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ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

REF:OCCL:TM

CDUA: OA-3718

FILE COPY

Acceptance Date: June 9, 2014

180-Day Expiration Date: December 6, 2014

SUSPENSE DATE: 21 days from Stamped date:

JUN 23 2014

JUN 12 2014

MEMORANDUM

TO: Jessica Wooley, Director
Office of Environmental Quality Control

FROM: Samuel J. Lemmo, Administrator
Office of Conservation and Coastal Lands

SUBJECT: Draft Environmental Assessment (EA) for Conservation District Use Application (CDUA) OA-3718 for the Aloha Council Boy Scouts of America's Camp Pūpūkea Master Plan located at 59-780 Pūpūkea Road, Haleiwa, Ko'olau Loa, O'ahu, TMK: (1) 5-9-005:002 & 007 and a remnant State Parcel

The Office of Conservation and Coastal Lands has reviewed the draft EA for the subject project, and anticipates a Finding of No Significant Impact (FONSI) determination. Please publish notice of availability for this project in the June 23, 2014 issue of the Environmental Notice. We have enclosed a hard copy and a pdf. copy on CD of the draft EA document. A copy of the Department's Acceptance letter and the applicant's Publication Form are also enclosed. An electronic copy of the publication form has been forwarded to your Office via e-mail.

Should you wish to provide comments regarding this project, please respond by the suspense date noted above. If no response is received by the suspense date, we will assume there are no comments. Contact Tiger Mills of our Office of Conservation and Coastal Lands staff at 587-0382 should you have any questions.

Enclosures

REC'D
14 JUN 12 P4:20
OFFICE OF CONSERVATION AND COASTAL LANDS

APPLICANT ACTIONS
SECTION 343-5(C), HRS
PUBLICATION FORM (JANUARY 2013 REVISION)

RECEIVED

Project Name: Camp Pūpūkea Master Plan

Island: O'ahu

District: Ko'olaupoko

TMK: (1) 5-9-05:002 and (1) 5-9-05:077

Permits: Conservation District Use Permit; National Pollutant Discharge Elimination System Permit; Department of Health Wastewater Permit; Building Permits

'14 JUN 12 P4:21

REC. OF ENVIRONMENTAL CONTROL

Approving Agency:

State Department of Land and Natural Resources, 1151 Punchbowl St., Honolulu, HI 96813

Contact: Kimberly (Tiger) Mills; Phone: (808) 587-0382; Fax (808) 587-0322

Applicant:

Aloha Council Boy Scouts of America, 42 Pū'iwa Road, Honolulu, HI 96817

Contact: Jeff Sulzbach; Phone: (808) 595-0859; Fax (808) 595-4323

Consultant:

PBR Hawaii & Associates, Inc., 1001 Bishop Street, Suite 650, Honolulu, HI 96813

Contact: Tom Schnell, AICP; Phone: (808) 521-5631; Fax (808) 523-1402

Status (check one only):

DEA-AFNSI

Submit the approving agency notice of determination/transmittal on agency letterhead, a hard copy of DEA, a completed OEQC publication form, along with an electronic word processing summary and a PDF copy (you may send both summary and PDF to oeqc@doh.hawaii.gov; a 30-day comment period ensues upon publication in the periodic bulletin.

FEA-FONSI

Submit the approving agency notice of determination/transmittal on agency letterhead, a hard copy of the FEA, an OEQC publication form, along with an electronic word processing summary and a PDF copy (send both summary and PDF to oeqc@doh.hawaii.gov; no comment period ensues upon publication in the periodic bulletin.

FEA-EISPN

Submit the approving agency notice of determination/transmittal on agency letterhead, a hard copy of the FEA, an OEQC publication form, along with an electronic word processing summary and PDF copy (you may send both summary and PDF to oeqc@doh.hawaii.gov; a 30-day consultation period ensues upon publication in the periodic bulletin.

Act 172-12 EISPN

Submit the approving agency notice of determination on agency letterhead, an OEQC publication form, and an electronic word processing summary (you may send the summary to oeqc@doh.hawaii.gov. NO environmental assessment is required and a 30-day consultation period upon publication in the periodic bulletin.

DEIS

The applicant simultaneously transmits to both the OEQC and the approving agency, a hard copy of the DEIS, a completed OEQC publication form, a distribution list, along with an electronic word processing summary and PDF copy of the DEIS (you may send both the summary and PDF to oeqc@doh.hawaii.gov); a 45-day comment period ensues upon publication in the periodic bulletin.

FEIS

The applicant simultaneously transmits to both the OEQC and the approving agency, a hard copy of the FEIS, a completed OEQC publication form, a distribution list, along with an electronic word processing summary and PDF copy of the FEIS (you may send both the summary and PDF to oeqc@doh.hawaii.gov); no comment period ensues upon publication in the periodic bulletin.

Section 11-200-23
Determination

The approving agency simultaneously transmits its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS to both OEQC and the applicant. No comment period ensues upon publication in the periodic bulletin.

Statutory hammer
Acceptance

The approving agency simultaneously transmits its notice to both the applicant and the OEQC that it failed to timely make a determination on the acceptance or nonacceptance of the applicant's FEIS under Section 343-5(c), HRS, and that the applicant's FEIS is deemed accepted as a matter of law.

Section 11-200-27
Determination

The approving agency simultaneously transmits its notice to both the applicant and the OEQC that it has reviewed (pursuant to Section 11-200-27, HAR) the previously accepted FEIS and determines that a supplemental EIS is not required. No EA is required and no comment period ensues upon publication in the periodic bulletin.

Withdrawal (explain)

Summary (Provide proposed action and purpose/need in less than 200 words. Please keep the summary brief and on this one page):

Boy Scouts of America Aloha Council have used Camp Pūpūkea for overnight camping and recreation since the early 1960s. This former military training area is the largest and busiest Boy Scout activity center in the Pacific. Its summer camp program plays host to troops from throughout Hawai'i and the United States Mainland. It is used year-round for camping, training, and other various activities.

The Boy Scouts are proposing various improvements at Camp Pūpūkea. Upgrades include infrastructure improvements (particularly wastewater improvements to eliminate the use of portable toilets), renovation or relocation of some existing structures, and new facilities. Improvements are expected to be completed in three phases over a period of 20 or more years.

The proposed improvements will address facility deficiencies and have beneficial impacts by creating safer conditions and improved facilities. Potential adverse impacts, while minimal, can be mitigated.

CAMP PŪPŪKEA MASTER PLAN

DRAFT ENVIRONMENTAL ASSESSMENT

Prepared for:



BOY SCOUTS OF AMERICA®
ALOHA COUNCIL

Approving Agency:



Prepared by:



May 2014

Camp Pūpūkea Master Plan

Draft Environmental Assessment

Prepared for:

Aloha Council Boy Scouts of America

Approving Agency:

State Department of Land and Natural Resources

Prepared by:



May 2014

SUMMARY

Project Name:	Camp Pūpūkea Master Plan
Location:	Pūpūkea-Paumalū, O‘ahu, Hawai‘i
Judicial District:	Ko‘olauloa
Tax Map Key (TMK):	(1) 5-9-05:02 and (1) 5-9-05:77
Land Area:	64.8 acres (TMK (1) 5-9-05:02; (1) 5-9-05:77) 2 acres (approximately)(remnant State parcel between TMKs (1) 5-9-05:02 and (1) 5-9-05:77)
Landowner:	Aloha Council Boy Scouts of America (TMK (1) 5-9-05:02; (1) 5-9-05:77) State of Hawai‘i (TMK (1) 5-9-05:000)
Applicant:	Aloha Council Boy Scouts of America
Approving Agency:	State Department of Land and Natural Resources
Existing Use:	Boy Scouts campground
Proposed Action:	The Boy Scouts are proposing to provide various improvements at Camp Pūpūkea. Upgrades include infrastructure improvements (particularly wastewater improvements to eliminate the use of portable toilets), renovation or relocation of some existing structures, and new facilities.
Current	
Land Use Designations:	<i>State Land Use:</i> Conservation <i>Conservation District Subzone:</i> General and Resource Subzone <i>City & County Zoning:</i> P-1 (Restricted Preservation) <i>North Shore Sustainable Communities Plan:</i> Preservation <i>Special Management Area (SMA):</i> Not in SMA

CAMP PŪPŪKEA MASTER PLAN
DRAFT ENVIRONMENTAL ASSESSMENT

**Alternatives
Considered:**

Two alternatives were considered:

- No Action: The existing facilities are deficient in capacity and not in compliance with environmental regulations.
- Preferred Alternative: Conceptual plan alternatives were developed. The consultant team synthesized the plans and prepared the Ultimate Site Plan, the plan subject to this environmental assessment.

**Potential Impacts and
Mitigation Measures:**

The Camp Pūpūkea Master Plan will improve existing facilities, address facility deficiencies, and have beneficial impacts by creating safer conditions and improved indoor and outdoor facilities for Boy Scout programs. The potential adverse impacts, while minimal can be mitigated:

- Short-term construction impacts to air quality, noise, solid waste generation, storm water quality/quantity are anticipated. The project will address these impacts through compliance with County, State and Federal rules, regulations, permit and variance requirements regarding fugitive dust, community noise control, and non-point source discharges. In addition, best management practices that include structural and non-structural controls designed to inhibit run-off, erosion, fugitive dust will be implemented.
- Long-term potential impacts to storm water quality/quantity are anticipated if not addressed within the project design. To reduce storm water quality/quantity impacts the Master Plan will maintain natural drainage as much as possible and use pervious pavement to ensure storm water quality/quantity is not increased or degraded.

The Project is not anticipated to impact species listed by the U.S. Fish and Wildlife Service as Threatened or Endangered or their habitat, wetlands, or any known archaeological or cultural resources. The site is not located within agricultural zoned lands, nor within flood or tsunami zones.

**Anticipated
Determination:**

Finding of No Significant Impact (FONSI)

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DRAFT ENVIRONMENTAL ASSESSMENT

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CAMP PŪPŪKEA MASTER PLAN
DRAFT ENVIRONMENTAL ASSESSMENT

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1 INTRODUCTION

This Environmental Assessment (EA) is prepared in accordance with the requirements of Chapter 343, Hawai'i Revised Statutes (HRS), Title 11; Chapter 200, Hawai'i Administrative Rules (HAR) pertaining to Environmental Impact Statements, and Title 13, Chapter 5, HAR pertaining to the State Conservation District. The proposed action involves use of land within the State Conservation District.

1.1 LANDOWNER

Aloha Council Boy Scouts of America owns the 64.8-acre property currently used as Camp Pūpūkea, a Boy Scouts campground (TMKs (1) 5-9-05:002 and (1) 5-9-05:077). The State of Hawai'i owns the approximately two-acre remnant State parcel between TMKs (1) 5-9-05:02 and (1) 5-9-05:77).

1.2 APPLICANT

The applicant is Aloha Council Boy Scouts of America

Contact: Aloha Council Boy Scouts of America
ATTN: Jeff Sulzbach
42 Pū'iwa Road
Honolulu, Hawai'i 96817
Phone: (808) 595-0859
Fax: (808) 595-4323

1.3 ENVIRONMENTAL CONSULTANT

The environmental planning consultant is PBR HAWAII.

Contact: PBR HAWAII & Associates, Inc.
ATTN: Tom Schnell, AICP, Senior Associate
1001 Bishop Street, Suite 650
Honolulu, Hawai'i 96813
Telephone: (808) 521-5631
Fax: (808) 523-1402

1.4 APPROVING AGENCY

The approving agency is the State Department of Land and Natural Resources.

Contact: State Department of Land and Natural Resources
ATTN: Kimberly (Tiger) Mills
1151 Punchbowl St.
Honolulu, Hawai‘i 96813
Telephone: (808) 587-3822
Fax: (808) 587-3827

1.5 COMPLIANCE WITH STATE OF HAWAI‘I ENVIRONMENTAL LAWS

Preparation of this document is in accordance with the provisions of Chapter 343, HRS and Title 11, Chapter 200, HAR pertaining to Environmental Impact Statements. Section 343-5, HRS establishes nine “triggers” that require either an EA or an Environmental Impact Statement (EIS). Actions within the State Conservation District are one of these “triggers.” The property is within the State Conservation District and, as such, the preparation of an Environmental Assessment is required.

This EA has also been prepared to satisfy the requirements of Title 13, Chapter 5, HAR pertaining to the State Conservation District Rules. These rules require an Environmental Assessment for all proposed land uses within the Conservation District.

1.6 STUDIES CONTRIBUTING TO THIS EA

The information contained in this report has been developed from site visits, generally available information regarding the characteristics of the site and surrounding areas, and technical studies. Technical studies are provided as appendices to this EA. These studies include:

- Flora and Fauna Surveys
- Archaeological Inventory Survey
- Cultural Impact Assessment
- Traffic Impact Assessment Report

2 CAMP PŪPŪKEA DESCRIPTION

2.1 BACKGROUND INFORMATION

Aloha Council Boy Scouts of America (Boy Scouts)

It is the vision of the Boy Scouts to be recognized by people in the communities they serve as the premier youth organization in Hawai‘i and throughout the Pacific by carrying out the mission of the Boy Scouts of America. The Boy Scouts’ mission is to prepare young people to make ethical and moral choices over their lifetimes by instilling in them the values of the Scout Oath and Law. The outcomes of Scouting have a dynamic, positive effect on the youth, leaders, and families they serve and help build stronger communities with more caring citizens.

The Boy Scouts of America, Aloha Council serves over 12,960 registered Scouts in over 684 Cub Scout Packs, Boy Scout Troops, Varsity Scout teams, Venture Crews, Explorer Posts, and Learning for Life groups sponsored by 360 businesses, churches, schools, and community service organizations. Over 4,946 dedicated volunteers and a professional staff of 16 deliver high-quality Scouting programs.

The Boy Scouts of America has a long history of helping to shape and mold the values and character of youth. According to the Scout Law, scouts are trustworthy, loyal, helpful, friendly, courteous, kind, obedient, cheerful, thrifty, brave, clean, and reverent. The Boy Scouts continue to help strengthen youth, families, and communities through comprehensive programs for its members. Boy Scouts empower boys by giving them useful roles in their communities and encouraging them to serve others. Scouting’s core values of faith in God, personal integrity, and patriotism are conveyed to members at all activities. Every Scouting activity focuses on nurturing the six critical elements of healthy youth development:

- Strong personal values and character
- Positive sense of self-worth and usefulness
- Caring and nurturing relationships with parents, other adults, and peers
- A desire to learn
- Productive/creative use of time
- Social adeptness

As Boy Scouts leaders reinforce positive behavior in each of these six areas, they prepare youth to face the challenging and complicated issues of today’s society. For over a century, the BSA has helped build future leaders by combining educational activities and lifelong values with fun. The Boy Scouts believe — and, through over a century of experience, knows — that helping youth is a key to building a more conscientious, responsible, and productive society.

CAMP PŪPŪKEA MASTER PLAN
DRAFT ENVIRONMENTAL ASSESSMENT

Camp Pūpūkea

In 1927, the U.S. Army acquired the Camp Pūpūkea site via a Presidential Executive Order. The U.S. military used the land to build the Pūpūkea Military Reservation, including Pūpūkea Battery Emplacements 1 and 2, which were part of the U.S. Army Fleet Defense System. The Camp remained active until the end of World War II. In 1953, another Presidential Executive Order returned Camp Pūpūkea to the Territory of Hawai‘i.

Camp Pūpūkea has been used by the Boy Scouts for overnight camping and recreational use since the early 1960s. This former military training area is the largest and busiest Boy Scout activity center in the Pacific. Its summer camp program plays host to troops from throughout Hawai‘i and the United States Mainland. The camp operates year-round, with events varying depending on the season:

- Summer – Scout Summer Camp (June to August)
- Fall – individual unit camps and Camporees (held on weekends)
- Christmas – Scout Winter Camp (one week)
- Winter/Spring – individual unit camps and our Scouting Outreach groups

2.1.1 Location and Property Description

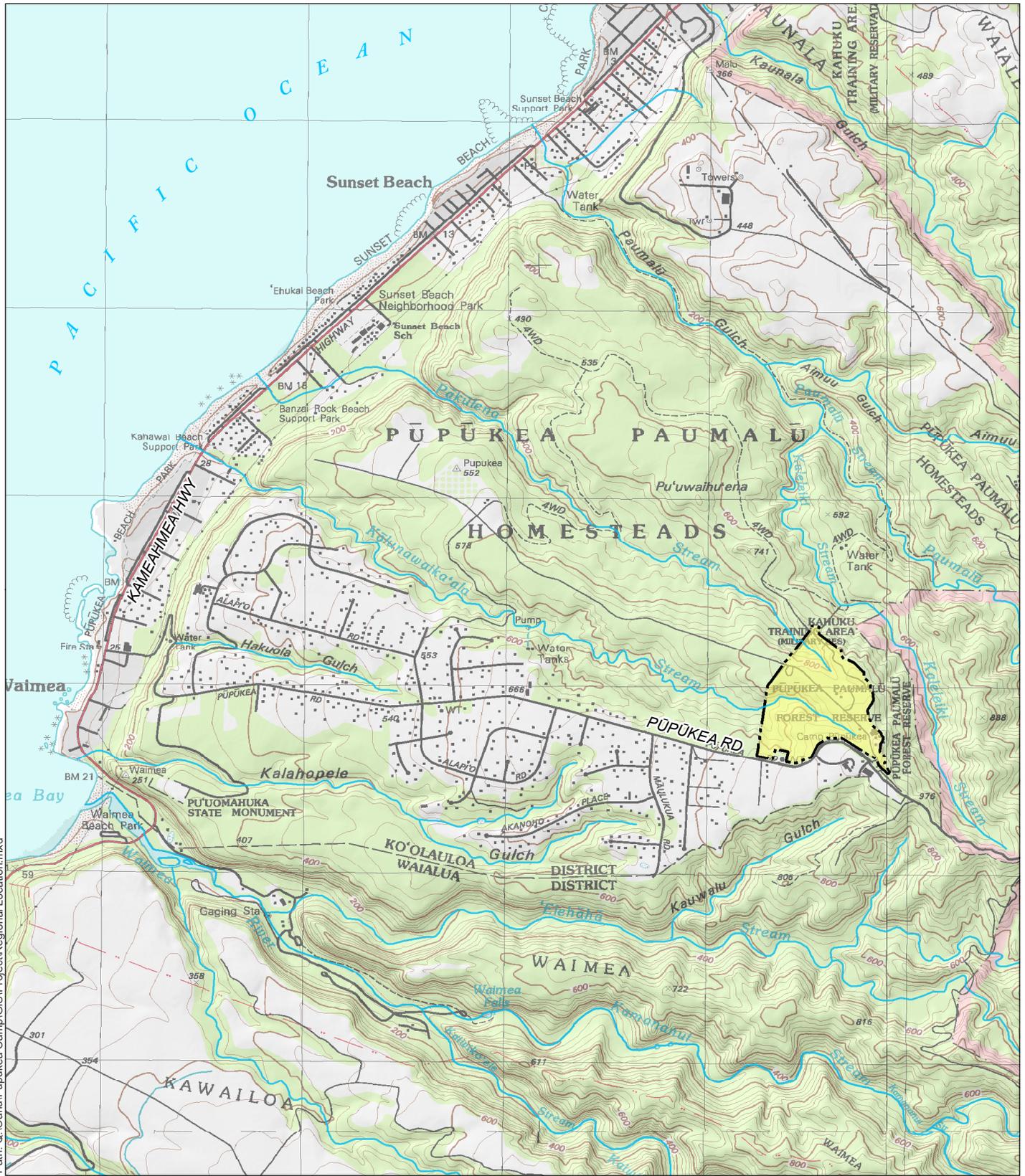
Camp Pūpūkea is located on O‘ahu’s North Shore, approximately three miles from Waimea, atop the slopes of the Ko‘olau Mountain Range, Pūpūkea *ahupua‘a*, Ko‘olauloa District (Figure 1). The Camp Pūpūkea site encompasses approximately 64.8 acres identified as TMKs 5-9-05:002 and 5-9-05:077 (Figure 2). The two parcels are bisected by a remnant State parcel.

The site is triangular in shape, bound by Pūpūkea Road to the south, the Kahuku Training Area to the north northwest, and the Pūpūkea-Paumalu Homesteads and the Pūpūkea-Paumalu State Park Reserve to the west.

Camp Pūpūkea is comprised of various cabins, campsites and outdoor physical fitness and recreational facilities. Figure 3 contains site photographs and Figure 4 contains a map of the camp showing existing buildings and facilities.

Pākūlena Stream and Kālunawaika‘ala Stream both originate within the boundaries of Camp Pūpūkea and continue *makai* of the property in its natural state.

