such as obstruction to radio frequency transmission or to allow different groups to communicate without sharing encryption keys. Cooper Air Strip, within TA 3 in the State-owned land, is dedicated to UAV operations, which use radio frequencies for communication between the UAV and the crew on the ground. Hawai'i Electric Light Company (HELCO) and U.S. Government-owned aerial power lines are within and adjacent to the State-owned land (USARHAW, undated). A cellular tower containing AT&T and T-Mobile equipment is within the Cantonment, adjacent to the State-owned land. The HELCO power lines and cellular tower are not owned, operated, or maintained by the U.S. Government and would not be affected by the Proposed Action.

EMS equipment used by the DoD is cleared through the DoD's Joint Spectrum Center and meets Institute of Electrical and Electronics Engineers (IEEE) radio frequency standards. EMS equipment at PTA generates electromagnetic energy below exposure reference levels (ERLs) established in IEEE C95.1-2345 and is inventoried on an annual basis (USAG-HI, 2021c). Department of the Army Pamphlet 385-24 notes that current scientific evidence indicates that no adverse health impacts will occur with electromagnetic energy exposures that are within the ERLs, even under repeated or long-term exposure conditions.

3.14.5 Methodology and Significance Criteria

This section outlines the methods and criteria used in **Section 3.14.6** to assess potential significant impacts on the EMS. The criteria considered to assess whether an alternative would result in potential significant impacts on the EMS include the extent or degree to which an alternative would result in the following:

- Noncompliance with EMS policies, regulations, and technical standards
- Operation of EMS equipment in an unsafe condition with respect to electromagnetic energy

3.14.6 Environmental Analysis

3.14.6.1 Alternative 1: Full Retention

The Army would retain all of the State-owned land under Alternative 1. No changes in use, maintenance, or repair of EMS equipment would occur. As stated in **Section 3.13.4**, electromagnetic energy from EMS equipment at PTA is below ERLs established by IEEE. Therefore, no new impacts on or from EMS would occur, but continued long-term, negligible, adverse impacts on safety related to the continued use of EMS equipment from ongoing activities would occur. Existing measures would continue to be implemented to reduce continued EMS impacts.

Summary of Impacts: No new impacts on or from EMS emissions would occur, continued long-term, negligible, adverse impacts on safety from continued use of EMS equipment would occur.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.14.6.2 Alternative 2: Modified Retention

Land Retained

Retransmission sites within TAs 1 and 9 and Cooper Air Strip, where UAV operations are conducted, are within the approximately 19,700 acres of State-owned land that would be retained under Alternative 2. The Army would continue to use, maintain, and repair EMS equipment in this area due to ongoing activities. Therefore, no new impacts on or from EMS would occur, but continued long-term, negligible, adverse impacts on safety related to the continued use of EMS equipment would occur in the State-owned land retained. Existing measures would continue to be implemented to reduce continued EMS impacts.

Land Not Retained

The Army would no longer have access to approximately 3,300 acres of maneuver area, facilities, and some roads and training trails within the State-owned land. By the lease expiration date, all training would stop within the State-owned land not retained. Therefore, new long-term, negligible, beneficial impacts from reduced exposure to electromagnetic energy are anticipated due to a cessation in the use of radio systems within the State-owned land not retained.

Summary of Impacts: New long-term, negligible, beneficial impacts would occur from elimination of EMS equipment within the land not retained. Continued long-term, negligible, adverse impacts would occur from continued use of EMS equipment in the land retained. In total, the impacts would be less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.14.6.3 Alternative 3: Minimum Retention and Access

Land Retained

The retransmission site within TA 9, Cooper Air Strip, and vital training and support facilities and associated maneuver area are within the approximately 10,100 acres of State-owned land that would be retained under Alternative 3. The Army would continue to use, maintain, and repair EMS equipment in this area due to ongoing activities. Therefore, no new impacts on or from EMS would occur, but continued long-term, negligible, adverse impacts on safety related to the continued use of EMS equipment would occur in the State-owned land retained. Existing measures would continue to be implemented to reduce continued EMS impacts.

Land Not Retained

TA 1, which contains a retransmission site, is within the approximately 12,900 acres of State-owned land that would not be retained. The Army would, however, continue to use, maintain, and repair all U.S. Government-owned utilities, including EMS equipment, in the State-owned land not retained. By the lease expiration date, all training would stop within the State-owned land not retained. Therefore, new long-term, negligible, beneficial impacts from reduced exposure to electromagnetic energy are anticipated due to a cessation in the use of radio systems within the State-owned land not retained.

Summary of Impacts: Similar to Alternative 2, new long-term, negligible, beneficial impacts would occur from elimination of EMS equipment within the land not retained, and continued long-term, negligible, adverse impacts would occur from continued use of EMS equipment in the land retained. In total, the impacts would be less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.14.6.4 No Action Alternative

Under the No Action Alternative, the Army would not retain any of the State-owned land after the lease expires and all EMS equipment would be removed from the State-owned land. New long-term, negligible, beneficial impacts on safety would occur from the discontinued use of EMS equipment in the State-owned land. Impacts associated with loss of communications capacity is addressed in **Section 3.15**.

Summary of Impacts: New long-term, negligible, beneficial impacts would occur from the elimination of the use of EMS equipment within the State-owned land. The impacts would be less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.15 Utilities

3.15.1 Definition

Utilities are the services and associated infrastructure provided to a specified area that enable it to function effectively. Utilities include items such as electricity, potable water, fire protection water, communications, wastewater, stormwater, natural gas, liquid fuel, and solid waste management. This section has been prepared in a manner that protects sensitive information pertaining to utilities systems, particularly the locations of the utility systems.

3.15.2 Regulatory Framework

The State-owned land contains U.S. Government-owned utilities and non-U.S. Government-owned utilities. Additionally, ongoing activities (primarily training) within the State-owned land involve the use of utilities within the U.S. Government-owned land (e.g., personnel use facilities within the Cantonment when not training). A summary of applicable regulations follows.

AR 420-49, Utility Services, includes policies and responsibilities for operation, maintenance, and repair of infrastructure and systems for the efficient and economical management of utilities at Army installations. It is applicable to U.S. Government-owned utilities on PTA, as well as non-U.S. Government-owned utilities on PTA that are used by PTA.

As a public water system operator, PTA is required to comply with HAR Section 11-20. Additionally, because the Cantonment utilizes UIC wells for the treatment of wastewater, PTA is subject to the regulations of the SDWA, which safeguards public health by regulating and protecting the U.S. public drinking water supply (P.L. 93-23, 42 U.S.C. Section 300f). The USEPA and the Hawai'i DOH, as its agent, administer the enforcement of the SDWA through 40 CFR Parts 141-149. The PTA potable water and wastewater systems, including UIC wells, are regulated and have been permitted by the Hawai'i DOH SDWB (USAG-HI & USARPAC, 2013).

Solid waste management at PTA complies with DoD Instruction 4715.23, Integrated Recycling and Solid Waste Management, which established the protocols to implement waste prevention and recycling for DoD activities.

The Hawai'i Integrated Solid Waste Management Act (HRS Chapter 342G) and HAR Section 11-58.1, which governs implementation of HRS Chapter 342G, outline that counties should consider a variety of solid waste management practices and processing methods to safely and effectively manage solid waste with the least adverse impact on human health and the environment. The rules under HAR Section 11-58.1 apply to any entity that proposes to own, operate, or maintain a solid waste recycling, reclamation, salvage, transfer, or disposal facility. However, HRS Chapter 342G and HAR Section 11-58.1 are not applicable to PTA because it is not classified as a solid waste processing, management, or disposal facility.

HRS Chapter 342H requires solid waste landfill operators to obtain a permit from DOH prior to constructing, operating, modifying, expanding, or closing a landfill.

3.15.3 Region of Influence

The ROI for utilities includes utilities within the State-owned land and utilities in U.S. Government-owned land affected by ongoing activities (primarily training) within the State-owned land.

3.15.4 Existing Conditions

Electricity

Electrical power is provided to PTA by HELCO (USACE-POH & USAG-HI, 2020a). HELCO-owned powerlines and a HELCO-owned substation (HELCO substation) are located on the State-owned land via easement. Power from two HELCO 69-kilovolt circuits, the Waiki'i Substation and the Hale Pōhaku Substation, feed the HELCO substation at PTA. Power from the HELCO substation feeds a substation owned, operated, and maintained by the U.S. Government (PTA substation). The PTA substation is also located on State-owned land.

The U.S. Government owns, operates, and maintains the PTA electricity distribution network beyond the PTA substation. The PTA electricity distribution network consists of metering equipment, transformers, overhead lines, and poles throughout the State-owned land and U.S. Government-owned land, including the training ranges to the southwest of the State-owned land. Personnel that train and perform other activities within the State-owned land use electricity within the Cantonment when they are working or resting in the Cantonment.

PTA's electricity usage is approximately 1,718,400 kW-hours per year (USAG-HI & USARPAC, 2013).

Potable Water

All water for operation of PTA is purchased from the County of Hawai'i Department of Water Supply facility in Waimea and transported to PTA. Water is regularly trucked 40 miles via 5,000-gallon tanker trucks to two enclosed standpipes within the State-owned land where it is pumped via two pump stations to three U.S. Government-owned 670,000-gallon aboveground storage tanks located on State-owned land. One of the three storage tanks is reserved for fire protection water, and the other two are used for potable water. The potable water is chlorinated on the State-owned land and conveyed via underground pipes to three smaller 10,000-gallon reservoirs on the Cantonment where it is distributed to facilities on the Cantonment (USACE-POH & USAG-HI, 2015).

Personnel that train and perform other activities within the State-owned land use the potable water facilities within the Cantonment when they are working or resting in the Cantonment.

Water consumption at PTA varies from 10,000 gallons per day during periods of minimal troop presence to approximately 70,000 gallons per day when at full capacity (USAG-HI & USARPAC, 2013).

Fire Protection Water

As noted in the potable water section, there is one U.S. Government-owned 670,000-gallon aboveground storage tank on State-owned land that contains fire protection water. Additionally, PTA has approximately ten 30,000- to 80,000-gallon dip tanks to support aerial and ground wildfire fighting activities.

Approximately eight of the ten dip tanks are within the State-owned land. The dip tanks are refilled via 5,000-gallon water tankers (USAG-PTA, 2021g).

Wastewater

A latrine wastewater holding tank is located at Building 600 within TA 5 of the State-owned land. The wastewater holding tank is serviced by B&B Pumping Services, LLC.

Portable latrine facilities are permanently sited at the BAX and temporarily sited at various locations within the State-owned land during training events. The portable latrines are serviced by commercial waste haulers, and the wastewater is disposed at county wastewater disposal facilities (USAG-HI, 2018).

Personnel who train and perform other activities within the State-owned land use the wastewater facilities within the Cantonment when they are working or resting in the Cantonment. The Cantonment disposes of wastewater via individual wastewater/septic systems and UIC wells. Septic tank pumping services haul the wastewater to county wastewater disposal facilities by commercial haulers. The septic systems and UIC wells are regulated and permitted by Hawai'i DOH SDWB (USAG-HI & USARPAC, 2013).

Stormwater

There are no stormwater facilities on the State-owned land. The majority of PTA consists of variable permeable surfaces with high percolation rates that allow rain to infiltrate naturally (USAG-HI & USARPAC, 2013). Stormwater runoff on State-owned land is discussed in **Section 3.9**.

Non-Hazardous Solid Waste

A former solid waste landfill (POTA-06) is located within TA 6 of the State-owned land. It was closed in 1993 and capped in 1996 in accordance with HRS Chapter 342H. The closure and capping was accepted by the Hawai'i DOH (USACE-POH, 2017). **Section 3.5.4** provides more information on this closed solid waste landfill. There are no other solid waste landfills on the State-owned land.

Solid waste is no longer disposed within the State-owned land. All solid waste generated within PTA, including the State-owned land, is collected and brought to the solid waste accumulation point, recycling, and composting facility on the Cantonment. PTA's recycling center diverts (recycles) approximately 54 percent of PTA's solid waste. The remaining solid waste is trucked from the Cantonment to the West Hawai'i Sanitary Landfill for disposal.

Solid waste generation at PTA is directly tied to the number of personnel using the installation and the duration of their stay. Data from 2010 revealed that PTA generated 1,100 tons of solid waste per year, an average of 3 tons per day, which resulted in annual disposal costs to PTA of \$166,250 (USAG-HI & USARPAC, 2013).

Liquid Fuel

The State-owned land does not contain active, permanent liquid fuel storage tanks. An inactive diesel fuel AST is located near Building 600 in the State-owned land (USACE-POH, 2017). Temporary, liquid fuel storage tanks are used at the FARPs within the State-owned land during training events.

Personnel who train and perform other activities within the State-owned land use the liquid fuel facilities at the PTA fueling station within U.S. Government-owned land to fuel vehicles, helicopters, tilt-rotor aircraft, and UAVs. The PTA fueling station includes gasoline, diesel, and Jet A fuel (USAG-PTA, 2018a).

Communications

Telecommunications services are provided to PTA by Hawaiian Telcom and Spectrum (USACE-POH & USAG-HI, 2020a). Hawaiian Telcom owns most of the telecommunication infrastructure on PTA (USACE-POH & USAG-HI, 2015).

Communication facilities within the State-owned land include pole towers, retransmission stations, antennas, and other communications infrastructure (USACE-POH & USAG-HI, 2015).

Personnel who train and perform other activities within the State-owned land use the communications facilities within the Cantonment when they are working or resting in the Cantonment.

3.15.5 Methodology and Significance Criteria

This section outlines the methods and criteria used in **Section 3.15.6** to assess potential significant impacts on utility systems. The analysis considers the impacts of utility system use, access, maintenance, and repair under each of the alternatives. To fully assess the utility impacts, utility system use includes use of utilities within U.S. Government-owned land by personnel that train and perform other activities within the State-owned land. Analysis of non-U.S. Government-owned utilities is limited to use because the Proposed Action would not affect the access, maintenance, or repair of these utilities. Because analysis of utilities includes areas beyond the State-owned land, the analysis is not separated into State-owned land retained and not retained for Alternative 2 and 3 as it is for other resource areas.

The criteria considered to assess whether an alternative would result in potential significant impacts on utilities include the extent or degree to which an alternative would result in the following:

- Exceedance of capacity or an unreasonable demand on a utility
- Loss or reduction of utility capacity such that demand exceeds capacity
- Noncompliance with a permit or regulation

3.15.6 Environmental Analysis

3.15.6.1 Alternative 1: Full Retention

Under Alternative 1, all the State-owned land would be retained. U.S. Government-owned utilities within the State-owned land would continue to be used, accessed, maintained, and repaired at similar levels by PTA; and non-U.S. Government-owned utilities within the State-owned land would continue to be used at similar levels by PTA. Additionally, utilities within the U.S. Government-owned land would continue to be used at similar levels by PTA. Alternative 1 would result in no new impacts on utilities; however, long-term, minor, adverse impacts on utilities would continue due to ongoing activities within the State-owned land and associated activities within the U.S. Government-owned land (e.g., continued use of electricity, potable water, and wastewater in the barracks by personnel training in the State-owned land).

Summary of Impacts: Alternative 1 would result in no new impacts on utilities; however, long-term, minor, adverse impacts on U.S. Government-owned and non-U.S. Government-owned utilities would continue due to ongoing activities within the State-owned land and associated activities within U.S. Government-owned land. In total, the impact on utilities would be less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.15.6.2 Alternative 2: Modified Retention

Under Alternative 2, approximately 19,700 acres of the State-owned land would be retained, and the Army would retain use of and access to the U.S. Government-owned utilities throughout the State-owned land to enable continued safe operation of State-owned land retained and U.S. Government-owned land at PTA. As noted in **Section 2.2.2**, Alternative 2 would have negligibly reduce ongoing activities conducted in the State-owned land; therefore, the Army would continue to use, access, maintain, and repair U.S. Government-owned utilities within the State-owned land at similar levels. Likewise, use of non-U.S. Government-owned utilities within the State-owned land and U.S. Government-owned and non-U.S. Government-owned utilities in the U.S. Government-owned land would remain at similar levels. Therefore, utilities impacts would be the same as described for Alternative 1.

Summary of Impacts: Alternative 2 would result in no new impacts on utilities; however, long-term, minor, adverse impacts on U.S. Government-owned and non-U.S. Government-owned utilities would continue due to ongoing activities within the State-owned land retained and associated activities within U.S. Government-owned land. In total, the impact on utilities would be less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.15.6.3 Alternative 3: Minimum Retention and Access

Under Alternative 3, approximately 10,100 acres and 11 miles of select roads and training trails within the State-owned land would be retained, and the Army would retain use and access of the U.S. Government-owned utilities throughout the State-owned land to enable continued safe operation of State-owned land retained and U.S. Government-owned land at PTA. As noted in **Section 2.2.3**, Alternative 3 would moderately reduce the ongoing activities conducted in the State-owned land due to the loss of approximately 12,900 acres. Consequently, the Army would continue to use, access, maintain, and repair U.S. Government-owned utilities within the State-owned land but at moderately reduced levels. Likewise, use of non-U.S. Government-owned utilities within the State-owned land and U.S. Government-owned and non-U.S. Government-owned utilities in the U.S. Government-owned land would continue to occur but at moderately reduced levels. Lease expiration would result in elimination of ongoing activities in the State-owned land not retained and associated activities within U.S. Government-owned land, which would cause long-term reductions in utility demand. Alternative 3 would result in new long-term, negligible, beneficial impacts on U.S. Government-owned and non-U.S. Government-owned utilities from this decreased demand. However, long-term, negligible, adverse impacts on U.S. Government-owned and non-U.S. Government-owned utilities would continue due to ongoing activities within the State-owned land retained and associated activities within U.S. Government-owned land.

Summary of Impacts: Alternative 3 would result in new long-term, negligible, beneficial impacts on U.S. Government-owned and non-U.S. Government-owned utilities from decreased demand due to loss of access to the State-owned land not retained. However, long-term, negligible, adverse impacts on U.S. Government-owned and non-U.S. Government-owned utilities would continue due to ongoing activities within the State-owned land retained and associated activities within U.S. Government-owned land. In total, the impact on utilities would be less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.15.6.4 No Action Alternative

Under the No Action Alternative, the Army would not retain any of the State-owned land at PTA, including U.S. Government-owned utilities. By the lease expiration date, ongoing activities within the State-owned land, and associated activities within the U.S. Government-owned land, would stop. Because the Army would have no land access to the impact area and training ranges south of the State-owned land, ongoing activities within the impact area and training ranges also would largely cease. The elimination of activities in the State-owned land and elimination of associated activities in the U.S. Government-owned land would reduce utility demand, resulting in new long-term, minor, beneficial impacts on U.S. Government-owned and non-U.S. Government-owned utilities that would still exist or be accessible such as wastewater, solid waste, liquid fuel, and communications.

The Army would have no access to, and may have to remove, the potable water and fire protection water facility, PTA substation, retransmission stations, antennas, other communication infrastructure, and a portion of the communication distribution network (overhead lines on poles) on the State-owned land. Removal of or inability to use, maintain, and repair these utilities would result in their immediate or near-term loss, respectively. Loss of the potable water and fire protection water facility would eliminate potable water and fire protection water service for all of PTA. Loss of the PTA substation would eliminate electricity throughout PTA. Loss of the retransmission stations, antennas, other communication infrastructure, and a portion of the communication distribution network (overhead lines on poles) would substantially reduce communication capabilities at PTA. The retransmission sites are vital for range and emergency services communications at PTA. Loss of these utilities would result in long-term, significant, adverse impacts on the availability or capacity of these utilities at PTA.

Summary of Impacts: The No Action Alternative would have new long-term, minor, beneficial impacts on U.S. Government-owned and non-U.S. Government-owned utilities due to reduced demand; however, it also would result in new long-term, significant, adverse impacts to the provision of potable water, fire protection water, electricity, and communication services to PTA. Overall, the impact under the No Action Alternative would be significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Significant.

3.16 Human Health and Safety

3.16.1 Definition

A safe environment is one in which there is no, or an optimally reduced, potential for death, serious bodily injury, illness, or property damage. Necessary elements for an accident-prone situation or environment include the presence of a hazard and an exposed (and potentially susceptible) population. Analysis of potential human health and safety impacts includes consideration of any activities, occurrences, or operations that have the potential to affect the following:

- The well-being, safety, or health of DoD personnel – persons who are directly involved with an operation that produces an effect or who are physically present at the operational site
- The well-being, safety, or health of members of the public – persons not physically present at the location of an operation, including workers at nearby locations who are not involved in the operation and the off-installation population

This analysis considers hazards associated with actions on State-owned land at PTA that could affect PTA personnel and the public, such as military munitions storage, training operations, and aircraft operations, as well as wildland fire management. This section also includes an analysis of emergency services and readiness of State and county government agencies that use PTA for emergency services training. Safety areas such as ESQD arcs, Surface Danger Zones (SDZs), Clear Zones (CZs), and Accident Potential Zones (APZs) are present on State-owned land at PTA and are defined as follows:

- ESQD arcs are ground areas that represent the prescribed minimum distance between facilities used for storage, handling, and maintenance of explosive material and specified exposures (e.g., inhabited buildings, public highways, other storage or handling facilities). ESQD arcs restrict the use of areas and personnel density within the arc and provide an explosive material safety buffer.
- SDZs are two-dimensional features, extending from a FP to a distance downrange, that provide a contained area representing a 1:1,000,000 probability of escapement for all projectiles, debris, and fragments resulting from detonation of weapons and explosives.
- CZs begin immediately beyond each end of a runway and are the areas with the highest potential for aircraft accidents or mishaps (DoD, 2018d).
- APZs are areas at military airfields that possess a high potential for aircraft accidents, or mishaps, when compared to non-airfield areas. There are two APZs (APZ I and APZ II) that lie immediately beyond each CZ and have increasingly less accident potential as you move away from the runway, but still enough to warrant safety concerns (DoD, 2018d).

3.16.2 Regulatory Framework

Numerous federal and State regulations have been enacted for the well-being of workers and the general population, including the Occupational Safety and Health Act of 1970 (29 U.S.C. Chapter 15 Section 651 et seq), which established laws and regulations to ensure safe working conditions through enforcing standards and training requirements and is administered by the Occupational Safety and Health Administration. EO 12196, *Occupation Safety and Health Programs for Federal Employees*; DoD Instruction 6055.01, *DoD Safety and Occupational Health Program*, and DoD Instruction 6055.05, *Occupational and Environmental Health*, set safety and health guidelines, in accordance with Occupational Safety and

Health Administration standards, for DoD employees. The Hawai'i Occupational Safety and Health Division administers the Hawai'i Occupational Safety and Health Law (HRS Chapter 396) and has jurisdiction over private sector employment on federal land, including military installations, with some exceptions.

The Army has established various regulations and guidance documents to implement safety requirements of DoD policies including DoD Instruction 6055.06, DoD Fire and Emergency Services (F&ES) Program; DoD Instruction 6055.07, Mishap Notification, Investigation, Reporting, and Record Keeping; DoD Instruction 6055.16, Explosives Safety Management Program; and DoD Instruction 6055.17, DoD Emergency Management (EM) Program. AR 385-10, The Army Safety Program, establishes safety standards designed to protect against serious injury, loss of life, and damage to property. AR 385-10 prescribes the Army's safety criteria and standards for operations involving ammunition and explosives and is supported by Army Pamphlet 385-64, *Ammunition and Explosives Safety*, which includes Army-wide safety policies, responsibilities, standards, and procedures for installations with an ammunition and/or explosives mission. AR 385-63, *Range Safety*, and Army Pamphlet 385-63, *Range Safety*, include policies, procedures, and standards for firing ammunition, lasers, guided missiles, and rockets and provide guidance for risk management in range operations.

Per Army Pamphlet 385-40, *Army Accident Investigations and Reporting*, which supports AR 385-10, and the PTA External Standard Operating Procedures, accident reporting requirements are applied during all tactical/combat operations and training. A written risk assessment is completed for all tasks and activities prior to unit deployment to PTA. The Directorate of Installation Safety performs, categorizes, and approves risk assessments using the risk-management process. Reporting requirements for occupational accidents are covered under federal and State regulations. Accidents occurring along public roadways that involve military personnel are investigated and reported through standard procedures of the Hawai'i Police Department. DoD Police at PTA also investigate and report accidents through their standard procedures for accidents involving military personnel immediately outside the PTA boundary (DA & HIARNG, 2013).

AR 420-1, Army Facilities Management, instructs PTA to develop and implement an IWFMP compliant and integral with the installation's INRMP, ICRMP, and fire and emergency programs. The PTA IWFMP describes the methods and procedures necessary to minimize fire frequency, severity, and size while providing military units the freedom to conduct the training exercises required to maintain a high level of combat readiness (USAG-PTA, 2021g).

HRS, Article, XII, Section 7 declares the State "shall protect the rights, customarily and traditionally exercised for subsistence, cultural and religious purposes . . . by native Hawaiians" and descendants. Such rights are subject to the State to regulate in the interest of preserving public safety and welfare.

3.16.3 Region of Influence

The human health and safety ROI includes PTA and the land within PTA's 420 square mile emergency response area.

3.16.4 Existing Conditions

During the public scoping process (summarized in **Section 1.6**), members of the public raised concerns regarding air contamination, DU, migration of hazardous substances and contaminated soils, health impacts on wild animals, geologic hazards, aircraft hazards, climate change, flooding, and wildland fire

management. The human health and safety topics discussed in this section include safety areas such as ESQD arcs, SDZs, CZs, and APZs; range operations; wildland fire management; fire protection, police, and medical services; and emergency services training. In addition, other issues associated with the Proposed Action that are connected to human health and safety are addressed throughout other sections of this EIS (e.g., DU is addressed in **Sections 3.5** and **Section 3.6**).

ESQD Arcs. DoD establishes ESQD arcs for the safe storage and handling of various quantities and types of ammunition and explosives. ESQD arcs at PTA are imaginary ground surfaces, with a typical radius of 2,000 feet or less, that extend from an explosive or hazardous material storage area such as the ASP, AHAs, FARPs, and the hazardous cargo pad at BAAF. There is one ASP, two AHAs, and two FARPs on State-owned land at PTA. ESQD arcs associated with these facilities, as well as two AHAs and two FARPs on U.S. Government-owned land, range from approximately 1,250 feet to 1,900 feet in diameter and are present within TAs 5, 6, 7, 8, 17, 18, and 20 on the State-owned land (DA, 2018d; DA, 2018e). The ESQD arcs are depicted in **Figure 3-25**. For security reasons, the ASP, AHAs, and their associated ESQD arcs are not shown.

The hazardous cargo pad at BAAF has an associated 1,250-foot ESQD arc, in which inhabited buildings are prohibited. The 1,250-foot ESQD arc extends across an approximately 0.25-mile segment of DKI Highway and within a portion of TA 10. There are no inhabited buildings within this area. Within the 1,250-foot ESQD arc, there is a 750-foot ESQD arc in which public traffic routes are prohibited. There are no public traffic routes within this area (DA, 2018e).

SDZs and Range Safety. The FPs with SDZs on State-owned land are within TAs 8, 9, 12, 13, and 15 (see **Figure 3-26**). SDZs on State-owned land are contained within TAs 7, 8, 9, 12, 13, 14, 15, and 18. All of these SDZs are oriented south toward the impact area. There are three FPs within the Ke'āmuku parcel, south of DKI Highway, that are used for live-fire into the impact area. The SDZs associated with these FPs are over TAs 13, 14, 17, 18, and 19 on State-owned land. The State DOT prohibits live ammunition from crossing over DKI Highway; therefore, there are no SDZs north of DKI Highway.

Various types of military munitions are used during live-fire training exercises within the State-owned land. Ammunition is delivered to PTA via aircraft (i.e., helicopter) or military convoy from Kawaihae Harbor on the west side of the island of Hawai'i. Helicopters, barges, and ground transportation vehicles responsible for delivering ammunition to PTA follow safe handling and transportation procedures addressed in Army Pamphlet 385-64, Ammunition and Explosives Safety, to maintain safety and reduce the potential for accidental detonation.

Ammunition at PTA is managed via the ASP and the Training Support System, which are licensed by the DDESB and sited and built to meet regulatory requirements for net explosive weight, compatibility, and quantity-distance for ammunition storage and handling (DA, 2018d; DA, 2018e). The ASP, which is within State-owned land, consists of nine potential explosion sites including eight earth-covered magazines and one surveillance workshop, which is used to perform inspections and receive and distribute ammunition. The road to the ASP includes physical barriers that preclude direct access and is restricted to ASP personnel only (DA, 2018d). The Training Support System consists of 11 potential explosion sites that include six AHAs, two FARPs, one FARP/AHA combination, one burn pan area, and one hot cargo pad (at BAAF). There are two AHAs and two FARPs on State-owned land. There are no publicly accessible roads with access to the Training Support System (DA, 2018e).

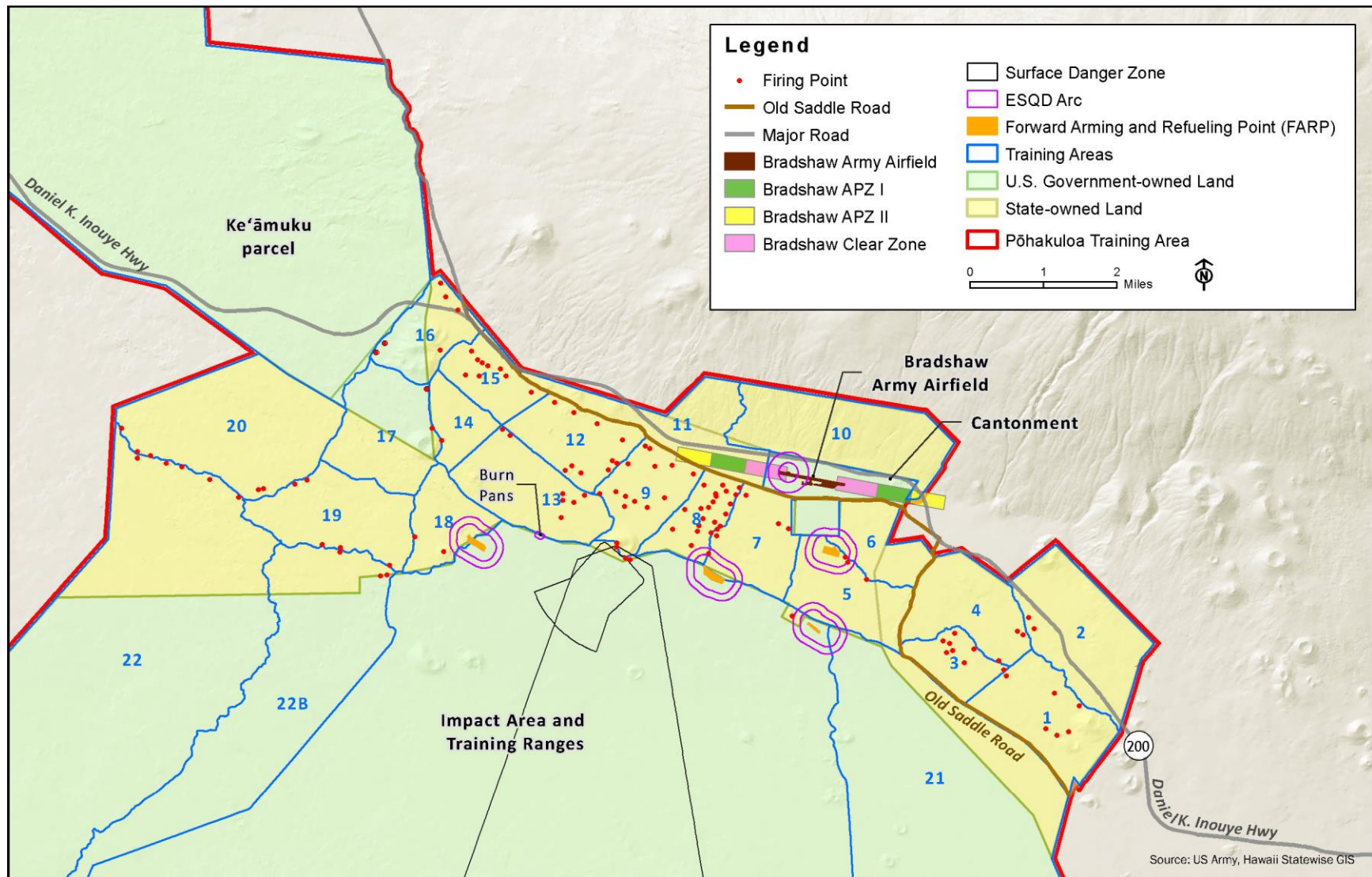


Figure 3-25: Safety Features at Pōhakuloa Training Area

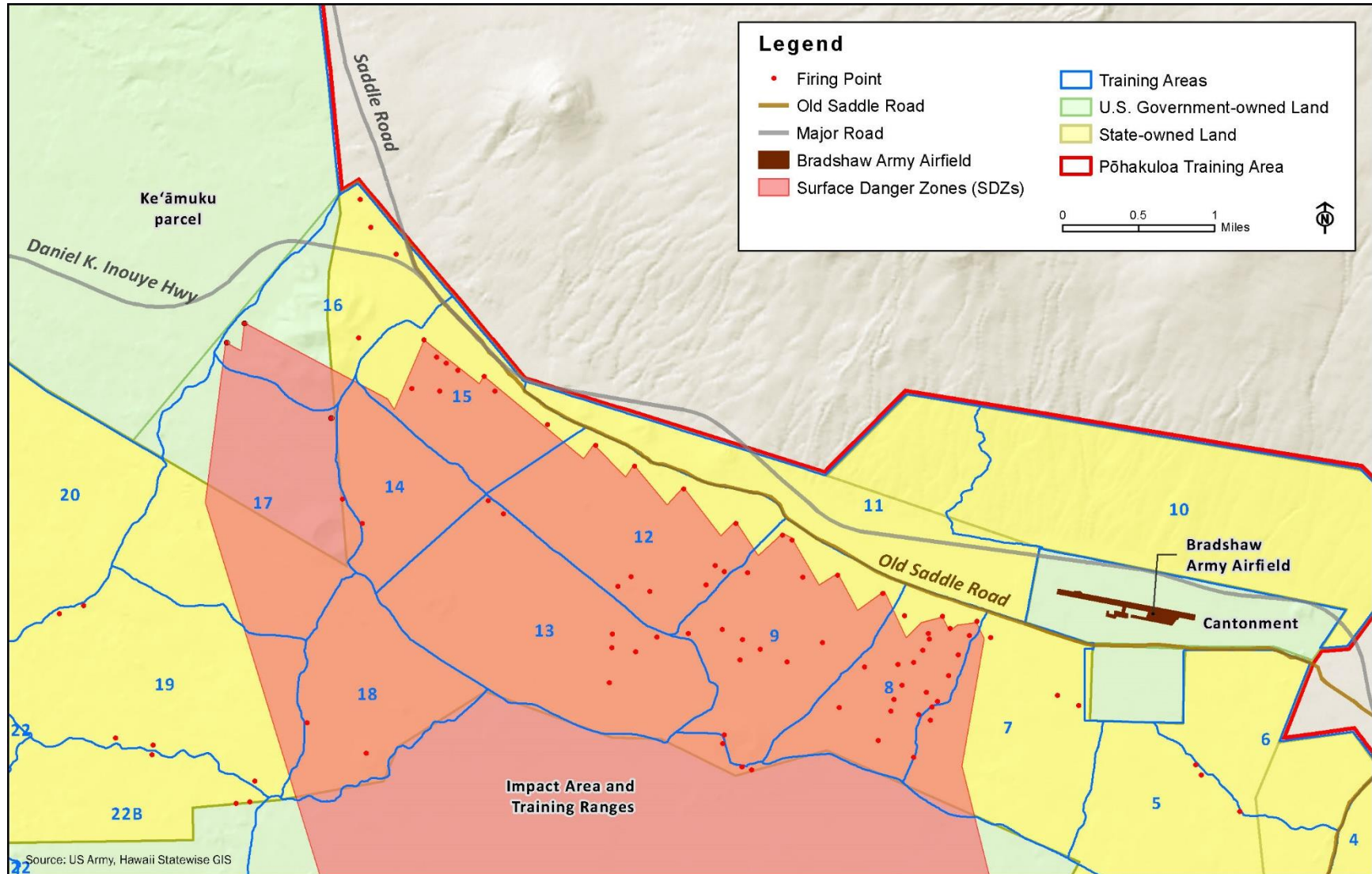


Figure 3-26: Surface Danger Zones on State-Owned Land at Pōhakuloa Training Area

Ammunition at PTA is primarily stored at the ASP, where it is issued to the training unit prior to training exercises. AHAs are used to temporarily store ammunition during training periods and are continually monitored by DoD personnel when ammunition is present. Any unused ammunition is returned to the original storage facility at the end of each training exercise. The Army carefully organizes each deployment to PTA to reduce unused ammunition and minimize transportation of ammunition on public, unsecured roadways (USAG-HI & USARPAC, 2013).

CZs and APZs

CZs and APZs, which are determined based on historical aircraft mishap and operations data, are areas with restrictions or land use controls that extend beyond each end of a runway to ensure the safety of military personnel and civilians. CZs and APZs at PTA are depicted in **Figure 3-24**. Each CZ and APZ associated with the runway at BAAF is approximately 3,000 feet long × 1,000 feet wide. APZ I, APZ II, and a portion of the CZ west of the runway overlap State-owned land at PTA, extending within TAs 9 and 11. A portion of APZ II east of the runway extends across DK1 Highway and within TA 10 on State-owned land. APZ II east of the runway also extends across the PTA boundary into the Mauna Kea Recreation Area. The PTA Garrison Commander restricts aircraft takeoffs and landings to the east to reduce the potential for aircraft mishap over the Cantonment, which is east of BAAF (USACE-POH & USAG-HI, 2019b). There are no CZs and APZs associated with Cooper Air Strip.

Fire Protection, Police, and Medical Services

Units stationed at PTA provide firefighting, police, and medical services to PTA and the areas surrounding PTA. PTA's emergency response area is approximately 420 square miles, which is twice the size of PTA.

PTA collaborates with the Maunakea Observatories to provide essential fire and medical first responder support for visitors at the Mauna Kea summit, which is accessed via the Mauna Kea Access Road approximately 7 miles east of the Cantonment along DK1 Highway. Given the proximity of PTA to the Mauna Kea Summit, PTA emergency services cut response times in half compared to the emergency services provided by the County of Hawai'i, which is beneficial for the health and safety of Hawai'i residents and visitors and reduces the burden of on-site Maunakea Observatories staff.

The PTA Fire Department is located at BAAF and firefighting staff are stationed at BAAF and the Cantonment. The PTA Fire Department is available to assist with fires proximal to PTA at the request of the County of Hawai'i Fire Department. Emergency response times to locations at PTA vary, and may be over an hour for more remote areas. The PTA Fire Department consists of six staff, including two emergency medical technicians, working around the clock. PTA Fire Department equipment includes six brush trucks, three Class A pumpers, one water pumper, one brush utility task vehicle, and one brush trailer command post (USAG-PTA, 2021f, 2021; USAG-PTA, 2021g). The PTA Fire Department also maintains an aircraft crash rescue vehicle and an ambulance (USAG-PTA, 2021f, 2021; USAG-HI & USARPAC, 2013). The closest external fire stations to PTA are the Waikoloa Fire Station and the Waimea Fire Station, approximately 20 miles northwest and 25 miles north of the Cantonment, respectively (COH, 2017a).

The DoD Police provide all police services on PTA, including general range and installation security. The DoD Police facility at PTA is within the Cantonment and operates 24 hours per day, 7 days per week. State-owned land at PTA is not regularly patrolled; however, DoD Police provide security when necessary. Units

that come to PTA for training exercises may bring military police of their own, depending on the size of the unit and policing requirements. DoD Police at PTA coordinate with and support the Hawai'i Police Department for patrol of DK1 Highway and areas surrounding PTA, and is available to support county police when needed (DA & HIARNG, 2013). DoD Police do not enforce the laws of external agencies or their regulations (e.g., State hunting regulations). The closest external police stations to PTA are the Waikoloa Police Station and the Waimea Police Station, approximately 20 miles northwest and 25 miles north of the Cantonment, respectively (COH, 2017b).

Medical services are provided by deployed military units and the fire and emergency services staff at PTA. Limited medical facilities are at the Cantonment, and emergency medical service staff have the capacity to respond to accidents along DK1 Highway (DA & USACE-POH, 2004). Serious medical emergencies rely on medical helicopter transport to Hilo, which is approximately 10 minutes away by air. The closest medical facilities to PTA are the North Hawai'i Community Hospital and the Hilo Medical Center, approximately 20 miles north and 30 miles east of the Cantonment, respectively (DOH-OHCA, 2020; USAG-PTA, 2021f, 2021).

Wildland Fire Management

Wildfires on State-owned land can occur from natural sources (i.e., volcanic activity and lightning), arson and accidental fires, and military activities. Most wildfires at PTA occur on live-fire ranges on the eastern and northern perimeters of the impact area on U.S. Government-owned land. The majority of military-ignited fires are caused by military munitions such as tracer rounds, pyrotechnics, illumination rounds, and explosive ordnance. These types of military munitions are fired from TAs on State-owned land into the impact area and from land within the impact area. Military munitions are not fired from within TAs north of DK1 Highway. Wildfires at PTA are considered frequent and the average yearly wildfire occurrence from 2012 through 2017 was 37 per year. Approximately 90 percent of wildfires occur on U.S. Government-owned land, while approximately 10 percent of wildfires occur on State-owned land. Since 1975, there have been 15 recorded wildfires greater than 100 acres at PTA, with 60 percent of fires occurring from military activities. A recent fire occurred in 2018 within TAs 18, 19, and 22B and affected 368 acres. The fire originated in TA 19 from inadvertent discharge of flares during aerial live-fire training. Wildfire at PTA also could occur from prescribed burns, or controlled fires, used to meet natural land management objectives within areas adjacent to PTA. There are no plans to implement prescribed burns at PTA (DA, 2018f; USAG-PTA, 2021g).

The Army uses an internal rating system to assess wildfire risk at PTA and assigns a daily fire danger rating to areas of PTA. Fire suppression resources at PTA include an extensive series of firebreaks/fuel breaks and areas of modified fuels; firefighting equipment and supplies; fire response vehicles including water tankers; and aerial resources that can be used for fire bucket support. Approximately ten 30,000-gallon to 80,000-gallon dip tanks at PTA are required to be filled at 60 percent capacity at all times and can be used by aerial and ground wildfire support resources (USAG-PTA, 2021g). Approximately eight of the ten dip tanks at PTA are within the State-owned land.

The PTA Fire Department is the first responder for wildfire occurrences within PTA. The minimum PTA Fire Department staffing requirement during live-fire training exercises is six personnel (USAG-PTA, 2021f, 2021). Because of PTA's large size, volume of training, and additional staff required by obligations in addition to the IWFMP, military units bring additional firefighting staff to PTA during training; therefore, staffing levels always exceed the minimum requirement. Additional support from the County of Hawai'i

Fire Department, National Park Service, and DLNR Division of Forestry and Wildlife are available for fire suppression if a fire has the potential to become large (USAG-PTA, 2021g).

The PTA Fire and Emergency Services Fire Chief and PTA Wildland Fire Program Manager are responsible for implementing the IWFMP, developing procedures to reduce the threat of wildland fires, responding to fires that impact PTA's emergency response area, and mitigating the adverse impacts of fires, which requires coordination with PTA Range Division Hawai'i and the PTA Natural Resources Office. The PTA Fire Department also assists the State during prescribed burns and emergency forest fire controls near PTA (USAG-PTA, 2021g).

The IWFMP incorporates public health and environmental quality considerations into its fire-management planning and execution and, where practical, provides protection for natural and cultural resources. By following the guidelines set forth in the IWFMP and associated fire prevention, suppression, and reporting SOPs, the Army reduces wildfire risks and provides for the protection of public services and utilities. In the event of a wildfire, wildland fire management at PTA is also conducted in accordance with the NHPA and ESA where possible (DA & HIARNG, 2013).

Emergency Services Training

PTA is used for training and logistics planning by local emergency services agencies, including State and county first responders and firefighters; the Hawai'i Civil Defense Agency; the Hawai'i Emergency Management Agency; the State Office of Homeland Security; and the Hawai'i Police Department. The facilities at PTA allow these State and county agencies to adequately train for emergency response situations and prepare emergency responders to ensure the health and safety of local communities within the County of Hawai'i and the State.

3.16.5 Methodology and Significance Criteria

This section outlines the methods and criteria used in **Section 3.16.6** to assess potential significant impacts on human health and safety. The evaluation of impacts on human health and safety is based on existing health and safety features in the ROI and compatibility of the Proposed Action with existing hazard conditions. The criteria considered to assess whether an alternative would result in potential significant impacts on human health and safety include the extent or degree to which an alternative would result in the following:

- Substantial increase of health and safety risks or hazards within the ROI
- Change or alteration of ESQD arcs, SDZs, CZs, or APZs in a way that would substantially increase their areas or associated hazards
- Substantial increase or introduction of wildfire risks within the ROI
- Reduction or elimination of the ability of PTA to respond to wildfires or provide fire, police, and emergency services
- Substantial reduction of State and county agencies' use of PTA for emergency services training

3.16.6 Environmental Analysis

3.16.6.1 *Alternative 1: Full Retention*

Under Alternative 1, established safety features such as ESQD arcs, SDZs, CZs, and APZs; procedures related to explosives and range safety; and the IWFMP for reducing and responding to wildfires would remain in place and would continue to be executed under applicable federal, State, and DoD regulations. PTA would continue to provide firefighting, police, medical, and wildland fire management services to, and within areas proximal to, the installation. State and county agencies would continue to use PTA for emergency services training, which would help to ensure human health and safety is maintained within local communities. Therefore, Alternative 1 would result in no new impacts to human health and safety. Long-term, minor, adverse impacts would continue from ongoing aircraft and military munitions use, and long-term, minor, beneficial impacts would continue from PTA providing firefighting, police, and medical services beyond the installation and permitting non-DoD emergency services agencies to use PTA facilities to train.

Summary of Impacts: Alternative 1 would result in no new impacts to human health and safety. Long-term, minor, adverse impacts would continue due to ongoing activities within the State-owned land and would continue to be addressed through existing safety procedures. Long-term, minor, beneficial impacts would continue from PTA providing emergency services beyond the installation and permitting non-DoD emergency services agencies to train within the State-owned land.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.16.6.2 *Alternative 2: Modified Retention*

Land Retained

Under Alternative 2, the Army would continue to conduct training and continue to permit and coordinate emergency services training for non-DoD agencies at PTA. State and county agencies would be able to continue to use PTA for emergency services training, which would help to ensure human health and safety is maintained within local communities. Established safety features, such as ESQD arcs, SDZs, CZs, and APZs, and procedures related to explosives and range safety on State-owned land retained would not change. PTA would continue using dip tanks and firebreaks/fuel breaks in the State-owned land retained. The IWFMP for reducing and responding to wildfires would continue to be executed under applicable federal, State, and DoD regulations. PTA also would continue to provide firefighting, police, and medical services to, and within areas proximal to, the installation. Therefore, Alternative 2 would result in no new impacts on human health and safety; however, long-term, minor, adverse impacts would continue from ongoing aircraft and military munitions use, and long-term, minor, beneficial impacts would continue from providing firefighting, police, and medical services beyond the installation and permitting non-DoD emergency services agencies to train within the State-owned land retained.

Land Not Retained

The Army would not access State-owned land not retained for wildfire protection and firefighting activities. To address wildfire risk, State and county agencies would become the first responders for

wildfire occurrences in the land not retained and it is assumed they would maintain similar practices as the Army to prevent and respond to potential wildfires. Fire-causing military munitions and training would not be used on land not retained under Alternative 2; however, the land not retained is rarely used for training and is not used for live-fire military munitions. Therefore, no adverse impacts on wildfire risk within the land not retained would occur.

The Army would lose three FPs within TA 16 in the land not retained, but because these FPs are north of DKI Highway they are not used for live-fire and do not have SDZs; therefore, there would be no impact on health and safety.

The Army would continue to operate the hazardous cargo pad and runway at BAAF (located on U.S. Government-owned land), which would result in the 1,250-foot ESQD arc associated with the hazardous cargo pad and APZs I and II east of the runway extending into the State-owned land not retained in TA 10. The areas underlying the ESQD arc and APZs are unimproved and would not likely be accessed by the public. The PTA Garrison Commander would continue to restrict aircraft takeoffs and landings to the east to reduce the potential for aircraft mishap. Because the likelihood of aircraft mishap to the east of the runway is low and the area is not likely to be accessed by the public, the potential for harm to the public would be low. Therefore, new long-term, negligible, adverse impacts on human health and safety within the State-owned land not retained would occur.

Summary of Impacts: Alternative 2 would result in new long-term, negligible, adverse impacts on human health and safety on State-owned land not retained due to the locations of APZs and ESQD arcs that would remain active. Long-term, minor, adverse impacts would continue due to ongoing activities within the State-owned land retained and would continue to be addressed through existing safety procedures. Long-term, minor, beneficial impacts would continue from PTA providing emergency services beyond the installation and permitting non-DoD emergency services agencies to train within the State-owned land retained.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.16.6.3 Alternative 3: Minimum Retention and Access

Land Retained

Under Alternative 3, established safety features such as ESQD arcs, SDZs, CZs, and APZs; procedures related to explosives and range safety; and the IWFMP for reducing and responding to wildfires would remain in place within the State-owned land retained and would continue to be executed under applicable federal, State, and DoD regulations. SDZs within TAs 7, 8, 9, 12, 13, 14, 15, and 18 on State-owned land retained would remain in place, and PTA would continue to implement SDZ safety procedures in accordance with applicable regulations. The Army would retain and continue to use the firebreaks/fuel breaks along most of the 11 miles of select roads and training trails proposed for retention. The Army also would continue to use the dip tanks within the State-owned land retained and continue to implement the PTA IWFMP on the State-owned land retained. Additionally, PTA would continue to provide firefighting, police, and medical services, as needed, within the State-owned land retained and areas proximal to PTA. Therefore, Alternative 3 would result in no new impacts on human health and safety within the State-owned land retained; however, long-term, minor, adverse impacts would continue from ongoing aircraft

and military munitions use, and long-term, minor, beneficial impacts would continue from providing firefighting, police, and medical services beyond the installation and permitting non-DoD emergency services agencies to train within the State-owned land retained.

Land Not Retained

The State-owned land not retained under Alternative 2 also would not be retained under Alternative 3. Therefore, impacts for those areas would be the same as discussed for Alternative 2. Impacts for additional State-owned land not retained under Alternative 3 are discussed below.

The Army would no longer have access to roads and training trails, TAs, and training facilities in the land not retained. One AHA and associated ESQD arc on State-owned land not retained would be removed, and military munitions would no longer be temporarily stored at the AHA during training exercises, which would reduce hazards associated with military munitions storage and handling and result in new long-term, minor, beneficial impacts on health and safety.

The Army would lose approximately 29 FPs within the land not retained, but because these FPs are not used for live-fire they do not have SDZs; therefore, there would be no impact on health and safety.

The Army would retain a use agreement to enable the firing of indirect-fire weapons from three FPs in the Ke'āmuku parcel over the State-owned land not retained and into the impact area. Any use agreement associated with firing over State-owned land not retained from these FPs would consider appropriate safety requirements. The SDZs associated with these FPs that would extend into State-owned land not retained would be maintained; however, areas underlying the SDZs are unimproved and would not likely be accessed by the public, which limits the potential risks. Therefore, new, long-term, negligible, adverse impacts on human health and safety would occur. To reduce adverse impacts associated with retention of the SDZs for three FPs over the State-owned land, the Army could negotiate an agreement with the State to allow the Army to monitor the State-owned land not retained for wildfires and assist wildfire responders with wildfire suppression.

State-owned land not retained would no longer be monitored for wildfire risks, assessed for daily fire danger, or maintained to reduce natural fuels (such as dry grasses) by PTA in accordance with the IWFMP. State and county agencies would become the first responders for wildfire occurrences in the State-owned land not retained and are assumed to maintain similar practices as the Army to prevent and respond to potential wildfires. Because military training activities would be eliminated on State-owned land not retained, a reduction of wildfire hazards associated with military activity-caused fires within those areas would occur, which would result in a new long-term, minor, beneficial impact on health and safety.

The Army would continue to allow State and county agencies to use PTA for emergency services training, where possible. Any reduction in training capabilities or loss of facilities at PTA would nonetheless reduce emergency services readiness, which would result in new long-term, minor, indirect, adverse impacts on human health and safety within local communities.