Vegetation within Camp Pūpūkea is dominated by non-native species consisting mainly of Swamp mahogany (*Eucalyptus robusta*) and strawberry guava (*Psidium cattleianum*). The camp is densely forested except for clearings around camp facilities.



DATE: 2/4/2014

LEGEND

-  Camp Pūpūkea
-  Roads
-  Streams

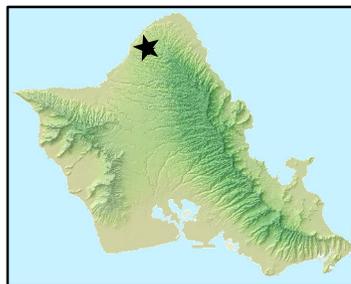


FIGURE 1:
Regional Location

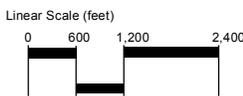
CAMP PŪPŪKEA

The Boy Scouts of America, Aloha Council Island of O'ahu

North

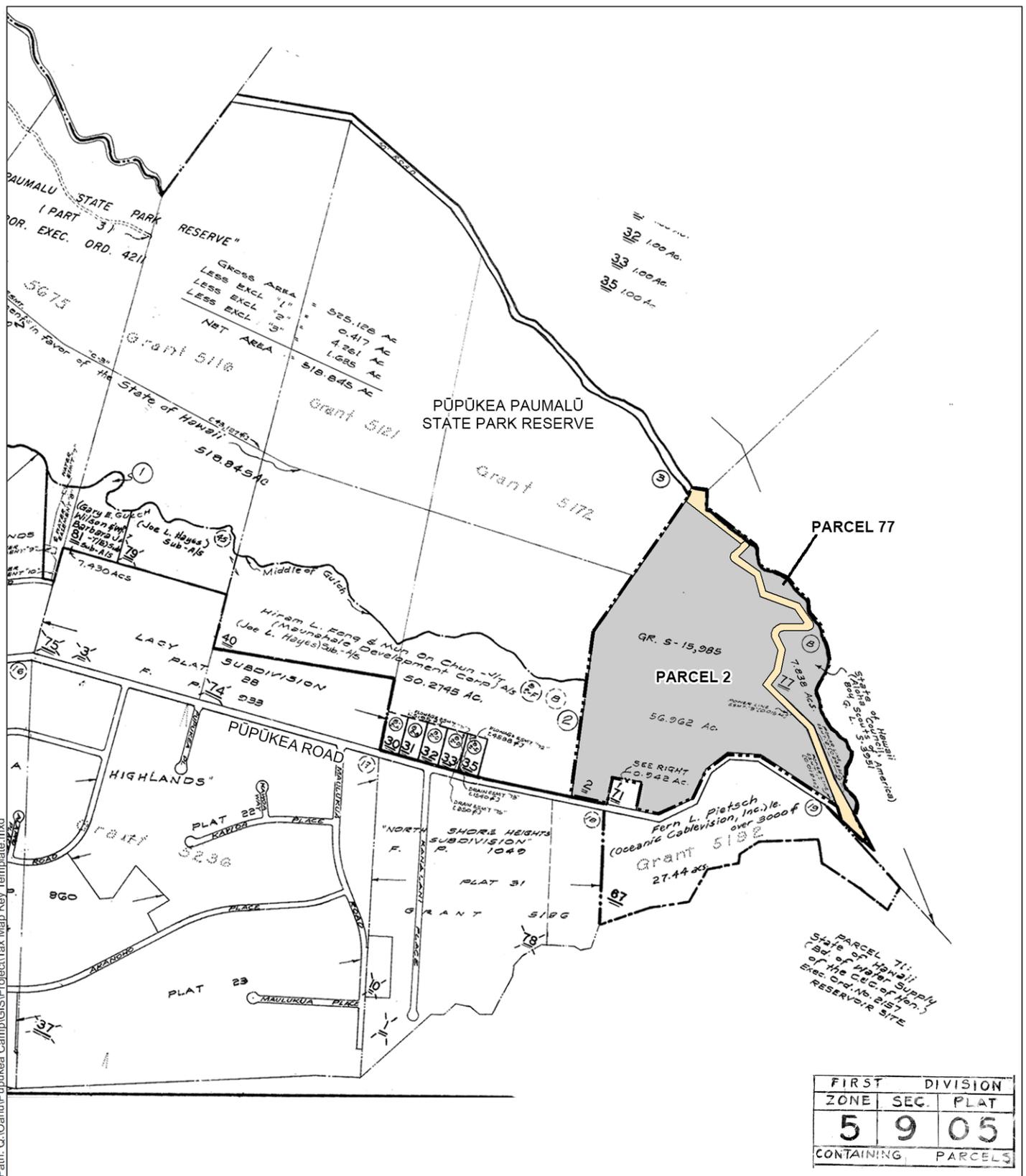


Linear Scale (feet)




Source: U.S. Geological Survey (2014); State Division of Aquatic Resources (2013)
 Disclaimer: This Graphic has been prepared for general planning purposes only and should not be used for boundary interpretations or other spatial analysis.

PDF - Q:\Oahu\Pupukea Camp\PDF\Figure 2 TMK
 Path: Q:\Oahu\Pupukea Camp\GIS\Project\Tax Map Key Template.mxd



FIRST DIVISION	
ZONE	SEC. PLAT
5	9 05
CONTAINING PARCELS	

DATE: 2/6/2014

LEGEND

- Camp Pūpūkea
- Remnant State Parcel

FIGURE 2:
Tax Map Key

CAMP PŪPŪKEA

The Boy Scouts of America, Aloha Council
 North

Island of O'ahu

Linear Scale (feet)
 0 250 500 1,000

Source: City & County of Honolulu (2013)
 Disclaimer: This Graphic has been prepared for general planning purposes only and should not be used for boundary interpretations or other spatial analysis.



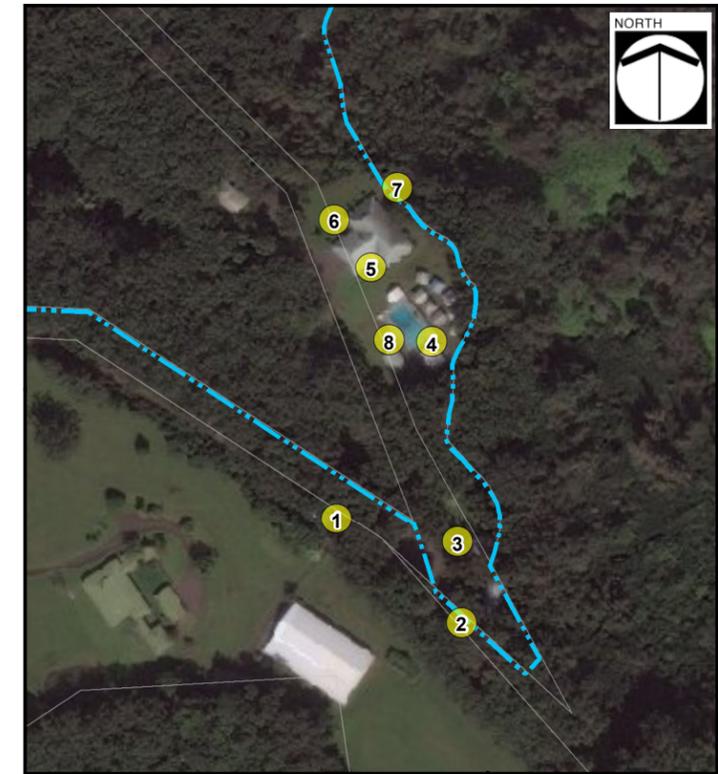
1. Entry Gate (left) and public trail access (right) to Pūpūkea- Paumalū Forest Reserve.



2. Two 3,000 gallon water storage tanks.



3. Ranger's Residence.



4. Cesspool and leech field for camp Master and Director's Cabins.



5. Staff and visitor cabins adjacent to pool.



6. Sewer manhole and leech field for Weinberg Lodge.



7. Observation deck adjacent to Weinberg Lodge.



8. View of Weinberg Lodge from pool.

FIGURE 3A :
Site Photos

CAMP PŪPŪKEA

The Boy Scouts of America, Aloha Council

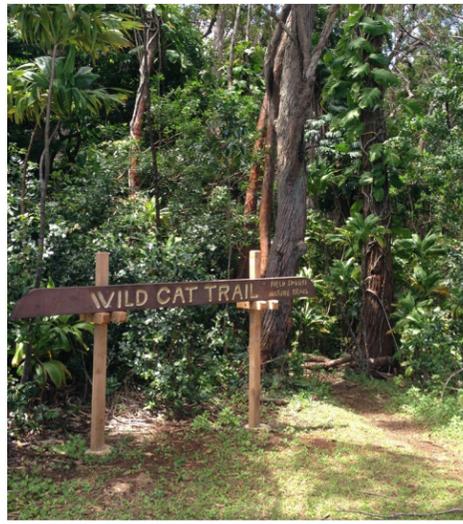
Island of O'ahu

DATE PHOTOS TAKEN: April 17, 2014





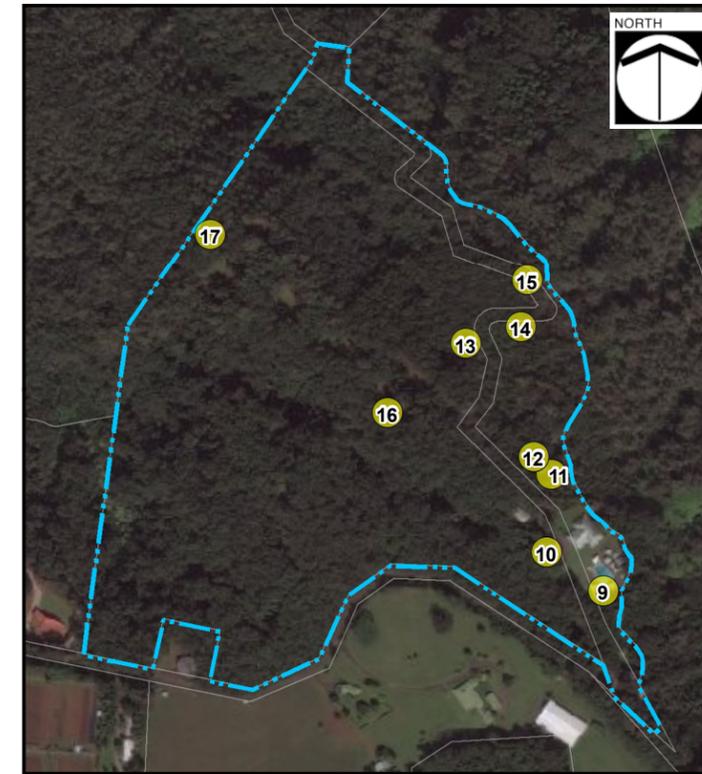
9. Pool Facilities.



10. Trailhead to rifle and archery range.



11. Kilohana campgrounds.



12. Closed latrine and portable toilet at Kilohana.



13. Campfire bowl.



14. Shower facility.



15. View of dirt road looking northwest.



16. Aloha 'Āina camp grounds.



17. Access gate to Pūpūkea-Paumalū Forrest Reserve.

**FIGURE 3B :
Site Photos**

CAMP PŪPŪKEA

The Boy Scouts of America, Aloha Council

Island of O'ahu

DATE PHOTOS TAKEN: April 17, 2014





EXISTING CAMP NO. 2157
 RESURFACE SITE
 MAP 5-9-0005 011
 0.945 ACRES
 (CSF 11.945)

EXISTING FACILITIES

- Four campsites equipped with tents on platforms (82 tents total)
- Five primitive campsites
- Two campsite shower buildings
- A campfire bowl gathering area
- Two Challenging Outdoor Personal Experience (COPE) courses (Ropes Course)
- An assembly yard (Gathering Place)
- A Hawaiiana yard
- A chapel
- Rifle and archery range with a pavilion and storage building
- A trading post/craft lodge
- A nature hut
- A health lodge
- A quartermaster building with ranger's office
- Eight staff cabins
- A swimming pool with showers, changing rooms, and bathrooms
- A maintenance room for the pool filtration system
- An open pavilion (Aloha Pavilion)
- Camp Director cabin
- Camp Master cabin
- The Weinberg Lodge, a multi-purpose lodge with a full service kitchen, commissary, pantry, dining hall, and administration offices
- A ranger's residence
- Pole barn garage
- Water tanks
- Trails

Source: CJS Group Architects, Ltd. 2014

FIGURE 4:
Existing Facilities
CAMP PŪPŪKEA

The Boy Scouts of America, Aloha Council
 North Island of O'ahu

Linear Scale (in feet)
 0 125 250 500

PBR HAWAII & ASSOCIATES, INC.

DATE: 04/07/14

Elevations range from approximately 850 to 970 feet above mean sea level, with average slope of approximately six percent in an east-west, *mauka* to *makai* direction.

Vehicle access to the site is at the *mauka* terminus of Pūpūkea Road where the road turns into the camp driveway. Nature trails are located throughout the site.

2.1.2 Existing Land Use Designations

Current land use designations for the property are:

- **State Land Use District:** Conservation (Figure 5)
- **Conservation District Subzone:** General and Resource (Figure 5)
- **City & County Zoning:** P-1 (Restricted Preservation) (Figure 6)
- **North Shore Sustainable Communities Plan:** Preservation (Figure 7)
- **Special Management Area (SMA):** Not in SMA (Figure 8)

2.1.3 Surrounding Land Uses

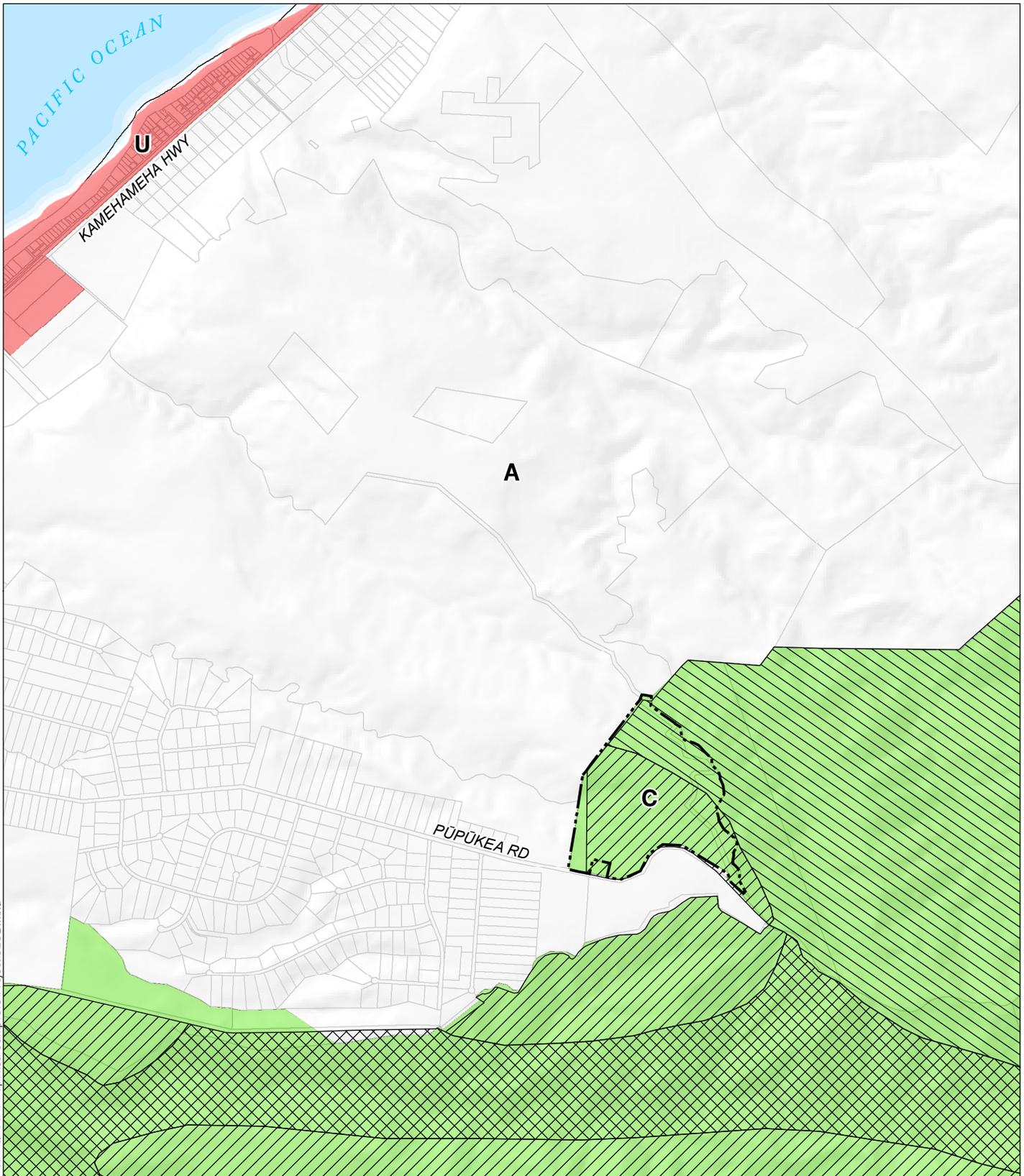
The Pūpūkea-Paumalū State Park Reserve encompasses the majority of the lands to the north, and west of Camp Pūpūkea. This State park reserve is administered by DLNR, Division of Forestry and Wildlife (DOFAW) and actively managed by DOFAW for natural resource conservation, forest product development, and outdoor recreation.

Sunset Ranch, to the south, comprises 27 acres and is dedicated in perpetuity to ranching and agriculture use under a conservation easement which prohibits any future development of the property. A large portion of the Sunset Ranch lands are utilized for equestrian operations. Sunset Ranch offers merit badge programs to the Boy Scouts.

North Shore Heights Subdivision, to the southeast, is a residential/agricultural community.

Waimea Valley, further south and makai, is most commonly known as the site of Waimea Falls Park, a recreational, botanical, and historical park.

PDF - Q:\Oahu\Pupukea Camp\PDF\Figure 5 SLUD
 Path: Q:\Oahu\Pupukea Camp\GIS\Project\SLUD.mxd



DATE: 2/5/2014

LEGEND

-  Camp Pūpūkea
- State Land Use District**
-  A - Agriculture
-  C - Conservation
-  U - Urban

- Conservation District Subzones**
-  General
-  Resource
-  Limited

**FIGURE 5:
 State Land Use Districts**

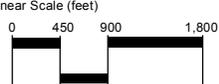
CAMP PŪPŪKEA

The Boy Scouts of America, Aloha Council Island of O'ahu

North

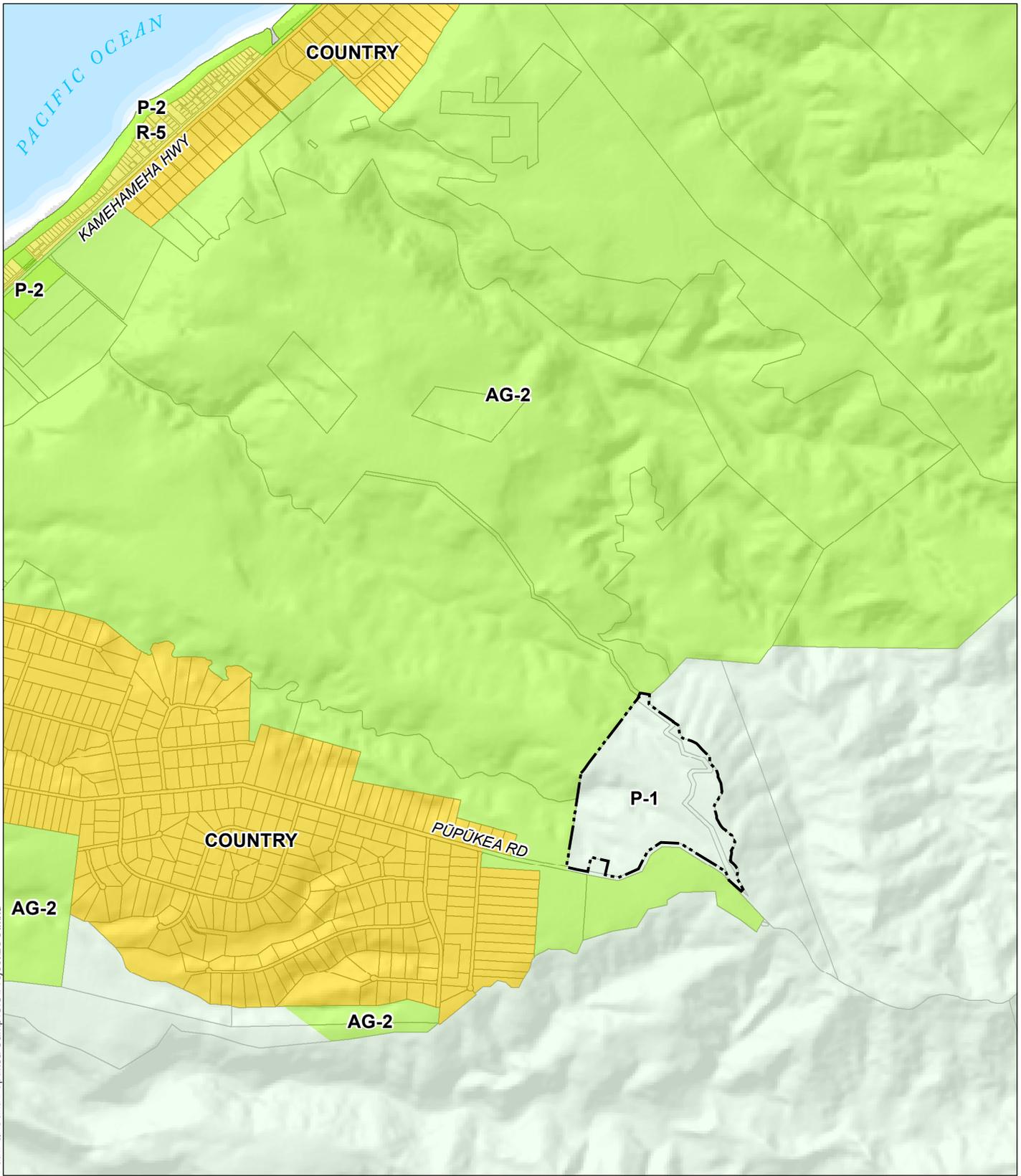


Linear Scale (feet)




PBR HAWAII & ASSOCIATES, INC.