Summary of Impacts: Alternative 3 would result in new long-term, negligible, adverse impacts on human health and safety due to the locations of APZs and ESQD arcs extending into the land not retained as well as firing of indirect-fire weapons over the land not retained. Loss of State-owned land and PTA facilities would have new long-term, minor, adverse impacts on emergency services readiness because training for non-DoD emergency services agencies would be reduced. New, long-term, minor, beneficial impacts

would occur from less military munitions storage and handling due to loss of the AHA and a reduction of wildfire hazards associated with less military activities.

Long-term, minor, adverse impacts would continue from ongoing aircraft and military munitions use, and long-term, minor, beneficial impacts would continue from providing firefighting, police, and medical services beyond the installation and permitting non-DoD emergency services agencies to train within the State-owned land retained. The overall impact under Alternative 3 would be less than significant.

Potential Mitigation Measures: The Army would consider the following mitigation measures to further reduce potential adverse impacts on health and safety: negotiation of an agreement with the State to allow the Army to monitor the State-owned land not retained for wildfires and assist wildfire responders with wildfire suppression.

Level of Significance: Less than significant.

3.16.6.4 No Action Alternative

Under the No Action Alternative, the Army would not retain any State-owned land at PTA following expiration of the lease. The ASP, two AHAs, and two FARPs within State-owned land would be removed and their associated ESQD arcs would be inactivated. The Army would no longer have the ability to fire indirect-fire weapons from FPs within the State-owned land and the Ke‘āmuku parcel into the impact area; therefore, SDZs associated with these live-fire FPs would be inactivated. Military munitions would no longer be stored at the ASP or AHAs on State-owned land.

Due to the loss of the ASP, all military munitions that are transported to PTA would need to be returned to O‘ahu following training exercises. Helicopters, barges, and ground transportation vehicles responsible for returning military munitions to O‘ahu would follow safe handling and transportation procedures to maintain safety and reduce the potential for accidental detonation. Therefore, new long-term, negligible, adverse impacts on public safety associated with military munitions handling and transportation hazards would occur due to increased handling and transportation of military munitions.

The AHAs on U.S. Government-owned land would continue to be used. The Army would no longer control some areas (i.e., State-owned land) underlying the ESQD arcs associated with two AHAs on U.S. Government-owned land and some areas (i.e., State-owned land) underlying CZs and APZs associated with BAAF, which would result in long-term, minor, adverse impacts on public safety from potential exposure to safety hazards. Areas underlying ESQD arcs, CZs, and APZs that extend into State-owned land are unimproved, and it is unlikely public activity in the area would increase substantially as a result of the No Action Alternative.

The Army would no longer have access to firebreaks/fuel breaks and dip tanks on State-owned land or maintain wildland fire management procedures on State-owned land in accordance with the IWFMP. The State-owned land would no longer be monitored by PTA for wildfire risks, assessed for daily fire danger, or maintained to reduce potential natural fuels, such as dry grasses, in accordance with the IWFMP. The State and county agencies would become responsible for monitoring and responding to wildfire occurrences on the State-owned land and would maintain similar practices as the Army to prevent and respond to wildfires. Therefore, no adverse impacts on wildland fire management would occur.

The Army would no longer have land access to impact areas and training ranges to the south of the State-owned land; therefore, it is likely all live-fire training exercises at PTA would cease. Hence, wildfire hazards associated with military activity-caused fires would be greatly reduced, resulting in long-term, minor, beneficial impacts on wildland fire management.

Because the Army would not retain any of the State-owned land, the Army would no longer have access to roads and training trails on State-owned land that could be used to respond to emergencies. U.S. Government-owned utilities and infrastructure within State-owned land, including the U.S. Government-owned potable water facility and electrical substation at the Cantonment, would impact emergency services communication and restrict PTA wildfire protection and firefighting capabilities. Loss of utilities and infrastructure also would reduce the ability for PTA to permit and coordinate training and other activities for State and county emergency service agencies and restrict PTA from providing community services that extend beyond the PTA boundary such as local police and medical support.

Loss of the State-owned land would adversely affect the readiness of State and county emergency service agencies that train at PTA. The Army also would lose access roads and training trails used for implementing and maintaining the IWFMP and assisting the State during wildfires and prescribed burns. Therefore, long-term, moderate, adverse impacts on human health and safety within local communities would occur.

Summary of Impacts:

The No Action Alternative would result in new long-term, negligible to moderate, adverse impacts on human health and safety from increased munitions handling and transportation; potential exposure of public to ESQDs, CZs, and APZs; and loss of State and county emergency services training. The No Action Alternative would also result in new long-term, minor, beneficial impacts on human health and safety from the elimination of military activities on the State-owned land and impact area and training range (U.S. Government-owned land) that could cause wildfires. In total, the impact would be less than significant.

Potential Mitigation Measures: None recommended.

Level of Significance: Less than significant.

3.17 Summary of Potential Environmental Impacts and Mitigation Measures

This section summarizes the potential impacts and mitigation measures for the action alternatives and the No Action Alternative.

Table 3-24 provides a summary of the potential impacts associated with the action alternatives and the No Action Alternative. As described in **Section 3.1**, each resource topic identifies an overall level of significance. The following is a key to the impact abbreviations in **Table 3-24**.

NI = No impact (no measurable impacts)

LSI = Less than significant impact (negligible, minor, or moderate impacts)

SI = Significant impact (obvious, serious impacts)

LSI/SI = Significant but mitigable to less than significant impact (the application of mitigation measure(s) reduces a significant impact to less than significant)

As discussed in **Section 3.1**, this EIS applies compliance with applicable regulations, BMPs and SOPs to the analysis before making impact conclusions. If compliance with applicable regulations and implementation of existing BMPs and SOPs are insufficient to lessen the intensity of an impact, project-specific mitigation measures are recommended to actively avoid or minimize new adverse impacts. **Table 3-25** provides a summary of potential mitigation measures for the action alternatives. At the conclusion of the NEPA process, the ROD will identify which mitigation measures the Army will implement.

3.17.1 Summary of Potential Environmental Impacts

Table 3-24 Potential Environmental Impacts				
Resource	Alternative 1	Alternative 2	Alternative 3	No Action Alternative
Land Use	LSI <ul style="list-style-type: none"> Adverse impacts to recreation due to restricted public access. Beneficial impacts on land tenure and conformance with State land use policy. 	LSI <ul style="list-style-type: none"> Similar to Alternative 1 but with a lower degree of adverse impacts to recreation and a lower degree of beneficial impacts to land tenure. Adverse impacts on encroachment management. 	LSI <ul style="list-style-type: none"> Similar to Alternative 2 but with a lower degree of adverse impacts to recreation, a lower degree of beneficial impacts to land tenure, and a higher degree of adverse impacts to encroachment management. 	LSI <ul style="list-style-type: none"> Beneficial impacts to recreation and scenic vistas. Adverse impacts to encroachment management.
Biological Resources	LSI <ul style="list-style-type: none"> Adverse impacts from ongoing Army activities. 	LSI <ul style="list-style-type: none"> Adverse impacts from ongoing Army activities. Adverse impacts from increased hunting and public access. Beneficial impacts from reduced Army activities. Beneficial impacts from lease compliance actions (e.g., reforestation). 	LSI <ul style="list-style-type: none"> Similar to Alternative 2 but with generally higher degrees of beneficial impacts. 	SI <ul style="list-style-type: none"> Similar to Alternative 2 but with additional adverse impacts from increased hunting and public access and significant adverse impacts to protected species on U.S. Government-owned land.

Table 3-24 Potential Environmental Impacts

Resource	Alternative 1	Alternative 2	Alternative 3	No Action Alternative
Cultural Resources	LSI/SI <ul style="list-style-type: none"> No impacts to historic architectural resources. Adverse impacts to archaeological sites due to ongoing military activities. Significant but mitigable impacts to traditional and customary practices from ongoing limitations on access. 	LSI/SI <ul style="list-style-type: none"> Similar to Alternative 1 but with generally beneficial effects related to reduced military activities and increased levels of access. Adverse impacts from ground-disturbing activities associated with lease compliance actions in the land not retained. 	LSI/SI <ul style="list-style-type: none"> Similar to Alternative 2 but with additional beneficial effects related to reduced military activities and increased levels of access. Adverse impacts from ground-disturbing activities associated with lease compliance actions in the land not retained. 	SI (beneficial) <ul style="list-style-type: none"> Similar to Alternative 3 but with additional beneficial effects related to reduced military activities. Significant beneficial impact from increased access to areas for traditional and customary practices.
Hazardous and Toxic Materials and Wastes	LSI <ul style="list-style-type: none"> Adverse impacts from continued contamination but minimized with the management of MEC and radioactive materials. 	LSI <ul style="list-style-type: none"> Similar to Alternative 1 but with additional beneficial impacts related to the elimination of the use of hazardous and toxic materials, including MEC, within the State-owned land not retained. Overall beneficial impact. 	LSI <ul style="list-style-type: none"> Similar to Alternative 2 but with a higher degree of beneficial impact. 	LSI <ul style="list-style-type: none"> Similar to Alternative 3 but with a higher degree of beneficial impact.

Table 3-24 Potential Environmental Impacts

Resource	Alternative 1	Alternative 2	Alternative 3	No Action Alternative
Air Quality and Greenhouse Gases	<p>LSI</p> <ul style="list-style-type: none"> Adverse impacts on air quality and GHGs would occur from continuation of ongoing activities on the State-owned land. 	<p>LSI</p> <ul style="list-style-type: none"> Adverse impacts on air quality and GHGs due to lease compliance actions and cleanup activities. Adverse impacts on air quality and GHGs would occur from continuation of ongoing activities on the State-owned land. 	<p>LSI</p> <ul style="list-style-type: none"> Beneficial impacts on air quality and GHGs due to the elimination of Army ongoing activities within the State-owned land not retained. Adverse impacts on air quality and GHGs would occur from lease compliance actions and cleanup activities and continuation of ongoing activities on the State-owned land retained. 	<p>LSI</p> <ul style="list-style-type: none"> Beneficial impacts on air quality and GHG emissions because of the elimination of ongoing activities on the State-owned land as well as the potential reduction in activities at the Cantonment. Adverse impacts on air quality and GHGs due to lease compliance actions and cleanup activities.

Table 3-24 Potential Environmental Impacts

Resource	Alternative 1	Alternative 2	Alternative 3	No Action Alternative
Noise	LSI <ul style="list-style-type: none"> Adverse impact with noise levels continuing to extend slightly beyond the PTA boundary; however, those overlaps occur over non-noise sensitive, uninhabited forest reserve areas. 	LSI <ul style="list-style-type: none"> Similar to Alternative 1 but with lower noise levels associated with reduced training. Adverse impacts from lease compliance actions. 	LSI <ul style="list-style-type: none"> Similar to Alternative 2 but with lower noise levels associated with reduced training and additional impacts from lease compliance actions. 	LSI <ul style="list-style-type: none"> Beneficial impacts associated with decreased training and other activities with potential reduction of noise and disruptions to PTA wildlife. Adverse impacts associated with a reduced noise buffer – noise in the impact area would extend onto areas potentially used by the public. Additional adverse impacts from lease compliance actions.
Geology, Topography and Soils	LSI <ul style="list-style-type: none"> Adverse impacts from training related soil disturbances would continue; however, impacts would be minimized through established programs. 	LSI <ul style="list-style-type: none"> Similar to Alternative 1 but with beneficial impacts from elimination of ground disturbances on land not retained. 	LSI <ul style="list-style-type: none"> Similar to Alternative 2 but with additional beneficial impacts from elimination of ground disturbances on State-owned land not retained. 	LSI <ul style="list-style-type: none"> Similar to Alternative 3 but with additional beneficial impacts from elimination of ground disturbances during training.

Table 3-24 Potential Environmental Impacts

Resource	Alternative 1	Alternative 2	Alternative 3	No Action Alternative
Water Resources	LSI <ul style="list-style-type: none"> Adverse impacts on water resources due to ongoing activities within the State-owned land. 	LSI <ul style="list-style-type: none"> Similar to Alternative 1 but with some beneficial impacts on water resources from lease compliance actions in State-owned land not retained. 	LSI <ul style="list-style-type: none"> Similar to Alternative 2 but with beneficial impacts from reducing the potential for nonpoint source pollution, erosion, and stormwater runoff from State-owned land not retained. 	LSI <ul style="list-style-type: none"> Similar to Alternative 3 but with additional beneficial impacts from decreased demand for potable water.
Socioeconomics	LSI <ul style="list-style-type: none"> Beneficial impacts on social and economic resources from ongoing activities. 	LSI <ul style="list-style-type: none"> Adverse impacts from reduction in spending related to military training and conservation and public use programs. Beneficial impacts on social and economic resources from ongoing activities. 	LSI <ul style="list-style-type: none"> Similar to Alternative 2 but with a higher degree of adverse impacts from reduced spending and a lower degree of beneficial impacts. 	SI <ul style="list-style-type: none"> Significant adverse impacts from discontinuation of Army spending for activities at PTA. Also, a reduction in Army support for community services such as firefighting support and local emergency services.
Environmental Justice	LSI <ul style="list-style-type: none"> Adverse impacts related to land use, cultural resources, and transportation and traffic would disproportionately affect low-income and minority populations. 	LSI <ul style="list-style-type: none"> Impacts would be similar to Alternative 1, although to a lesser degree. 	LSI <ul style="list-style-type: none"> Impacts would be similar to Alternative 2, although to a lesser degree. 	LSI <ul style="list-style-type: none"> Adverse impacts identified for the action alternatives would not occur and impacts would, therefore, be generally beneficial.

Table 3-24 Potential Environmental Impacts

Resource	Alternative 1	Alternative 2	Alternative 3	No Action Alternative
Transportation and Traffic	LSI <ul style="list-style-type: none"> Adverse impacts on PTA and regional transportation systems and traffic from ongoing activities within the State-owned land. 	LSI <ul style="list-style-type: none"> Similar to Alternative 1 but with reduced adverse impacts on PTA and regional transportation systems. Beneficial impacts on PTA and regional transportation systems and traffic due to reduction in use of State-owned land not retained. 	LSI <ul style="list-style-type: none"> Similar to Alternative 2 but with reduced adverse impacts on PTA and regional transportation systems. 	LSI <ul style="list-style-type: none"> Similar to Alternative 2 but impacts would be overall beneficial.
Airspace	LSI <ul style="list-style-type: none"> Adverse impacts due to the need for civilian air traffic to avoid military training operations being conducted in R-3103. 	LSI <ul style="list-style-type: none"> Impacts would be similar to Alternative 1. 	LSI <ul style="list-style-type: none"> Reduced adverse impacts to civilian air traffic due to reduced requirements to make detours around restricted airspace. 	LSI <ul style="list-style-type: none"> Similar to Alternative 3 but overall beneficial impacts.
Electromagnetic Spectrum	LSI <ul style="list-style-type: none"> Adverse impacts on safety related to the continued use of EMS equipment. 	LSI <ul style="list-style-type: none"> Similar to Alternative 1 but with a slight reduction in adverse impacts. 	LSI <ul style="list-style-type: none"> Similar to Alternative 2 but with a slight reduction in adverse impacts. 	LSI <ul style="list-style-type: none"> Beneficial impacts from discontinued use of EMS-producing equipment on State-owned land.

Table 3-24 Potential Environmental Impacts

Resource	Alternative 1	Alternative 2	Alternative 3	No Action Alternative
Utilities	LSI <ul style="list-style-type: none"> Adverse impacts due to use of public and U.S. Government-owned utilities. 	LSI <ul style="list-style-type: none"> Impacts would be similar to Alternative 1. 	LSI <ul style="list-style-type: none"> Impacts would be similar to Alternatives 1 and 2, but to a lesser degree. 	SI <ul style="list-style-type: none"> Beneficial impacts due to reduced utility demand. Significant, adverse impacts to the provision of potable water, fire protection water, electricity, and communication services to PTA.
Human Health and Safety	LSI <ul style="list-style-type: none"> Adverse impacts from training would continue due to ongoing activities within the State-owned land. Beneficial impacts would continue from providing emergency services beyond the installation and permitting non-DoD agencies to train within the State-owned land. 	LSI <ul style="list-style-type: none"> Adverse impacts from training would continue due to ongoing activities within the State-owned land. Adverse impacts would occur related to the ESQD arc associated with the hazardous cargo loading area extending past the PTA boundary. 	LSI <ul style="list-style-type: none"> Similar to Alternative 2, with additional adverse impacts on combat and emergency services readiness. 	LSI <ul style="list-style-type: none"> Similar to Alternative 3. Additionally, adverse impacts related to removal of wildfire management infrastructure and a reduction in local emergency services agency training would occur.

3.17.2 Summary of Potential Mitigation Measures

Table 3-25 Potential Mitigation Measures				
Resource	Alternative 1	Alternative 2	Alternative 3	No Action Alternative
Land Use	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> The Army would consider adding fencing and signage to minimize encroachment from adjacent non-U.S. Government-owned land. 	<ul style="list-style-type: none"> The Army would consider adding fencing and signage to minimize encroachment from adjacent non-U.S. Government-owned land. 	<ul style="list-style-type: none"> No mitigation measures recommended.
Biological Resources	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended.
Cultural Resources	<ul style="list-style-type: none"> Through consultation with Native Hawaiians, and/or other ethnic groups as appropriate, provide access to promote and protect cultural beliefs, practices, and resources. 	<ul style="list-style-type: none"> Through consultation with Native Hawaiians, and/or other ethnic groups as appropriate, provide access to promote and protect cultural beliefs, practices, and resources. 	<ul style="list-style-type: none"> Through consultation with Native Hawaiians, and/or other ethnic groups as appropriate, provide access to promote and protect cultural beliefs, practices, and resources. 	<ul style="list-style-type: none"> No mitigation measures recommended.
Hazardous and Toxic Materials and Wastes	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended.
Air Quality and Greenhouse Gases	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended.
Noise	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended.
Geology, Topography and Soils	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended.

Table 3-25 Potential Mitigation Measures

Resource	Alternative 1	Alternative 2	Alternative 3	No Action Alternative
Water Resources	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended.
Socioeconomics	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended.
Environmental Justice	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended.
Transportation and Traffic	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended.
Airspace	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended.
Electromagnetic Spectrum	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended.
Utilities	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended.
Human Health and Safety	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> No mitigation measures recommended. 	<ul style="list-style-type: none"> Negotiation of an agreement with the State to allow the Army to monitor the State-owned land not retained for wildfires and assist wildfire responders with wildfire suppression. 	<ul style="list-style-type: none"> No mitigation measures recommended.

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Chapter 4

CUMULATIVE IMPACTS

4.1 Introduction

Assessment of cumulative impacts of a proposed action is required under the CEQ regulations implementing NEPA (40 CFR Parts 1500–1508). The Army’s NEPA regulations (32 CFR Part 651.51(a)(1)(ii)) and the State’s HEPA regulations (HAR Section 11-200.1-24 (l)) both require that an EIS include an assessment of cumulative impacts.

CEQ regulations define cumulative impacts as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR Section 1508.7).

This chapter analyzes the potential cumulative impacts of the Proposed Action when combined with other past, present, and reasonably foreseeable future actions. **Section 4.2** describes the methodology for analyzing cumulative impacts. **Section 4.3** provides background information on other actions within the ROI. **Section 4.4** presents the analysis of cumulative impacts for each of the resource areas analyzed in **Chapter 3**.

4.2 Methodology

4.2.1 Resources Considered

Cumulative impacts analysis was conducted for all resource areas analyzed in **Chapter 3** because each resource area would be impacted under the Proposed Action.

4.2.2 Region of Influence

The ROI for cumulative impacts generally correlates with the ROI established for each respective resource, as described in **Chapter 3**. The ROI also includes areas where impacts of the Proposed Action would have a connection, in space or time, with impacts from other actions and consequently have the potential to contribute to cumulative impacts. This connection includes one between individuals or groups who may incur impacts related to events of a historical nature (e.g., the connection between Native Hawaiians and the maintenance of customary practices). The timeframe for actions addressed in this analysis is 10 years, which is approximate to the timeframe anticipated for implementation of any of the action alternatives.

4.2.3 Significance Criteria

As provided in 40 CFR Part 1508.7, cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Cumulative impacts occur when impacts from a proposed action and impacts from past, present, and reasonably foreseeable actions are additive or interactive in some combination. Although impacts from individual actions may be negligible, the combined impacts, over a period of time, may result in significant cumulative impacts. Significance criteria for cumulative impacts are often the same as discussed in **Chapter 3**.

Cumulative impacts are significant if the impacts from a proposed action, when added to past, present, and reasonably foreseeable impacts, result in combined significant impacts. Significant cumulative impacts would not be identified when there is either no impact from a proposed action or no impact from the past, present, and reasonably foreseeable actions.

In some cases, beneficial impacts may result from either a proposed action or from past, present, and reasonably foreseeable actions. If beneficial impacts are involved, the net cumulative effect may be less than the most adverse impact as the beneficial impact would partially counteract the negative results of the adverse impact.

4.2.4 Approach to the Cumulative Analysis

Cumulative impacts are assessed by resource area. For some actions included in the list of past, present, and reasonably foreseeable actions (see **Table 4-1**), no quantitative data were available for analysis purposes. In those instances, a qualitative analysis was conducted with the best information available.

The following approach was used to determine whether impacts associated with the Proposed Action would have the potential to combine with impacts of past, present, or reasonably foreseeable future actions to generate cumulative impacts:

1. Identity resource areas for cumulative impact analysis. Resource areas for which the Proposed Action would experience an impact would result in cumulative impacts and therefore were carried forward for analysis.
2. Describe impacts associated with past activities at PTA.
3. Describe impacts associated with the Proposed Action for each resource area.
4. Identify past, present, or reasonably foreseeable actions that have the potential for overlapping impacts with the Proposed Action.
5. Describe impacts associated with the past, present, or reasonably foreseeable actions that have the potential to affect each resource area.
6. Determine whether impacts from the Proposed Action when combined with impacts from past, present, or reasonably foreseeable actions would result in a significant cumulative impact.
7. Identify additional mitigation measures to avoid or minimize significant cumulative impacts, if necessary.

4.3 Past, Present, and Reasonably Foreseeable Future Actions

4.3.1 List of Projects

Analysis of cumulative impacts considers past, present, and reasonably foreseeable actions within the ROI that have the potential to contribute to cumulative impacts. Past actions are considered already implemented and part of existing conditions that are described and analyzed in **Chapter 3** of this EIS and are summarized in **Section 4.4**. Actions are considered reasonably foreseeable when they meet one or more of the following conditions: 1) the action has been programmed for implementation or initiated an environmental review process, 2) the action has secured funding, or 3) the action has obtained a permit.

Actions listed in **Table 4-1** were identified through a review of recent NEPA and HEPA documents, review of County of Hawai'i building permits, discussion with Army officials, and internet research.

Table 4-1 identifies other past, present, and reasonably foreseeable future actions considered in this chapter.

Table 4-1 Other Past, Present, and Reasonably Foreseeable Future Actions		
Action	Description	Year
Cantonment Facilities Improvement Program (FIP), PTA	<p>The Cantonment FIP proposes modernization within the base camp portion of the PTA Cantonment, located on U.S. Government-owned land, and includes a building component and a utility component. The building modernization component will replace outdated buildings with code-compliant one-story structures, without increasing density or height.</p> <p>The utility modernizations in the FIP, including drainage, sewer, electrical and telecommunications, have already been approved under Records of Environmental Consideration and are underway (USAG-HI, 2018).</p>	2017–2028
PTA Real Property Master Plan (RPMP)	<p>USAG-HI has prepared a RPMP for PTA that outlines future installation improvements and the Garrison Commander's strategy to address antiterrorism and force protection, reduced manpower and resources, base realignments and closures, and maintaining troop readiness.</p> <p>RPMPs are comprised of several components. Future modernization projects within a 20-year horizon are found in the short and long-range components of the RPMP. All projects proposed in the RPMP will require separate NEPA compliance, in accordance with Army Regulations. A summary of projects in the short- and long-range components is provided:</p> <p>Short Range Projects (0–7 years):</p> <ul style="list-style-type: none"> • Cantonment FIP (Cantonment, U.S. Government-owned land) • Kawaihae Harbor Ramp and Dolphin Repairs (Kawaihae Harbor) • BAAF Pavement and Infrastructure (BAAF) • AHA 1-3 de-licensing (Cantonment) • Communications Improvements (various locations) • State Training Lands Retention (State-owned land) • Production Water Well (Cantonment, U.S. Government-owned land) • Equipment Canopy (Cantonment, U.S. Government-owned land) • Old Saddle Road Right of Way Acquisition (State- and U.S. Government- 	20-year horizon

	<p>owned land)</p> <p>Long-Range Projects (8–20 years):</p> <ul style="list-style-type: none"> • Dining Facility (Cantonment) • Ammunition Supply Point (State-owned land) • Pre-Positioned Storage Facilities (Cantonment) • BAAF (BAAF) • Range Road Improvements (State- and U.S. Government-owned land) • Training Complex (Cantonment) • Unmanned Aerial System and UAV Hangar (Cooper Air Strip, State-owned land) • Tactical Vehicle Area (Cantonment) • Logistics Readiness Center (Cantonment) • Troop Issue Subsistence Activity Warehouse (Cantonment) • Pavement Upgrades (Cantonment) • DPW Facility (Cantonment) • Tactical Equipment Maintenance Facility Building (Cantonment) • Hazardous Materials Storage Building Installation (Cantonment) • Recycling Facility (Cantonment) • Refuse Collection Area (Cantonment) • POL Storage Facility (Cantonment) • Vehicle Wash Facility (Cantonment) • Range Maintenance/Pacific Missile Range Facility Maintenance Facility (Cantonment) • Fire/Emergency Management Services/Provost Marshall Office facility (TBD) • East Land Acquisition (east of Cantonment, off-installation) <p>At the time of the Army Training Land Retention PTA Draft EIS, these specific projects from the RPMP are programmed for implementation over the next 10 years:</p> <ul style="list-style-type: none"> • Cantonment FIP (Cantonment) • Kawaihae Harbor Ramp and Dolphin Repairs (Kawaihae Harbor) • BAAF Pavement and Infrastructure (BAAF) • State Training Lands Retention (current EIS action) • POL Storage Facility (Cantonment) <p>These are the specific RPMP projects that will be considered in the cumulative analysis for this chapter (USACE-POH & USAG-HI, 2020b).</p>	
Range Complex Master Plan (RCMP)	<p>The RCMP, an annex to the RPMP, establishes the training land and live-fire range requirements for USAG-HI. The plan is updated annually and is a road map for development of the training land and ranges to meet current and future USAG-HI training missions. The following activities are programmed for PTA for the timeframe FY21–FY28:</p> <ul style="list-style-type: none"> • Range maintenance and improvements (State- and U.S. Government-owned land) • Target replacements (U.S. Government-owned land) • Facility lifecycle upgrades to comply with current Ars (State- and U.S. Government-owned land) 	2021–2028

	<ul style="list-style-type: none"> UXO clearance (U.S. Government-owned land) <p>Construction of a tactical UAV runway and aircraft shelter for two platoons on U.S. Government-owned land (DA, 2021).</p>	
Saddle Road Extension	<p>The Saddle Road extension would connect the western terminus of the DK1 Highway to the intersection of the Queen Kaʻahumanu Highway. A Draft EIS was published in April 2017 and a Final EIS was being prepared; however, the project went on hold in 2020. Completion of the Final EIS and project implementation is contingent upon funding (HDOT-HD & USDOT-FHWA, 2017; USDOT-FHWA, 2021).</p>	2025–2030
Mauna Kea Observatories [Thirty Meter Telescope (TMT)]	<p>The Mauna Kea Observatories TMT project consists of the construction, operation, and ultimate decommissioning of the TMT Observatory and ancillary facilities, with a 30-meter diameter optical/infrared telescope and the construction and operation of associated ancillary facilities. The TMT will address the outstanding constraints in astronomy and astrophysics research and was identified in the 2001 National Academy of the Sciences Decadal Survey for Astronomy as the most critical need for ground-based astronomy and recommendation to trace the evolution of galaxies and the formation of stars and planets.</p> <p>The TMT Observatory is planned to be sited on the northern plateau of Mauna Kea. During the TMT site testing campaign, Mauna Kea was found to have some of the best conditions that were ever encountered at any of the candidate sites. The site at Mauna Kea is considered to be optimal to build and operate the TMT, located above approximately 40 percent of Earth’s atmosphere with stable, dry, and cold climate characteristics that are important for capturing the sharpest images and producing the best science. In addition, the atmosphere over Mauna Kea offers exceptional conditions for astronomical measures with adaptive optics, which will be equipped on the TMT. The TMT has become controversial due to its planned location on the Mauna Kea summit, considered a sacred place in Native Hawaiian culture.</p> <p>The University of Hawaiʻi (UH) leases sites atop Mauna Kea to international observatories. The building and operation of the TMT Observatory on Mauna Kea requires a sublease from the UH, which leases this ceded land from DLNR. All lands managed by UH on Mauna Kea, including the site for the TMT, are located within a conservation district, which requires a CDUP approved by the Hawaiʻi BLNR. In 2010, following the approval of the Final Environmental Impact Statement, the UH - Hilo applied for a CDUP. The BLNR issued the CDUP to the UH - Hilo for the construction of the TMT on Mauna Kea with the authorization of a contested case. From 2011 to 2018, the CDUP was challenged in court and contested, involving multiple hearings and appeals. In 2018, the Hawaiʻi State Supreme Court affirmed BLNR’s decision to issue the CDUP and construction was scheduled to begin in 2019. From August to December 2019, protestors blocked access to the construction site and prevented construction from commencing. In 2020, the COVID-19 pandemic delayed the timeline and schedule, construction was planned to resume in 2021. Currently, stakeholders are reviewing alternatives and whether to initiate a formal federal environmental review process for the project (UH, 2010).</p>	On hold

Land Authorizations for Long-term Continuation of Astronomy on Maunakea	<p>The UH leases the 11,288-acre Mauna Kea Science Reserve under general lease S-4191, which expires on December 31, 2033, and the 19-acre Halepōhaku mid-level facility under general lease S-5529, which expires in 2041. In addition, UH holds non-exclusive Easement S-4697 for the Mauna Kea Access Road between the two leased properties, the easement area is roughly 71 acres, and the easement expires on December 31, 2033. The two leased properties plus a 400-yard-wide corridor on either side of the Mauna Kea Access Road, excluding areas within the adjacent Natural Area Reserve, make up the UH Management Area on Maunakea. UH is seeking to replace its two existing leases and easement with a new land authorization well before they expire.</p> <p>The EISPN discusses a “No Action Alternative,” an action alternative under which UH receives a new authorization for a much-reduced land area relative to its current encumbered area, and an action alternative under which it receives a new authorization for the same areas it currently leases or holds an easement over (UH, 2018).</p>	2033 forward
Nakahili Workforce Developers, LLC	<p>Nakahili is envisioned to be an agricultural residential community proposed by Work Force Developers, LLC on approximately 1,560 acres near the intersection of Māmalahoa Highway and Waikoloa Road. The property is just west of the Ke’āmuku Maneuver Area. The Nakahili community is planned to include farm dwellings on agricultural lots, multi-family rental apartments for workforce housing, parks, commercial and light industrial uses.</p> <p>The family agricultural district is designed to include approximately 700 one-acre agricultural lots surrounded by 150 larger agricultural lots ranging from two to five acres. The neighborhood commercial area is planned to include approximately 300 multi-family apartments. A majority of the agricultural dwellings and lots and village rental apartment are planned to be affordable rental units, specifically for workforce housing. Neighborhood commercial uses planned include a neighborhood grocery store, shops, and restaurants.</p> <p>Two parks are planned for Nakahili including 1) an approximately six-acre neighborhood park; and 2) an approximately 29-acre regional park. In addition, community infrastructure will be provided onsite including individual wastewater systems on each lot, water wells, water tanks, and a small wastewater treatment facility to service the neighborhood commercial area (WFD, 2019).</p>	2023
‘Āina Mauna Legacy Program (DHHL)	<p>Under the ‘Āina Mauna Legacy Program, DHHL manages approximately 56,200 acres of land located to the east of PTA in the Humu’ula-Pi’ihonua area on the northeast slopes of Mauna Kea. The ‘Āina Mauna Legacy Program is a comprehensive, long-range planning program and implementation strategy to guide DHHL in its restoration and management of the Humu’ula-Pi’ihonua lands, which represents the most important native forest area remaining in the DHHL trust. The mission of the program and its implementation is to restore and protect the lands of Humu’ula-Pi’ihonua, while also providing an ecological, cultural, and economical self-sustaining resource for DHHL, its beneficiaries, and the community.</p> <p>The initial phase of the program includes restoration and protection of the native forest areas, gorse eradication, and unmanaged-ungulate eradication. Following this phase, homestead, pasture uses, and commercial development</p>	Some programs underway

	<p>would begin. Overall, DHHL seeks to establish areas for conservation, rural homesteads, and mixed land uses including community center, campground, and commercial retail. The ultimate long-term goal for DHHL is an economically sustainable healthy native forest ecosystem, homesteading, pasture use for beneficiaries, gathering and traditional practices, educational and research, eco-tourism, and commercial activities. The time commitment for the program and restoration of the land is long-term, essentially for the next 100 years and beyond.</p> <p>Current efforts underway include the Native Forest Restoration, Koa Salvage and Reforestation Project, Demonstration Game Management Program, 'Āina Mauna Christmas Tree Demonstration Project, and Gorse Removal and Harvesting Pilot Program.</p> <p>The Native Forest Restoration has begun restoration of the Humu'ula-Pi'ihonua lands, including approximately 17,800 acres to be restored back to a healthy, diverse native koa and 'ōhi'a forest ecosystem, and approximately 10,000 acres to be restored to māmane forest, a critical Palila bird habitat. The Native Forest Restoration Project will provide a variety of benefits and opportunities through gathering, cultural practices, and opportunities to see and understand native forest ecosystems.</p> <p>The Koa Salvage and Reforestation Project promotes forest-based economic opportunities, with the focus on sustainable commercial forestry management practices on approximately 498 acres of Humu'ula lands.</p> <p>The Demonstration Game Management Program manages feral sheep on DHHL lands bordering the Saddle Road, restores native vegetation on nearby pu'u, and conducts research to help direct future decisions about managing feral sheep and other game animals on approximately 1,559 acres of Humu'ula lands. Only archery hunting is allowed as proximity to Saddle Road makes gun hunting unsafe.</p> <p>The Feral Cattle Removal Project is underway to remove feral cattle on approximately 14,315 acres of Humu'ula lands and approximately 5,690 acres of Pi'ihonua lands.</p> <p>The Hawai'i Forest Institute 'Āina Mauna Christmas Tree Demonstration Project involves importing and propagating seed and outplanting Douglas fir seedlings on DHHL lands in Humu'ula/Pi'ihonua.</p> <p>The Gorse Removal and Harvesting Pilot Program is ongoing, established to remove and harvest gorse from Mauna Kea and develop it as a marketable product to expand economic opportunities for Native Hawaiians.</p> <p>Future improvements planned include 100-200 rural homesteads, an administration base facility, outplanting centers and field worker accommodations, campgrounds, adaptive reuse of the Humu'ula Sheep Station, eco-tourism activities, and commercial facilities, including a visitor center, restaurant, general store, rest stop, lodging, and retail facilities (DHHL, 2012).</p>	
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4.4 Cumulative Impacts Analysis

This section provides a summary of past impacts of activities at PTA, potential impacts of the Proposed Action, and impacts of past, present, and reasonably foreseeable actions, and then assesses the combined effects in terms of cumulative impacts. A significant cumulative impact may be identified under the circumstances described in **Section 4.2.3**.

If there is no potential for cumulative impacts (i.e., there is either no impact from the Proposed Action or no impact from past, present, and reasonably foreseeable actions), then the reason for no cumulative impacts is explained and the resource is not analyzed further.

4.4.1 Land Use

Impacts of Past PTA Activities

Most of the land surrounding PTA is undeveloped and is used for forest reserves, game management, and cattle grazing. Hunting is the primary recreational use of State-owned land at PTA. Hunting is subject to training schedule compatibility and a permit from the PTA Commander. Restrictions to public access to hunting areas is the primary adverse impact associated with past PTA activities as identified in **Section 3.2**.

Summary of Potential Impacts of the Proposed Action

Action alternatives would have less than significant adverse impacts related to the continuation of access restrictions to recreation areas on State-owned land retained.

Impacts of Present and Reasonably Foreseeable Future Actions

The Cantonment FIP EA indicated that construction would require siting of temporary laydown spaces, internal road closures, and utility service interruptions that may result in some level of temporary disruption to onsite personnel, which is considered a less than significant impact. The PTA RPMP and RCMP indicated compatibility with existing and planned land uses surrounding PTA and result in less than significant, and potentially beneficial, impacts to land use. The TMT EIS indicated that the project would be in compliance with land use policies and controls and would have less than significant impacts on land use. The Saddle Road Extension EIS noted consistency with goals, objectives, and standards in local land use plans, including the County of Hawai'i General Plan, and the Kona and South Kohala Community Development Plans.

Cumulative Impacts

The action alternatives as well as reasonably foreseeable future actions are all consistent with existing and planned land uses. No significant impacts to land use, or specifically recreational access, were identified in any documentation and combined effects would not aggregate to a level of significance. Therefore, cumulative impacts on land use are considered less than significant.

4.4.2 Biological Resources

Impacts of Past PTA Activities

Section 3.3 indicates that State-owned land at PTA provides potential habitat for at least 20 federally listed plant species, two federally listed invertebrates, three federally listed bird species, one protected mammal species, and one USFWS-designated critical habitat. The military is required to follow all minimization and mitigation measures outlined in the Biological Opinions, which is the USFWS response to a Section 7 consultation. Biological resources management programs at PTA have been beneficial; however, increased risk of wildfires, caused by training activity, have destroyed individual plants and have altered habitat, preventing recovery of some native species.

Summary of Potential Impacts of the Proposed Action

Impacts of the action alternatives would be mixed. Impacts under Alternative 1 would be similar to the impacts of past PTA activities. Under Alternatives 2 and 3, mixed impacts would stem from continuation of adverse impacts due to ongoing activities on State-owned land retained, and potential beneficial impacts due to reduced Army activities on State-owned land not retained as well as lease compliance and reforestation activities in the State-owned land not retained. Overall, impacts of the action alternatives would be less than significant.

Impacts of Present and Reasonably Foreseeable Future Actions

The Cantonment FIP EA indicated that construction would have no impact on terrestrial wildlife or critical habitat, although there would be short-term, less than significant, impacts to the Hawaiian goose, Hawaiian hoary bat, and seabirds; also, there would be no effect for Blackburn's sphinx moth and yellow-faced bees. The Saddle Road Extension EIS indicated that there would be effects on habitat of non-native vegetation that supports non-native animals, with no critical animal habitat affected; impacts would be less than significant. The TMT EIS indicated that the projects would displace 0.2 acres of weiku bug habitat and 6 acres of alpine stone desert lava flow habitat; these impacts were determined to be less than significant after mitigations; long-term continuation of astronomy, would likely have similar types of effects. The DHHL 'Āina Mauna EA indicated that there would be anticipated benefits to forest resources associated with the project, stemming from feral animal eradication, pig management, and gorse eradication.

Cumulative Impacts

Cumulative impacts to biological resources would be primarily associated with actions at PTA. Past, present, and reasonably foreseeable future actions would have less than significant impacts, as would the action alternatives. There would not be additive impacts among the Proposed Action and past, present, and reasonably foreseeable actions, as no new training that would lead to additional risk of wildfire is proposed, and biological resources management programs on State-owned land retained would remain in place. Therefore, cumulative impacts would be less than significant.

4.4.3 Cultural Resources

Impacts of Past PTA Activities

Previously assessed adverse impacts from past PTA activities include damage to archaeological sites from subsurface excavations related to troop training (e.g., field fortifications, emplacement of obstacles), off-road mounted maneuvers with tactical vehicles and other routine vehicular traffic, increased access by ground troops into the ranges, possible damage from live fire where resources are in the line of fire, and cleanup of UXO within or adjacent to resources. Additionally, there have been adverse impacts related to limitations on access for traditional and customary practices.

Summary of Potential Impacts of the Proposed Action

The impacts of ongoing activities at PTA described previously would continue to varying degrees under the action alternatives and are described in **Section 3.4** as significant but mitigable through consultation with Native Hawaiians, and/or other ethnic groups as appropriate, to provide access to promote and protect cultural beliefs, practices, and resources.

Impacts of Present and Reasonably Foreseeable Future Actions

The Cantonment FIP EA indicated that no historic properties would be affected by the Cantonment FIP. The RPMP EA indicated that there would be no impact on archaeological resources. The TMT EIS indicated that while some individuals would consider impacts of the project, and long-term continuation of astronomy, a significant impact on cultural practices, the project would not exceed HRS Chapter 343 significance criteria, and impacts are considered, overall, less than significant. The TMT EIS also indicated the action would not result in the loss or complete destruction of archaeological or historic resources within the summit region and therefore impacts are considered less than significant. The DHHL 'Āina Mauna EA indicated that the project would provide benefits for the exercise of cultural traditions and opportunities for a variety of koa wood production.

Cumulative Impacts

Considering past, present, and reasonably foreseeable actions over the years, impacts to Native Hawaiian cultural resources have been significant with respect to destruction of historical resources and reduced access to cultural sites. Despite the action alternatives having a less than significant impact (after mitigation) as well as ongoing management and minimization measures, the cumulative impact on cultural resources has been, and will continue to be, significant.

4.4.4 Hazardous and Toxic Materials and Wastes

Impacts of Past PTA Activities

Section 3.5 identifies 12 sites that have potential to have hazardous substances or petroleum products on State-owned land at PTA. The contaminants detected in site soils have a low likelihood to become mobilized off-site due to the low rainfall in the area and lack of streams or a developed drainage system across the property. The surface contamination is also unlikely to infiltrate to the underlying localized perched aquifer and more regional high-level aquifer present at PTA due to the low rainfall in the area and the considerable vertical depth to these groundwater systems.

Summary of Potential Impacts of the Proposed Action

The action alternatives would, to varying degrees, lead to a continuation of past adverse impacts. **Section 3.5** indicates that these impacts would tend to be negligible and less than significant due to minimization efforts that would continue to be in practice.

Impacts of Present and Reasonably Foreseeable Future Actions

The Cantonment FIP EA indicated that there would be the potential for release of petroleum products or other substances during construction but that the impact would be less than significant. The RPMP EA indicated that the action would have beneficial impacts due to modernization of waste collection and storage processes. The TMT EIS indicated that the project would generate additional waste, but the impact is considered less than significant as the project would comply with all applicable requirements and regulations.

Cumulative Impacts

In general, hazardous and toxic materials and wastes are subject to strict handling and monitoring procedures, which have improved over time. Given these procedures and the unlikelihood for infiltration, broader water systems would not be substantially affected; therefore, additive effects are unlikely to occur and would be minimal in an instance that they do. Because additive effects would be limited, cumulative impacts would be less than significant.

4.4.5 Air Quality and Greenhouse Gases

Impacts of Past PTA Activities

As indicated in **Section 3.6**, air emission sources associated with training and other activities on State-owned land at PTA include exhaust from military vehicles and aircraft flight operations, dust from vehicle use on gravel and dirt roads and near-ground helicopter operations, military munitions use, and an internal combustion engine for an emergency generator at Building 601. This engine has a permitted potential to operate for up to 500 hours per year but operates for approximately 18 hours per year. Actual emissions from these sources are far below maximum allowable levels. These emissions constitute minor adverse impacts that are classified as less than significant.

Summary of Potential Impacts of the Proposed Action

The action alternatives would generally present similar impacts as those described above, and none would lead to an increase in long-term emissions. Alternatives 2 and 3 would result in short-term, minor air emissions due to lease compliance actions and hazardous substance investigation, removal, and cleanup actions. Less than significant impacts would tend to continue over the long term.

Impacts of Present and Reasonably Foreseeable Future Actions

The Cantonment FIP EA indicated that there would be a less than significant impact of air quality during construction from use of construction equipment. The RPMP EA indicated that the action would have less than significant impacts as it would not contribute to a violation of air quality regulations or substantially increase GHG emissions. The TMT EIS indicated that some dust would be produced during construction of

the project but that this would not substantially affect the environment and the impact is considered less than significant. The Saddle Road Extension EIS indicated that the build alternatives for the action would lead to better air quality than no build alternatives.

Cumulative Impacts

Because there is limited opportunity for locally generated air pollutants to accumulate, the Proposed Action combined with present and reasonably foreseeable future actions would not have an additive effect on regional air quality. Because additive effects would be limited, cumulative effects would be less than significant.

4.4.6 Noise

Impacts of Past PTA Activities

Existing sources of noise on and adjacent to PTA include military vehicles and aircraft, road traffic, and military munitions use during training exercises. **Section 3.7** indicates that noises that extend beyond the installation boundaries overlap with uninhabited forest reserve areas; there are no noise-sensitive lands impacted. **Section 3.7** also indicates that noise generated at PTA may cause wildlife startle, alarm, and alert behaviors, potentially causing rapid movement or flight in avoidance behavior. This could increase the risk of wildlife being struck by live-fire, abandoning nest or young, receiving auditory damage, or increasing energy expenditure and food demands. It is also possible that habituation to noise or distraction caused by noise could cause wildlife to be less aware of surroundings and more prone to predation. DoD has been developing programs to evaluate noise on installations since the 1970s, including the ICUZ and the 2010 SONMP to address major noise sources, including airfield noise.

Summary of Potential Impacts of the Proposed Action

Under the action alternatives, the Army would continue operations in accordance with federal and local noise ordinances and guidance, including the SONMP and ICUZ. Alternatives 2 and 3 would result in new short-term, minor, adverse noise impacts due to lease compliance actions and hazardous substance investigation, removal, and cleanup actions. Long-term noise levels at PTA would tend to decrease under Alternatives 2 and 3.

Impacts of Present and Reasonably Foreseeable Future Actions

The Cantonment FIP EA indicated that there would be limited noise during construction that would have a less than significant impact on personnel and wildlife; impacts such as this could also be expected with other PTA construction projects associated with the RCMP and the RPMP. The TMT EIS indicated that noise produced during construction of the project would not substantially degrade environmental quality in noise-sensitive areas and impacts are considered less than significant.

Cumulative Impacts

Continuing noise impacts from the action alternatives would tend to only have additive effects in combination with present and reasonably foreseeable future actions at PTA to include the Cantonment FIP and planned construction projects associated with the RCMP and RPMP, actions which would also occur in accordance with the ICUZ. These planned construction projects would be implemented over a

long period of time and are expected to overlap only occasionally. Because noise from the lease compliance actions; hazardous substance investigation, removal, and cleanup actions; and continued training associated with the action alternatives would produce less than significant impacts and individual construction projects at PTA would also produce less than significant effects, the overall cumulative effects related to noise would be less than significant.

4.4.7 Geology, Topography and Soils

Impacts of Past PTA Activities

Section 3.8 indicates that adverse impacts of activities at PTA have been minor and primarily relate to runoff, erosion, sedimentation, and soil disturbances.

Summary of Potential Impacts of the Proposed Action

Under the action alternatives, the minor impacts related to soil disturbance would continue to varying degrees.

Impacts of Present and Reasonably Foreseeable Future Actions

The Cantonment FIP EA indicated that there would be less than significant impacts on natural hazards, geology, and soils associated with construction and operations. The RPMP EA indicated that the action would not result in alteration to soils or geological features that could cause soil erosion or loss or increase natural hazard risks. Impacts identified in the TMT EIS are expected to be minimal and, therefore, considered less than significant.

Cumulative Impacts

Impacts for the action alternatives would be minimal, as would impacts related to present and reasonably foreseeable future actions. Potential for additive effects would occur only at PTA itself, and numerous programs have been established to limit impacts associated with federal actions (**Section 3.8**). Because impacts from combined actions would tend to be limited, cumulative impacts are considered less than significant.

4.4.8 Water Resources

Impacts of Past PTA Activities

Groundwater has never been extracted from the State-owned land of PTA, and potable water supplies required for operations at PTA are trucked in. Groundwater beneath PTA is likely high quality due to its distance inland from the coast. **Section 3.9** indicates that activities at PTA have led to negligible impacts on the watershed, underlying aquifer systems, and stormwater and flooding impacts within the State-owned land. There are no perennial streams, rivers, lakes, or other surface water bodies within the State-owned land due to the low annual rainfall in the area and the highly porous nature of the relatively young volcanic rocks that cover most of the property. In addition, there is little or no water quality information available for the water in Lake Waiau or the spring water on the slopes of Mauna Kea above PTA.

Summary of Potential Impacts of the Proposed Action

The action alternatives would not generate any new impacts, but the continued negligible adverse impacts to the watershed, underlying aquifer systems and stormwater and flooding described above would continue over the long term.

Impacts of Present and Reasonably Foreseeable Future Actions

The Cantonment FIP EA indicated that any potential adverse impacts to water resources would be mitigated to a level of negligible impact. The TMT EIS indicated that the project would increase the amount of impervious surfaces, use of potable water, and wastewater discharge; however, design features and compliance with requirements and regulations lead to impacts being less than significant. The DHHL 'Āina Mauna EA indicated that, for potable water, the project would likely implement a catchment or groundwater well, storage, and distribution system for uses on the property.

Cumulative Impacts

The action alternatives and the present and reasonably foreseeable future actions would each follow requirements and regulations related to use and discharge of water and would all generate less than significant impacts. Additive effects would tend to relate to use of water from the aquifer and the long-term availability of water on the island of Hawai'i. None of the projects, however, are particularly water intensive (as, for instance, a new agricultural operation may be); therefore, cumulative impacts are considered less than significant.

4.4.9 Socioeconomics

Impacts of Past PTA Activities

As noted in **Section 3.10**, military activity has been an important contributor to the State's economy for decades supporting 1,962 jobs with approximately \$92 million in associated labor income in the County of Hawai'i as of 2016. Army expenditures in the County of Hawai'i also include local purchases of potable water, equipment, and other services. Additionally, various DoD, State, and local agencies and groups contribute to the local economy by traveling to PTA for training and spending in the County of Hawai'i. Overall, socioeconomic impacts were determined to be less than significant.

Summary of Potential Impacts of the Proposed Action

Compared to Alternative 1, Alternatives 2 and 3 would include slightly reduced levels of ongoing activities at PTA, which would lead to minimal reductions in employment and personal income, constituting a less than significant, adverse, impact to the economy.

Impacts of Present and Reasonably Foreseeable Future Actions

Documents indicated that all of the reasonably foreseeable future actions would tend to generate beneficial economic impacts through increases in employment and income, and the Nakahili Workforce Developers and DHHL 'Āina Mauna projects also would have beneficial impacts on housing supply. The DHHL 'Āina Mauna project would provide increased economic and subsistence opportunity for homestead beneficiaries.

Cumulative Impacts

Alternatives 2 and 3 would have minimal adverse economic effects associated with reduced military spending in the County of Hawai'i. Combined with the beneficial economic effects of present and reasonably foreseeable future actions, the cumulative impact would likely remain moderate and beneficial.

4.4.10 Environmental Justice

Impacts of Past PTA Activities

As noted in **Section 3.11**, there have been adverse impacts related to reduced access to recreation and customary practices, as well as traffic impacts that tend to disproportionately affect low-income, minority, or Native Hawaiian populations.

Summary of Potential Impacts of the Proposed Action

The action alternatives would represent a continuation of the less than significant adverse impacts described previously. These impacts were determined to be less than significant in the context of those resource areas and in the context of environmental justice.

Impacts of Present and Reasonably Foreseeable Future Actions

Neither the Cantonment FIP EA nor the TMT EIS indicated that there would be an impact to environmental justice. The PTA RPMP EA indicated that there would be no impacts on low-income or minority residents and that there would be no increased environmental health and safety risks that would disproportionately affect children. The DHHL 'Āina Mauna EA indicated that the project would tend to be beneficial by providing homesteading and increased economic opportunity for homesteading beneficiaries.

Cumulative Impacts

Neither the action alternatives nor the present and reasonably foreseeable future actions would lead to significant impacts to environmental justice and the DHHL 'Āina Mauna would tend to be beneficial. No specific additive effects were identified; therefore, cumulative impacts to environmental justice would be less than significant.

4.4.11 Transportation and Traffic

Impacts of Past PTA Activities

The Army uses several regional roadways to transport military materiel and soldiers, and civilian personnel commutes to and from PTA. Soldiers permanently stationed at PTA and civilian personnel employed at the Cantonment commute daily from Hilo, Kailua-Kona, Waikōloa, Waimea, and other island of Hawai'i residential communities via the DKI Highway and other public roadways. Army activities do not disrupt or displace harbor or airport operations. As indicated in **Section 3.12**, adverse impacts to regional transportation are considered minor and less than significant.

Summary of Potential Impacts of the Proposed Action

The action alternatives would have similar impacts to those described above, with Alternatives 2 and 3 having lower levels of impact than Alternative 1 due to reduced levels of training.