Source: State Department of Land and Natural Resources (2014)
 Disclaimer: This Graphic has been prepared for general planning purposes only and should not be used for boundary interpretations or other spatial analysis.



DATE: 2/4/2014

LEGEND

Camp Pūpūkea

Zoning

- AG-2
- COUNTRY
- P-1
- P-2
- R-5

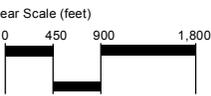
FIGURE 6:
City & County of Honolulu
Land Use Ordinance Zoning
CAMP PŪPŪKEA

The Boy Scouts of America, Aloha Council Island of Oahu

North

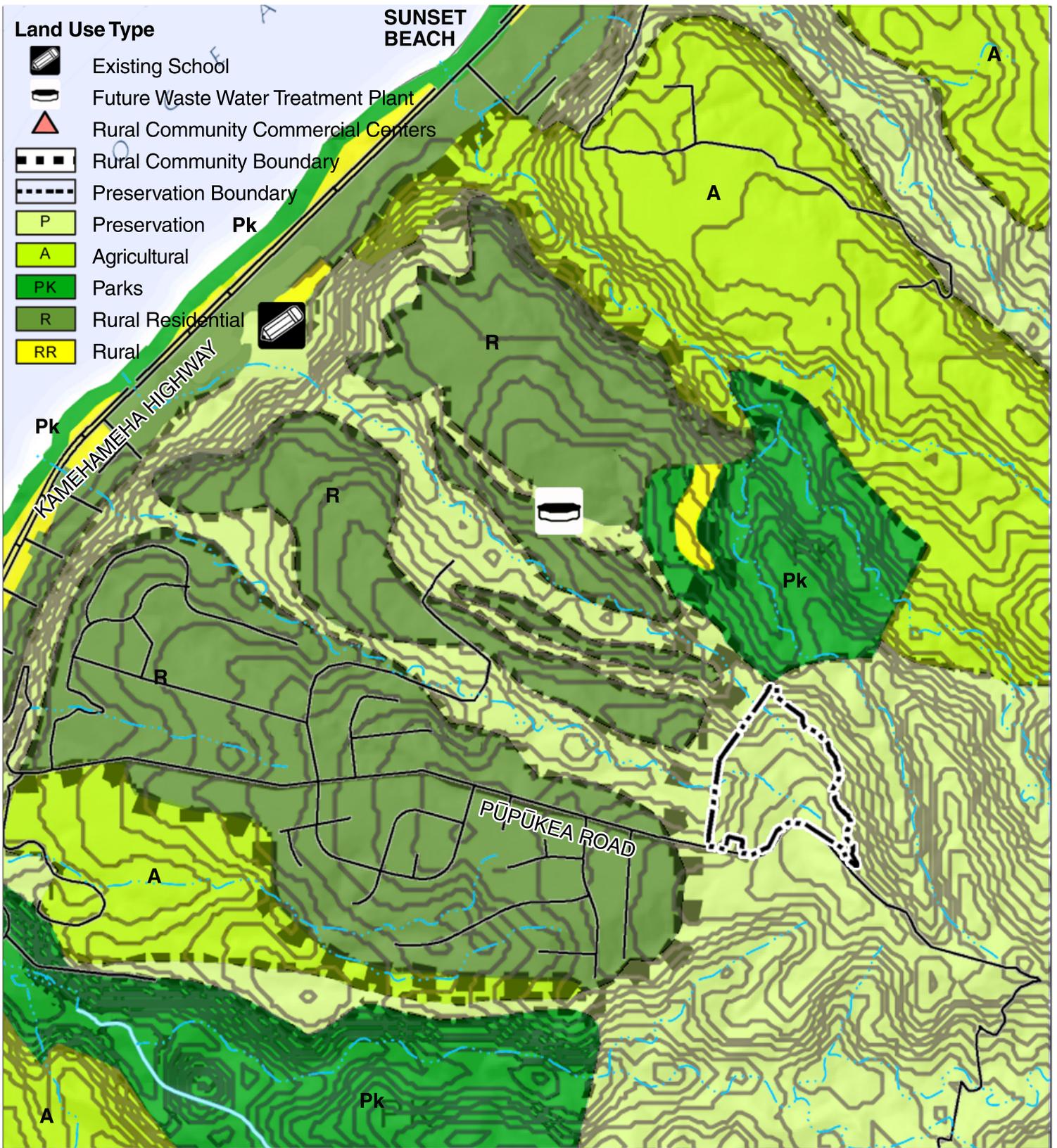


Linear Scale (feet)




PBR HAWAII & ASSOCIATES, INC.

Source: City & County of Honolulu Land Use Ordinance (2013)
 Disclaimer: This Graphic has been prepared for general planning purposes only and should not be used for boundary interpretations or other spatial analysis.



DATE: 1/31/2014

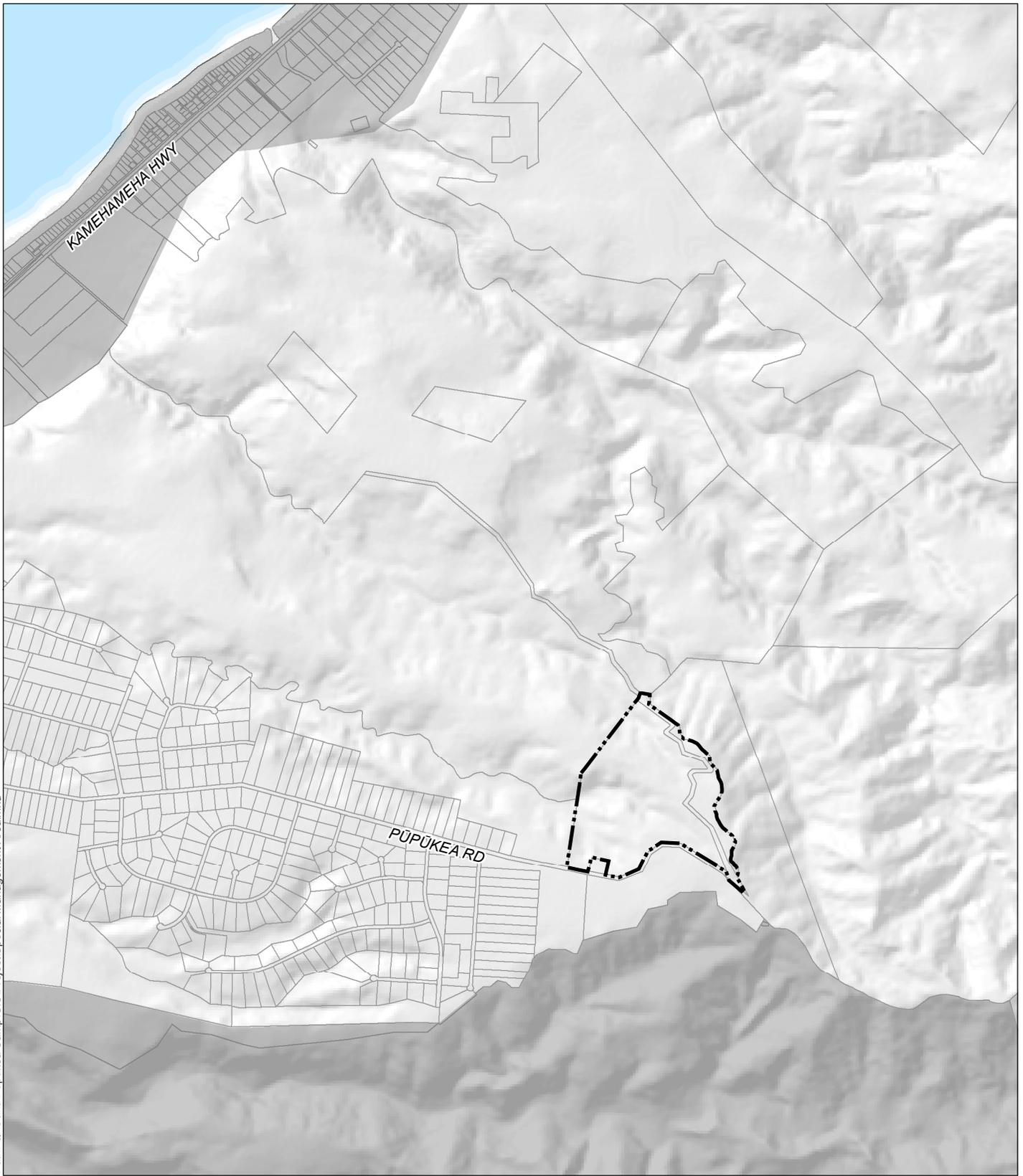
FIGURE 7:
North Shore Sustainable Communities Plan, Land Use Map
CAMP PŪPŪKEA

The Boy Scouts of America, Aloha Council
 North
 Island of O'ahu

Linear Scale (feet)
 0 450 900 1,800

PBR HAWAII & ASSOCIATES, INC.

Source: City & County of Honolulu (2010)
 Disclaimer: This Graphic has been prepared for general planning purposes only and should not be used for boundary interpretations or other spatial analysis.



DATE: 2/4/2014

LEGEND

-  Camp Pūpūkea
-  Special Management Area

FIGURE 8:
Special Management Area

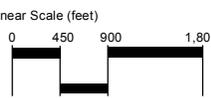
CAMP PŪPŪKEA

The Boy Scouts of America, Aloha Council Island of O'ahu

North



Linear Scale (feet)




PBR HAWAII & ASSOCIATES, INC.

Source: City and County of Honolulu Department of Planning and Permitting (2013)
 Disclaimer: This Graphic has been prepared for general planning purposes only
 and should not be used for boundary interpretations or other spatial analysis.

2.2 PURPOSE AND NEED

The Camp Pūpūkea Master Plan will: 1) provide much needed infrastructure improvements for the campgrounds; and 2) provide more adequate camp facilities for the Boy Scouts' training and leadership programs.

Infrastructure Improvements

Camp Pūpūkea is in need of an updated wastewater system. Currently, camp toilet facilities are provided with portable toilets (porta-potties) as a temporary method of complying with the EPA's 2005 regulations requiring the closure of large capacity cesspools (LCCs). Previously, the camp had latrines with wastewater disposal handled by 12 LCCs. As of February 2012, 11 LCCs were still in operation at Camp Pūpūkea. By June 2012, the Boy Scouts had submitted a preliminary work plan to the State of Hawai'i Department of Health to upgrade their wastewater system. It was at this time that the latrines were boarded to make them inaccessible and the porta-potties were installed to minimize the impact to the environment until an approved wastewater system can be constructed.

Camp Programs and Facilities

New facilities and additional campgrounds are needed for the Boy Scouts expanding programs and members. These new facilities will be located primarily in the south west portion of the camp. Some of the existing structures will need to be renovated or relocated on-site.

2.3 THE BOY SCOUTS' CAMP PŪPŪKEA MASTER PLAN

The Boy Scouts are proposing to provide various improvements at Camp Pūpūkea. Upgrades include infrastructure improvements (particularly wastewater improvements to eliminate the use of portable toilets), renovation or relocation of some existing structures, and new facilities. As part of the Camp Pūpūkea Master Plan the Boy Scouts also propose to acquire the remnant State parcel that bisects the property by either land purchase or land exchange with the State of Hawai'i. The Boy Scouts will pursue the appropriate action in consultation with DLNR, Land Division.

Improvements are expected to be completed in three phases over a period of 20 or more years. The proposed action includes the following elements (collectively referred to as "Camp Pūpūkea Master Plan"):

Phase I

Phase I (Figure 9A) will see infrastructure and other improvements including:

- Water system improvements
- Electrical system improvements
- A junior staff lodging and family cabins complex consisting of five clusters of three cabins each.
- Fire sprinkler system improvements for the family camp area
- A widened camp access road that will also provide fire protection access
- An improved parking area at the entrance to the camp with space for 40 vehicles

The most significant improvement in Phase I will be the construction of five new shower and bathroom facilities (“comfort stations”) with individual wastewater systems to replace the existing shower facilities and portable toilets. Each comfort station’s wastewater system will include four 1,500-gallon IAPMO¹-approved septic tanks, one 1,250-gallon pre-loader, and one absorption bed.

On November 7, 2012, the State of Hawai‘i Department of Health approved the Boy Scouts’ twenty Individual Wastewater System Applications, authorizing the installation of the septic tanks and associated infrastructure. The total estimated wastewater flow of the 20 septic tanks is approximately 20,000 gallons per day. The 12 existing large capacity cesspools will also be formally closed and a Cesspool Closure and Backfilling Report will be submitted to both EPA and the State Department of Health. Some of the cesspools appear to be injection-well cesspools, and therefore, the Boy Scouts will obtain authorization and instructions from the Health Department’s Underground Injection Control program to properly abandon those cesspools.

Phase II

Phase II improvements (Figure 9B) are more mid-range in nature and are proposed to include:

- Upgrades to the Camp Director’s Cabin and Ranger’s House.
- Renovation and relocation of the Scout Leader meeting lounge, Chapel, and Health Lodge
- Expansion of the trading post
- A new Welcome Center
- New multi-use pavilions

¹ International Association of Plumbing and Mechanical Officials.

- A new Indigenous Studies facility
- Relocation of the archery range and rifle range, craft pavilion, climbing and zip line center (COPE facility)

Phase III

Phase III improvements (Figure 9C) are long-range in nature and will depend on the availability of funding. Phase III improvements include new programs, facilities, and additional campgrounds primarily in the south west portion of the camp, including:

- A new facility for Natural Science and Environmental Education
- Additional campground areas
- A mountain bike path
- Additional parking areas

2.4 SUSTAINABLE PLANNING AND DESIGN

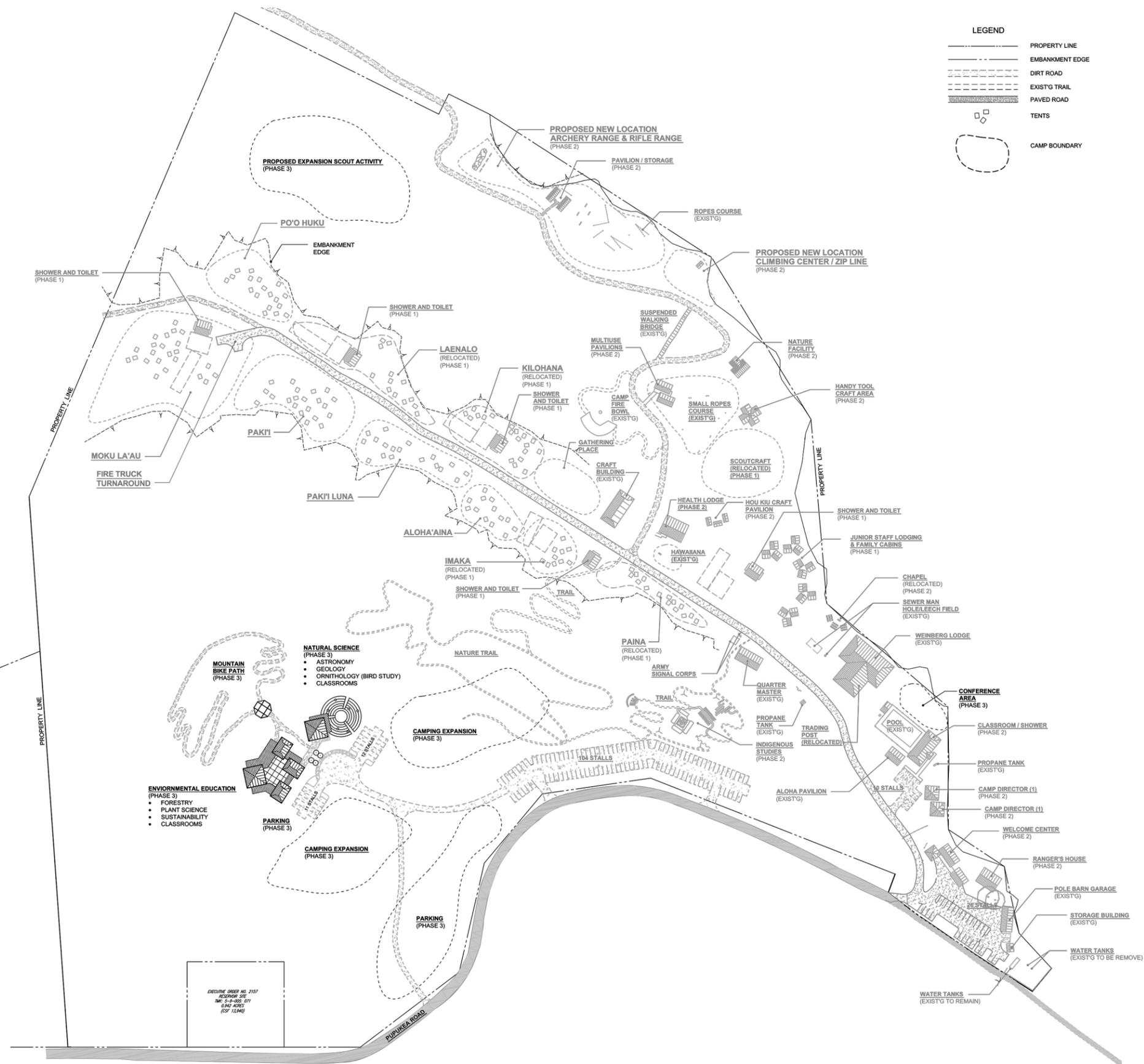
In the design and construction of the Camp Pūpūkea Master Plan, the architect will implement feasible measures to promote energy conservation and environmental stewardship, such as standards and guidelines promulgated by the United States Green Building Council (USGBC), the United States Environmental Protection Agency (EPA), or other similar programs. Sustainable design practices will be incorporated as applicable, including consideration for the following:

- Buildings to take advantage of natural light, ventilation, and trade winds.
- Manage and divert storm water on site to reduce flooding and runoff.
- Provide ADA access as required.
- Plan for and design social gathering spaces.
- Provide a system of pedestrian paths.
- Make room for composting on site.
- Provide motion sensor lighting.

2.5 DEVELOPMENT TIMETABLE AND PRELIMINARY COSTS

Construction of the Pūpūkea Master Plan will commence following the receipt of required approvals and permits, including a CDUP. It is estimated that Phase 1 will be completed by 2017, Phase 2 by 2020, and Phase 3 by 2030 or later.

The total anticipated cost for Phase 1 is \$6 million, \$4 million for Phase 2, and \$4 million for Phase 3. The estimated costs include site development costs, landscaping costs, and buildings costs.