Impacts of Present and Reasonably Foreseeable Future Actions

The Cantonment FIP EA indicated that traffic would be generated from the east (Kailua-Kona) and west (Hilo) sides of the island and that impacts would be less than significant. The TMT EIS indicated that the project would not lead to a decrease in LOS and no additional roadways would be required; therefore, impacts would be less than significant. According to the 'Āina Mauna Legacy Program EA, some new roadways would be required for the DHHL 'Āina Mauna project, these would be managed by DHHL. The Saddle Road Extension EIS indicated that the action would improve traffic in the long-term.

Cumulative Impacts

The action alternatives would continue to have minor adverse impacts on roadway traffic and would continue to not disrupt harbor or airport activities. These impacts combined with the less than significant impacts associated with present and reasonably foreseeable future actions would not substantially add to roadway traffic or cause harbor or airport disruption. The combined effects would be less than significant.

4.4.12 Airspace

Impacts of Past PTA Activities

Due to activities at PTA, civilian air traffic must avoid restricted airspace, which reduces the optimization of civilian routes, causes detours, and adds time and cost to civilian flights. This impact is considered adverse but less than significant.

Summary of Potential Impacts of the Proposed Action

Similar to the impacts described above, adverse impacts to civilian air traffic would continue under Alternatives 1 and 2 but would be somewhat reduced under Alternative 3. Impacts under each of these action alternatives are considered less than significant.

Impacts of Present and Reasonably Foreseeable Future Actions

Documentation indicated that none of the listed projects would have impacts on airspace.

Cumulative Impacts

Because none of the present and reasonably foreseeable future actions would be additive to impacts of the action alternatives, cumulative impacts would be similar to those described for the action alternatives. There would be a continuation of slight reductions in civilian route optimization, detours, and slightly increased time and cost for civilian flights. The impacts of the action alternatives are considered less than significant; therefore, cumulative impacts would be less than significant.

4.4.13 Electromagnetic Spectrum

Impacts of Past PTA Activities

Section 3.14 indicates that EMS equipment at PTA is below ERLs established in IEEE C95.1-2345 and is inventoried on an annual basis (USAG-HI, 2021d). Department of the Army Pamphlet 385-24 notes that current scientific evidence indicates that no adverse health effects will occur with exposures that are within the ERLs, even under repeated or long-term exposure conditions. These impacts are considered less than significant.

Summary of Potential Impacts of the Proposed Action

The less than significant adverse impacts described above would continue under the action alternatives, although they would be reduced under Alternative 3. Overall, impacts of the action alternatives, related to EMS emissions, would be less than significant.

Impacts of Present and Reasonably Foreseeable Future Actions

Documentation indicated that none of the listed projects would have impacts on EMS; however, some would likely contribute to the overall use of EMS equipment.

Cumulative Impacts

Continuing impacts from the use of EMS equipment would be less than significant for the action alternatives and likely less than significant for reasonably foreseeable future actions. Neither the action alternatives nor reasonably foreseeable future actions are centered on equipment or activities that are EMS intense; therefore, cumulative impacts are considered less than significant.

4.4.14 Utilities

Impacts of Past PTA Activities

Public utilities that are utilized by PTA include potable water, solid waste, wastewater, electrical power, and telecommunications services. **Section 3.15** indicates that PTA use of those utilities does not place an unreasonable demand on public utility capacity, and impacts of activities at PTA have been less than significant.

Summary of Potential Impacts of the Proposed Action

The less than significant adverse impacts described above would continue under the action alternatives, although they would be reduced under Alternative 3.

Impacts of Present and Reasonably Foreseeable Future Actions

The Cantonment FIP EA indicated that there would be beneficial impacts to Army facilities and infrastructure. The TMT EIS indicated that the project would not substantially affect HELCO capacity nor power capacity for nearby telescopes; therefore, impacts are considered less than significant. The Nakahili

Workforce Developers EA indicated that utility usage by the project would not have substantial adverse effects.

Cumulative Impacts

Use of public utilities under the action alternatives and present and reasonably foreseeable future actions would have additive effects on public utility capacity. These additive effects, however, would not likely lead to a condition where public utility providers lack capacity to provide services, and under some circumstances (such as electricity provision), increases in utility usage can be beneficial for utility providers. Overall, cumulative impacts would be less than significant.

4.4.15 Human Health and Safety

Impacts of Past PTA Activities

Section 3.16 indicates that adverse impacts from ongoing activities would continue, as would beneficial impacts associated with the Army providing emergency services beyond the installation boundary.

Summary of Potential Impacts of the Proposed Action

Impacts to human health and safety under Alternatives 2 and 3 would be adverse because the 1,250-foot ESQD arc associated with the hazardous cargo pad and APZs I and II would extend onto State-owned land, access to which could not be controlled by the Army. This impact is considered less than significant due to the low likelihood of an aircraft mishap or civilians occupying areas under the ESQD arc (an area difficult to access due to terrain), and the very low likelihood of both occurring simultaneously.

Impacts of Present and Reasonably Foreseeable Future Actions

None of the listed projects indicated that they would have impacts on human health and safety.

Cumulative Impacts

The action alternatives would have a less than significant impact on human health and safety and present and reasonably foreseeable future actions would also have minimal impacts to human health and safety. Therefore, cumulative impacts are considered less than significant.

4.5 Summary

Table 4-2 presents a summary of the cumulative effects analysis for each resource area presented in the EIS. The analysis reviewed past impacts of activities at PTA, impacts of the action alternatives, impacts of present and reasonably foreseeable future actions, and provided a cumulative impact determination for each resource. Additional details on past activities at PTA, as well as impacts of the action alternatives, is presented in **Chapter 3**.

Table 4-2 Cumulative Impacts Summary				
	Past PTA Activities	Action Alternatives	Present and Reasonably Foreseeable Future Actions	Cumulative Impacts
Land Use	Restrictions to public access to recreation areas.	Restrictions to public access to recreation areas.	No additive impacts.	Less than significant
Biological Resources	Increased risk of wildfires, caused by Army activities over time, have destroyed individual plants and have altered habitat, preventing recovery of some native species.	Continued adverse impacts from ongoing activities under each action alternative. Beneficial impacts under Alternatives 2 and 3 related to reductions in Army activities coupled with lease compliance (e.g., reforestation).	Less than significant impacts to critical habitat. Less than significant impacts to threatened and endangered species.	Less than significant
Cultural Resources	Damage to sites and limited access for traditional and customary practices on State-owned land. The presence of training personnel has also affected resources through accidental damage or vandalism.	Continuation of damage and access restrictions to areas used for customary practices. Mitigable through consultation with Native Hawaiians, and/or other ethnic groups as appropriate, provide, or continue to provide, access to promote and protect cultural beliefs, practices, and resources.	No loss of archaeological or historic resources associated with the identified projects. Potential increase in opportunities for the exercise of cultural traditions with the DHHL 'Āina Mauna project. Potential damage to cultural resources.	Significant

Hazardous and Toxic Materials and Wastes	Soil contamination within the State-owned land has occurred via a variety of release mechanisms. The contaminants have a low likelihood to become mobilized off-site and are also unlikely to infiltrate to the underlying aquifers.	The action alternatives would, to varying degrees, lead to a continuation of past adverse impacts.	The Cantonment FIP EA indicated that there would be the potential for release of petroleum products or other substances during construction. Additive effects unlikely due to strict handling procedures.	Less than significant
Air Quality and Greenhouse Gases	Air emission sources associated with training and other activities on State-owned land at PTA from multiple sources, classified as less than significant.	Continued emissions with any of the action alternatives, no increased impacts under any of the action alternatives. Less than significant impacts.	Some localized additive effects from PTA-related actions. Also, construction related dust from reasonably foreseeable future actions. Less than significant impacts to regional air quality.	Less than significant
Noise	Noise sources at PTA include military vehicles and aircraft, road traffic, and military munitions use during training exercises. Noise does not extend onto populated areas.	Continued noise impacts, but no increases with any of the action alternatives. Less than significant impacts.	Primarily construction noise with less than significant impacts on populations and wildlife.	Less than significant
Geology, Topography and Soils	Minor impacts primarily related to runoff, erosion, sedimentation, and soil disturbances.	Continued impacts related to soils, but no increased impacts under any of the action alternatives. Less than significant impacts.	Some additive effects at PTA. Overall, minimal impacts considered less than significant.	Less than significant
Water Resources	Activities at PTA have led to negligible impacts on the watershed, underlying aquifer systems, and stormwater and flooding impacts within the State-owned land.	Continued negligible adverse impacts to the watershed, underlying aquifer systems and stormwater and flooding. No increased impacts with any of the action alternatives. Less than significant impacts.	Management and mitigation measures would lead to minimal, less than significant, impacts.	Less than significant
Socioeconomics	Army expenditures have been beneficial to the County of Hawai'i economy.	Continued beneficial impacts that would be reduced under Alternatives 2 and 3.	Generally beneficial impacts related to construction and operations of reasonably foreseeable future actions.	Less than significant

Environmental Justice	Disproportionate adverse impacts related to reduced access to recreation and customary practices, as well as adverse impacts to regional transportation. These impacts were determined to be less than significant in the context of environmental justice.	A continuation of, less than significant, disproportionate adverse impacts.	Documents did not indicate impacts to environmental justice. The DHHL 'Āina Mauna EA indicated that the project would tend to be beneficial by providing homesteading and increased economic opportunity for homesteading beneficiaries.	Less than significant
Traffic and Transportation	Less than significant impacts to regional transportation related to additional traffic due to transport of military materiel and soldiers, as well as employee commutes.	The action alternatives would have similar impacts to those described for past activities, with Alternatives 2 and 3 having lower levels of impact than Alternative 1.	Minimal additional impacts, with no anticipated decrease in LOS.	Less than significant
Airspace	Reduces the optimization of civilian routes, causes detours, and adds time and cost to civilian flights. This impact is considered adverse but less than significant.	Less than significant impacts to civilian air traffic would continue under Alternatives 1 and 2 but would be somewhat reduced under Alternative 3.	No additive impacts.	Less than significant
Electromagnetic Spectrum	Use of EMS emitting equipment with less than significant impacts.	Less than significant adverse impacts would continue under the action alternatives, though would be reduced under Alternative 3.	No additive impacts.	Less than significant
Utilities	Additional demand on public utilities that do not strain capacity. Less than significant impacts overall.	Less than significant impacts would continue under the action alternatives, though would be reduced under Alternative 3.	No substantial additive impacts.	Less than significant
Human Health and Safety	Less than significant impact on health and safety from past activities at PTA.	Potential adverse impacts under Alternatives 2 and 3 due to an ESQD arc and APZs 1 and 2 that would extend over State-owned land not retained.	No additive impacts.	Less than significant

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Chapter 5

OTHER REQUIRED CONSIDERATIONS

5.1 Introduction

This section supports the impact analysis summarized in **Section 3.17**. NEPA and HEPA require that incomplete information be disclosed (**Section 5.2**), and that the analysis of environmental consequences describe the Proposed Action's relationship to federal, state, and local land use plans, policies, and controls. A list of permits and approvals from federal, state, and county agencies necessary for implementation of the Proposed Action is required in this EIS under 40 CFR Part 1502.25(b) and HAR Section 11-200.1-24(k). **Table 1-1** lists the anticipated permits and approvals for the Proposed Action.

NEPA and HEPA require the action's relationship to environmental reviews, laws, and EOs be integrated into this EIS to the extent practicable. Compliance with most plans and policies may be undertaken separately from the EIS process, but discussion is included here to provide decision makers with a concise and comprehensive view of the primary environmental issues (**Section 5.3**). NEPA and HEPA also require that significant adverse impacts that cannot be avoided are identified (**Section 5.4**). Other required disclosures include the irreversible and irretrievable commitment of resources associated with the Proposed Action, which is discussed in **Section 5.5**, and the trade-off between short-term use of the environment and the maintenance and enhancement of long-term productivity, which is discussed in **Section 5.6**.

5.2 Incomplete Information

5.2.1 Land Retention Estate and Method

The Army may proceed with the Proposed Action after completion of the EIS and ROD and would consider, at that time, the appropriate land retention estate(s) and method(s) based on the selected alternative. One or more estates and methods may be considered and are described in **Section 2.3**. Additionally, negotiation is required with the State to determine what estate(s) and method(s) would be considered. This negotiation would follow issuance of the Army ROD.

While the estate(s) and method(s) are not known at this time, the impact analysis conducted in this EIS is based on land retention via title (ownership via fee simple title), unless another estate would be more impactful to the resource analyzed. Title is assumed to be the least restrictive of the land retention estates (land would be owned by the Army) because conditions would not be imposed as could be likely under other land retention estates (i.e., lease, easement, license) (**Section 3.1.3**).

5.2.2 Lease Compliance Actions

The lease stipulates conditions associated with lease expiration, including some to be negotiated, that would be applicable to State-owned land not retained. The parameters for lease compliance actions are subject to the terms of the lease and negotiation with the State, which cannot be done until the EIS is completed and an alternative has been selected; therefore, the parameters would be defined and determined after completion of this EIS. It is assumed lease compliance actions would occur under various DoD programs (**Section 2.2.2**). In general, it is assumed the lease compliance actions would result in long-term, beneficial impacts on the environment because they involve returning land to a natural state.

5.3 Consistency with other Federal, State, and County Land Use Plans, Policies, and Controls

A list of all permits and approvals from federal, state, and county agencies necessary for implementation of the Proposed Action is required in this EIS under 40 CFR Part 1502.25(b) and HAR Section 11-200.1-24(k). **Table 1-1** in **Chapter 1** lists the anticipated reviews related to this real estate action. No County of Hawai'i reviews or approvals are anticipated.

In accordance with 40 CFR Part 1502.16(c), analysis of environmental consequences should include discussion of possible conflicts between the Proposed Action and the objectives of federal, regional, state, and local land use plans, policies, and controls (laws, regulations, and permits). Similarly, HAR Section 11-200.1-24(j) requires discussion of how the Proposed Action may conform or conflict with objectives and specific terms of approved or proposed land use and resource plans, policies, and controls, if any, for the affected area. This section identifies the principal land use plans, policies, and controls that are applicable to the Proposed Action, and briefly describes how compliance would be accomplished. Consistency with regulations that govern more than one resource area are also discussed here rather than in the regulatory framework sections of **Chapter 3**.

5.3.1 Federal

Armed Forces, 10 U.S.C. – Relevant Sections Related to Real Property

Miscellaneous administrative provisions relating to real property, 10 U.S.C. Section 2661

The Secretary concerned is authorized to lease buildings and facilities for the purpose of conducting field exercises and maneuvers under 10 U.S.C. Section 2661. The Secretary may also maintain defense access roads that are certified as important to national defense under the provisions of 23 U.S.C. Section 210.

Land acquisition authorities, 10 U.S.C. Section 2663

The Secretary is authorized to acquire any interest in land that is needed for national defense or to maintain the operational integrity of a military installation under 10 U.S.C. Section 2663. The Secretary will pursue all available options for the acquisition or use of land, such as the purchase of an easement, before commencing any legal proceeding to acquire land by non-negotiated acquisition strategies. The Secretary is required to submit a report to the congressional defense committees, including certification that negotiations with landowner(s) occurred and a rationale as to why alternative acquisition strategies are inadequate.

Military construction, 10 U.S.C. Section 2802

Land acquisitions, military construction, and defense access road projects are authorized by 10 U.S.C. Section 2802. Proposed projects are submitted to the President, with recommendations, and to Congress, with a budget.

Sikes Act, as Amended, 16 U.S.C. Section 670a-670o

The Sikes Act relates to mutual agreements with federal and state agencies in regard to conservation, protection, and management of fish and wildlife resources, and establishes that lands and waters used by DoD will be made available to the public for educational or recreational use when such access is compatible with military mission, ecosystem sustainability, and other security and safety considerations. **Section 3.2** provides further description.

Discussion: Ongoing activities on State-owned land retained would continue to be consistent with the Sikes Act. The Proposed Action would also be consistent because it does not include changes to resource management and public use programs.

Coastal Zone Management Act of 1972, 16 U.S.C. Section 1451, as amended

In 1972, the U.S. Congress enacted the CZMA to establish a federal-state partnership to provide comprehensive management of coastal resources focused on protecting natural resources, managing development in high hazard areas, giving development priority to coastal dependent uses, providing public access for recreation, and coordinating state and federal actions. CZMA aids states in effectively exercising their responsibilities in coastal zones through development and implementation of management programs. Hawai'i CZM Law (HRS Chapter 205A) was passed in 1977 and received federal approval the following year.

The State CZM program guides the use, protection, and development of land and ocean resources within the coastal zone. The CZM area is defined in HRS Chapter 205A to include all lands of the State. Federal agencies are required to conduct planning, management, development, and regulatory activities consistent with the State coastal management program. As a federal agency, the Army is required to determine whether its proposed activities would affect the coastal zone by evaluating the Proposed Action relative to the objectives and policies of the Hawai'i CZM Program. **Section 5.3.2** provides further discussion.

Discussion: The Proposed Action is consistent with the goals, policies, and objectives of Hawai'i's CZM program, and would have no effects on coastal uses or resources as it does not involve new development, alteration of existing land or facilities, changes in land use, or changes in ongoing activities. The Army has initiated the CZM consistency requirement through coordination with the State. The determination will provide the Proposed Action's consistency from the State.

The Endangered Species Act of 1973, 16 U.S.C. Chapter 1531 et seq.

The ESA was established to protect and recover imperiled species and the ecosystems needed to survive. The ESA requires federal agencies, in consultation with USFWS, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the

destruction or adverse modification of designated critical habitat of such species. **Section 3.3** provides further information on ESA.

The Army is moving toward a programmatic approach to ESA consultation for PTA. In this approach, specific species, activities, avoidance and minimization measures, and conservation measures would be incorporated into a new programmatic BO. The existing BOs now applicable to activities at PTA could then be superseded by the programmatic BO, or subsequent amendments required thereafter, pursuant to 50 CFR Part 402.16, resulting from a major land use change.

Discussion: Ongoing activities on State-owned land retained have been consistent with the ESA. The Proposed Action would also be consistent with the ESA. BOs issued by USFWS identify specific conservation programs and conservation measures for activities on PTA that are carried out by USAG-HI NRO staff. Additionally, the INRMP guides biological conservation and restoration of biological resources including species with federal and/or State status. The analyses of potential changes to conservation efforts for State-owned land not retained under Alternatives 2 and 3 are provided in **Section 3.3**.

No Section 7 consultation for the Proposed Action is anticipated at this time, as the action is a land retention (real estate) action that does not propose new training or activities. All ongoing PTA training and activities are covered under previous NEPA and associated consultations including the 2003, 2008 and 2013 BOs.

Clean Water Act of 1972, 33 U.S.C. Chapter 1251 to 1387 et seq.

The CWA establishes federal limits, through the NPDES program, on the amounts of specific pollutants that can be discharged into surface waters to restore and maintain the chemical, physical, and biological integrity of the water. The NPDES is a permit program that regulates the discharge point (i.e., end of pipe) and non-point (i.e., stormwater) sources to waters of the United States. The State DOH administers the NPDES program in Hawai'i under HAR Chapter 11-55.

Section 404 of the CWA authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredge or fill into wetlands and other waters of the United States. Any discharge of dredge or fill into waters of the United States requires a permit from USACE. The Proposed Action does not include the discharge of dredge or fill, and there are no wetlands or waters of the United States within the State-owned land; therefore, Section 404 does not apply to the Proposed Action.

Section 10 of the Rivers and Harbors Act provides for USACE permit requirements for in-water construction. The Proposed Action does not include in-water construction, and there are no waters of the United States within the State-owned land; therefore, Section 404 does not apply to the Proposed Action.

Clean Air Act, 42 U.S.C. Chapter 85

Under the Clean Air Act, USEPA has established NAAQS for several different air pollutants that are considered harmful to public health and the environment. **Section 3.6** provides further description of the Clean Air Act and PTA's attainment of air quality standards.

Discussion: The Proposed Action, an administrative action, would be consistent with the Clean Air Act, as it would generate no pollutants. Ongoing activities on State-owned land retained would continue to be consistent with the Clean Air Act and would comply with all federal, state, and local air regulations.

Emergency Planning and Community Right-to-Know Act, 42 U.S.C. Section 11001 et seq.

The Emergency Planning and Community Right-to-Know Act of 1986 was enacted in response to concerns regarding the potential environmental and safety hazards that can result from the production, storage, use, and release of hazardous and toxic chemicals into the environment. Congress requires federal, state and local governments, tribes, and industries to report on the production, storage, use, and release of hazardous and toxic chemicals (if amounts exceed specified threshold quantities) so that communities and the environment are protected from potential chemical hazards.

Discussion: The Proposed Action, an administrative action that does not propose construction or operations, would be consistent with this act as it would not utilize hazardous and toxic materials. Ongoing activities on State-owned land retained would continue to be consistent with the Emergency Planning and Community Right-to-Know Act.

National Flood Insurance Act of 1968, 42 U.S.C. Section 4001 et seq.

The National Flood Insurance Act of 1968 (as amended) establishes the NFIP, a voluntary floodplain management program for communities, which is implemented by FEMA. Congress found that flood disasters created an unforeseen economic burden on the country's resources. NFIP makes flood insurance available to persons nationwide who have a need for such protection, where the private insurance industry has been insufficient. At minimum, every five years FEMA assesses the need to revise and update floodplain areas and flood risk zones on Flood Insurance Rate Maps (FIRM). FEMA FIRMs are available to federal and state agencies, and community representatives participating in the NFIP. Any action within a FEMA-designated floodplain in a participating community must adhere to the community's FEMA-approved floodplain management regulations.

Discussion: The Proposed Action would be consistent with the National Flood Insurance Act. **Section 3.9** identifies the FIRM classification and notes that the State-owned land is not located within a floodplain.

Resource Conservation and Recovery Act, 42 U.S.C. Section 6901 et seq.

The RCRA gives the USEPA authority to control hazardous waste from cradle to grave. This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. The RCRA refers to the collective federal laws and USEPA regulations, policies, and guidance that address hazardous and non-hazardous waste management. Subtitle C of RCRA sets criteria for hazardous waste generators, transporters, and treatment, storage, and disposal facilities.

Discussion: The Proposed Action, an administrative action that does not propose construction, modernization, or changes in ongoing activities, would be consistent with this act, as it would not generate hazardous waste. Ongoing activities on State-owned land retained would continue to be consistent with RCRA; **Section 3.5** documents that the State-owned land does not contain designated RCRA cleanup sites.

National Historic Preservation Act, 54 U.S.C. Section 300101 et seq.

NEPA regulations require federal agencies to consider the impacts of proposed actions and alternatives on historic and cultural resources. Federal agencies are encouraged to prepare NEPA documents while coordinating and integrating the analysis and requirements of applicable historic preservation laws. The NHPA defines a process considering those impacts and is the primary federal historic preservation law applicable to the Proposed Action. **Section 3.6** provides additional detail on PTA and State-owned land consistency with NHPA.

Discussion: The Proposed Action would be consistent with NHPA. For ongoing activities facilitated by the Proposed Action, mitigation measures have been established through a PA executed with the SHPD and the Advisory Council on Historic Preservation in 2018. The PA resolves adverse effects to historic and cultural resources that may result from ongoing military actions and related activities at PTA, including those activities on the State-owned land. The PA is a 15-year agreement that will remain in effect until at least 2033 and includes a process to extend the life of the agreement (**Section 1.4.2**).

5.3.2 State

Consistency with State land use plans, policies, and controls (laws, regulations, and permits) pertinent to the Proposed Action is evaluated in this section. HAR Section 11-200.1-24(o) also requires that a Draft EIS include possible adverse environmental effects through discussion of specific statutes relating to pollution control and abatement. **Table 5-1** identifies the required HRS and notes any that are not relevant to the Proposed Action and ongoing activities. The EIS section in which the regulation is discussed is also noted.

Historic Preservation, Hawai'i Revised Statutes Chapter 6E

Under HRS Chapter 6E, State agencies issuing a permit or entitlement must determine if a project would affect historic properties, aviation artifacts, or burial sites. The State agency provides a determination as to whether a project may have an effect on historic properties and could include commitments to mitigation to address potential effects. SHPD can review the agency's determination and concur or advise further action.

Discussion: Section 6E rules do not provide for SHPD review of this EIS. Rather, the rules allow SHPD to review and comment on a State agency's determination of effect when the agency considers permits and/or land transfers by a state agency (e.g., a lease, or Conservation District Use Permit [CDUP]). Thus, compliance with Chapter 6E would follow the EIS process. SHPD was notified of the intent to prepare an EIS and of the Draft EIS availability, although it has no regulatory review responsibility.

The impacts of the Proposed Action on historic and archaeological resources are presented in **Section 3.4**. An Archaeological Literature Review was prepared to summarize existing archaeological conditions, which is included in **Appendix D**.

**Table 5-1 Consistency with Hawai'i Revised Statutes
Required for Evaluation in HAR 11-200.1-24(o)**

HRS Chapter	EIS Discussion
Environmental Response Law, HRS Chapter 128D	The Proposed Action would comply with the Statewide Contingency Plan through fulfillment of the USAG-HI SPCCP. (See Section 3.5.)
Air Pollution Control, HRS Chapter 342B	The Proposed Action and ongoing activities would comply with air quality standards. (See Section 3.6.)
Ozone Layer Protection, HRS Chapter 342C	Not applicable. The Proposed Action and ongoing activities do not utilize chlorofluorocarbons. The action alternatives would be consistent with all federal, state, and local air regulations including HRS Chapters 342B and 342C.
Water Pollution, HRS Chapter 342D	The Proposed Action and ongoing activities would comply with the State water pollution regulations, as well as federal regulations. Stormwater is infrequently generated in the developed area of PTA on U.S. Government-owned land and does not exit the installation. (See Section 3.9.)
Non-point Source Pollution Management and Control, HRS Chapter 342E	The Proposed Action and ongoing activities would comply with the State water pollution regulations. (See Section 3.9.)
Integrated Solid Waste Management, HRS Chapter 342G	Not applicable. State-owned land at PTA does not contain a solid waste processing, management, or disposal facility. (See Section 3.15.)
Solid Waste Pollution, HRS Chapter 342H	The Proposed Action would comply with HRS Chapter 342H; there are no solid waste landfills in operation on State-owned land. (See Section 3.15.)
Special Wastes Recycling, HRS Chapter 342I	Not applicable. State-owned land at PTA does not contain a disposal facility to which this HRS applies.
Hazardous Waste, HRS Chapter 342J	The Proposed Action does not involve the handling or generation of hazardous wastes. The ongoing activities facilitated by the Proposed Action would continue to comply with HRS Chapter 342J. (See Section 3.5.)
Underground Storage Tanks, HRS Chapter 342L	The Proposed Action would comply with HRS Chapter 342L; there are no USTs on State-owned land. (See Section 3.5.)
Asbestos and Lead, HRS Chapter 342P	The Proposed Action and ongoing activities would comply with HRS Chapter 342P. (See Section 3.5.)