PHASE III IMPROVEMENTS

- A new facility for Natural Science and Environmental Education
- Additional campground areas
- A mountain bike path
- Additional parking areas

Source: CJS Group Architects, Ltd. 2014

FIGURE 9C:
Site Plan - Phase III
CAMP PŪPŪKEA

The Boy Scouts of America, Aloha Council
 North
 Island of O'ahu

Linear Scale (in feet)
 0 125 250 500

DATE: 04/07/14

3 DESCRIPTION OF THE NATURAL ENVIRONMENT, POTENTIAL IMPACTS, AND MITIGATION MEASURES

3.1 CLIMATE

Climate throughout the North Shore region is generally mild. Temperatures range between a high of 84 degrees to a low of 64 degrees Fahrenheit(F), with an annual mean temperature of 75 degrees F. Historically, the warm season occurs from June to October and is followed by the colder season between December to March. Climate variance is low due to prevailing ocean-born trade winds. The region lies more or less perpendicular to the flow of these winds, and annual wind speed ranges between 12 to 14 mph. Precipitation on the North Shore is moderate. Mean annual rainfall in the area amounts to 62 inches with each month seeing at least three inches.

Potential Impacts and Mitigation Measures

The Camp Pūpūkea improvements are not expected to have a significant impact on the region's climate, and no mitigation measures are warranted or planned.

3.2 GEOLOGY & TOPOGRAPHY

Camp Pūpūkea is situated along the top of Kaleleiki Gulch. Elevations range from approximately 850 feet above mean sea level at the makai end, up to 970 feet at the mauka end of the camp. Average slope is approximately six percent in an east-west, *mauka* to *makai* direction.

The camp also rests adjacent to the northeastern base of the Ko'olau Volcano. The hilly topography of the northeastern ridges were thought to have been the result of a giant landslide causing destruction of the eastern flank of the Ko'olau shield. However, further study suggests that a combination of stream and wave erosion may have caused removal of the flank of the Ko'olau shield. The resulting rifts have formed natural drainage systems within the Ko'olau Range and the interior drains entirely north. Considerable canyons have taken form such as the nearby Waimea Bay with a depth of 400 feet. The mountainous region lies above Pliocene-age Ko'olau Basalt and is the most widespread geologic unit exposed on O'ahu.

Potential Impacts and Mitigation Measures

The upgrades to Camp Pūpūkea are not expected to significantly impact the topographic nature of the site relative to the surrounding lands; therefore, no mitigation measures are planned. Any grading necessary will be kept to a minimum to maintain the existing natural state as much as possible and to keep adjacent lands undisturbed. Clearing and grading will be necessary for the shower/comfort station buildings, leach fields for the individual wastewater systems, the junior staff lodging and family cabins complex, and other improvements in subsequent phases. New

buildings in the junior staff lodging and family cabins complex will be of post and pier construction that will not require grading under the floor.

3.3 SOILS

Three soil suitability studies prepared for lands in Hawai‘i describe the physical attributes of land and the relative productivity of different land types for agricultural production; these are: 1) the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) Soil Survey; 2) the University of Hawai‘i Land Study Bureau (LSB) Detailed Land Classification; and 3) the State Department of Agriculture’s Agricultural Lands of Importance to the State of Hawai‘i (ALISH). The three soil suitability studies are discussed below.

Natural Resource Conservation Service Soil Survey

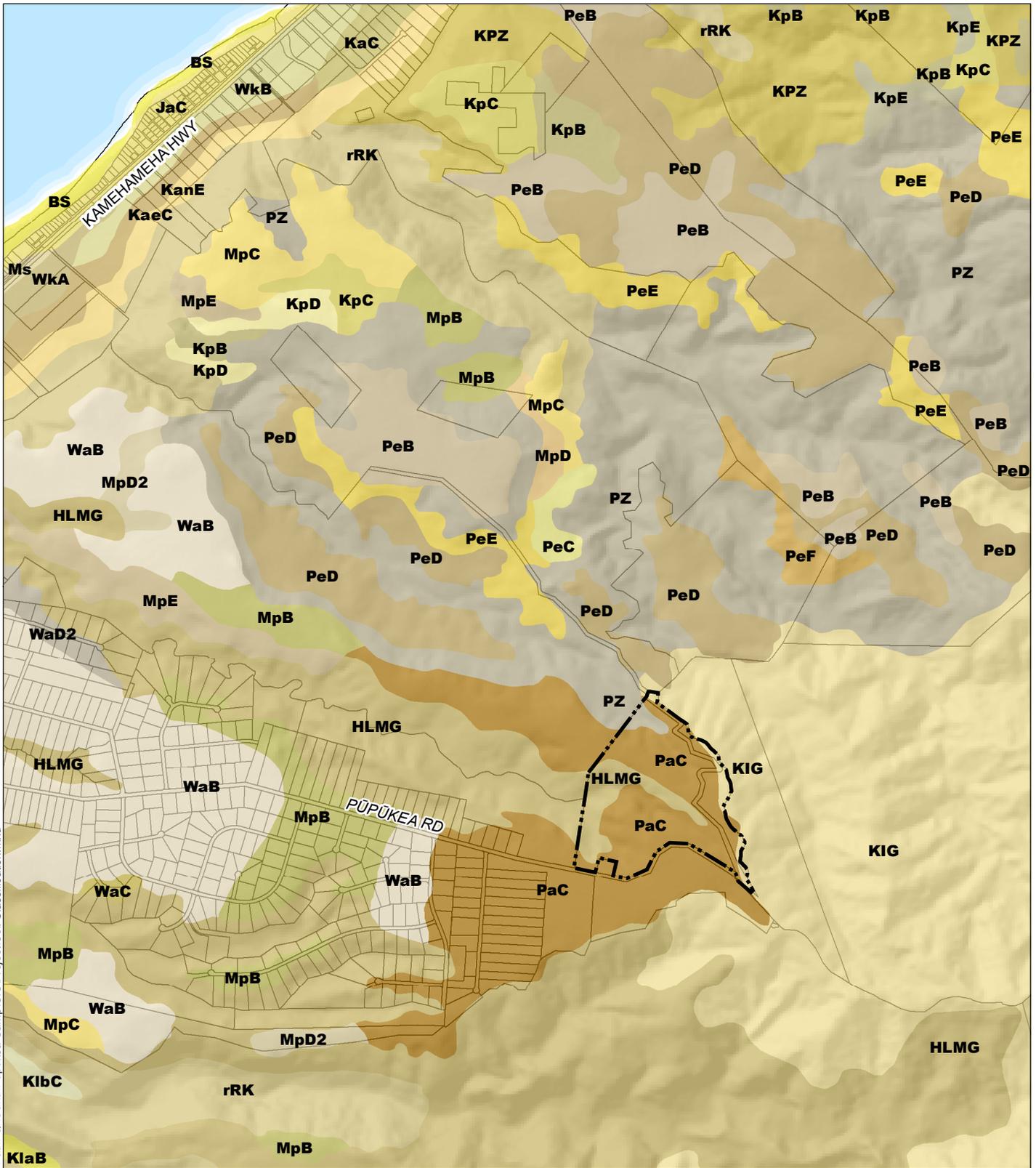
The Natural Resource Conservation Service (NRCS), *Soil Survey of the Islands of Kauai, O‘ahu, Maui, Molokai, and Lanai, State of Hawai‘i* (1972) classifies the soil of the Camp Pūpūkea site as Pa‘aloa silty clay, Helemano silty clay, Kapa‘a silty clay, and Paumalū-Badland complex (Figure 10).

Pa‘aloa silty clay, 3 to 12 percent slopes, occurs on uplands at elevations ranging from just below the steeply sloping, deeply dissected areas covered by rain forest. Vegetation is ‘ōhi‘a, koa, guava, fern, and California grass. Permeability is moderately rapid. Runoff is slow to medium, and the erosion hazard is slight to moderate. This soil is generally used for pasture and sugarcane.

Helemano silty clay, 30 to 90 percent slopes, occurs in deep gulches and drainage ways. Permeability is moderately rapid. Runoff is medium to very rapid, and erosion hazard is severe to very severe. This soil is generally used for pasture, woodland and wildlife habitat.

Kapa‘a silty clay, 40 to 100 percent slopes, occurs on broad ridges on the uplands. Permeability is moderately rapid. Runoff is very rapid, and erosion hazard is severe to very severe. This soil is generally used for water supply, wildlife habitat, and woodland.

Paumalū-Badland complex, occur on uplands with slopes that range from 3 to 70 percent. Permeability is moderately rapid. Runoff is medium to rapid and the erosion hazard is moderate to severe. This soil complex is generally used for pasture and military purposes.



DATE: 2/11/2014

LEGEND

Camp Pūpūkea

Soil Type - Only types within Camp Pūpūkea are listed below

- HLMG - Helemano silty clay, 30 to 90 percent slopes
- KIG - Kapaa silty clay, 40 to 100 percent slopes
- PZ - Paumalu-Badland complex
- PaC - Paaloo silty clay, 3 to 12 percent slopes
- PeD - Paumalu silty clay, 15 to 25 percent slopes

Source: Natural Resources Conservation Service; City & County of Honolulu (2013)
 Disclaimer: This graphic has been prepared for general planning purposes only and should not be used for boundary interpretations or other spatial analysis.

**FIGURE 10:
 Soil Survey**

CAMP PŪPŪKEA

The Boy Scouts of America, Aloha Council Island of O'ahu

North

Linear Scale (feet)

**PBR HAWAII
 & ASSOCIATES, INC.**

Land Study Bureau Detailed Land Classification

The University of Hawai‘i Land Study Bureau’s *Detailed Land Classification – Island of O‘ahu* classifies non-urban land by a five-class productivity rating system, using the letters A, B, C, D and E, where “A” represents the highest class of productivity and “E” the lowest.

The Detailed Land Classification – Island of O‘ahu classifies lands of Camp Pūpūkea as “C” and “E” (Figure 11). The soils covering Camp Pūpūkea generally have little or no potential for soil-based agricultural production.

Agricultural Lands of Importance to the State of Hawai‘i

The Agricultural Lands of Importance to the State of Hawai‘i (ALISH) classification system is based primarily, but not exclusively, on soil characteristics and criteria of or similar to that of the national NRCS classification system. The ALISH system identifies and maps three broad classes of agricultural land – Prime, Unique, and Other Important Agricultural Land, as well as Unclassified Land.

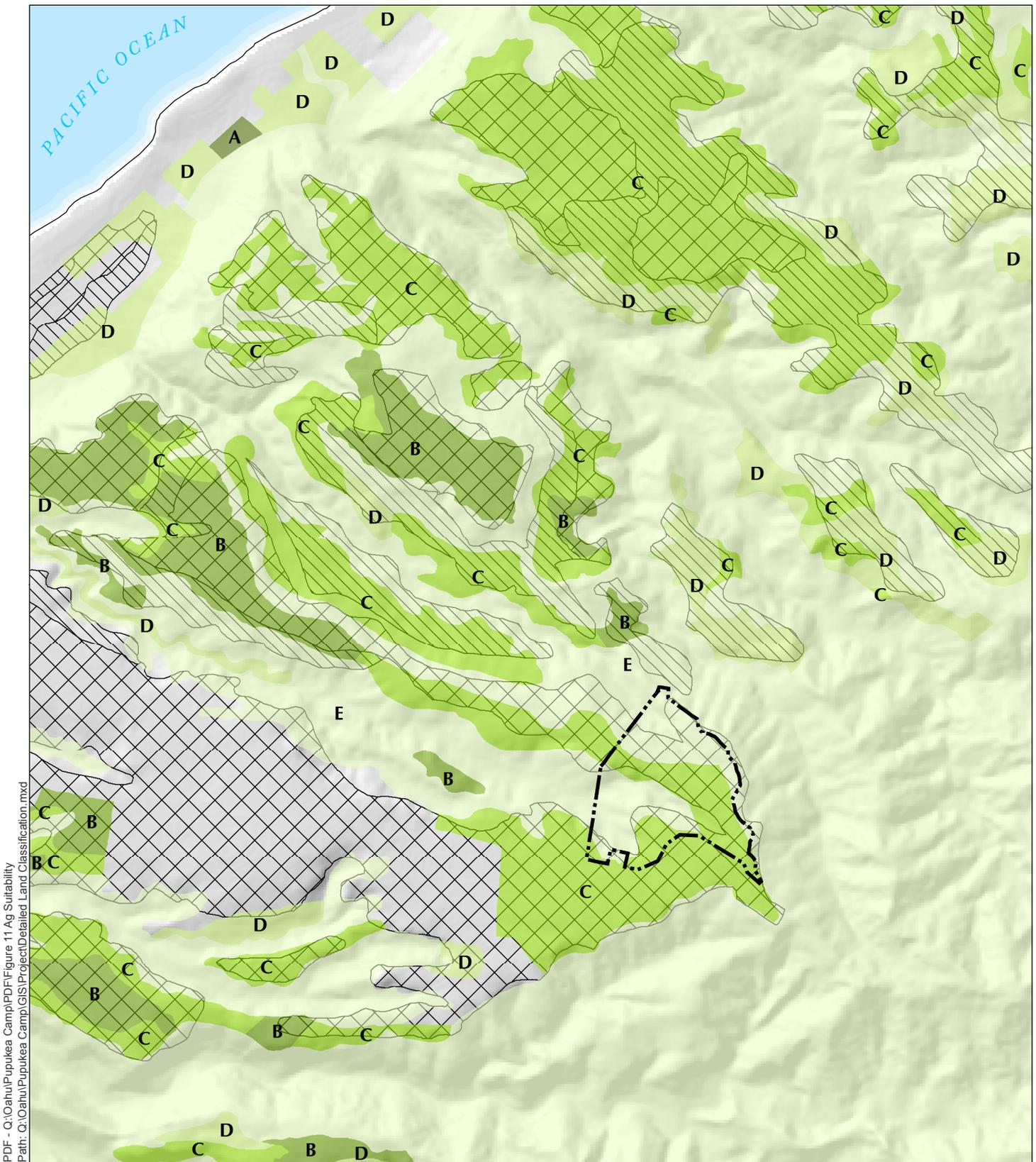
Under the ALISH land system classification, the Camp Pūpūkea lands are designated as Prime Agricultural Land and Unclassified Land (Figure 11). Approximately 54 percent of Camp Pūpūkea is classified as Prime Agricultural Land although the entire property is within the Conservation District.

According to the ALISH system, when treated and managed according to modern farming methods, including water management, Prime Agricultural Land has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops economically. Prime Agricultural Land is land best suited for the production of food, feed, forage, and fiber crops.

Potential Impacts and Mitigative Measures

The Camp Pūpūkea improvements will not reduce the inventory of agriculturally significant land. The site is comprised of silty clay soils where permeability and runoff is rapid and erosion can be severe. Soils at the site are classified as “C” and “E” on the LSB classification, indicating that the site is not agriculturally significant. Although the lands are designated as Prime under the ALISH system, the entire property is located within the State Land Use Conservation District.

Impacts to the soils include potential for soil erosion and the generation of dust during grading and construction. All construction activities will comply with all applicable Federal, State, and County regulations and rules for erosion control. Although not expected, if soil disturbance



PDF - Q:\Oahu\Pupukea Camp\PDF\Figure 11 Ag Suitability
 Path: Q:\Oahu\Pupukea Camp\GIS\Project\Detailed Land Classification.mxd

DATE: 1/30/2014

LEGEND

- Camp Pūpūkea
- Agricultural Lands of Importance (ALISH)**
- Prime ALISH
- Other ALISH

Land Study Bureau (LSB)

- A - Very Good
- B - Good
- C - Fair
- D - Poor
- E - Very Poor

FIGURE 11:
Agricultural Suitability

CAMP PŪPŪKEA

The Boy Scouts of America, Aloha Council Island of O'ahu

North

Linear Scale (feet)

0 450 900 1,800

Source: Land Study Bureau (1972); State Department of Agriculture (1977)
 Disclaimer: This graphic has been prepared for general planning purposes only and should not be used for boundary interpretations or other spatial analysis.

exceeds one acre in area, a National Pollutant Discharge Elimination System (NPDES) permit for Storm Water Associated with Construction Activity will be necessary.

During construction and landscaping at the site, top soil and vegetation will be disturbed on a localized basis. Contractors will use best management practices (BMPs) to minimize erosion during construction and planting. Long term, the landscaping will mitigate the potential of soil erosion from wind and water runoff.

3.4 HYDROLOGY

Camp Pūpūkea is located within the Kālunawaika‘ala and Pākūlena watersheds, which taken together measure approximately two square miles. Kālunawaika‘ala watershed reaches a maximum elevation of 974 feet along the Ko‘olau mountain range and Pākūlena reaches just below that at 938 feet. A watershed area captures rainfall and atmospheric moisture from the air and allows the water to drip slowly into underground aquifers or enter stream channels and eventually the ocean. A description of these resources are provided below.

3.4.1 Groundwater

There are two aquifer coding systems in Hawai‘i used to characterize groundwater resources: 1) the State Commission on Water Resource Management’s (CWRM’s) coding system and 2) the State DOH coding system. Both coding systems are resource-based, CWRM’s system estimates the quantity of sustainable yield in the area while DOH’s system is more for quality/contamination risk considerations.

Based on CWRM’s coding system, the Camp Pūpūkea site overlies the Kawaihoa Aquifer System of the North Aquifer Sector. The Kawaihoa Aquifer has a sustainable yield of 29 million gallons per day (mgd) and belongs to a designated ground water management area. Aquifers in the North Shore region of O‘ahu were historically developed for agricultural uses. According to the U.S. Geological Survey, principal aquifers serving the North Sector include the Ko‘olau Basalt in the east and the Wai‘anae Volcanics in the west. Groundwater in the region occurs as a freshwater lens and recharge occurs naturally through direct rainfall infiltration and groundwater inflow from adjacent areas. Discharge is by outflow to springs and the ocean and withdrawals from wells and shafts.

The DOH coding system also classifies the underlying aquifer as the Kawaihoa Aquifer System of the North Aquifer Sector. DOH characterizes the Kawaihoa Aquifer System as a basal unconfined aquifer within horizontally extensive lavas. The aquifer is currently used for potable uses, has chloride concentrations of less than 250 milligrams per liter, is irreplaceable, and has a high vulnerability to contamination. Contaminants identified by DOH refer to any large-scale use of the land where improper disposal of organic and inorganic chemicals into the ground occur.

Potential Impacts and Mitigation Measures

Phase I improvements to Camp Pūpūkea will include new shower and bathroom facilities connected to individual wastewater systems in compliance with EPA regulations. Previously, the camp had latrines with wastewater disposal handled by 12 large capacity cesspools. However since 2005, EPA regulations have required large capacity cesspools to be closed and replaced with an alternative wastewater system. As a result of this requirement, in 2012, the latrines were boarded to make them inaccessible and portable toilets are now used. As part of the upgrade to individual wastewater systems, the existing cesspools will also be formally closed and a Cesspool Closure and Backfilling Report will be submitted to both EPA and the State Department of Health. These measures will provide long-term protection against cesspool-related groundwater contamination. In acknowledgement of the State CWRM, the Boy Scouts will use best management practices (BMP) to minimize the impact of any facility upgrades to the existing area's hydrology.

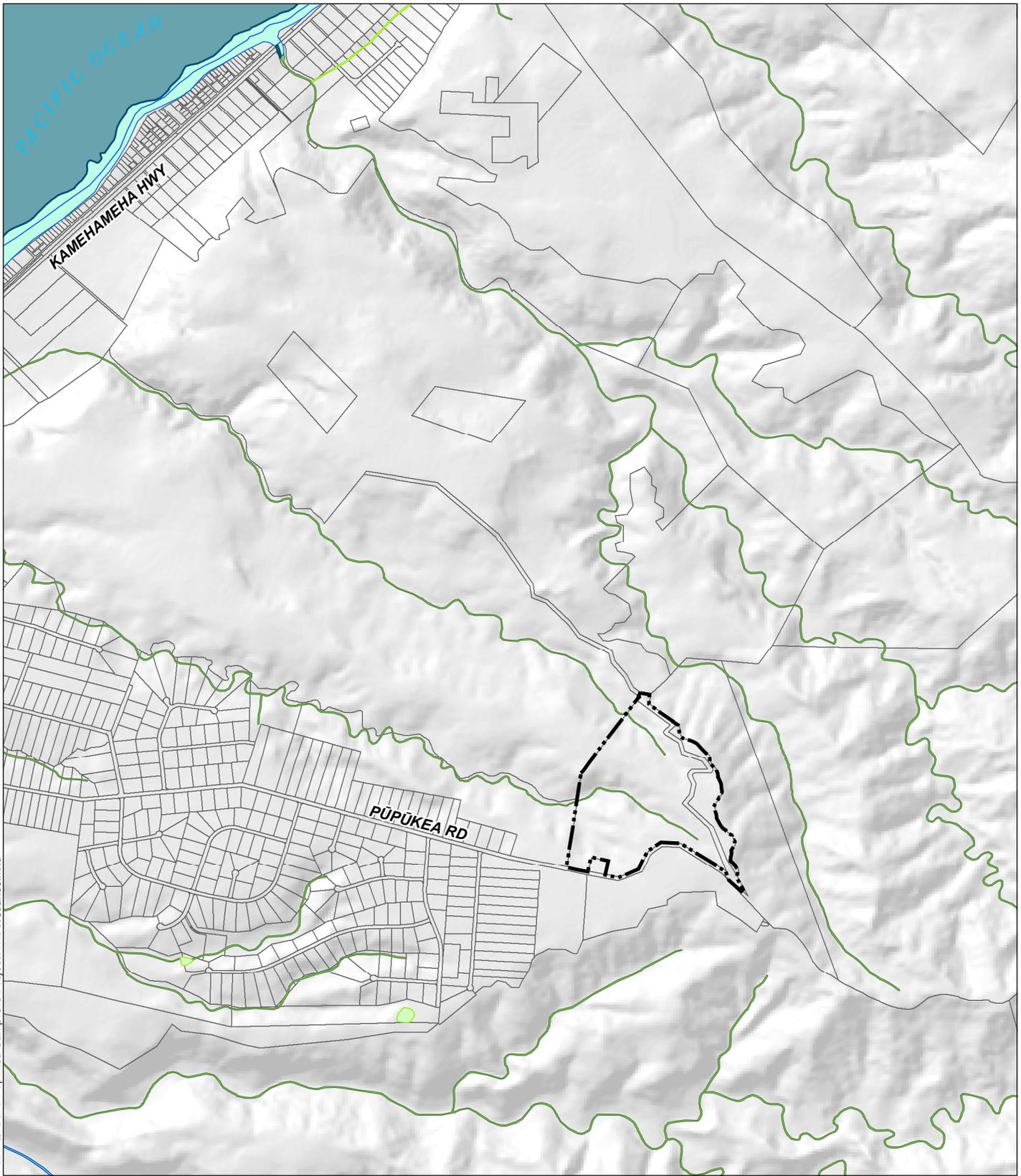
Further, upgrades to the camp are not expected to involve fertilizers, pesticides, or similar materials that have the potential to contaminate groundwater. Therefore future use of the camp for Boy Scouts activities are not expected to cause contamination or impact groundwater resources.

3.4.2 Surface Water

Surface water sources include Pākūlena Stream and Kālunawaika'ala Stream, which both originate within the boundaries of the Camp site. Both streams are perennial. Intermittent surface water runoff associated with heavy rainfall drains through these stream beds.

The U.S. Fish and Wildlife Service (USFWS) designates these two streams as freshwater forested/shrub wetlands. According to the National Wetlands Inventory, the streams belong to a palustrine system and are forested by woody vegetation at least six meters tall (Figure 12). Woody plants include broad-leaved evergreen. The wetland is seasonally flooded, with surface water present for an extended period of time at the start of the growing season and absent by the season end.

The State DOH Water Quality Standards Map classifies Pākūlena Stream and Kālunawaika'ala Stream as Class 2 Inland Waters. Water Quality Standards outlined in HAR, 11-54-3 state that protection of Class 2 Inland Waters is necessary to support the propagation of fish, shellfish, and wildlife, and allow recreational uses in and on these waters. Discharges into Class 2 waters must receive the best degree of treatment or control compatible with the criteria established for this class.



DATE: 2/5/2014

LEGEND

 Camp Pūpūkea

Wetlands Type

-  Estuarine and Marine Deepwater
-  Estuarine and Marine Wetland
-  Freshwater Emergent Wetland
-  Riverine
-  Freshwater Forested/Shrub Wetland

FIGURE 12:
National Wetlands Inventory

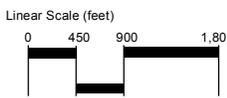
CAMP PŪPŪKEA

The Boy Scouts of America, Aloha Council Island of O'ahu

North



Linear Scale (feet)




PBR HAWAII & ASSOCIATES, INC.

Source: U.S. Fish & Wildlife Service (2013); City and County of Honolulu (2013)
Disclaimer: This graphic has been prepared for general planning purposes only and should not be used for boundary interpretations or other spatial analysis.

Potential Impacts and Mitigation Measures

Hawai‘i’s watersheds are characterized by steep terrain, flash flood-prone streams, and small drainage basins. Watershed health has a direct impact on the health of coastal and marine resources. For instance, according to the Hawai‘i Ocean Resources Management Plan, sediment and pollutants from upland ecosystems and water sources can directly impact coastal waters and marine life. To address these concerns, the Hawai‘i Watershed Guidance Report (in reference to the Hawai‘i Ocean Resources Management Plan) outlines three strategic actions relevant to the Camp Pūpūkea site to improve coastal water quality:

- Reduce soil erosion from upland forest ecosystems and conservation lands.
- Reduce pollutant loads from residential, agricultural, and commercial land uses in priority watersheds.
- Restore and protect wetlands, streams, and estuaries.

In accordance with the Hawai‘i Ocean Resources Management Plan, the Boy Scouts plan to follow these proposed actions where feasible. This type of holistic, land-to-sea approach to watershed management fulfills both the Hawai‘i Watershed Guidance Report’s guiding principles for watershed management and the Hawai‘i Coastal Nonpoint Pollution Control Program (managed jointly by NOAA and the EPA).

The United States Army Corps of Engineers (Corps) has the sole authority to determine if an aquatic feature is or is not a water of the United States subject to regulation under Section 10 and/or Section 404 of the Clean Water Act. If any waterbodies within the camp are determined to be waters of the United States, authorization from the Corps will be required prior to discharging dredge or fill material into the waterbodies. In this scenario, the Boy Scouts would need to demonstrate that the proposed facility upgrades do not increase sediment erosion or pollutant discharge.

3.4.3 Marine Waters

The Site is approximately two miles inland from the nearest coastline on the North Shore. Near shore marine waters off the coast of Sunset Beach are classified as class “A” waters by the State Department of Health (DOH) (Water Quality Standards Map of the Island of Oahu, 1987). According to DOH Water Quality Standards, “it is the objective of class A waters that their use for recreational purposes and aesthetic enjoyment be permitted as long as it is compatible with the protection and propagation of fish, shellfish, and wildlife, and with recreation in and on these waters” (HAR §11-54-03).

Downstream of the site is the Pupukea Marine Life Conservation District.

Potential Impacts and Mitigation Measures

Although Camp Pūpūkea is located approximately two miles inland, Pākulena Stream and Kālunawaika‘ala Stream originate within the boundaries of the Camp site and eventually empty into the Pacific Ocean. To reduce storm water quality/quantity impacts, improvements to Camp Pūpūkea will maintain existing on-site drainage conditions as much as possible. Depending on the severity of a storm, discharge of storm water runoff from the Camp site into marine waters could occur. If required prior to construction, an NPDES permit will be obtained specifying measures to prevent stormwater discharges from affecting coastal water quality. Even if an NPDES permit is not required, best management practices shall be incorporated during construction to prevent storm water discharges from affecting coastal water quality. Facility improvements to Camp Pūpūkea will not significantly increase the amount of impervious surface area and permanent best management practices like erosion controlling vegetation shall be incorporated into the design to limit post construction levels of erosion. Also, facility upgrades are not expected to increase pesticide or fertilizer use on the property.

3.5 NATURAL HAZARDS

Hawai‘i is susceptible to potential natural hazards, such as flooding, hurricanes, volcanic hazards, earthquakes, and wildfires. This section provides an analysis of site vulnerability to such hazards.

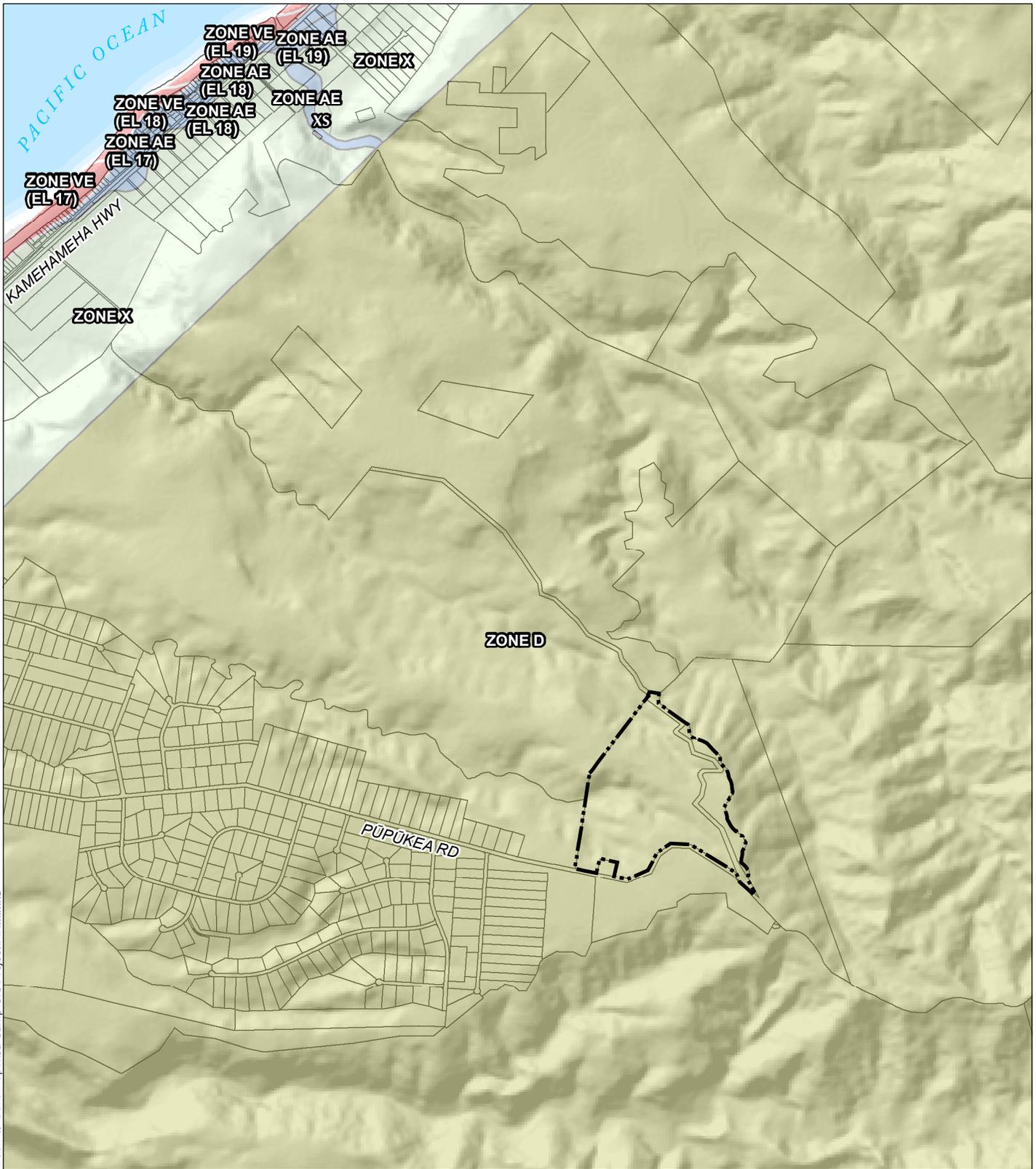
Flood

The Federal Emergency Management Agency (FEMA) publishes flood information in the form of Flood Insurance Rate Maps (FIRM) used by government and insurance agencies to determine the relative potential for damage during flood events. According to the Flood Insurance Rate Map (FIRM) prepared by the Federal Emergency Management Agency (FEMA), National Flood Insurance Program, the entire Camp site is located in Zone D or unstudied areas where flood hazards are undetermined but possible (Figure 13).

Currently, surface runoff sheet flows from east to west, in a *mauka* to *makai* direction where it may enter the two streams onsite or continue off site.

Tsunami

Since the early 1800’s, approximately 50 tsunami have inundated the State of Hawai‘i’s shores. Seven historical events have caused major damage. According to the FEMA Flood Insurance Rate Maps (FIRM), Camp Pūpūkea is located well outside of areas which would be impacted by coastal flooding (from a tsunami). The most recent tsunami to impact O‘ahu, occurred on March



DATE: 2/5/2014

LEGEND

Camp Pūpūkea

Flood Zones

- AE: 1% annual chance flood (100-year flood), Base Flood Elevations determined.
- VE: 1% annual chance flood (100-year flood); Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.
- Zone X: Areas of 0.2% annual chance flood
- D: Undetermined flood hazards.

Source: FEMA (2011); City & County of Honolulu (2013)
 Disclaimer: This graphic has been prepared for general planning purposes only and should not be used for boundary interpretations or other spatial analysis.

**FIGURE 13:
 Flood Insurance Rate Map**

CAMP PŪPŪKEA

The Boy Scouts of America, Aloha Council Island of O'ahu
 North

Linear Scale (feet)
 0 450 900 1,800

11, 2011, causing damage at several locations around the island especially the north shore. There are no records of inundation of lands within Camp Pūpūkea during any of the recorded tsunami. The Site is located approximately two miles inland from the nearest coastline on the North Shore, outside of the designated tsunami evacuation zone.

Hurricane

Records show that strong wind storms have struck all major islands in the Hawaiian Island chain since the beginning of history. The first officially recognized hurricane in Hawaiian waters was Hurricane Hiki in August of 1950. Since 1982 two devastating hurricanes have impacted Hawai‘i: Hurricane ‘Iwa in 1982 and Hurricane ‘Iniki in 1992. While it is difficult to predict these natural occurrences, it is reasonable to assume that future events could be likely given the recent record.

Earthquake

In Hawai‘i, most earthquakes are linked to volcanic activity, unlike other areas where a shift in tectonic plates is the cause of an earthquake. Each year, thousands of earthquakes occur in Hawai‘i, the vast majority of which are so small they are detectable only with highly sensitive instruments. However, moderate and disastrous earthquakes have occurred in the islands.

Wildfires

According to Honolulu Fire Department data, 399 wildfire responses occurred in the 2011 fiscal year although the data shows a decrease of 24 percent from 525 wildfire responses in 2010. Human carelessness is the number one cause of fires in Hawai‘i. Human error combined with the spread of non-native invasive grasses, shrubs, and trees, has led to an increased susceptibility to wildfires.

Much of the vegetation found within Camp Pūpūkea is identified as non-native, invasive weedy species. A study by the U.S. Department of Agriculture Forest Services reports non-native grasses as potential threats to Hawaiian ecosystems due to their ability to readily catch fire and rapidly spread in the event of a fire. Non-native grasses on site include Hilo grass (*Paspalum conjugatum*), narrow-leaved carpetgrass (*Axonopus fissifolius*), and basket grass (*Oplismenus hirtellus*). The study specifically notes that Hilo grass poses a high threat to plant communities due to its rapid post-fire occupation.

Potential Impacts and Mitigation Measures

The camp upgrades will not present or exacerbate any hazard condition relating to tsunamis, hurricanes, and earthquakes, and no mitigation measures are planned or warranted at this time.

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The camp is not in a designated flood hazard or tsunami evacuation area. The potential impacts of hurricanes and earthquakes will be mitigated through designing all structures in compliance with the City & County of Honolulu’s building code. Impacts from natural hazards can be further mitigated by adherence to appropriate civil defense evacuation procedures.

The Boy Scouts of America recognizes the role humans play in preventing wildfires and has implemented fire prevention and awareness programs as a result. Scout members are trained on proper campsite etiquettes to limit their environmental impact during camping. The Leave No Trace Achievement Award program recognizes scout members who display an exemplary level of stewardship toward protecting the environment and its natural resources. One of the seven principles of the Leave No Trace Achievement Award is to minimize campfire impacts. The Leave No Trace principles practiced by all Boy Scouts (regardless of whether they receive the award) also give the following recommendations about minimizing campfire impacts:

- Use lightweight camp stoves instead of building a campfire
- If building a fire, use an existing campfire ring in a well-placed campsite
- Avoid fires in areas where wood is scarce: higher elevations, deserts, etc.
- Keep fires small and use wood that can be broken easily by hand
- Burn all wood to ash and remove all unburned trash/food from the fire ring
- Be sure that all wood and campfire debris is dead out

In addition to the above campfire protection measures, at Camp Pūpūkea, campfires are only allowed in the campfire bowl gathering area and are required to be kept off the ground. All campfires in the campfire bowl gathering area are administered and supervised by adult scout leaders.

3.6 FLORA & FAUNA

Robert Hobdy conducted flora and fauna surveys of Camp Pūpūkea. The objectives of the surveys were to:

- Document plant and animal species that occur on the property or may likely occur in the existing habitat.
- Document the status and abundance of each species.
- Determine the presence or likely occurrence of any native flora and fauna, particularly any that are federally listed as Threatened or Endangered; if such occur, identify what features of the habitat may be essential for these species.
- Determine if the camp area contains any special habitats which if lost or altered might result in a significant negative impact on the native flora and fauna in this part of O’ahu.

The results of the surveys are summarized below, along with other relevant information. Appendix B contains the complete survey report.

3.6.1 Flora

No Endangered or Threatened plant species were found during the survey, nor were any plant species seen that are candidates for such status. A total of 15 native species (both endemic and indigenous) were recorded during the survey. Most of these were found on the ridge top along the east side of the camp that overlooks Paumalū Gulch. None of the native plants are considered rare and all are known from more than one island. In addition, no special native plant habitats were found. An additional seven plant species found were “canoe plants,” brought to Hawai‘i during the Polynesian migrations.

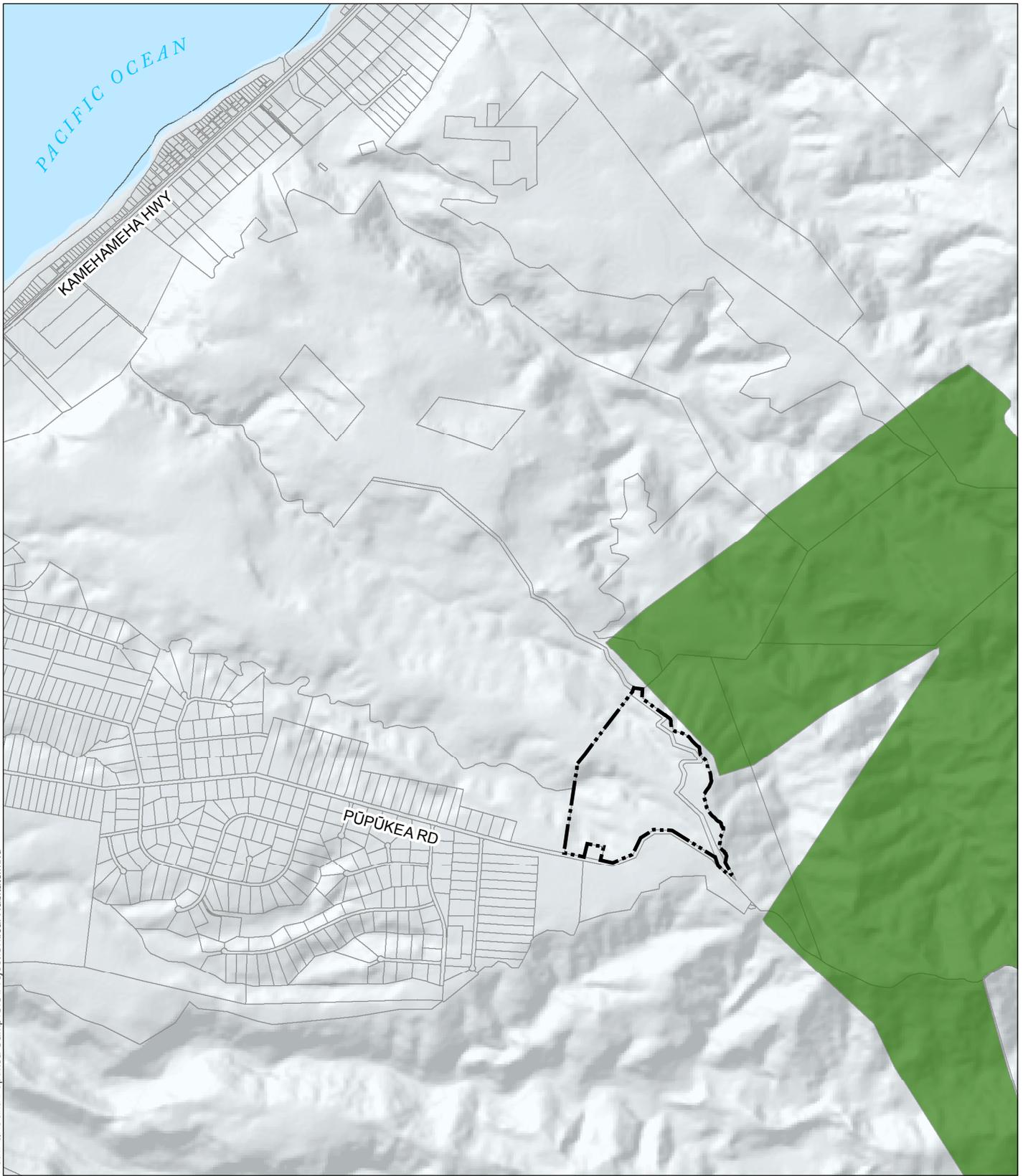
The vegetation within Camp Pūpūkea is dominated by non-native species. The camp is densely forested except for clearings around camp facilities. Two tree species are abundant throughout the area. Swamp mahogany (*Eucalyptus robusta*) forms the upper canopy at 60 feet to 80 feet in height. Beneath this canopy, the shade tolerant strawberry guava (*Psidium cattleianum*) forms nearly impenetrable thickets. In Hawai‘i strawberry guava is considered a highly invasive species.