Hawai'i State Plan, Hawai'i Revised Statutes Chapter 226

The Hawai'i State Planning Act was adopted in 1978 as HRS Chapter 226, and created the *Hawai'i State Plan* (revised in 1991). The *Hawai'i State Plan* is a guide for the long-range development of the State and provides goals, objectives, policies, priority guidelines, and implementation mechanisms for the State's growth, development, and allocation of limited resources. HRS Section 226-1 states the purpose of the act as "...to improve the planning process in the State, to increase the effectiveness of government and private actions, to improve coordination among different agencies and levels of government, to provide for wise use of Hawai'i's resources and to guide the future development of the State."

HRS Section 226-4 documents that it is the goal of the State to achieve the following to ensure that present and future generations may approach their desired levels of self-reliance and self-determination:

1. "A strong, viable economy, characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawai'i present and future generations.
2. A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people.
3. Physical, social, and economic well-being, for individuals and families in Hawai'i, that nourishes a sense of community responsibility, of caring, and of participation in community life."

The State plan provides a basis for determining priorities and allocating limited resources such as public funds, services, land and other resources. This consistency review of the Proposed Action focuses on the State goals and evaluates only the pertinent objectives and policies.

Discussion: The following State objectives and policies are outside the scope of the Proposed Action and are not discussed: population; economies related to agriculture, visitor industry, potential growth, and information industry; the State's facility systems; and socio-cultural advancement related to housing, health, education, social services, leisure, individual rights and well-being, and government.

§226-6 Objectives and policies for the economy in general.

(a) *Planning for the State's economy in general shall be directed toward achievement of the following objectives:*

- (1) *Increased and diversified employment opportunities to achieve full employment, increased income and job choice, and improved living standards for Hawai'i's people.*

Discussion: The Proposed Action supports the State objective of diversified employment opportunities and job choice. The Army supports 75,920 employees in the State, with 1,962 in the County of Hawai'i. The Army spends approximately \$4.4B in labor income in the State, \$92M of which is spent in the County of Hawai'i. Without the Proposed Action, loss of training and Army-funded activities within the State-owned land would result in a significant reduction in spending in the local economy. For further information, see **Section 3.10**.

§226-9 Objective and policies for the economy--federal expenditures.

(a) *Planning for the State's economy with regard to federal expenditures shall be directed towards achievement of the objective of a stable federal investment base as an integral component of Hawai'i's economy.*

(b) To achieve the federal expenditures objective, it shall be the policy of this State to:

- (1) Encourage the sustained flow of federal expenditures in Hawai'i that generates long-term government civilian employment.*
- (2) Promote Hawai'i's supportive role in national defense.*
- (3) Promote the development of federally supported activities in Hawai'i that respect state-wide economic concerns, are sensitive to community needs, and minimize adverse impacts on Hawai'i's environment.*
- (4) Increase opportunities for entry and advancement of Hawai'i's people into federal government service.*
- (5) Promote federal use of local commodities, services, and facilities available in Hawai'i.*
- (6) Strengthen federal-state-county communication and coordination in all federal activities that affect Hawai'i.*
- (7) Pursue the return of federally controlled lands in Hawai'i that are not required for either the defense of the nation or for other purposes of national importance, and promote the mutually beneficial exchanges of land between federal agencies, the State, and the counties.*

Discussion: The Proposed Action supports the State objective of federal expenditures as a stable federal investment base as an integral component of Hawai'i's economy. Defense spending in Hawai'i has remained stable during the COVID-19 pandemic, which has helped to buffer some of the negative impact to the State's economy from the associated reduction in tourism. For further information, see **Section 3.10**.

The Proposed Action aligns with Hawai'i's policy to play a supportive role in U.S. national defense. USARHAW's mission and training requirements are based on national and Army security and defense strategies, and training at PTA supports the Army's fulfillment of its role. Hawai'i is a strategic location for national defense and rapid deployment of military forces, as it lies between the west coast of the continental United States and the countries in the USINDOPACOM AOR. For further information, see **Chapters 1** and **Chapter 2**.

The Proposed Action supports Hawai'i's policy to promote federally supported activities that respect State-wide economic concerns, are sensitive to community needs, and minimize adverse impacts on Hawai'i's environment. PTA is also used by non-profit organizations such as the Red Cross, Boy Scouts, Girl Scouts, and Youth Challenge. Community outreach activities conducted by personnel at PTA include maintaining adjacent properties by keeping grass and other materials that pose a risk of fire cleared and under control; assisting in cleanup after weather events; and donating manpower and food to the local communities. The support to community emergency response provided by the Army at PTA is further discussed under §226-26 *Objectives and policies for socio-cultural advancement--public safety*.

The Proposed Action supports Hawai'i's policy to promote federal use of local commodities and services. Army expenditures in the County of Hawai'i include local purchases of equipment and services in support of inter-island travel for troops. For further information, see **Section 3.10**.

The Proposed Action proposes retaining up to approximately 23,000 acres of State-owned land leased from the State since 1964. Over the past six decades, the State-owned land has been the keystone of PTA

and an important portion of the 132,000-acre training area. **Chapter 1** describes the ongoing need of this land for the nation's defense.

§226-11 Objectives and policies for the physical environment--land-based, shoreline, and marine resources.

- (a) Planning for the State's physical environment with regard to land-based, shoreline, and marine resources shall be directed towards achievement of the following objectives:*
 - (1) Prudent use of Hawai'i's land-based, shoreline, and marine resources.*
 - (2) Effective protection of Hawai'i's unique and fragile environmental resources.*
- (b) To achieve the land-based, shoreline, and marine resources objectives, it shall be the policy of this State to:*
 - (1) Exercise an overall conservation ethic in the use of Hawai'i's natural resources.*
 - (2) Ensure compatibility between land-based and water-based activities and natural resources and ecological systems.*
 - (4) Manage natural resources and environs to encourage their beneficial and multiple use without generating costly or irreparable environmental damage.*
 - (5) Consider multiple uses in watershed areas, provided such uses do not detrimentally affect water quality and recharge functions.*
 - (6) Encourage the protection of rare or endangered plant and animal species and habitats native to Hawai'i.*
 - (8) Pursue compatible relationships among activities, facilities and natural resources.*
 - (9) Promote increased accessibility and prudent use of inland and shoreline areas for public recreational, educational and scientific purposes.*

Discussion: The Proposed Action supports Hawai'i's policies related to prudent use of and protection of Hawai'i's natural resources. The Proposed Action would not impact shoreline or marine resources. The Army is committed to environmental stewardship and protection, guided by federal regulations. The ESA requires federal agencies, in consultation with the USFWS, to ensure actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of listed species or result in the destruction of habitat. For further information, see **Section 3.3**. The Army invests over \$12M annually in biological and cultural resources management actions and additional funds for associated activities such as emergency services throughout Hawai'i (**Section 3.10**). **Chapter 3** of this EIS analyzes potential impacts to land use and cultural resources at PTA from the Proposed Action and includes mitigation to conduct consultation with Native Hawaiians, and/or other ethnic groups as appropriate, provide, or continue to provide, access to promote and protect cultural beliefs, practices, and resources. Additionally, portions of PTA would continue to be available for hunting for recreational purposes, subject to training constraints.

§226-12 Objective and policies for the physical environment--scenic, natural beauty, and historic resources.

- (a) Planning for the State's physical environment shall be directed towards achievement of the objective of enhancement of Hawai'i's scenic assets, natural beauty, and multi-cultural/historical resources.*

(b) To achieve the scenic, natural beauty, and historic resources objectives, it shall be the policy of this State to:

- (1) Promote the preservation and restoration of significant natural and historic resources.*
- (3) Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features.*
- (4) Protect those special areas, structures, and elements that are an integral and functional part of Hawai'i's ethnic and cultural heritage.*

Discussion: The Proposed Action supports policies related to preservation of Hawai'i's scenic assets and historic resources. There would be no new impacts on vistas stemming from the action alternatives. For further information, see **Section 3.2**.

The Proposed Action would not impact special areas, structures or elements that are a part of Hawai'i's ethnic heritage. Built resources within PTA are primarily located within the Cantonment and BAAF, which are outside the State-owned land. No historic buildings or structures have been recorded within the State-owned land (**Section 3.4**). Management of cultural resources and compliance with the State policy is further discussed under §226-25 *Objectives and policies for socio-cultural advancement—culture*.

§226-13 Objectives and policies for the physical environment--land, air, and water quality.

(a) Planning for the State's physical environment with regard to land, air, and water quality shall be directed towards achievement of the following objectives:

- (1) Maintenance and pursuit of improved quality in Hawai'i's land, air, and water resources.*
- (b) To achieve the land, air, and water quality objectives, it shall be the policy of this State to:*
 - (2) Promote the proper management of Hawai'i's land and water resources.*
 - (3) Promote effective measures to achieve desired quality in Hawai'i's surface, ground and coastal waters.*
 - (4) Encourage actions to maintain or improve aural and air quality levels to enhance the health and well-being of Hawai'i's people.*
 - (5) Reduce the threat to life and property from erosion, flooding, tsunamis, hurricanes, earthquakes, volcanic eruptions, and other natural or man-induced hazards and disasters.*

Discussion: The Proposed Action complies with maintenance or improvement of land, air and water resources at PTA. This EIS describes existing environmental conditions from ongoing activities and lists the regulatory environment and minimization measures employed by the Army. For further information, see **Chapter 3**.

§226-25 Objectives and policies for socio-cultural advancement—culture.

- (a) Planning for the State's socio-cultural advancement with regard to culture shall be directed toward the achievement of the objective of enhancement of cultural identities, traditions, values, customs, and arts of Hawai'i's people.*
- (b) To achieve the culture objective, it shall be the policy of this State to:*

- (1) Foster increased knowledge and understanding of Hawai'i's ethnic and cultural heritages and the history of Hawai'i.*
- (2) Support activities and conditions that promote cultural values, customs, and arts that enrich the lifestyles of Hawai'i's people and which are sensitive and responsive to family and community needs.*
- (3) Encourage increased awareness of the effects of proposed public and private actions on the integrity and quality of cultural and community lifestyles in Hawai'i.*
- (4) Encourage the essence of the aloha spirit in people's daily activities to promote harmonious relationships among Hawai'i's people and visitors.*

Discussion: The Proposed Action would not result in new impacts to known or undiscovered cultural resources beyond those already assessed in previous NEPA/NHPA analyses associated with ongoing military use. The previous assessments provide mitigation for ongoing training activities. Impacts on archaeological resources would continue to be mitigated in compliance with existing regulatory requirements. For further information, see **Section 3.4**.

§226-26 Objectives and policies for socio-cultural advancement--public safety.

- (a) Planning for the State's socio-cultural advancement with regard to public safety shall be directed towards the achievement of the following objectives:*
 - (1) Assurance of public safety and adequate protection of life and property for all people.*
 - (2) Optimum organizational readiness and capability in all phases of emergency management to maintain the strength, resources, and social and economic well-being of the community in the event of civil disruptions, wars, natural disasters, and other major disturbances.*
- (d) To further achieve public safety objectives related to emergency management, it shall be the policy of this State to:*
 - (1) Ensure that responsible organizations are in a proper state of readiness to respond to major war-related, natural, or technological disasters and civil disturbances at all times.*
 - (2) Enhance the coordination between emergency management programs throughout the State.*

Discussion: The Proposed Action supports Hawai'i's policy to advance public safety objectives. State and county agencies, such as Hawai'i Emergency First Responders, Hawai'i Emergency Management, and the Hawai'i Police Department, periodically use PTA for training. PTA personnel also act as first and secondary responders to car accidents, brush fires, and emergency incidents in the region around PTA. For further information, see **Section 3.10**.

State Land Use Law, Hawai'i Revised Statutes Chapter 205

Hawai'i was the first of the 50 states to create an overall framework of land use management. HRS Chapter 205, titled *Land Use Commission* and commonly referred to as the State Land Use Law, was adopted in 1961 and classified all land in the State into one of four land use districts: (1) Urban, (2) Rural, (3) Agriculture, or (4) Conservation. The State legislature established the Land Use Commission to administer this State-wide land use law. The counties make all land use decisions in the Urban District in accordance with their respective county general plans, development plans, and zoning ordinances. The counties also

regulate land use in the Rural and Agriculture Districts, within the limits imposed by HRS Chapter 205. The conservation district is governed by DLNR under HRS Chapter 183C. For further information, see the discussion of Conservation District Rules, HAR Chapter 13-5.

Discussion: The region including and surrounding PTA was included in the conservation district in 1964. The lease for Army use of State-owned land was signed in August of 1964, prior to the enactment of HRS Chapter 183C. Per the statute and its enacting rule, HAR Chapter 13-5, *Conservation District*, lawful use of lands established prior to October 1, 1964, are considered nonconforming. For further information, see the discussion of Conservation District Rules, HAR Chapter 13-5.

Conservation District Rules, Hawai'i Administrative Rules Chapter 13-5

The boundaries of the conservation district were established in 1964 and went into effect with the conservation district law (HRS Chapter 183C). The conservation district boundaries supplanted the boundaries of the forest and water reserve zones established in 1957. The conservation district purpose is conserving, protecting, and preserving the important natural and cultural resources of the State through appropriate management and use to promote their long-term sustainability and public health, safety, and welfare.

Land within the conservation district is further classified into five subzones: protective, limited, resource, general, and special. The first four subzones range from the most environmentally sensitive (Protective) to the least sensitive (General). The Special subzone defines a unique land use on a specific site. Allowable uses for each subzone are defined in HAR Sections 13-5-22, 23 and 24 in a hierarchical fashion. Uses allowed in the Protective subzone are incorporated into the allowable uses for the Limited subzone and uses allowed in the Limited subzone are incorporated into the allowable uses for the Resource subzone and so on. Allowable uses vary in requirements for approval and are administered by DLNR's Office of Conservation and Coastal Lands; approvals range from no formal approval to submittal and approval of a site plan by the Office of Conservation and Coastal Lands, to approval by the BLNR. Uses that are not listed require a discretionary permit from the BLNR.

Discussion: The State-owned land at PTA lies in the Resource subzone. Military training is not included as an allowable use for any conservation district subzone. However, HAR Chapter 13-5 provides for authorization of additional uses and, therefore, allows for conformance with the rules. **Section 3.2** indicates that ongoing activities have been in conformance with conservation district rules and that the Proposed Action would be as well.

Coastal Zone Management, Hawai'i Revised Statutes Chapter 205A

Hawai'i CZM, HRS Chapter 205A, describes the State's objectives, policies, laws, standards, and procedures to guide and regulate public and private uses through its coastal zone management program. Ten over-arching resources are addressed through objectives and policies: (1) recreational resources, (2) historic resources, (3) scenic and open space resources, (4) coastal ecosystems, (5) economic uses, (6) coastal hazards, (7) managing development, (8) public participation, (9) beach protection, and (10) marine resources. Virtually all of the resources relate to potential development impacts on the shoreline, near shore, and ocean area environments. Under the State CZM program, each county designates and regulates SMAs within the State's coastal areas. For further information, see the discussion under County of Hawai'i SMA in **Section 5.3.3**.

Discussion: The Proposed Action is not located on or near the coastline. The State-owned land at PTA is approximately 30 miles inland. The action alternatives represent a real estate action (i.e., administrative action) that would allow continuation of ongoing activities on the retained State-owned land. This discussion of CZM consistency includes minimization measures for impacts of ongoing activities that could stem from the action alternatives. The Proposed Action’s compliance with specific objectives and policies of CZM as defined in HRS Chapter 205A is shown in **Table 5-2**.

Table 5-2 Coastal Zone Management, HRS Chapter 205A Objectives and Policies	
OBJECTIVES & POLICIES	
(1) Recreational resources;	
Provide coastal recreational opportunities accessible to the public.	
A.	Improve coordination and funding of coastal recreational planning and management; and
B.	Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:
(i)	Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;
(ii)	Requiring replacement of coastal resources having significant recreational value including, but not limited to, surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the State for recreation when replacement is not feasible or desirable;
(iii)	Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;
(iv)	Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;
(v)	Ensuring public recreational uses of county, state and federally owned or controlled shoreline lands having recreational value consistent with public safety standards and conservation of natural resources.
(vi)	Adopting water quality standards and regulating point and non-point sources of pollution to protect and where feasible, restore the recreational value of coastal waters;
(vii)	Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches and artificial reefs for surfing and fishing; and
(viii)	Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the Land Use Commission, BLNR, and county authorities; and crediting such dedication against the requirements of Section 46-6, HRS.
<i>Discussion:</i> The State-owned land at PTA is not near the shoreline and is not in the SMA. The Proposed Action would not impact access to coastal resources and would not provide or impact shoreline or coastal recreation. The analysis of potential impacts to water resources from the action alternatives is discussed in Section 3.9 .	
(2) Historic resources;	
Protect, preserve, and, where desirable, restore those natural and man-made historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.	
(A)	Identify and analyze significant archaeological resources;
(B)	Maximize information retention through preservation of remains and artifacts or salvage operations; and
(C)	Support state goals for protection, restoration, interpretation, and display of historic resources.

**Table 5-2 Coastal Zone Management, HRS Chapter 205A
Objectives and Policies**

Discussion: *The Proposed Action would not impact special areas, structures or elements that are a part of Hawai'i's ethnic heritage. Built resources within PTA are primarily located within the Cantonment and BAAF, which are on U.S. Government-owned land. No historic buildings or structures have been recorded within the State-owned land (Section 3.4). An Archaeological Literature Review was prepared for this EIS and is included in Appendix D.*

The analysis of impacts to cultural resources (Section 3.4) identifies that the action alternatives would not result in new impacts to known or undiscovered cultural resources beyond those already assessed in previous NEPA/NHPA analyses associated with ongoing military use. The previous assessments provide mitigation for ongoing activities. Impacts on archaeological resources would continue to be mitigated in compliance with existing regulatory requirements.

(3) Scenic and open space resources;

Protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources.

(A) Identify valued scenic resources in the coastal zone management area;

(B) Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;

(C) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and

(D) Encourage those developments that are not coastal dependent to locate in inland areas.

Discussion: *The Proposed Action supports policies related to preservation of Hawai'i's scenic assets. There would be no new impacts on vistas stemming from the action alternatives. For further information, see Section 3.2.*

(4) Coastal ecosystems;

Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.

(A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;

(B) Improve the technical basis for natural resource management;

(C) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;

(D) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and

(E) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and non-point source water pollution control measures.

**Table 5-2 Coastal Zone Management, HRS Chapter 205A
Objectives and Policies**

Discussion: *The Proposed Action complies with the policy of protecting shoreline and marine resources. The Army is committed to environmental stewardship and protection, guided by federal regulations. The ESA requires federal agencies, in consultation with the U.S. Fish and Wildlife Service, to ensure actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction of habitat. For further information, see **Section 3.3**. The Army invests over \$12M annually in biological and cultural management actions and additional funds for associated activities such as emergency services throughout Hawai'i (**Section 3.10**). **Chapter 3** of this EIS analyzes potential impacts to biological resources at PTA from the Proposed Action.*

(5) Economic uses;

Provide public or private facilities and improvements important to the State's economy in suitable locations.

- (A) Concentrate coastal dependent development in appropriate areas;
- (B) Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor industry facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and
- (C) Direct the location and expansion of coastal dependent developments to areas presently designated and used for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when: (i) Use of presently designated locations is not feasible; (ii) Adverse environmental effects are minimized; and (iii) The development is important to the State's economy.

Discussion: *The State-owned land at PTA is not located near the coast.*

(6) Coastal hazards;

Reduce hazard to life and property from tsunamis, storm waves, stream flooding, erosion, subsidence, and pollution.

- (A) Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and non-point source pollution hazards;
- (B) Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and non-point source pollution hazards;
- (C) Ensure that developments comply with requirements of the Federal Flood Insurance Program; and
- (D) Prevent coastal flooding from inland projects.

Discussion: *The State-owned land at PTA is inland and approximately 30 miles from the coastline. **Section 3.8** includes a section on Natural Hazards. The State-owned land is not in an area prone to erosion, flooding, sea level rise or hurricanes. A discussion of the lava hazard zone and seismic activity associated with volcanic eruptions is presented in **Section 3.8**. The action alternatives and use of PTA would not exacerbate natural hazard conditions. FEMA defines the State-owned land at PTA as located within Flood Zone X, an area that is outside of the 0.2 percent annual chance flood or 500-year floodplain (**Section 3.9**).*

(7) Managing Development

Improve the development review process, communication, and public participation in the management of coastal resources and hazards.

- (A) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;

**Table 5-2 Coastal Zone Management, HRS Chapter 205A
Objectives and Policies**

(B) Facilitate timely processing of applications for development permits and resolve overlapping or conflicting permit requirements; and

(C) Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the public to facilitate public participation in the planning and review process.

Discussion: *The Proposed Action does not involve construction or development near the coast.*

(8) Public Participation

Stimulate public awareness, education, and participation in coastal management.

(A) Promote public involvement in coastal zone management processes;

(B) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal issues, developments, and government activities; and

(C) Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.

Discussion: *This consistency evaluation under CZM has been undertaken as part of the EIS process under HRS Chapter 343 and HAR Chapter 11-200.1. Section 1.6 provides information on the public input process associated with this EIS.*

(9) Beach Protection

Protect beaches for public use and recreation

(A) Locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion;

(B) Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities; and

(C) Minimize the construction of public erosion-protection structures seaward of the shoreline.

(D) Prohibit private property owners from creating a public nuisance by inducing or cultivating the private property owner's vegetation in a beach transit corridor; and

(E) Prohibit private property owners from creating a public nuisance by allowing the private property owner's unmaintained vegetation to interfere or encroach upon a beach transit corridor.

Discussion: *The State-owned land at PTA is inland and approximately 30 miles from the coastline; these policies are not applicable.*

(10) Marine Resources

Promote the protection, use, and development of marine and coastal resources to assure their sustainability.

(A) Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;

(B) Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency;

(C) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;

(D) Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities

Table 5-2 Coastal Zone Management, HRS Chapter 205A Objectives and Policies	
	relate to and impact upon ocean and coastal resources; and
(E)	Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.
<i>Discussion:</i> The State-owned land at PTA is inland and approximately 30 miles from the coastline; these policies are not applicable. The Army's commitment to protect coastal ecosystems and marine water quality is explained under Coastal Ecosystems in this table, and in Section 3.9 .	

State Environmental Policy, Hawai'i Revised Statutes Chapter 344

HRS Chapter 344, *State Environmental Policy*, is a state policy which will “. . . encourage productive and enjoyable harmony between people and their environment, promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of humanity, and enrich the understanding of the ecological systems and natural resources important to the people of Hawai'i.”

HRS Section 344-3 documents that it is the policy of the State to:

- Conserve the natural resources, so that land, water, mineral, visual, air and other natural resources are protected by controlling pollution, preserving or augmenting natural resources, and safeguarding the State's unique natural environmental characteristics in a manner that will foster and promote the general welfare, create and maintain conditions under which humanity and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of the people of Hawai'i.
- Enhance the quality of life by: (A) Setting population limits so that the interaction between the natural and artificial environments and the population is mutually beneficial; (B) Creating opportunities for the residents of Hawai'i to improve their quality of life through diverse economic activities which are stable and in balance with the physical and social environments; (C) Establishing communities which provide a sense of identity, wise use of land, efficient transportation, and aesthetic and social satisfaction in harmony with the natural environment which is uniquely Hawaiian; and (D) Establishing a commitment on the part of each person to protect and enhance Hawai'i's environment and reduce the drain on non-renewable resources.

HRS Section 344-4 identifies the policies to be advanced by the State through its programs, authorities, and resources. Guidelines outside the scope of the Proposed Action are not discussed: population; transportation; energy; community life and housing; and education and culture. This consistency review of the Proposed Action focuses on the pertinent State guidelines.

(2) Land, water, mineral, visual, air, and other natural resources.

- (A) Encourage management practices which conserve and fully utilize all natural resources.*
- (D) Encourage management practices which conserve and protect watersheds and water sources, forest, and open space areas.*

Discussion: The Proposed Action is consistent with the guidelines of managing biological and natural resources. Management activities and programs are described in **Chapter 3** on State-owned land retained. The Army adheres to federal and state environmental policies to conserve and protect natural resources.

(3) Flora and fauna.

- (A) Protect endangered species of indigenous plants and animals and introduce new plants or animals only upon assurance of negligible ecological hazard.*

Discussion: The Proposed Action is consistent with the guideline to protect endangered species and to prevent introduction of non-native plants and animals. **Section 3.3** highlights the Army's programs for threatened, endangered, and other species of concern as guided by State and federal regulations. ESA Section 7 requires federal agencies, in consultation with USFWS, to ensure that the actions authorized, funded, or implemented do not jeopardize the existence of listed species or result in the destruction or modification of a designated critical habitat.

(4) Parks, recreation, and open space.

- (A) Establish, preserve and maintain scenic, historic, cultural, park and recreation areas, including the shorelines, for public recreational, educational, and scientific uses;*
- (C) Promote open space in view of its natural beauty not only as a natural resource but as an ennobling, living environment for its people.*

Discussion: The Army supports hunting as a recreational use on State-owned land at PTA within State hunting guidelines and when not in conflict with the PTA mission. For State-owned land retained under the action alternatives, there would be no new impacts on recreation and public access would continue to be restricted. The Proposed Action supports policies related to preservation of Hawai'i's scenic assets and historic resources. There would be no new impacts on vistas stemming from the action alternatives. For further information, see **Section 3.2**.

The Proposed Action would not impact shoreline or marine resources. The Army is committed to environmental stewardship and protection, guided by federal regulations. For further information, see **Section 3.3**.

(5) Economic development.

- (C) Encourage federal activities in Hawai'i to protect the environment;*

Discussion: The Proposed Action is consistent with the guideline for federal activities in Hawai'i to protect the environment. The Army invests over \$12M annually for biological and cultural management actions and additional funds for associated activities such as emergency services throughout Hawai'i. For further information, see **Section 3.10**.