Many of the non-native plants within the camp have been planted as timber trees, fruit trees and ornamentals, or in demonstration gardens focusing on Hawaiian cultural plants and on poisonous plants, but the majority of the non-native plants are invasive weedy species.

The USFWS has designated much of the area of neighboring Pūpūkea-Paumalū Forest Reserve as critical habitat for Hāhā (*Cyanea longiflora*) and Nīoi (*Eugenia koolauensis*). These critical habitat areas are to the northeast and southeast of Camp Pūpūkea, and there are no critical habitat areas within the camp site. Figure 14 shows that there are no critical habitat designations within Camp Pūpūkea.

Camp Pūpūkea and the surrounding area was once a diverse native forest with a great variety of trees, shrubs, vines, grasses, and ferns clothing the ridge tops and gulches. Early western explorers introduced several species of herbivorous animals in the late 1700s that were initially allowed to reproduce and spread. They soon began to denude Hawai‘i’s lowlands and mountain slopes of their native cover. By the end of the 1800s there was great concern that critical watersheds were being destroyed. In 1904 the Territorial Legislature created the Board of Agriculture and Forestry to address this crisis. The Pūpūkea-Paumalū Forest Reserve (among many others statewide) was set aside in 1910 and work began to eradicate goats, sheep, and cattle from the area. Fast growing non-native trees were planted to reforest barren slopes. As these trees grew, other species of introduced plants spread and began to take over the understory. Today this forest is once again dense with vegetation but the species growing here have

PDF - Q:\Oahu\Pupukea Camp\PDF\Figure 14 Critical Habitats
Path: Q:\Oahu\Pupukea Camp\GIS\Project\Critical Habitats.mxd



DATE: 2/4/2014

LEGEND

 Camp Pūpūkea

 Plant Critical Habitat

FIGURE 14:
Critical Habitats

CAMP PŪPŪKEA

The Boy Scouts of America, Aloha Council Island of Oahu

North

Linear Scale (feet)

0 450 900 1,800



Source: U.S. Fish and Wildlife Service (2014)
Disclaimer: This Graphic has been prepared for general planning purposes only
and should not be used for boundary interpretations or other spatial analysis.

completely changed. Only a handful of the hardiest native plants persist within an essentially non-native forest (Hobby 2012).

Potential Impacts and Mitigative Measures

The botanical survey concludes that upgrades to Camp Pūpūkea: 1) will have a minimal effect on botanical resources; and 2) are not expected to have a significant negative impact on the botanical resources in this part of O‘ahu. Because of the existing site conditions and the absence of any Endangered or Threatened plant species, there is little concern regarding the botanical resources within Camp Pūpūkea. No special recommendations with reference to plants are deemed appropriate or necessary.

Limited tree and vegetation removal may be necessary for some of the proposed improvements to Camp Pūpūkea, especially related to the leach field creation necessary for the upgrades to the wastewater system. All trees will be removed in accordance with the Conservation District Rules (Title 13, Chapter 5, HAR), including obtaining a site plan approval from DLNR, if required. Areas where tree removal is necessary will be quickly re-vegetated to prevent erosion.

Swamp mahogany (*Eucalyptus robusta*) is the most commonly planted tree species and most common eucalypt in Hawai‘i. Most likely they were planted in the area of Camp Pūpūkea by the State of Hawai‘i Forestry Division in the 1930s or 1940s as part of their reforestation plan. These trees are not considered to have any special conservation status.

Strawberry guava (*Psidium cattleianum*) is classified as an invasive species in Hawai‘i and is considered a very serious, habitat-altering pest in many parks and preserves where it poses a major threat to Hawai‘i's rare endemic flora and fauna. Based on the conclusions of the of the botanical survey that camp upgrades are not expected to have a significant negative impact on the botanical resources, combined with the fact that the two most abundant tree species within the camp are very common (swamp mahogany) or considered invasive (strawberry guava), any tree removal within the camp will not result in significant impacts to plant species and may result in beneficial impacts.

3.6.2 Fauna

The fauna within Camp Pūpūkea is sparse in diversity and mostly non-native. No native birds were recorded during the faunal survey and only one native mammal, the ‘ōpe‘ape‘a or Hawaiian bat was detected.

The USFWS has not designated any areas within Camp Pūpūkea or the Pūpūkea-Paumalū Forest Reserve as critical habitat for any animal species.

Mammals

Three mammal species were detected during the course of the faunal survey. During the daytime signs of feral pigs (*Sus scrofa*) were observed in the bottom of the gulches and dog (*Canis familiaris*) tracks were found along the ridge top roads.

During the evening a special effort was made to look for the Endangered Hawaiian hoary bat or 'ōpe'ape'a (*Lasiurus cinereus semotus*) using both visual and electronic techniques. When present in an area these bats can sometimes be seen in the glow of twilight as they begin to forage for flying insects that become active during the evening hours. In addition, a bat detecting device (Batbox IIID) was used after dark, set to the frequency that these bats are known to use for echolocation. No bat activity was seen at twilight, but later, after dark, at least three bats were detected using the Batbox over a clearing near the top of the camp. Based on this information the survey concludes that significant bat population is indicated in the area around Camp Pūpūkea.

Other mammals that would likely be found in the area, but which were not observed during the survey, include rats (*Rattus* spp.), mice (*Mus domesticus*), mongoose (*Herpestes auropunctatus*) and domestic cats (*Felis catus*). Rats and mice feed on seeds, fruits, and herbaceous vegetation, while the mongoose and cats prey on these rodents and birds.

Birds

Over the course of the survey, birdlife was moderate both in numbers of species present and in the numbers of individuals seen. Eight non-native bird species were observed. Two bird species were of common occurrence: the Japanese white-eye (*Zosterops japonicus*) and wild chickens (*Gallus gallus*). The six remaining species were uncommon or rare in occurrence however none of these species are listed as Endangered or Threatened.

A few other non-native birds may also occasionally use the camp area. The habitat, however, is not suitable for O'ahu's native forest birds which are presently restricted to good quality native forests at higher elevations. The habitat is also not suitable for native seabirds such as the Endangered 'ua'u (*Pterodroma sandwichensis*) and the Threatened 'a'o (*Puffinus newelli*) which nest in dense, wet fern shrubland near the summits of mountains.

Insects

Insect life was rather sparse in the dense non-native forest that covers most of the camp. Only eight insect species were observed during the course of the survey. Insects within the camp include: spiders, mosquitos, wasps, moths, butterflies (three species), and grasshoppers.

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Only one insect species was common throughout the area, the house mosquito (*Culex quinquefasciatus*). Less common were the passion flower butterfly (*Agraulis vanillae*) and the small rice grasshopper (*Oxya japonica*). No native insect species were seen and none of the observed insect species is listed as Endangered or Threatened.

Potential Impacts and Mitigation Measures

The fauna survey concludes that there may likely be a significant population of ‘ōpe‘ape‘a or Hawaiian bats around Camp Pūpūkea, but no other concerns with regard to fauna species or habitats are apparent.

The Endangered Species status of the ‘ōpe‘ape‘a’s brings it under the jurisdiction of the USFWS. The Boy Scouts will consult with the USFWS to arrive at a plan that will ensure that no bats will be injured or killed in the course of upgrades to the camp. In general, Hawaiian bats are known to roost in native and non-native trees greater than 15 feet tall. During the peak pup rearing season between June 1 and September 15 young Hawaiian hoary bat pups may be incapable of flight and harmed or killed if their roost site is disturbed. To minimize the potential for harm to juveniles, removal and trimming of trees greater than 15 feet tall will be avoided during the peak pup rearing season between June 1 and September 15. Other measures to protect ‘ōpe‘ape‘a, as may be recommended by the USFWS will also be implemented.

4 DESCRIPTION OF THE HUMAN ENVIRONMENT, POTENTIAL IMPACTS, AND MITIGATION MEASURES

4.1 ARCHAEOLOGICAL AND HISTORIC RESOURCES

Scientific Consultant Services, Inc. conducted an archaeological inventory survey of Camp Pūpūkea. Fieldwork included a pedestrian survey and manual excavation of four shovel probes. All excavated materials were visually inspected for the presence of cultural materials. The report findings are summarized below. Appendix C contains the complete report.

Land Use History

In the second half of the 19th century, sugar cane planting became a lucrative endeavor. Its cultivation quickly spread throughout the islands, as more and more large land sections became available for lease and purchase. Plantations located on the more isolated North Shore benefited from a railway system built by Benjamin Dillingham in 1889 (Dorrance and Morgan 2000:44). The O.R. & L. Railroad eventually extended from Honolulu to Kahuku, stopping at the various sugar plantations along the way. The Waimea Railroad Station, known as Maunawai Station, was located at the junction of the government road and the Pūpūkea Road.

In the early 1900s, farming in upland Pūpūkea became profitable now that there was a train to transport crops to the city. Large tracts of land were sold by the government and Frederick Haley, Sr. planted 400 acres in avocado trees, eventually growing 11,000 trees of many different varieties (Clark 1977: 123). Three Tables Cove, previously known for the Kalua o Maua stone, was called Avocado Beach, as mule-powered wagons full of ripe avocados, slowly descended the steep, dirt road along the cliffs to the Maunawai train stop at the bottom (ibid:124). After Haley sold most of his farm to Libby, McNeil, and Libby, pineapple was cultivated in the Pūpūkea highlands. These were also taken by mule-wagons down the cliffs, known by then as “Jackass Hill,” to the Maunawai train station (ibid.).

As the United States (U.S.) sought to expand its land holdings and become a global power, it saw Hawai‘i as a key strategic military location. On June 29, 1927, President Coolidge signed Executive Order 4697, which set aside lands in the Republic of Hawai‘i—including lands in Pūpūkea—for U.S. Military Reservations. However, initial land surveys proved to be erroneous. Thus, on August 21, 1929, President Hoover signed Executive Order 5175, which corrected the incorrect land survey boundaries. Subsequently, the U.S. military established camps—such as the Pūpūkea Military Reservation—and defense infrastructure around the island of O‘ahu. Many of these military establishments remained active until the end of World War II. On October 14, 1953, Executive Order 10496, signed by President Eisenhower, restored possession, use, and control of all public lands that had been transferred to the federal government by the Republic of

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Hawai'i back to the Territory of Hawai'i. The Pūpūkea Military Reservation—now the site of Camp Pūpūkea —was included in this land transfer.

In summary, the Camp Pūpūkea site was occupied by the U.S. military from approximately 1927-1953. Prior to and during World War II, the Pūpūkea Military Reservation was used as the site for Pūpūkea Battery Emplacements 1 and 2, which were parts of the U.S. Army Fleet Defense System. After World War II, the site was mainly used for housing soldiers.

Prior Archaeological Studies

No past archaeological studies have been conducted specifically on the Camp Pūpūkea site. Nevertheless, other archaeological studies have been conducted for areas in the vicinity of Camp Pūpūkea.

In 1933, J. Gilbert McAllister described, mapped, and photographed Pu'u o Mahuka Heiau (located three miles west of the Camp). Smith and Yent (1991) conducted additional mapping and subsurface testing of the Heiau, which revealed intact cultural deposits. An Archaeological Reconnaissance of the property conducted by Dennison (1979) identified a historic stone-walled enclosure below the Pūpūkea cliffs. During the Kamehameha Highway/Waimea Bay Emergency Rockfall Mitigation Project, rock shelters below the Heiau were found to contain human skeletal remains (McIntosh and Cleghorn 2000). In 2011, no new archaeological sites were discovered during an Archaeological Monitoring program conducted by Scientific Consultant Services, Inc.

Identified Sites

The archaeological inventory survey of Camp Pūpūkea did not reveal any Hawaiian cultural artifacts or human remains. During the survey 15 new archaeological sites, comprised of a total of thirty surface features, were identified. All fifteen archaeological sites were interpreted as associated with the United States Army, based on feature type, construction methods, and construction materials. One site was also interpreted as a historic road associated with the development of Pupuokea-Paumalu Homesteads.

Twenty-four artifacts were discovered from the ground surface survey. A complete list of artifacts can be found in Appendix C. A subsequent laboratory study evaluated each artifact based on type, materials, and historical context. All 24 artifacts were determined to be historic materials related to the U.S. Army. Twenty-two of the 24 artifacts were manufactured between 1929 and 1954. This time period is consistent with the U.S. Army's occupation of the Camp Pūpūkea site from 1927 to 1953. Moreover, the other two recovered artifacts—a .30-caliber rifle and a porcelain electrical insulator—were commonly used by the U.S. Military at that time. These findings suggest that the U.S. Army has been the primary occupant of the Camp Pūpūkea site.

Potential Impacts and Mitigation Measures

The archaeological inventory survey recommends that no further archaeological work is necessary for the Camp Pūpūkea property. To be considered “significant,” under Hawai‘i Administrative Rules §13-275-6, an archaeological site must be characterized by one or more of five criteria. Upon evaluation of the study area, it was determined that several sites within the Camp Pūpūkea property were significant under Criterion D for information purposes only. In other words, further evaluation of the site is unlikely to yield any archaeological information that is considered historically significant. Therefore, based on the archaeological inventory survey, preservation of the existing artifacts is not necessary and future archaeological studies are not warranted.

While the archaeological inventory survey did not reveal any Hawaiian cultural artifacts or human remains within the Camp Pūpūkea site, the Boy Scouts and its contractors will comply with all State and County laws and rules regarding the preservation of archaeological and historic sites. The construction documents will include a provision that if undocumented historic sites such as walls, platforms, pavements and mounds, or remains such as artifacts, burials, concentrations of shell or charcoal or artifacts are inadvertently encountered during construction activities, work will cease immediately in the vicinity of the find and the find will be protected. The contractor will immediately contact the State Historic Preservation Division, which will assess the significance of the find and recommend appropriate mitigation measures, if necessary.

4.2 CULTURAL RESOURCES

Scientific Consultant Services, Inc. prepared a Cultural Impact Assessment (CIA) for the Camp Pūpūkea property. The CIA was conducted in accordance with the Hawai‘i State Office of Environmental Quality Control’s (QECC) guidelines for assessing cultural impacts. Thus, it includes archival research of published/unpublished sources and interviews of individuals/organizations with knowledge relevant to the Camp Pūpūkea property. The report findings are summarized below. Appendix D contains the complete report.

Wahi Pana (Storied Places)

Archival research revealed a mo‘olelo—an ancient Hawaiian story or legend—published in a 19th century Hawaiian newspaper discussing the beauty of Pūpūkea. According to the mo‘olelo, as Hi‘iaka (Pele’s sister) traveled with her companion Wahineoma‘o, around the north side of O‘ahu, she chanted the delights and special qualities of Pūpūkea. They continued to the plain of Kuilima and watched the sea of Pūpūkea throwing its sprays upward. It swept over the leaves of the ‘ilima, yellowing them, then Hi‘iaka chanted:

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<i>He kai kapi ike one</i>	The sea sprays up over the sand,
<i>Ko Kalamaula i Pupukeya</i>	The yellowing sea of Pūpūkea,
<i>Ua hele a pala i ke kai</i>	Yellows the leaves of the ‘ilima,
<i>Ke oho o ka ilima</i>	With its sprays,
<i>E hiki aku ai i Kapi</i>	This is the way to Kapi,
<i>E iho aku ai i Piliamaama la</i>	This the trail to Piliaama.
<i>Aia e pili wale -----e</i>	(last three lines not translated from the Hawaiian)
<i>Aia la ke lele ala</i>	[<i>Ka Leo O ka Lahui</i> 1893 in Sterling and Summers
<i>Aohe i ka welo-----e.</i>	1978:144]
[http://nupepa.org 2011a]	

Pu‘u o Mahuka, a *luakini* (human sacrifice) *heiau* (place of worship), overlooks Waimea Valley. This *heiau* is located approximately three miles west of Camp Pūpūkea and is situated on Pūpūkea Hill. Considered the largest *heiau* on the island of O‘ahu (Handy and Handy 1972: 464), the construction and consecration of a structure of such prominence could only have occurred at the behest of a paramount chief (Valeri 1985: 179, 234-235). Pu‘u o Mahuka Heiau was first recorded by Thrum, but little was known of its actual origins. It was said to have been built by *menehune* and, “...the fierceness of its dedicatory fires warmed the hills of Kaua‘i. This gives a clue to its type as of the severe po‘o kanaka or human sacrifice class” (Thrum 1923:30).

Land Commission Awards

In the 1840s, traditional land tenure shifted drastically with the introduction of private land ownership based on western law. While it is a complex issue, many scholars believe that in order to protect Hawaiian sovereignty from foreign powers, Kauikeaouli (Kamehameha III) was forced to establish laws changing the traditional Hawaiian economy to that of a market economy. The mahele of 1848 divided Hawaiian lands between the king, the chiefs, the government, and began the process of private ownership of lands. The subsequently awarded parcels were called Land Commission Awards (LCAs).

Kauikeaouli (Kamehameha III) was awarded Pūpūkea Ahupua`a. However, his listed awards on O‘ahu include only Kona, Ko`olau Poko, and `Ewa, suggesting he gave up Pūpūkea to the government (Waihona `Aina database 2013, Chinen 1961: 26). This is substantiated by the Boundary Commission Documents, specifically Boundary Commission Document (BCId): 14985, which indicated that Pūpūkea Ahupua`a was Crown Lands. Thirty-one kuleana claims were recorded for the ahupua`a, nine of which were un-awarded. Eighteen of the awarded LCAs were located between Ka Awa ika ala and Waihuena Gulches and extended from the mauka cliffs to the shore. This area received water from the mountains through the two gulches, creating excellent conditions for agriculture. This section of the coast is now residential/agriculture and the home of Sunset Elementary School. Land Court Award 08165, awarded to Hiipei, was located below Pu`u o Mahuka Heiau and the Pūpūkea cliffs, and was claimed as a house site. No

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LCAs could be identified in or near the project area. However, archival research indicated that Land Grant 5172, comprised of 109.7 acres immediately adjacent and west of the project area, was purchased by H.M. Stalnaker for \$1,371, on May 2, 1909.

Consultation and Interviews

None of the individuals consulted indicated that the proposed improvements to Camp Pūpūkea would impact traditional cultural practices. Interviews were conducted via telephone, email, and the U.S. Postal Service. Consultation was sought from the Waialua Civic Club; Phyllis "Coochie" Cayan, State Historic Preservation Division; Dr. Kamana'opono M. Crabbe, Chief Executive Officer, Office of Hawaiian Affairs; William Ho'ohuli, community member; Kawika Farm, State Historic Preservation Division, Burial Sites Program; Martha Yent, Department of Land and Natural Resources, Division of State Parks, community member; Alan Carpenter, of Land and Natural Resources, Division of State Parks; Dawn Wasson, community member; and Tony Yardley, Cultural Monitor and Cultural Practitioner. Additionally, a Cultural Impact Assessment Notice was published on March 17, 20, and 21, 2013, in *The Honolulu Star-Advertiser* and in the May 2013 issue of the OHA newspaper, *Ka Wai Ola*. No public response has since been received.

With its scouting program at Camp Pūpūkea, the Boys Scouts are proud to contribute to the larger cultural context of O'ahu. The Boy Scouts have not received requests from Native Hawaiians to access the Camp Pūpūkea site for cultural purposes; however, access to the site is permitted with permission from the Boy Scouts.

Potential Impacts and Mitigation Measures

According to the CIA report, it appears that the Camp Pūpūkea property has not been used for traditional cultural purposes within recent times. Therefore, the CIA states that it is reasonable to conclude that the proposed improvements to the existing Boy Scouts' Camp Pūpūkea will not affect the exercise of Native Hawaiian rights, or any ethnic group, related to gathering, access or other customary activities.

4.3 VISUAL RESOURCES

Camp Pūpūkea is located on O‘ahu’s North Shore atop the slopes of the Ko‘olau Mountain Range. Because of its location surrounded by the Pūpūkea-Paumalū Forest Reserve on three sides, the camp site is surrounded by tall trees and thick vegetation—predominantly Swamp Mahogany and Strawberry Guava. This forest setting prevents any views of the coast below, including Waimea Bay. Likewise, Camp Pūpūkea is not visible from either Kamehameha Highway or Waimea Bay. Looking toward the camp from sea level, the only visual image is the face of the Ko‘olau Mountains.

Potential Impacts and Mitigation Measures

Because of Camp Pūpūkea’s visually remote location, the proposed facility upgrades will have no effect on visual resources. Views from the camp site—both *mauka* and *makai*—will still be severely restricted by forest trees, which prevent any coastal views. Similarly, the tall vegetation will continue to block views of the camp site from lower elevations.

4.4 NOISE

Due to the remote and undeveloped nature of the area, there are no major sources of noise within the vicinity of Camp Pūpūkea, with the possible exception of helicopters from sightseeing tours or other aircraft. Natural sources of noise may include sounds from wind and rain. Noise from within Camp Pūpūkea may be generated due to ongoing camp operations and would include the sounds associated with human habitation and camp activities.

Potential Impacts and Mitigation Measures

The upgrades to Camp Pūpūkea are not expected to exacerbate or otherwise affect ambient noise levels in the area. The current capacity of the camp is 385 campers/staff. The proposed upgrades to camp are projected to be built out over the next 20 years and increase the number of campers and staff by 100 to a total of 485. Relative to existing conditions, the additional number of campers and staff is not expected to contribute to significant increases in noise levels.

Any increases in ambient noise levels due to the upgrades are primarily limited to short-term construction activity. However because of the remote location of the camp, with relatively few nearby neighbors, any noise from construction is likely not to cause any annoyances. In addition, noise from construction activities will be short-term and will comply with DOH noise regulations (HAR, Chapter 11-46, Community Noise Control). When construction noise exceeds, or is expected to exceed the DOH’s allowable limits, a permit must be obtained from the DOH. Specific permit restrictions for construction activities are:

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- No permit shall allow any construction activities that emit noise in excess of the maximum permissible sound levels before 7:00 a.m. and after 6:00 p.m. of the same day, Monday through Friday.
- No permit shall allow any construction activities that emit noise in excess of the maximum permissible sound levels before 9:00 a.m. and after 6:00 p.m. on Saturday.
- No permit shall allow any construction activities that would emit noise in excess of the maximum permissible sound levels on Sundays and holidays.
- The use of pile drivers, hoe rams, jack hammers 25 lbs. or larger, high-pressure sprayers, and chain saws may be restricted to 9:00 a.m. to 5:30 p.m., Monday through Friday.

Following construction, noise from any additional vehicles traveling on Pūpūkea Road to the camp is not expected to be significant.

4.5 AIR QUALITY

In general, air quality in Hawai‘i is excellent due to the predominant northeast trade winds. According to the Environmental Protection Agency (EPA) there are no “non-attainment” sites in the State of Hawai‘i. A non-attainment area is defined as a locality where air pollution levels persistently exceed National Ambient Air Quality Standards. Because there are no “non-attainment” sites in Hawai‘i, the entire state is considered by the EPA to be in attainment for all criteria pollutants. Thus, Camp Pūpūkea is located within an “attainment area.”

Regional and local climate together with the amount and type of human activity generally dictate the air quality of a given location. The climate in the vicinity of Camp Pūpūkea is very much affected by its elevation and the prevailing ocean-born trade winds. Temperatures range between a high of 84 degrees to a low of 64 degrees Fahrenheit. Mean annual rainfall in the area amounts to 62 inches with each month seeing at least three inches.

The present air quality in the vicinity of Camp Pūpūkea is believed to be relatively good and there are no sources of potential air pollution.

Potential Impacts and Mitigation Measures

The upgrades to Camp Pūpūkea will not exacerbate or otherwise affect air quality in the area. No State or Federal air quality standards will be violated during or after the upgrades.

Limited, short-term impacts from emission of fugitive dust may occur during site preparation and construction. As necessary, an effective dust control plan will be implemented. All construction activities will comply with the provisions of Section 11-60.1-33, HAR related to Fugitive Dust. Measures to control dust may include:

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- Providing an adequate water source at the site prior to start-up construction activities;
- Irrigating the construction site during periods of drought or high winds;
- Landscaping and rapid covering of bare areas, including slopes, starting from the initial grading phase;
- Disturbing only the areas of construction that are in the immediate zone of construction to limit the amount of time that the areas will be subject to erosion;
- Providing adequate dust control measures during weekends, after hours, and before daily start-up of construction activities; and
- Installing dust screening in the areas of disturbance.

Overall, air quality impacts will be temporary and limited to the duration of construction. Long-term impacts are not expected.

4.6 ROADWAYS AND TRAFFIC

SSFM International prepared a Traffic Impact Analysis Report (TIAR) to evaluate the potential traffic impacts resulting from upgrades to Camp Pūpūkea. The TIAR includes an analysis of existing regional traffic conditions (including with current camp use) and projected future conditions both without and with the upgrades to Camp Pūpūkea. The report findings are summarized below. Appendix E contains the complete report.

Access to Camp Pūpūkea is from Pūpūkea Road. A description of existing roads and traffic conditions is provided below.

Roadways

Pūpūkea Road: Pūpūkea Road is a 2.6-mile, two-lane, County collector that runs mauka-makai (inland-oceanside) with a posted speed limit of 25 mph. The road intersects with residential driveways and local roads providing access to homes. Also included along Pūpūkea Road is access to Pu‘u o Mahuka Heiau, a historic site and Hawai‘i State Park. Pūpūkea Road attracts a variety of users as a result of the available access to these destinations. Parking is permitted along the majority of Pūpūkea Road, including at the mauka end where the driveway to Camp Pūpūkea exists.

Kamehameha Highway: Kamehameha Highway (State Highway Route 83) is a two-lane rural primary arterial that runs north-south in the vicinity of Camp Pūpūkea with a posted speed limit of 35 mph. The roadway cross-section includes ten-foot wide lane widths and five-foot shoulders with parking prohibited along both sides of the road.

The makai end of Pūpūkea Road intersects with Kamehameha Highway at a signalized intersection. The intersection operates as a four-way intersection with access to beach parking on

the makai leg approach. On the northwest corner of the intersection, the Sunset Beach Fire Station exists. A designated left-turn lane exists for the southbound, northbound, and mauka-bound approaches to the intersection. A couple hundred feet mauka of the signalized intersection, on Pūpūkea Road, a dedicated left-turn lane provides access to the Foodland supermarket driveway and parking lot.

Pa‘ala‘a Uka Pūpūkea Road (Drum Road): At the mauka end of Pūpūkea Road, a stretch goes unpaved before transitioning to the paved Army owned and operated, Pa‘ala‘a Uka Pūpūkea Road (also known as Drum Road). Pa‘ala‘a Uka Pūpūkea Road is a 23-mile road that provides access to the Kahuku Military Reservation.

The roadways and parking area within Camp Pūpūkea are unimproved with surfaces composed of a mixture of dirt and gravel. There are no concrete walkways or any asphalt pavement within the camp.

Traffic Conditions

Since Camp Pūpūkea is currently in use, analysis of existing conditions included traffic related to existing camp operations. Traffic volumes associated with Camp Pūpūkea include: 1) campers and staff who are dropped off, participate in rideshare (i.e. arrive by bus, van, or carpool); and 2) staff who drive themselves and leave their car at the camp overnight. Camp Pūpūkea directors noted that nearly all camp users (i.e. campers and staff) arrive through rideshare.

Week-long camps during the summer (June-July) typically have the largest number of users. The week-long camps generate trips: 1) at the start of camp on Sundays (between 10:00 AM and noon) when people are arriving at the camp; and 2) and on the following Saturdays (between 10:00 AM and noon) when people are departing from the camp. The year-round weekend camps are smaller and do not have set times of use. To assess a worst-case traffic scenario, the TIAR analyzed weekend impacts as a result of vehicles generated from summer week-long programs.

With a current capacity of 385 campers/staff, it was assumed that the majority of campers (who are under driving age) and staff come through rideshare with an equal distribution of vehicles staying overnight and vehicles that drop-off/pick-up users at the beginning/end of the program. Using an average of four campers/staff per vehicle, this equates to 96 vehicles, 48 staying overnight and 48 traveling to/from the site for drop-off/pick-up. The existing parking lot has a 50-vehicle capacity and therefore is able to accommodate the 48 vehicles estimated to stay overnight.

The TIAR studied traffic volumes and turning movements at the intersections of Pūpūkea Road and Kamehameha Highway and at the Pūpūkea Road and Foodland driveway. Existing (2013)

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conditions at these intersections were analyzed for a peak Saturday/Sunday midday hour because this is the time that the most camp users would be coming to and from the camp.

Based on analysis of existing conditions, the TIAR found that under current conditions level of service was appropriate for all intersection movements. With all intersection movements resulting in appropriate level of service, no mitigation is recommended for existing (2013) conditions.

Potential Impacts and Mitigation Measures

An existing unpaved road through Camp Pūpūkea will be upgraded to comply with HFD requirements for fire access. The exiting road begins at Pūpūkea Road, runs through the parking area, follows the slope down ridge to the lowest camp site, and then continues downslope to provide access to the Pūpūkea-Paumalū State Park Reserve. Per HFD requirements, the road will be widened within Camp Pūpūkea to provide for a continuous minimum width of 16 feet and a fire truck turnaround area will be provided lowest camp site, before the road continues to the Pūpūkea-Paumalū State Park Reserve (see Figure 9A). An additional unpaved roadway begins in the vicinity between the health lodge and the trading post and follows the DLNR roadway lot down the north side and around the campfire bowl area. Should other buildings be constructed further along this roadway, the dirt road will also have to be widened to 16 feet wide and improved to meet HFD fire code requirements.

Projected Traffic Conditions

Plans are for Phase 1 Camp Pūpūkea improvements to retain the existing maximum capacity of campers and staff at 385. Phase 2 and Phase 3 improvements are expected to be built out over the next 20 years and increase the number of campers and staff by 100 to a total of 485. With an increase in 100 campers/staff for future conditions, averaging four people per vehicle, an additional 25 vehicles would be attracted to the camp when all improvements are completed compared to existing conditions. These additional vehicles would be using area roadways during weekend camp start/end periods.

The TIAR projects that with the addition of Camp Pūpūkea-related traffic resulting from the upgrades and the additional camp users, there will be minimal change in level of service at the study intersections and the level of service will remain appropriate for all intersection movements at the study intersections.

With all intersection movements resulting in appropriate LOS, no mitigation is recommended at the study intersections for future conditions without or with upgrades to Camp Pūpūkea. However the TIAR recommends that with the upgrades to the camp:

- The need for additional parking should be studied to accommodate the increase in vehicles attracted to Camp Pūpūkea;
- Continued ridesharing should be encouraged; and
- Camp users should be encouraged to travel the speed limit on Pūpūkea Road when coming to and from the camp.

The above recommendations will be implemented, and in particular the Camp Pūpūkea master plan includes additional parking areas.

4.7 INFRASTRUCTURE AND UTILITIES

Kim & Shiroma Engineers, Inc. prepared a civil basis of design report for Camp Pūpūkea master plan. Relevant information from the report is summarized below. Appendix F contains the complete civil basis of design report. In addition, on November 7, 2012, the State of Hawai‘i Department of Health (DOH) approved applications for Individual Wastewater System at the camp. Appendix also contains F the DOH approval letter.

4.7.1 Water System

Water is provided to the site from the Board of Water Supply’s (BWS) reservoir at an elevation of 890 feet. A BWS water meter and Boy Scouts pump is located adjacent to the reservoir site. The Boy Scouts pump system pumps the water up Pupukea Road to two, 3,000 gallon water storage tanks located at the southeast corner of the cleared parking area. These tanks, which are nine feet high and at an elevation of 890 feet, provide adequate storage to the camp.

From the water tanks, a two inch line exits the tanks and splits into two lines – a 1.5-inch line that feeds the ranger house, the camp director building, the camp master building, the swimming pool and the Weinberg Lodge and a two inch line that services the health center, the quarter master building, shower buildings and the many hosebibs and drinking fountains located throughout the camp sites.

Between November 2008 and October 2009, the average water demand for the camp was approximately 4,900 gallons per day. The low during that year occurred in the months of November and December 2008 when average demand was approximately 2,700 gallons per day. The yearly high occurred in the months of July and August 2009 when average demand was approximately 8,800 gallons per day.

Potential Impacts and Mitigation Measures

The Camp Pūpūkea facility improvements will include new showers, bathrooms, and an overall water system upgrade. The water system upgrade will include an expansion of the system

serving the Weinberg lodge and upper buildings to include the family cabin area and associated shower/comfort station. In addition, a new PVC water line will be designed to replace the existing gravity, galvanized water line system that connects to the two 3,000 storage tanks.

The camp's water demand may increase slightly due to the new shower and bathroom facilities. However, where financially and structurally possible, the Boy Scouts plan to use water efficient fixtures to improve water efficient practices. The Boy Scouts also plan to implement alternative water sources, wherever possible. These mitigation measures are consistent with the State Commission on Water Resource Management's comments regarding the proposed facility upgrades.

After reviewing the landscape irrigation conservation best management practices endorsed by the Landscape Industry Council of Hawai'i, the Boy Scouts have concluded that there is very little need for irrigation within Camp Pūpūkea. The camping facility is at an elevation that receives adequate rainfall. Also, the majority of the camp property is in a natural state with very few formal landscape areas. For these reasons, the facility improvements will not increase the need for irrigation.

4.7.2 Wastewater System

No public wastewater system currently services the area in the vicinity of the site.

Camp Pūpūkea is serviced by portable toilets (porta-potties) as a temporary method of complying with the EPA's 2005 regulations requiring the closure of large capacity cesspools (LCCs). Previously, the camp had latrines with wastewater disposal handled by 12 LCCs. As of February 2012, 11 LCCs were still in operation at Camp Pūpūkea. By June 2012, the Boy Scouts had submitted a preliminary work plan to the State of Hawai'i Department of Health to upgrade their wastewater system. It was at this time that the latrines were boarded to make them inaccessible and the porta-potties were installed to minimize the impact to the environment until an approved wastewater system is constructed. The porta-potties do not use water.

Potential Impacts and Mitigation Measures

Phase I improvements to Camp Pūpūkea will include new shower and bathroom facilities connected to individual wastewater systems in compliance with EPA and DOH regulations. The proposed wastewater facilities include the construction of five new comfort stations, each with four 1,500-gallon IAPMO-approved septic tanks, one 1,250-gallon pre-loader, and an absorption bed. On November 7, 2012, the State of Hawai'i Department of Health approved the Boy Scouts' twenty Individual Wastewater System Applications, authorizing the installation of the septic tanks and associated infrastructure. The total estimated wastewater flow of the twenty septic tanks is approximately 20,000 gallons per day.

As part of the upgrade to individual wastewater systems, the existing cesspools will also be formally closed and a Cesspool Closure and Backfilling Report will be submitted to both EPA and the State Department of Health. According to the Hawai'i Department of Health, some of the cesspools appear to be injection-well cesspools, and therefore, the Boy Scouts will obtain authorization and instructions from the Health Department's Underground Injection Control program to properly abandon those cesspools. These measures will provide long-term protection against cesspool-related groundwater contamination.

4.7.3 Drainage

Currently, there is no drainage system in place at the site or in adjacent Pupukea Road. Stormwater runoff that does not infiltrate into the soil continues to flow overland toward the steams or gullies around the camp in a *mauka* to *makai*, east-west direction. During heavy rainfall events, extensive runoff may flow into Pākulena Stream or Kālunawaika'ala Stream, which originate within the boundaries of the Camp site.

Potential Impacts and Mitigation Measures

No drainage improvements beyond the grading around new structures are proposed. Facility improvements to Camp Pūpūkea will not significantly increase the amount of impervious surface area. Clearing and grading will be necessary for the shower/comfort station buildings, individual wastewater systems, and other improvements. Grading will be kept to a minimum to keep the adjacent lands undisturbed. All new shower/comfort station buildings will be graded such that storm runoff will flow around the new buildings.

To reduce storm water quality/quantity impacts, improvements to Camp Pūpūkea will maintain existing on-site drainage conditions as much as possible. Depending on the severity of a storm, discharge of storm water runoff from the Camp site into marine waters could occur. If required prior to construction an NPDES permit will be obtained specifying measures to prevent stormwater discharges from affecting coastal water quality. Even if an NPDES permit is not required, best management practices shall be incorporated during construction to prevent storm water discharges from affecting coastal water quality. Facility improvements to Camp Pūpūkea will not significantly increase the amount of impervious surface area and permanent best management practices like erosion controlling vegetation shall be incorporated into the design to limit post construction levels of erosion.

4.7.4 Electrical and Communication Systems

The existing electrical service to Camp Pūpūkea is 120/240 volts, single phase, and three wires. The Hawaiian Electric Company (HECO) operates a pole-mounted transformer with overhead service drops to the Camp Director's Cottage and Ranger's Residence.

Makai of the swimming pool is a 100 kVA, HECO-owned pad-mounted transformer (Vault No. 7520), which serves to the electric service equipment and distribution panel in the pool pump building. The distribution panel, which is rated for 600 amps at 120/240 volts single phase, provides power to the pool, Dining Hall, and Quartermaster's Warehouse.

Potential Impacts and Mitigation Measures

The proposed upgrades to Camp Pūpūkea will include bringing three phase electrical power to the camp. A new 2-4 inch ductline will connect the existing HECO pole on Pūpūkea Road to a new, HECO three phase pad-mounted transformer. The new three phase distribution equipment will feed the existing single phase equipment as well as the new three phase equipment planned for the Dining Hall. Any new buildings requiring electric power will also be served by the three phase equipment.

The Camp Pūpūkea improvements will include, where feasible, energy-saving technologies such as high-efficiency lighting and Energy Star appliances.

4.8 SOCIO-ECONOMIC CHARACTERISTICS

4.8.1 Population

The 2010 Census reported the total residential population of the North Shore region to be 17,720 people. This reflects a 3.6 percent population decrease from the 2000 Census reported total of 18,380 people. Despite reports of slight population declines in the region from 2000 to 2010, totals for the Pūpūkea Census Designated Place indicated a population increase. 2010 Census reported the Pūpūkea CDP population to be 4,551 people, a 7.08 percent increase from the 2000 Census total of 4,353. Overall, the City and County of Honolulu anticipates population changes in the North Shore to increase by 9.5 percent to 19,375 by the year 2030.

Potential Impacts and Mitigation Measures

Upgrades to Camp Pūpūkea are not expected to impact the population of the North Shore as there will be no permanent residents at the campsite, with the exception of a Ranger who may reside onsite.

4.8.2 Economy

The visitor industry dominates the economic landscape of the North Shore. According to the State of Hawai‘i Department of Business, Economic Development, and Tourism, 51 percent of all O‘ahu tourists visit the North Shore. Applying this percentage to the Hawai‘i Tourism Authority’s 2011 Annual Visitor Research Report data, more than 2.2 million tourists visit the North Shore on an annual basis. The North Shore’s primary economic industries reflect the significance of the tourism sector. According to the 2010 U.S. Census, recreation, accommodation, and retail combine to make up 30 percent of the north shore economy—defined as Waialua, Hale‘iwa, and Kahuku census tracts. Educational, health care, and social services is the second largest industry at 20 percent of the labor force. Although the North Shore has historically been considered a major agricultural producer, 2010 Census data indicates that only 1.4 percent of the North Shore economy is dedicated to agriculture.

With an annual median household income over \$72,000, North Shore residents are relatively well off compared to the state average of \$67,000 (U.S. Census Bureau). Despite the collapse of the national housing market starting in 2008, prices for North Shore homes remain high. In 2012, the North Shore median home price was \$531,100 (Prudential Locations LLC.). However, North Shore unemployment remains relatively high—approximately 9-percent-compared to the state average of 6.4 percent (U.S. Census Bureau).

Potential Impacts and Mitigation Measures

The upgrades to Camp Pūpūkea represent the Boy Scout’s long-term commitment to the area. Currently, the construction industry accounts for 12 percent of the North Shore work force (U.S. Census Bureau). Construction of the upgrades to Camp Pūpūkea will provide positive economic benefits in the form of construction jobs, construction spending, and multiplier effects on the local economy.