5.3.3 County of Hawai'i

County of Hawai'i, 2005 General Plan

The County of Hawai'i General Plan is the policy document for the long-range comprehensive development of the island of Hawai'i. The purposes of the 2005 General Plan are as follows:

- Guide the pattern of future development in the county based on long-term goals.
- Identify the visions, values, and priorities important to the people of the county.
- Provide the framework for regulatory decisions, capital improvement priorities, acquisition strategies, and other pertinent government programs within the county organization and coordinated with State and federal programs.
- Improve the physical environment of the county as a setting for human activities; to make it more functional, beautiful, healthful, interesting, and efficient.
- Promote and safeguard the public interest and the interest of the county as a whole.
- Facilitate the democratic determination of community policies concerning the utilization of its natural, man-made, and human resources.
- Effect political and technical coordination in community improvement and development.
- Inject long-range considerations into the determination of short-range actions and implementation.

The county's existing General Plan was adopted in 2005. A revision, entitled the *General Plan 2040*, has undergone public review, which will be followed by a multi-step revision, review, and adoption process. Accordingly, the project consistency is reviewed under the approved 2005 General Plan. This consistency review of the Proposed Action and alternatives ("action alternatives") under the county's General Plan evaluates only goals and policies relevant to the project.

The 2005 General Plan organizes its goals and policies within 13 subject areas of public policy concerning the needs of the people and the functions of the government. The subject areas applicable to the Proposed Action include economic activity, environmental quality, flooding and other natural hazards, historic sites, natural beauty, natural resources and shoreline, recreation, and land use.

The subject areas not applicable to the Proposed Action are not discussed, and include energy, housing, public utilities, transportation, and public facilities including health and education services.

Specific General Plan goals most applicable to the Proposed Action are described below:

Economic

- A. *Provide residents with opportunities to improve their quality of life through economic development that enhances the County's natural and social environments.*
- B. *Economic development and improvement shall be in balance with the physical, social and cultural environments of the island of Hawai'i.*
- C. *Strive for diversity and stability in the economic system.*

- D. Provide an economic environment that allows new, expanded, or improved economic opportunities that are compatible with the County's cultural, natural and social environment.*
- E. Strive for an economic climate that provides its residents an opportunity for choice of occupation.*
- F. Strive for diversification of the economy by strengthening existing industries and attracting new endeavors.*
- G. Strive for full employment.*
- H. Promote and develop the island of Hawai'i into a unique scientific and cultural model, where economic gains are in balance with social and physical amenities. Development should be reviewed on the basis of total impact on the residents of the County, not only in terms of immediate short run economic benefits.*

Discussion: The Proposed Action supports the county goals of choice of occupation and diversity and stability in the economy. Defense spending in Hawai'i has remained stable during the COVID-19 pandemic, which has helped to buffer some of the negative impact to the State's economy from the associated reduction in tourism. The Army spends approximately \$4.4B in labor income in the State, \$92M of which is spent in the County of Hawai'i. The Army supports 75,920 employees in the State, with 1,962 in the County of Hawai'i. Without the Proposed Action, loss of training and Army-funded activities within the State-owned land would result in a significant reduction in spending in the local economy. For further information, see **Section 3.10**.

Environmental Quality

- A. Define the most desirable use of land within the County that achieves an ecological balance providing residents and visitors the quality of life and an environment in which the natural resources of the island are viable and sustainable.*
- B. Maintain and, if feasible, improve the existing environmental quality of the island.*
- C. Control pollution.*

Discussion: The Proposed Action complies with maintenance and improvement of environmental quality and natural resources at PTA. The action alternatives represent a real estate action (i.e., administrative action) that would allow continuation of ongoing activities on the retained State-owned land. This EIS describes existing environmental conditions from ongoing activities and lists the regulatory environment and minimization measures employed by the Army. For further information, see **Chapter 3**.

Flooding and Other Natural Hazards

- A. Protect human life.*
- B. Prevent damage to man-made improvements.*
- C. Control pollution.*
- D. Prevent damage from inundation.*
- E. Reduce surface water and sediment runoff.*
- F. Maximize soil and water conservation.*

Discussion: Implementation of an action alternative would be consistent with this guideline. The Army would continue ongoing activities in accordance with Army requirements and guidelines and federal and state programs described throughout **Chapter 3** and in this section. The State-owned land is not located within a floodplain, so impacts on floodplains are not analyzed in this EIS. For further information, see **Section 3.9**.

Historic Sites

- A. *Protect, restore, and enhance the sites, buildings, and objects of significant historical and cultural importance to Hawai'i.*
- B. *Appropriate access to significant historic sites, buildings, and objects of public interest should be made available.*
- C. *Enhance the understanding of man's place on the landscape by understanding the system of ahupua'a.*

Discussion: The Proposed Action would not result in new impacts to known or undiscovered cultural resources beyond those already assessed in previous NEPA/NHPA analyses associated with ongoing activities. The previous assessments provide mitigation for ongoing activities. The Proposed Action would not impact any buildings of historic importance, as no historic buildings or structures have been recorded within the State-owned land. Built resources within PTA are primarily located within the Cantonment and BAAF on U.S. Government-owned land. For further information, see **Section 3.4**.

Natural Beauty

- A. *Protect, preserve and enhance the quality of areas endowed with natural beauty, including the quality of coastal scenic resources.*
- B. *Protect scenic vistas and view planes from becoming obstructed.*
- C. *Maximize opportunities for present and future generations to appreciate and enjoy natural and scenic beauty.*

Discussion: The Proposed Action supports policies related to preservation of Hawai'i's natural beauty and scenic vistas. The State-owned land at PTA is not near coastal resources. This EIS evaluated impacts on vistas and has identified that there would be no new impacts from the action alternatives. For further information, see **Section 3.2**.

Natural Resources and Shoreline

- A. *Protect and conserve the natural resources from undue exploitation, encroachment and damage.*
- B. *Provide opportunities for recreational, economic, and educational needs without despoiling or endangering natural resources.*
- C. *Protect and promote the prudent use of Hawai'i's unique, fragile, and significant environmental and natural resources.*
- D. *Protect rare or endangered species and habitats native to Hawai'i.*
- E. *Protect and effectively manage Hawai'i's open space, watersheds, shoreline, and natural areas.*

- F. Ensure that alterations to existing land forms, vegetation, and construction of structures cause minimum adverse effect to water resources, and scenic and recreational amenities and minimum danger of floods, landslides, erosion, siltation, or failure in the event of an earthquake.*

Discussion: The Proposed Action would not impact shoreline or marine resources. The Army is committed to environmental stewardship and protection, guided by federal regulations. The ESA requires federal agencies, in consultation with the USFWS, to ensure actions they authorize, fund or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction of habitat. For further information, see **Section 3.3**.

The Army invests over \$12M annually in biological and cultural management actions throughout Hawai'i (**Section 3.10**). **Chapter 3** of this EIS analyzes potential impacts to biological and cultural resources at PTA from the Proposed Action.

Recreation

- A. Provide a wide variety of recreational opportunities for the residents and visitors of the County.*
- B. Maintain the natural beauty of recreation areas.*
- C. Provide a diversity of environments for active and passive pursuits.*

Discussion: The Proposed Action provides limited consistency with this guideline. Recreational opportunities on the State-owned land at PTA are primarily for hunting of game birds and game animals within State hunting guidelines and when not in conflict with the PTA mission. For State-owned land retained under the action alternatives, the analysis identifies continued minor adverse impacts on recreation based on continued restricted public access. For further information, see **Section 3.2**.

Land Use

- A. Designate and allocate land uses in appropriate proportions and mix and in keeping with the social, cultural, and physical environments of the County.*
- B. Protect and encourage the intensive and extensive utilization of the County's important agricultural lands.*
- C. Protect and preserve forest, water, natural and scientific reserves and open areas.*

Discussion: The Proposed Action is consistent with the county's land use guidelines for Open and Forest Reserve zoning of the State-owned land at PTA. Continued activities on the State-owned land at PTA would be consistent with the past 65 years of military use. Zoning for the Open district includes areas that contribute to the general welfare; and objectives include to buffer uses and preserve valuable scenic vistas. The Forest Reserve district is considered non-zoned by the county and is instead regulated under State conservation district rules. PTA is outside of the SMA established by the County of Hawai'i under CZM. There is no State agricultural district land within PTA. For further information, see **Section 3.2**.

The Army invests over \$12M annually in biological and cultural management activities throughout Hawai'i. For further information, see **Section 3.10**. **Chapter 3** of this EIS analyzes ongoing beneficial impacts to biological and cultural resources at PTA from the action alternatives.

Hāmākua Community Development Plan

The *Hāmākua Community Development Plan* (“Hāmākua CDP”) was adopted by County Ordinance No. 2018-78 on August 22, 2018. The purpose of the Hāmākua CDP is to create a long-range plan (a 20-year horizon) that implements and translates the broad goals and objectives of the County of Hawai‘i *General Plan* (2005) to the meet the unique needs of the Hāmākua CDP Planning Area. The Hāmākua CDP Planning Area encompasses the judicial districts of Hāmākua and North Hilo, and a portion of the South Hilo district Rural South Hilo. The Hāmākua CDP is guided by community objectives, which were developed and adopted by the Hāmākua Steering Committee. The 13 community objectives are based on the values and visions statement and fall into three major themes: ‘āina, community, and economy. The community objectives are to be implemented through the identification of three different types of actions/strategies: “County Actions” (within the jurisdiction of county agencies), “Community Actions” (within the jurisdiction of the community), and “Kōkua Actions” (within the jurisdiction of federal / state agencies or non-governmental organizations).

The Hāmākua CDP discusses PTA and the DoD only under four Kōkua Actions, naming them as under the jurisdiction of the DoD. The following paragraphs evaluate the Proposed Action’s consistency with pertinent county and community actions.

Department of Defense, Pōhakuloa Training Area (PTA)

- *Kōkua Action 44: Complete the large-scale firebreak that extends completely across Pu‘u Anahulu between the Ke‘amuku and the 1859 lava flows.*

Discussion: This Kōkua Action is not in the vicinity of the State-owned land at PTA; therefore, a discussion of consistency with this action is not applicable to this analysis. However, ongoing activities facilitated by the Proposed Action would continue to be consistent, including continued wildfire protection and firefighting activities on State-owned land retained (**Section 2.2; Section 3.16**).

- *Kōkua Action 45: Improve Mauna Kea Trail and Infantry Road to firebreak standards and to extend Mauna Kea Trail slightly in the area behind Pu‘u Pōhakuloa.*

Discussion: This Kōkua Action is not in the vicinity of the State-owned land at PTA; therefore, a discussion of consistency with this action is not applicable to this analysis. However, ongoing activities facilitated by the Proposed Action would continue to be consistent, including continued wildfire protection and firefighting activities on State-owned land retained. This includes maintenance of firebreaks/fuel breaks under the IWFMP to reduce and respond to wildfires under applicable federal, State, county, and DoD regulations on State-owned land retained.

- *Kōkua Action 46: Complete the Remedial Investigation for the Pu‘u Pa‘a Area (PTA-003-R-01). Remaining actions include a focused Feasibility Study, Proposed Plan / Decision Document, followed by Remedial Design and Remedial Action for Munitions and Explosives of Concern removal.*

Discussion: This Kōkua Action is not in the vicinity of PTA. It is beyond the scope of this EIS and therefore a discussion of consistency with this action is not applicable to this analysis.

- *Kōkua Action 47: Address the potential hazards of depleted uranium at the Pōhakuloa Training Area. Consider the eight-point plan as outlined in County Res. No. 639-08. See also House Bill 2011 H.C.R. No. 181, "Pōhakuloa Training Area; Testing and Monitoring of Radioactive Contamination." County RES. 639 Draft 01 2006- 2008*

Discussion: This DoD Kōkua Action is beyond the scope of this analysis, which focuses on the Proposed Action, an administrative action (e.g., real estate). However, ongoing activities facilitated by the Proposed Action would continue to be consistent. The Army performed a series of health and risk assessments from 2008 to 2010 to determine the potential impacts on human health from past use of DU at PTA. Data from a 2009 air monitoring program showed that DU had not impacted air quality at PTA or in the surrounding area because the total airborne uranium levels in the collected particulate matter samples were within the range of naturally occurring uranium in Hawaiian soils and rock and were several orders of magnitude below U.S. and international chemical and radiological health guidelines. (Discussions of DU at PTA are covered in **Sections 3.5, 3.6 and 3.16**).

SMA

Hawai'i CZM, HRS Chapter 205A, charges the counties with designating and administering an SMA within the State's coastal areas to provide for ". . . *special controls on developments within an area along the shoreline are necessary to avoid permanent losses of valuable resources and the foreclosure of management options, and to ensure that adequate access, by dedication or other means, to public owned or used beaches, recreation areas, and natural reserves is provided.*" (HRS Chapter 205A Part II.) Any "development," as defined by HRS Chapter 205A and county regulations, located within the SMA requires an SMA permit.

Discussion: PTA and the State-owned land within PTA are not located within the SMA. No development is proposed within the action alternatives.

5.4 Unavoidable Significant Adverse Impacts

The Proposed Action would not result in any unavoidable significant adverse impacts. **Table 3.2** in **Section 3.17** summarizes the potential environmental impacts of the Proposed Action. The adverse impacts are either less than significant, or significant but mitigable to less than significant.

5.5 Irreversible and Irretrievable Commitment of Resources

NEPA and HEPA require evaluation of irreversible and irretrievable commitment of resources should the Proposed Action be implemented. **Section 5.3** provides the Proposed Action's consistency with federal, State and local plans, policies and controls. The analysis of irreversible and irretrievable resources generally refers to uses of energy or other non-renewable resources (e.g., minerals or construction materials). The Proposed Action does not require new or increased uses of energy or other non-renewable resources, and thus would not impact these resources for future generations. Under Alternatives 2 and 3, the short-term use of fuel to conduct lease compliance actions and removal, investigation, and cleanup of hazardous and toxic materials and wastes (connected actions) in the State-owned land not retained would be offset by the end of military activities in these areas due to lease expiration, which would decrease long-term use of fuel.

5.6 Relationship Between Short-term Use of the Environment and Long-term Productivity

NEPA requires a discussion of trade-offs among short-term uses of the environment and the maintenance and enhancement of long-term productivity. HAR Section 11-200.1-24(m) states the discussion “. . . shall include the extent to which the Proposed Action forecloses future options or narrows the range of beneficial uses of the environment or poses long-term risks to health or safety.”

The analysis of the Proposed Action describes minor to significant adverse and beneficial impacts for short- and long-term uses of the environment (**Chapter 3**). On the State-owned land retained, the Army would continue to implement protocols and resource management actions and associated activities such as emergency services that minimize impacts on the Army's biological and cultural resources. For biological resources, plans and procedures are generally developed cooperatively with federal and State agencies; the list of documents guiding management is provided in **Section 3.3.2**. For cultural resources, previous NEPA/NHPA analyses of military use has determined an adverse effect on historic properties within PTA, and mitigation is in place for ongoing training. Adherence to existing protocols and cultural resources management actions would ensure the Proposed Action would not create new impacts to known or undiscovered cultural resources (**Section 3.4**).

On the State-owned land not retained (Alternatives 2 and 3), short-term, adverse environmental impacts would occur for biological and cultural resources (**Chapter 3**). Short-term, negligible, adverse impacts would occur to biological resources from discontinuation of Army conservation efforts before the State can implement new programs on State-owned land not retained. Short-term, minor, adverse impacts would occur to cultural resources from ground-disturbing activities associated with lease compliance actions.

The Proposed Action envisions that land retention would promote long-term productivity at PTA by supporting the Army's mission and thus national defense. Continued use of the State-owned land is paramount to the Army's readiness in Hawai'i; the maneuver area and training and support facilities and features on the State-owned land at PTA are needed for USARHAW to fulfill its mission. Loss of key features and facilities within the State-owned land would foreclose the opportunity for the Army to train in Hawai'i above the company level (i.e., battalion and brigade level) for infantry, artillery, and aviation units. Due to the lack of some required training, USARHAW would not be able to support ready forces to provide the Pacific Response Force per USINDOPACOM order or the Army Contingency Response Force per USARPAC order. Army readiness and joint training with other component commands of USINDOPACOM would be reduced at a time when revisionist powers and rogue regimes threaten democracy and the United States.

Chapter 6

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B.A., Communications; 32 Years

Peter Mow, G70 – Utilities
B.S.E., Aerospace Engineering; 30 Years

Deborah Peer, HDR, Inc. – Peer Reviewer of Environmental Justice
M.S., Environmental Management; 22 Years

Angela Peltier, Element Environmental, LLC – Geology, Topography and Soils, Hazardous and Toxic Materials and Wastes, Water Resources; Peer Reviewer of Electromagnetic Spectrum
B.S., Geology and Geophysics; 17 Years

Andrew Pereira, CommPac – Communications and Media Monitoring
B.A., Political Science; 28 Years

Stephanie Saephan, G70 – Geographic Information Systems Analyst
M.S., Botany; 24 Years

Amanda Sims, Kleinfelder / GANDA – Cultural Resources
B.A., Anthropology; 15 Years

Emily Smith, HDR, Inc. – Peer Reviewer of Geology, Topography and Soils, Water Resources
M.E.M., Environmental Policy; 15 Years

Patrick Solomon, HDR, Inc. – Peer Reviewer of DOPAA, Utilities
M.S., Geography; 27 Years

Steve Spengler, Element Environmental, LLC – Geology, Topography and Soils, Water Resources; Peer Reviewer of Electromagnetic Spectrum
Ph.D., Hydrogeology; 25 Years

Trisha Kehaulani Watson-Sproat, J.D., Ph.D., Honua Consulting – Cultural Impact Assessment,
Cultural Resources

J.D., Environmental Law Certificate; Ph.D., American Studies; 18 Years

Cody Winchester, G70 – Peer Reviewer of Air Quality and Greenhouse Gases

M.A., Urban and Regional Planning; 5 Years

Chapter 8

PUBLIC NOTIFICATION AND COMMENT

8.1 EIS Scoping Consultation

Section 1.6.1 and **Section 1.6.2** describe the public notification process of the NOI and EISPN and the scoping process to obtain public input. Public notification began with publication of the scoping period in local newspapers and publication of the NOI and EISPN in federal and state bulletins. Scoping notices are reproduced in **Appendix A**. Postcards providing scoping dates and processes were mailed directly to approximately 100 agencies and organizations with jurisdiction or expertise, elected officials, and organizations. Those that were notified of the scoping period through direct mail postcard and those that provided comments during the scoping period are listed in **Table 8-1**. In some instances, commenters provided a partial name or no name with their scoping comment.

In accordance with HAR Section 11-200.1-26, responses to substantive, written scoping comments are published in the Draft EIS. Reproduction of the complete written comments received during scoping for this Draft EIS, and responses to those comments, are provided in **Appendix B**. **Section 1.6.2** provides a summary of oral comments received during the 5-hour SVOH event; the comments received were transcribed and are provided in **Appendix B**.

8.2 Notice of Availability for Draft Environmental Impact Statement

The public notification process for this Draft EIS is summarized in **Section 1.6.3**. Entities that were notified of the Draft EIS availability through direct mail postcard are listed in **Table 8-1**. OEQC informed the public of the Draft EIS availability through publication in its bulletin, *The Environmental Notice* [HRS Chapter 343-3(c)]. Notification of the Draft EIS availability also included publication in the *Federal Register* and local newspapers.

Printed versions of this Draft EIS have been provided to the following relevant public libraries to facilitate public review, in fulfillment of HEPA requirements: Hawai'i State Library Documents Center, Hilo Public Library, Kailua-Kona Public Library, and Thelma Parker Memorial Public and School Library. The Draft EIS is also available online through the State OEQC website: oegc2.doh.hawaii.gov/EA_EIS_library and on the project EIS website: <https://home.army.mil/hawaii/index.php/PTAEIS>.

Table 8-1: EIS Scoping and Notification of Availability for the Draft EIS	Provided Notice of Scoping	Written Scoping Comment Received	Provided Draft EIS Notice of Availability
Federal Agencies			
U.S. Army Corps of Engineers, Honolulu District	X		X
U.S. Department of Commerce, National Oceanographic and Atmospheric Administration	X		X
U.S. Department of the Interior, U.S. Fish and Wildlife Service Pacific Islands Fish and Wildlife Office	X		X
U.S. Department of the Interior, U.S. Fish and Wildlife Service Hakalau Forest National Wildlife Refuge	X		X
U.S. Department of the Interior, U.S. National Park Service Hawai'i Volcanoes National Park	X		X
U.S. Department of the Interior, U.S. National Park Service National Natural Landmarks Program		X	
U.S. Department of Transportation Federal Aviation Administration	X		X
U.S. Environmental Protection Agency Pacific Islands Office Region 9	X	X	X
U.S. Geological Survey, Pacific Islands Region 12	X		X
U.S. Marine Corps, Marine Corps Base Hawaii	X		X
State of Hawai'i Agencies			
Department of Agriculture	X		X
Department of Business, Economic Development & Tourism (DBEDT)	X		X
DBEDT Office of Planning	X		X
Department of Defense	X		X
Department of Hawaiian Home Lands	X	X	X
Department of Health, Environmental Health Administration	X		X
<i>Includes: Clean Air Branch; Clean Water Branch; Hazard Evaluation and Emergency Response Office; Indoor and Radiological Health Branch; Safe Drinking Water Branch; and Solid and Hazardous Waste Branch</i>			
Hazard Evaluation and Emergency Response Office		X	X
Department of Land and Natural Resources	X	X	X
Commission on Water Resource Management	X	X	X

Table 8-1: EIS Scoping and Notification of Availability for the Draft EIS	Provided Notice of Scoping	Written Scoping Comment Received	Provided Draft EIS Notice of Availability
Division of Forestry and Wildlife	X		X
Engineering Division	X	X	X
Land Division	X	X	X
Office of Conservation and Coastal Lands	X		X
State Historic Preservation Division	X		X
Department of Transportation	X	X	X
Office of Hawaiian Affairs	X		X
County of Hawai'i Agencies			
Hawai'i Civil Defense Agency	X		X
Hawai'i Department of Environmental Management	X		X
Hawai'i Department of Parks and Recreation	X		X
Hawai'i Department of Public Works	X		X
Hawai'i Department of Water Supply	X	X	X
Hawai'i Fire Department	X		X
Hawai'i Planning Department	X	X	X
Hawai'i Police Department	X		X
Hawai'i Department of Finance	X		X
Elected Officials			
The Honorable David Ige, Governor of the State of Hawai'i	X		X
U.S. Senator Brian Schatz	X		X
U.S. Senator Mazie Hirono	X		X
U.S. Representative Ed Case	X		X
U.S. Representative Tulsi Gabbard (outgoing); U.S. Representative Kaiali'i Kahele (as of 12/7/2020)	X		X
State House Rep. Mark M. Nakashima, District 1	X		X
State House Rep. Chris Todd, District 2	X		X
State House Rep. Richard H.K. Onishi, District 3	X		X
State House Rep. Joy A. San Buenaventura (outgoing), District 4; State House Rep. Greggor Ilagan (as of 12/7/2020), District 4	X		X
State House Rep. Richard P. Creagan (outgoing), District 5; State House Rep. Jeanne Kapela (as of 12/7/2020), District 5	X		X

Table 8-1: EIS Scoping and Notification of Availability for the Draft EIS	Provided Notice of Scoping	Written Scoping Comment Received	Provided Draft EIS Notice of Availability
State House Rep. Nicole E. Lowen, District 6	X		X
State House Rep. David A. Tarnas, District 7	X		X
State Senator Kaiali'i Kahele (outgoing), District 1; State Senator Laura Acasio (as of 12/7/2020), District 1	X		X
State Senator Russell E. Ruderman (outgoing), District 2; State Senator Joy A. San Buenaventura (as of 12/7/2020), District 2	X		X
State Senator Dru Mamo Kanuha, District 3	X		X
Mayor Harry Kim (outgoing); Mayor Mitch Roth (as of 12/7/2020)	X		X
Council Member Valerie T. Poindexter (outgoing), District 1; Council Member Heather L. Kimball (as of 12/7/2020), District 1	X		X
Council Member Aaron Chung, District 2	X		X
Council Member Susan "Sue" L. K. Lee Loy, District 3	X		X
Council Member Ashley Lehualani Kierkiewicz, District 4	X		X
Council Member Matt Kaneali'i-Kleinfelder, District 5	X		X
Council Member Maile Medeiros David, District 6	X		X
Council Member Rebecca Villegas, District 7	X		X
Council Member Karen Eoff (outgoing), District 8; Council Member Holeka Goro Inaba (as of 12/7/2020), District 8	X		X
Council Member Herbert M. "Tim" Richards III, District 9	X	X	X
Organizations			
Associated Universities Inc.		X	
Environmental Caucus of The Democratic Party of Hawai'i		X	
Et Al. Native Tenants Hawai'i Kingdom		X	
Girl Scouts of Hawai'i		X	
Hawai'i Island Chamber of Commerce		X	
Hawai'i Peace and Justice		X	
Kamehameha Schools	X		X
Kona-Kohala Chamber of Commerce		X	
Maka'ala O Ka Hana Wai		X	
Mauna Kea Moku Nui 'Aelike/Consensus Building 'Ohana		X	

Table 8-1: EIS Scoping and Notification of Availability for the Draft EIS	Provided Notice of Scoping	Written Scoping Comment Received	Provided Draft EIS Notice of Availability
Maunakea Observatories		X	
Mālama Mākua		X	
Na Kupuna Moku O. Keawe		X	
Native Hawaiian Legal Corporation		X	
Nā Kuleana o Lele		X	
Ola’a First Hawaiian Church		X	
Pacific Resource Partnership		X	
Sierra Club, Hawai’i Island Group		X	
Temple of Lono		X	
University of Hawai’i, Institute for Astronomy		X	
Waiki’i Ranch Homeowners Association	X		X
Waikoloa Village Association	X		X
Public Repositories	Provided EIS Preparation Notice	Provided Draft EIS	
Hawai’i State Library, Hawai’i Documents Center	X	X	
Hilo Public Library	X	X	
Kailua-Kona Public Library	X	X	
Thelma Parker Memorial Public and School Library	X	X	
Individuals	Scoping Comment Received		
Kimi Abbott-Jackson	X		
Douglass Adams	X		
Shelly Aina	X		
Jim Albertini	X		
Carol Ann Alina	X		
Kelsey Amos	X		
Deb Anderson	X		
James Anthony	X		
Kelsea Armstrong	X		
Andrew Ashburn	X		
Nalu Awai	X		

Individuals	Scoping Comment Received
Brenda Bailey-White	X
Carla Baker	X
Christopher Baker	X
Bruce Banick	X
Lorrie Beggs	X
Jana Bennett	X
Jared Bernard	X
Alexandra Bernstein	X
AziaLynne Bird	X
Patricia Blair	X
Jeff Bond	X
Dennis Boyd	X
Jody Brissette	X
Mark Brouwer	X
Maryann Broyles	X
Cheryl Burghardt	X
Kesslyn Carlos	X
Kinion Wahineali'i Carroll	X
Alana Carvalho	X
Jared Char	X
Carl Christensen	X
Aurora Cole	X
Barbara Cooney	X
Andrew Cooper	X
Alexis Cox	X
Dizia Crisostomo	X
Alexander Cryan	X
Sasha Davis	X
Stella Dee	X
Kahu: Richard Maele DeLeon	X

Individuals	Scoping Comment Received
Dexter	X
Amanda Dillon	X
Stephany Dinnan-Kaolulo	X
Alyce Dodge	X
Blake Doll	X
Candy Doogle	X
Susan Douglas	X
Robert Duerr	X
Mahina Embers	X
Sofronio Estores	X
Jhernie Evangelista	X
Mia Evans	X
Piikea Everett	X
Hanalei Fergerstrom	X
Rico Ferrari	X
Joe Ferraro	X
Kristen Ferrer	X
John Ferry	X
Kevin Fray	X
Antoinette Freitas	X
David Fuertes	X
Don Fujimoto	X
Jhonele Gambill	X
Antonio Gaspar	X
Michael Gast	X
Carl Geise	X
Robert Gerard	X
Ezekiel Giddens	X
Marcia Goldman-Manker	X
David B. Gomes	X

Individuals	Scoping Comment Received
D.A. Haliimaile Goo	X
Brian Goodyear	X
Mark Gordon	X
Donna Grabow	X
Tina Grandinetti	X
Linda Green	X
Patricia Greene	X
William Greentree	X
Renate Gregory	X
Kaiki Gunderson-Cook	X
Richard Hamasaki	X
Corey Harden	X
Gary Harrold	X
James Head	X
Brittney Hedlund	X
Joan Heller	X
Linnea Heu	X
Rebecca Hightower	X
Jennifer Ho	X
Tamlyn Hunt	X
Charley Ice	X
Bianca Isaki	X
Marco Jablonowitz	X
Helen Jaccard	X
Sam Jacobs	X
Jerard Jardin	X
Laurie Jenkins	X
Henrietta Jeremiah	X
Sydney Ji	X
Lanie Johnson	X

Individuals	Scoping Comment Received
Michael Jones	X
Dexter Ka`iama	X
Na'e Kaiama	X
Pearl Kaiama	X
Trevor Kaiama	X
Kyle Kajihiro	X
Dana Keawe	X
Matilda Keith	X
Nikki Kepano	X
Cindy Kester	X
Gwendolyn Kim	X
Kimo	X
Mary Klauder	X
Charles Kuahine III	X
Kyle Lanclos	X
Arlene Larrua	X
Mary Beth Laychak	X
Erika Leaf	X
J Lemus	X
Thomas Lenchanko	X
Luwella Leonardi	X
Debora Letelier	X
Selah Levine	X
Danny H. C. Like	X
Anna Lindsey-Robles	X
Michael Linnolt	X
Sandra Linskey	X
Sheena Lopes	X
Brenda Lucas	X
Mary Macmillan	X

Individuals	Scoping Comment Received
Mana Maglinti	X
Scott Mahoney	X
Elisabeth Mehana Makainai	X
Mailani Makainai	X
Sylvia Makainai	X
John Makoff	X
Gordon Malakaua Mann	X
Scott Malis	X
Linda Manabe	X
Snow Marks	X
Keith Marrack	X
Nancy Martin	X
Cynthia Massa	X
Titus Matthews	X
Dangelo McIntyre	X
Carol McMillan	X
Denise Medeiros	X
Randall Medeiros	X
Lillian Merle	X
Jeffrey Mermel	X
Zach Mermel	X
Meleanna Meyer	X
William W. Milks	X
Mariana Monasi	X
Maimoa Moses	X
Joel Nakamoto	X
Suzanne Nicoll	X
Joseph Nobriga	X
A'ohe 'Oihana	X
Keith Okamoto	X

Individuals	Scoping Comment Received
Cat Orlans	X
Jonathan & Jamaica Osorio	X
Charles Ota	X
Brandie Oye	X
Stephen Paulmier	X
Cameo Perrells	X
Amy Perruso	X
Seanna Pieper-Jordan	X
Megan Ploski	X
Valerie Poag	X
Steven Pommier	X
Jim Popper	X
Kalai S. Posiulai	X
Tanya Power	X
Kahumu Rasi	X
Nancy Redfeather	X
Michael Reimer	X
Kahu Ricky	X
Rose Riedesel	X
Renee Riley	X
Elene Rizzo-Kuhn	X
Tara Rojas	X
Dale Ross	X
Jon Sabati	X
Ellen Schomer	X
Richard Schulherr	X
Kathleen Slaughter	X
Amy Smith	X
Katrina Souza	X
M. Kalani Souza	X

Individuals	Scoping Comment Received
Matthew Kalani Souza	X
Aaron Stene	X
Robert H Stiver	X
Julie Stowell	X
Anna Sumida	X
Jojo Tanimoto	X
Frances Tannen	X
James Tatar	X
Jane Taylor	X
Ariana Thompson-Lastad	X
Judy Tiktinsky	X
Melissa Tomlinson	X
Sharon Torbert	X
Wendy Volkmann	X
Brian Vollert	X
Brand W.	X
Kalyn Wadsworth	X
Sam Warren	X
Joyce Weaver	X
Danielle West	X
Wendi White	X
Tracy Whyte	X
Ellen Wilhite	X
Pete Wilson	X
Dr. Noe Noe Wong-Wilson	X
Colonel Ann Wright	X
Ann Wurden	X
Peter Yanan	X
Savory Yarrow	X
Sandy Yee	X

Individuals	Scoping Comment Received
Tatiana Young	X
Unidentified Caller #1	X
Unidentified Caller #2	X
Unidentified Caller #3	X
Unidentified Caller #4	X
Unidentified Caller #5	X
Unidentified Caller #6	X
Unidentified Caller #7	X
Unidentified Caller #8	X
Unidentified Caller #9	X
Unidentified Caller #10	X
Unidentified Caller #11	X
Unidentified Caller #12	X
Unidentified Caller #13	X
Unidentified Caller #14	X
Unidentified Caller #15	X

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Chapter 9

GLOSSARY

A-weighted Scale – The human ear cannot perceive all pitches or frequencies of sounds equally. To mimic the human ear’s sensitivity and perception of different frequencies, sound is measured by applying an A-weighted scale. Sound measurement uses decibels, and the A-weighted scale filters out very low and very high-pitched sounds. The A-weighted scale is used to evaluate noise generated by vehicles, aircraft, and small arms firing (up to .50-caliber).

Above Ground Level – Typically applied to aircraft operations, this is a measurement of the altitude (or height) above the ground surface expressed in feet (or meters).

Airspace – A three-dimensional configured resource managed and controlled by the FAA in the United States and its territories. There are four types—controlled, uncontrolled, special use, and other airspace.

Alternative – Options to meet the purpose of and need for a proposed action.

Ambient air – Outdoor air in locations accessible to the general public.

Ambient air quality standards – A combination of air pollutant concentrations, exposure durations, and exposure frequencies that are established as thresholds above which adverse impacts to public health and welfare may be expected. Ambient air quality standards are set on a national level by the USEPA. Ambient air quality standards are set on a state level by public health or environmental protection agencies as authorized by state law.

Ammunition – Material fired, scattered, dropped, or detonated from any weapon. Ammunition is both expendable weapons (e.g., bombs, missiles, grenades, land mines) and the component parts of other weapons that create the effect on a target (e.g., bullets and warheads).

Ammunition Holding Area – Area where ammunition is temporarily stored while a military unit is training.

Ammunition Supply Point – Facility where ammunition is securely stored for issue to and return by military units.

Aquifer Sector – An area that generally exhibits a continuous aquifer or source of water. Sector boundaries may include mountain ridges or valley floors. Regulatory agencies utilize sector boundaries in governing the state’s water supply.

Artillery and Mortar Systems – Indirect-fire weapons that do not rely on a direct line of sight between the gun and its target. They require long-range firing capabilities.

Attainment area – An area considered to have air quality as good as or better than the NAAQS. An area may be an attainment area for one pollutant and a nonattainment area for others.

Average daily traffic volume – The total traffic volume during a given time in 24-hour periods, greater than one day and less than one year, divided by the number of days in that period.

Battalion – A unit composed of multiple company teams, usually between 500 and 900 soldiers.

Battle Area Complex – Digital live-fire range for mounted, dismounted, and aviation training.

Brigade Combat Team – A unit composed of multiple battalions, usually between 3,000 and 5,000 soldiers.

C-weighted Scale – The human ear cannot perceive all pitches or frequencies of sounds equally. To mimic the human ear's sensitivity and perception of different frequencies, sound is adjusted or weighted. Noise measurements use decibels and the C-weighted scale to filter out low pitched, impulsive sounds. The C-weighted scale is used to measure percussive noise and vibrations generated by explosive charges and large-caliber weapons (over .50-caliber).

Cantonment – Permanent military station, usually containing administration buildings, barracks, and support facilities.

Carbon monoxide – A colorless, odorless gas that is toxic because it reduces the oxygen-carrying capacity of blood.

Census Block Group – A geographical unit used by the U.S. Census Bureau that is between the Census Tract and the Census Block. It is the smallest geographical unit for which the bureau publishes sample data, i.e., data that are only collected from a fraction of all households.

Combat Training Center – These provide an enhanced maneuver training experience, a dedicated opposing force, and robust instrumentation and formal evaluation and feedback process to brigade-sized combat teams. This is the final training event for large units and prepares them for their operational mission.

Combat Unit – A military unit organized, trained, and equipped to engage in combat.

Company Team – A military unit usually composed of multiple platoons with a headquarters section (between 100 and 200 soldiers).

Controlled Airspace – A generic term that includes the different classifications of airspace and defined dimensions within which air traffic control service is provided. Controlled airspace is divided into five classes, dependent upon location, use, and degree of control: Classes A, B, C, D, and E.

Council on Environmental Quality – The CEQ was established as part of the NEPA and consists of three members appointed by the President. The CEQ coordinates federal environmental efforts and works closely with the White House and federal agencies to develop environmental and energy policies and initiatives.

Criteria pollutants – Six common air pollutants that are considered harmful to public health and the environment, and cause property damage. These pollutants include ground-level ozone, particulate matter, carbon monoxide, lead, sulfur dioxide, and nitrogen dioxide.

Critical Habitat – A description of the specific areas with physical or biological features essential to the conservation of a listed species and that may require special management considerations or protection. These areas have been legally designated through publication in the *Federal Register*.

Cumulative impacts – Impacts that result from the incremental impacts of an action, when added to other past, present, and reasonably foreseeable future actions, regardless of which agency (federal or nonfederal) or person undertakes such actions.

Day-Night Average Sound Level – A measure of the average noise levels over a 24-hour period.

Decibel – A generic term for measurement units based on the logarithm of the ratio between a measured value and a reference value. Decibel scales are most commonly associated with acoustics (using air pressure fluctuation data); but decibel scales sometimes are used for ground-borne vibrations or other types of measurements.

Depleted uranium – DU is a dense, slightly radioactive heavy metal used by the United States and other countries in making ammunition, armor, aircraft counterweights, and other materials. Because of its density and penetrating power, DU is an excellent material for making armor and armor-piercing weapons.

Deployment – The movement of forces within operational areas.

Direct impact – An effect caused by an action that occurs at the same time and place.

Drop Zone – Cleared area used to drop equipment and personnel via parachute from aircraft.

Easement – An interest in land owned by another that entitles its holder to a specific limited use. A right-of-way is usually an easement.

Emission – The release of air contaminants into the ambient air; the amount (usually stated as a weight) of one or more specific compounds introduced into the atmosphere by a source or group of sources.

Encroachment – Describes the “cumulative result of any and all outside influences that inhibit normal military training and testing” and includes urban growth, interference with airspace, unexploded munitions, and endangered species habitat.

Endangered Species – Defined under the ESA as “any species which is in danger of extinction throughout all or a significant portion of its range.”

Endangered Species Act – Passed by Congress in 1973, the ESA recognized the rich natural heritage of “esthetic, ecological, educational, recreational, and scientific value to our Nation and its people.” The ESA protects and recovers imperiled species and the ecosystems upon which they depend and is administered by the USFWS and the Commerce Department’s National Marine Fisheries Service.

Endemic – Restricted or peculiar to a locality or region.

Environmental Impact Statement – As defined in the CEQ regulations, a detailed written report that provides a “full and fair discussion of significant environmental impacts and (informs) decision makers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment.” The draft EIS evaluates a range of reasonable alternatives and their associated impacts and presents a preferred alternative if one option is clearly favored above the others. After departmental review, the draft EIS is circulated among agencies and the public for comment. Following the public hearing held to formally record comments on the draft, a final EIS is prepared incorporating public and agency input and recommending a selected alternative.

Excavation – Digging with mechanical equipment during military training.

Executive Order – Order issued by the President by virtue of his authority vested by the Constitution or by an act of Congress. An Executive Order has the force of law.

Existing Conditions – The physical features, land, and area or areas to be influenced, affected by, or created by an alternative under consideration; also includes various social and environmental factors and conditions pertinent to an area.

Explosives – A substance that produces an explosion; may be incorporated into munitions or used in demolition to destroy structures and equipment, or clear areas.

Facilities – Buildings and the associated infrastructure, such as roads, trails, and utilities.

Federal Register – A daily publication of the U.S. Government Printing Office that contains notices, announcements, regulations, and other official pronouncements of U.S. Government administrative agencies. Various printed announcements and findings related to specified environmental matters and transportation projects and activities appear in this publication.

Fee simple – Fee simple ownership means possession of a piece of real estate in totality, generally not subject to any other person’s ownership interests. Also referred to as “fee simple absolute” or “owned in fee.”

Firing Point – Location used for live-fire and non-live-fire training by indirect-fire weapons (e.g., artillery and mortars).

Forward Arming and Refueling Point – Cleared area with concrete pads for providing fuel and ordnance to helicopters and tilt-rotor aircraft.

Forward Operating Base – Entry-controlled position used to support a strategic goal or objective (e.g., medical facilities, airfields, and maintenance support facilities).

Fugitive dust – Dust that could not be reasonably confined or collected.

Garrison – Applies to certain facilities that constitute a military base or military headquarters. A garrison is usually in a city, town, fort, castle, ship, or similar site. USAG-HI traces its history to the District of Hawai‘i, a command formed in 1910 as a sub element of the Department of California.

Geographic Information Systems – Computer applications used to store, view, and analyze geographical data. It provides a visual depiction of areas or data.

Greenhouse gases – Compounds found naturally within the Earth’s atmosphere that trap and convert sunlight into infrared heat. Increased levels of GHGs have been correlated to a greater overall temperature on Earth and global climate change.

Hazardous Materials – Substances defined as hazardous by the CERCLA and the Solid Waste Disposal Act, as amended by the RCRA. Generally, hazardous materials include substances that, due to their quantity, concentration, or other characteristics, may present danger to health or the environment if released.

Hazardous Waste – Substances defined as hazardous that are regulated under the RCRA. They are defined as any solid, liquid, contained gaseous, or semisolid waste, or any combination of wastes that either have one or more of the hazardous characteristics of ignitability, corrosivity, toxicity, or reactivity, or are listed as a hazardous waste under 40 CFR Part 261.

Helicopter Dip Tank – Surface water feature where helicopters can fill buckets with water during firefighting operations.

Infantry – Soldiers trained and equipped to fight on foot, the main land combat force and largest component of the Army.

Infrastructure – The basic physical and organizational structures and facilities (e.g., buildings, roads, power supplies) needed for the operation of a society or enterprise.

Hawai’i Environmental Policy Act – HEPA requires State agencies to consider the impact of governmental actions on the environment because “humanity’s activities have broad and profound effects upon the interrelations of all components of the environment, [and] an environmental review process will integrate the review of environmental concerns with existing planning processes of the State and counties and alert decision-makers to significant environmental effects which may result from the implementation of certain actions.”

Impacts – Positive or negative effects on the natural or social environment resulting from an action.

Impact Area – An area having designated boundaries, within the limits of which all ordnance will detonate on impact.

Indirect impact – Impacts that are caused by an action and may come later in time or be farther removed in distance than a direct impact but are still associated with the action.

Instrument Flight Rules – Rules under which a pilot relies on instruments to navigate in accordance with a set of FAA rules. The pilot has minimal or no reliance on visual information.

Landing Zone – Cleared area for landing and takeoff of helicopters and tilt-rotor aircraft.

Less than Significant Impact – Refers to the magnitude of the impact. Impacts are less than significant when they would not exceed an identified threshold of significance.

Level of service – Combinations of operating conditions that can occur in a given lane or roadway when it is accommodating various traffic volumes.

Live-fire – Training activities using “live” or lethal ammunition.

Local Training Area – These support individual-service and crew-served weapons proficiency training with the objective of qualifying Soldiers and small units on their weapon systems. Soldiers and units also train maneuver tactics, techniques, and procedures. The training objectives focus on individual through platoon weapons systems proficiency and up to battalion level maneuver operations.

Long-term impact – Impacts that occur during or continue after the completion of an action. These may take the form of delayed changes or changes resulting from the cumulative effects of many individual actions.

Major Training Area – These support larger unit collective live-fire training (platoon and higher) and maneuver training (battalion or brigade). MTA training builds on the training proficiencies achieved at LTAs and integrates maneuver tactics, techniques, and procedures, as necessary.

Maneuver – A movement to place ships, aircraft, or land forces in a position of advantage over the enemy. A maneuver area is land used for ground-based personnel and vehicles to patrol, establish defensive positions, and fire weapons.

Materiel – All items necessary to equip, operate, maintain, and support military activities without distinction as to its application for administrative or combat purposes. Examples of materiel are ships, tanks, self-propelled weapons, and aircraft and related spares, repair parts, and support equipment, but excluding real property, installations, and utilities.

Maximum sound level – The highest A-weighted sound level for aircraft measured during a single event in which the sound level changes value as time passes (e.g., an aircraft overflight). The maximum sound level is important in judging the interference caused by a noise event with conversation, television or radio listening, sleeping, or other common activities.

Metes and bounds – Metes and bounds are the boundaries of a parcel of real estate that is identified by its natural landmarks. Metes and bounds landmarks are often used in a “legal description” of a land.

Military Operations on Urban Terrain – Range with several buildings to simulate a village for practicing military operations in an urban setting.

Mitigation measure – A specific design commitment made with the resource agencies and other agencies during the environmental evaluation and study process that serves to moderate or lessen impacts derived from a proposed action. This might include planning and development commitments, environmental measures, and right-of-way improvements. A mitigation measure is implemented during construction or post-construction.

Modernization – The process of adapting something to modern needs.

Moratorium – A temporary prohibition of an activity.

Mortar – A muzzle-loading indirect-fire weapon with a high angle of fire.

National Ambient Air Quality Standards – Specific standards developed by the USEPA for criteria pollutants that represent the maximum levels of pollutant concentrations that are considered safe.

National Environmental Policy Act – The NEPA of 1969 is the United States' basic charter for protecting the environment. It establishes policy, sets goals and provides means for carrying out the policy. In accordance with NEPA, all federal agencies must prepare a written statement on the environmental impact of a proposed action. The provisions to ensure that federal agencies act according to the letter and spirit of NEPA are the CEQ regulations for implementing NEPA (40 CFR Parts 1500–1508).

No Action Alternative – The alternative describing the situation if a proposed action was not implemented.

Nonattainment area – An area that does not meet a federal or state ambient air quality standard. Federal agency actions occurring in a federal nonattainment area are subject to Clean Air Act conformity review requirements.

Notice of intent – Announcement in the *Federal Register* advising interested parties that an EIS will be prepared and circulated for a given project.

Operational – Relating to the mission, objectives, and tasks of the Army or other military.

Ordnance – Military supplies, primarily weapons and ammunitions; munitions.

Other airspace areas – Refers to uses such as Military Training Routes, Temporary Flight Restrictions and published visual flight rule routes.

Parcel – An extended area of land, piece of ground, piece of land, tract, or parcel.

Particulate matter – Solid or liquid material having size, shape, and density characteristics that allow the material to remain suspended in the atmosphere for more than a few minutes. Particulate matter can be characterized by chemical characteristics, physical form, or aerodynamic properties. Many components of suspended particulate matter are respiratory irritants. Some components (such as crystalline or fibrous minerals) are primarily physical irritants. Other components are chemical irritants (such as sulfates, nitrates, and various organic chemicals). Suspended particulate matter also can contain compounds (such as heavy metals and various organic compounds) that are systemic toxins or necrotic agents. Suspended particulate matter or compounds adsorbed on the surface of particles can also be carcinogenic or mutagenic chemicals.

Platoon – A unit of approximately 16 to 40 soldiers.

Potable water – Water that is safe to drink.

Proposed action – A plan that an entity (in this case, federal agency) intends to implement and that is the subject of an environmental analysis. The proposed action and all reasonable alternatives are evaluated against the no action alternative.

Record of Decision – A concise public document that records a federal agency’s decision(s) concerning a proposed action. The ROD identifies the alternatives considered in reaching the decision, the environmentally preferable alternative(s), factors balanced by the agency in making the decision, whether all practicable means to avoid or minimize environmental harm have been adopted, and if not, why they were not. A formal notice is published in the *Federal Register* by the USEPA and advertisements are placed in local newspapers to announce that the ROD was made.

Region of Influence – A geographic area selected as a basis on which social and economic impacts of project alternatives are analyzed. The criteria used to determine the ROI are the geographic location of the installation or training area where the proposed action would occur; the area where most effects of a project are likely to occur; the residency distribution of the military and civilian personnel associated with these facilities; commuting distances and times; and the location of businesses providing goods and services to the affected facilities, their personnel, and their dependents.

Restricted airspace – An area of airspace typically used by the military in which the local controlling authorities have determined that air traffic must be restricted or prohibited for safety or security concerns.

Retention – A land interest that would allow continued use of land.

Revisionist power – A ruling government or systems of power whose objective is to change or put an end to the current system.

Rocket – Self-propelled unguided projectile; fired from a vehicle-mounted or shoulder-fired rocket launcher.

Rogue regime – A ruling government or systems of power that violate principles of sovereignty and deliberately blurs lines between civil and military goals to destabilize global stability.

Scoping – A process conducted early in the project that is open to agencies and the public to identify the range, or scope, of issues and alternatives to be addressed during the environmental studies and in the EIS. Although scoping is the initial step in the EIS process, public involvement is a critical component that continues throughout the EIS process.

Screening Criteria – A statement of factors considered in deciding to accept or reject qualifications.

Short-Term Impact – Impacts that occur temporarily, typically during the time of the action causing the impact.

Significant Impact – Refers to the magnitude of an impact. Typically, a criterion is used to identify a threshold that, if exceeded, would constitute a significant impact.

Small Arms – Small caliber, portable firearms designed for individual use; examples include handguns, shotguns, light machine guns, rifles, and carbines.

Sound pressure level – A decibel level calculation based on the measurement of instantaneous pressure fluctuations over and under the prevailing barometric pressure.

Special status species – Those plants or animals that have a protective status designated by a state or federal agency because of general or localized population decline.

Special use airspace – Airspace within which specific activities must be confined or wherein limitations are imposed on aircraft not participating in those activities. SUAs are established in a coordinated effort with FAA to maintain safety by separating military and civilian flights.

Standard Operating Procedures – A set of step-by-step instructions compiled by an organization to help workers carry out routine operations. SOPs aim to achieve efficiency, quality output and uniformity of performance, while reducing miscommunication and failure to comply with regulations. PTA SOPs include information, policy, and guidance for users of PTA to plan and conduct training activities at the installation.

State-owned land – Refers to land owned by the State of Hawai'i that is currently leased by the U.S. Army at PTA. Retention of State-owned land is the general topic of this EIS.

Sustainable yield – The maximum rate of forced withdrawal from a source of water, which does not result in a loss of water quality or loss of rate of withdrawal.

Tactical – Using tactics in the use of weapons or forces deployed at the battlefield in such a way as to achieve a given objective.

Tax map key – The description of a physical land unit of the state, using the division, zone, section, plat, and parcel. It is prepared especially for taxation purposes and in accordance with the requirements of the City and County of Honolulu Real Property Assessment Division and the County of Hawai'i Real Property Tax Division.

Taxa – The name applied to a taxonomic group in a formal system of nomenclature.

Tilt-rotor aircraft – A hybrid aircraft that can take off and land like a helicopter, then tilt its engines to fly like an airplane; the Marine Corps V-22 Osprey is the primary example.

Toxic – Poisonous. Exerting an adverse physiological effect on the normal functioning of an organism's tissues or organs through chemical or biochemical mechanisms following physical contact or absorption.

Training Area – A geographic area used by the U.S. Army to conduct military training actions, subdivided into training ranges.

Training Range – A geographic subdivision of a training area often designated for specific weapons qualifications or other types of training actions.

Uncontrolled airspace – Airspace that is not otherwise designated as Class A, B, C, D, or E and without air traffic control authority or responsibility.

Unexploded Ordnance – Munitions that have been primed, fused, armed, or otherwise prepared for action, and have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, personnel, or material, and remains unexploded either by malfunction, design, or any other cause.

Ungulates – Hoofed mammals.

Unmanned Aerial Vehicle – An aircraft flown without a pilot aboard; commonly known as a drone.

Utilities – Facilities that provide water, electricity, waste disposal, or communications services.

Viewshed – The landscape that can be directly seen under favorable atmospheric conditions, from a viewpoint or along a transportation corridor.

Visual Flight Rules – Rules that are applicable when a pilot relies entirely on visual cues (e.g., other aircraft, topography, tall objects) when flying. The visibility distance, cloud cover, and pilot experience are all important factors for the regulatory agency to consider when delineating specific three-dimensional airspace on the aeronautical charts.

Washrack – Used to wash and inspect all vehicles to ensure invasive species seeds and plant material are removed from equipment.

Weapons System – Individual or crew-served large caliber munitions, using standard, incendiary, or high-explosive ammunition, either portable or vehicle-mounted. Examples include heavy machine guns, rocket launchers, shoulder-fired missiles, hand grenades, grenade launchers, mortars, and artillery.