More generally, the Boy Scouts prepare boys to be active, contributing members of society who may go on to positively influence the economy. A Gallup poll shows that men who have been Boy Scouts generally report higher average educational attainment and income than those who have not been Boy Scouts (Johnson & Clifton 2010). Twenty-eight percent of former Boy Scouts report an annual income of \$90,000 or more, compared with 20 percent of non-Scouts. At the same time, seven percent of non-Scouts report making less than \$12,000 per year, compared with four percent of men who have been Boy Scouts.

4.9 PUBLIC SERVICES AND FACILITIES

4.9.1 Schools

Educational facilities in the North Shore region are provided by the Department of Education and individual private schools. Public schools on the North Shore of O‘ahu include: Sunset Beach Elementary (K-6), Hale‘iwa Elementary (K-6), Kahuku Elementary (K-6), Waialua Elementary (K-6), Waialua High and Intermediate (7-12), and Kahuku High and Intermediate (7-12). Private schools in the region include St. Michael’s School (Preschool-8) and Sunset Beach Christian School (K-8). Official enrollment count and designed capacity of each public school facility according to DOE is shown in the table below (State of Hawai‘i Department of Education, 2013).

School	2013-2014 Enrollment
Elementary	
Sunset Beach	477
Hale‘iwa Elementary	190
Kahuku Elementary	493
Waialua Elementary	585
Intermediate and High	
Kahuku High and Intermediate	1,464
Waialua High and Intermediate	636

Potential Impacts and Mitigation Measures

Upgrades to Camp Pūpūkea are not expected to impact student enrollment numbers at public or private schools as there will be no permanent residents at the camp; therefore, no mitigation measures in regard to schools are proposed or necessary. Expansion and upgrades to the camp will benefit the immediate North Shore region and greater O‘ahu Island by providing youth development and environmental education programs.

4.9.2 Police, Fire and Medical

Police Protection

The North Shore is part of the Honolulu Police District 2 region. District 2 encompasses three sectors and includes all the North Shore communities between Waialua and Sunset Beach and the Central O‘ahu communities of Kūnia, Mililani, Wahiawā, Poamoho, and Whitmore Village. Police service in the district originates from the Wahiawā Police Station at 330 North Cane Street; there are no police substations on the North Shore. The district is regularly patrolled by officers in police vehicles.

Fire Protection

The Honolulu Fire Department (HFD) operates fire stations at Sunset Beach and Waialua-Hale'iwa. The Sunset Beach Fire Station is located approximately three miles west of the Camp Pūpūkea on Kamehameha Highway. Waialua Fire Station is approximately nine miles southwest from Camp Pūpūkea.

Medical

Wahiawa General Hospital is located approximately 18 miles from the Camp Pūpūkea at 128 Lehua Street. Current capacity and services offered by the hospital include a 53-bed acute facility and 107-bed long-term care facility.

A health lodge is located onsite and is equipped with supplies to handle most injuries that occur at the camp.

Potential Impacts and Mitigation Measures

The Honolulu Police Department was informed that a draft EA was being prepared for the proposed upgrades to Camp Pūpūkea. In their pre-consultation letter dated April 4, 2013, the Police Department stated: "This project should have no significant impact on the operations of the Honolulu Police Department."

In their pre-consultation letter dated April 9, 2013, the Honolulu Fire Department stated that upgrades to Camp Pūpūkea may impact Honolulu Fire Department services. As such, the Honolulu Fire Department will apply the requirements of the Fire Code to the camp upgrades.

To understand the Fire Code requirements, the Boy Scouts' architect and civil engineer met with Honolulu Fire Department and the following understanding was reached:

- A fire access road 16 feet wide with a turnaround at the end located within 150 feet from the last shower/comfort station will be provided. The finish surface of the fire lane must be able to support the weight of an 83,000 pound fire truck.
- All family/residential buildings will require protection with a fire sprinkler system or a fire hydrant system. If fire hydrants are installed, fire flow requirements specified by the Board of Water Supply must be met. If a fire sprinkler system is installed, the distance requirements for fire protection coverage can be extended by a factor of 3.
- For the junior staff lodging and family cabins complex, a fire sprinkler system that is connected to the swimming pool pump system is recommended. The 160,000 gallon swimming pool meets the Honolulu Fire Department's requirement of at least 100,000 gallons of stored water available for firefighting purposes.

- The Phase 1 shower/restroom buildings will be granted variances from the fire sprinkler/fire hydrant requirements but must be readily accessible from the 16 foot wide fire lane.
- Open sided pavilions and structures 400 square feet or less will not require fire sprinkler/fire hydrant protection.

The upgraded facilities for Camp Pūpūkea are not expected to significantly increase the need for healthcare or emergency medical facilities. If necessary, access for emergency vehicles is available via Pūpūkea Road. However, the upgraded onsite health lodge should be able to accommodate most injuries that occur at the camp.

4.9.3 Recreational Facilities

City and County Parks on the North Shore include beach/shoreline parks and right-of-ways which provide access to the shoreline.

The nearest State Park is Pu‘u o Mahuka Heiau off Pūpūkea Road.

Waimea Falls Park is a private recreation facility which hosts approximately 600,000 visitors per year. Situated on a 1,800-acre parcel in Waimea Valley, the Park has a visitor center, shops, restaurant, arboretum, botanical gardens, educational resources, Hawaiian cultural preservation areas, and hiking trails. The Park’s master plan includes expanded gardens, camp sites, access improvements, and office and maintenance space.

Other recreation facilities include the A. Wallace Scout Reserve, Camp Palama Uka, and Camp Paumalū, that are used primarily as Scout Camps.

Two hiking trails are accessible via Camp Pūpūkea and the Kaunala mountain bike trail at the mauka end of Pūpūkea Road, which is open and accessible to the public.

Potential Impacts and Mitigation Measures

The upgrades to Camp Pūpūkea are not expected to negatively impact recreational facilities in the North Shore region. Though located in a small area of the Pūpūkea-Paumalū Forest Reserve, the Boy Scouts are mindful of their location and the responsibilities attached to operating in that location. Camp Pūpūkea is an active community service participant, preserving the natural beauty and respect of the land.

In their pre-consultation letter dated March 28, 2013, the City and County of Honolulu Department of Parks and Recreation stated that the proposed upgrades to Camp Pūpūkea will have no impact on any program or facility of the Department of Parks and Recreation.

5 LAND USE CONFORMANCE

This section describes State of Hawai‘i and City and County of Honolulu land use plans, policies, and ordinances relevant to upgrading the facilities at Camp Pūpūkea. Each section includes discussion of how the project conforms to each of the plans and requirements.

5.1 STATE OF HAWAI‘I

5.1.1 State Land Use Law, Chapter 205, Hawai‘i Revised Statutes

The State Land Use Law (Chapter 205, HRS), establishes the State Land Use Commission and authorizes this body to designate all lands in the State into one of four (4) Districts: “Urban,” “Rural,” “Agricultural,” or “Conservation.” The Site is within the State Land Use Conservation District, General subzone and Resource subzone (See Figure 3).

As stated in Chapter 205-2 (e), HRS, “Conservation districts shall include areas necessary for protecting watersheds and water sources; preserving scenic and historic areas; providing park lands, wilderness, and beach reserves; conserving indigenous or endemic plants, fish, and wildlife, including those which are threatened or endangered; preventing floods and soil erosion; forestry; open space areas whose existing openness, natural condition, or present state of use, if retained, would enhance the present or potential value of abutting or surrounding communities, or would maintain or enhance the conservation of natural or scenic resources; areas of value for recreational purposes; other related activities; and other permitted uses not detrimental to a multiple use conservation concept.”

The objective of the General subzone as stated in Chapter 13-5-14, HAR, “is to designate open space where specific conservation uses may not be defined, but where urban use would be premature.” The objective of the Resource subzone as stated in Chapter 13-5-13, HAR, “is to develop, with the proper management, areas to ensure sustained use of the natural resources of those areas.”

In their letter dated April 2, 2013, the Office of Conservation and Coastal Lands confirmed that the proposed improvements to Camp Pūpūkea is an identified land use pursuant to Chapter 13-5-22, HAR (P-9 Structures, Existing) provided that a Conservation District Use Application (CDUA) for a Board permit is obtained, which the applicant will acquire prior to construction. The Board of the Department of Land and Natural Resources will have the discretion to allow, modify, or deny the CDUA.

5.1.2 State Conservation District Administrative Rules

(1) *The proposed land use is consistent with the purpose of the conservation district;*

Discussion: The purpose of the Conservation District is to regulate land use for the purpose of “conserving, protecting, and preserving the important natural resources of the State through appropriate management and use to promote their long-term sustainability and the public health, safety, and welfare.”

The upgrades to Camp Pūpūkea will not have a significant adverse impact on Conservation District resources such as watersheds and water resources, scenic or historic areas, park, wilderness or beach reserves, indigenous or endemic plants, fish, and wildlife.

No threatened or endangered plant species listed, or proposed for listing, under either the Federal or State of Hawai‘i endangered species programs were found during the course of a botanical survey of the camp property.

At least three ‘ōpe‘ape‘a, or Hawaiian hoary bats, were detected over a clearing near the top of the camp. With this information, the faunal survey concludes that there may be a significant population of ‘ōpe‘ape‘a around Camp Pūpūkea. The ‘ōpe‘ape‘a is listed as an endangered species under the Federal and State of Hawai‘i endangered species statutes. No other threatened or endangered mammal, bird, or insect species listed or proposed for listing, under either the Federal or State of Hawai‘i endangered species programs were found.

As a federally-listed Endangered Species, the ‘ōpe‘ape‘a is under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS). The Boy Scouts will consult with the USFWS to arrive at a plan that will ensure that no bats will be injured or killed in the course of upgrades to the camp. To minimize the potential for harm to juveniles, removal and trimming of trees greater than 15 feet tall will be avoided during the peak pup rearing season between June 1 and September 15. Other measures to protect ‘ōpe‘ape‘a, as may be recommended by the USFWS also will be implemented.

Regarding the cultural resources of the Conservation District, an archaeological inventory survey of Camp Pūpūkea did not reveal any Hawaiian cultural artifacts or human remains. All archaeological sites within Camp Pūpūkea are associated with the U.S. military use of the property between 1927 and 1953. The archaeological inventory survey concludes that: 1) further evaluation of the property is unlikely to yield any archaeological information that would be considered historically significant; 2) preservation of existing military-related archaeological sites is not necessary; and 3) no further archaeological work is necessary at the Camp Pūpūkea property.

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The upgrades to Camp Pūpūkea will promote long-term sustainability and public health, safety, and welfare by providing Boy Scouts with increased recreational and personal development opportunities.

(2) *The proposed land use is consistent with the objectives of the subzone of the land on which the use will occur;*

Discussion: The objective of the General subzone is to “designate open space where specific conservation uses may not be defined, but where urban use would be premature.” The objective of the Resource subzone is to “develop, with the proper management, areas to ensure sustained use of the natural resources of those areas.” The upgrades to the existing structures are an identified use within the Conservation District General and Resource subzones provided that a CDUA for a Board permit is obtained, which the applicant will acquire prior to construction.

The Camp Pūpūkea site is primarily open space surrounded by natural vegetation. The facility upgrades would allow the Boy Scouts to better operate and manage the wilderness camp without altering the existing open space conditions or deviating from the open space intent of the General subzone. In addition, the improvements will help ensure sustained use of the natural resources in the area.

(3) *The proposed land use complies with provisions and guidelines contained in chapter 205A, HRS, entitled “Coastal Zone Management,” where applicable;*

Discussion: The National Coastal Zone Management (CZM) Program was created through passage of the Coastal Zone Management Act of 1972. Hawai‘i’s CZM Program, adopted as Chapter 205A, HRS, provides a basis for protecting, restoring, and responsibly developing coastal communities and resources. The objectives and policies of the CZM Program encompass broad concerns such as impact on recreational resources, historic and archaeological resources, coastal scenic resources and open space coastal ecosystems, coastal hazards, and the management of development. The upgrades to Camp Pūpūkea comply with the objectives and policies of the CZM program as discussed in Section 5.1.3 of this EA.

(4) *The proposed land use will not cause substantial adverse impact to existing natural resources within the surrounding area, community, or region;*

Discussion: Camp Pūpūkea is an existing facility that has been in operation for over 50 years. The proposed upgrades of several of the camp’s systems and facilities will not substantially change its footprint or the activities that currently take place on the site. Therefore, upgrades to Camp Pūpūkea are not anticipated to cause adverse impact to existing natural resources within the surrounding area, community, or region.

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No threatened or endangered plant species listed, or proposed for listing, under either the federal or State of Hawai‘i endangered species programs were found during the course of a botanical survey of the camp property.

At least three ‘ōpe‘ape‘a, or Hawaiian hoary bats, were detected over a clearing near the top of the camp. With this information, the faunal survey concludes that there may be a significant population of ‘ōpe‘ape‘a around Camp Pūpūkea. The ‘ōpe‘ape‘a is listed as an endangered species under the Federal and State of Hawai‘i endangered species statutes. No other threatened or endangered mammal, bird, or insect species listed or proposed for listing, under either the Federal or State of Hawai‘i endangered species programs were found.

As a federally-list Endangered Species, the ‘ōpe‘ape‘a is under the jurisdiction of the USFWS. The Boy Scouts will consult with the USFWS to arrive at a plan that will ensure that no bats will be injured or killed in the course of upgrades to the camp. To minimize the potential for harm to juveniles, removal and trimming of trees greater than 15 feet tall will be avoided during the peak pup rearing season between June 1 and September 15. Other measures to protect ‘ōpe‘ape‘a, as may be recommended by the USFWS also will be implemented.

(5) *The proposed land use, including buildings, structures, and facilities, shall be compatible with the locality and surrounding areas, appropriate to the physical conditions and capabilities of the specific parcel or parcels.*

Discussion: The upgrades to Camp Pūpūkea will be compatible with the surrounding areas and appropriate to the physical conditions and capabilities of the Site. Many of the improvements will involve replacing outdated infrastructure and facilities, which will improve the operation and sustainability of Camp Pūpūkea. In addition, the upgrades will not significantly detract from the existing open space characteristics of the Site.

(6) *The existing physical and environmental aspects of the land such as natural beauty and open space characteristics will be preserved or improved upon, whichever is applicable;*

Discussion: Surrounded by the Pūpūkea-Paumalū Forest Reserve on three sides, the camp site is surrounded by tall trees and thick vegetation, which prevents any views of the coast below and prevents views of the camp from either Kamehameha Highway or Waimea Bay. The proposed facility upgrades will not affect the tall vegetation surrounding the camp. Therefore, the upgrades will not impact any existing visual resources. Moreover, clearing and grading will be kept to a minimum, so the facility upgrades will not have a significant negative impact on the natural beauty and open space characteristics of the Camp Pūpūkea site.

(7) *Subdivision of land will not be utilized to increase the intensity of land uses in the conservation district; and*

Discussion: The facility upgrades for Camp Pūpūkea will not involve any subdivision of land. It may, however, include the consolidation of lots after the portion of the Homestead Road is acquired.

(8) *The proposed land use will not be materially detrimental to the public health, safety and welfare.*

Discussion: The facility upgrades for Camp Pūpūkea will be beneficial to public health, safety, and welfare by 1) enhancing the camp's ability to provide high-quality recreational programs to boys enrolled in Boy Scouts; 2) strengthening the Boy Scouts' ability to carry out its mission, which in the long term, enhances the social fabric and well-being of the community and contributes to an ethical, moral, and responsible citizenry with the abilities to positively contribute to Hawai'i's social and economic well-being; and 3) permanently closing the large capacity cesspools and replacing them with individual wastewater systems, which, in the long-term, will serve to protect public health by providing protection against cesspool-related groundwater contamination. Also, facility upgrades are not expected to increase pesticide or fertilizer use on the property.

5.1.3 Coastal Zone Management Act, Chapter 205A, Hawai'i Revised Statutes

The Coastal Zone Management (CZM) Program (Chapter 205A, HRS) was established to provide public recreational opportunities, protect coastal resources and ecosystems, reduce hazards, and manage development. The Camp Pūpūkea site is not located near the shoreline, but because the entire state is defined to be within the Coastal Zone Management Area, the camp's improvements are consistent with the objectives and policies of the CZM program as discussed below.

(1) ***Recreational resources;***

Objective: *Provide coastal recreational opportunities accessible to the public.*

Policies

- (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;*

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- (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 and waters having recreational value consistent with public safety standards and conservation of natural resources;*
- (vi) Adopting water quality standards and regulating point and nonpoint 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, board of land and natural resources, and county authorities; and crediting such dedication against the requirements of section 46-6;*

Discussion: Camp Pūpūkea is not a coastal development, is not located on the coastline, and is not in the SMA; therefore, policies regarding shoreline recreation resources are not applicable; however to protect marine resources for purposes including recreation, Phase I improvements to Camp Pūpūkea will include new shower and bathroom facilities connected to individual wastewater systems in compliance with EPA regulations. These upgrades will allow higher quality and more abundant recreational opportunities in the CZM area. Previously, the camp had latrines with wastewater disposal handled by 12 large capacity cesspools. However, since 2005, EPA regulations have required large capacity cesspools to be closed and replaced with an alternative wastewater system. As a result of this requirement, in 2012, the latrines were boarded to make them inaccessible and portable toilets are now used. As part of the upgrade to individual wastewater systems, the existing cesspools will also be formally closed and a Cesspool Closure and Backfilling Report will be submitted to both EPA and the State Department of Health. These measures will provide long-term protection against cesspool-related groundwater contamination. In addition, Boy Scouts will use best management practices (BMPs) for stormwater management to maintain on-site infiltration and prevent polluted runoff from storm events from reaching the streams and ocean. Facility upgrades are not expected to increase pesticide or fertilizer use on the property.

(2) *Historic resources;*

Objective: Protect, preserve, and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

Policies

- (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;*

Discussion: The upgrades to Camp Pūpūkea will not adversely affect historic resources. An archaeological inventory survey of Camp Pūpūkea did not reveal any Hawaiian cultural artifacts or human remains. All archaeological sites within Camp Pūpūkea are associated with the U.S. military use of the property between 1927 and 1953. The archaeological inventory survey concludes that: 1) further evaluation of the property is unlikely to yield any archaeological information that would be considered historically significant; 2) preservation of existing military-related archaeological sites is not necessary; and 3) no further archaeological work is necessary for the Camp Pūpūkea property.

(3) *Scenic and open space resources;*

Objective: Protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources.

Policies

- (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: Camp Pūpūkea is located inland, away from the shoreline; therefore, it is anticipated that there will be no direct effect on the quality of the coastal scenic resources. Surrounded by the Pūpūkea-Paumalū Forest Reserve on three sides, the camp site is surrounded by tall trees and thick vegetation, which prevents any views of the coast below and prevents views of the camp from either Kamehameha Highway or Waimea Bay. The proposed facility

upgrades will not affect the tall vegetation surrounding the camp. Therefore, the upgrades will not impact any existing visual resources. Moreover, clearing and grading will be kept to a minimum, so the facility upgrades will not have a significant negative impact on the natural beauty and open space characteristics of the Camp Pūpūkea site.

Also, the proposed facility upgrades will be compatible with the surrounding areas and appropriate to the physical conditions and capabilities of the Site. Many of the improvements will involve replacing outdated infrastructure and facilities, which will improve the operation and sustainability of Camp Pūpūkea.

(4) Coastal ecosystems;

Objective: Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.

Policies

- (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 nonpoint source water pollution control measures;*

Discussion: Although Camp Pūpūkea is located approximately two miles inland, Pākulena Stream and Kālunawaika‘ala Stream originate within the boundaries of the Camp site and eventually empty into the Pacific Ocean. To reduce storm water quality/quantity impacts, improvements to Camp Pūpūkea will maintain existing on-site drainage conditions as much as possible. Depending on the severity of a storm, discharge of storm water runoff from the Camp site into marine waters could occur. If required prior to construction an NPDES permit will be obtained specifying measures to prevent stormwater discharges from affecting coastal water quality. Even if an NPDES permit is not required, temporary best management practices shall be incorporated during construction to prevent storm water discharges from affecting coastal water quality. Facility improvements to Camp Pūpūkea will not significantly increase the amount of impervious surface area and permanent best management practices like erosion controlling

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vegetation shall be incorporated into the design to limit post construction levels of erosion. Also, facility upgrades are not expected to increase pesticide or fertilizer use on the property.

(5) Economic uses;

Objective: Provide public or private facilities and improvements important to the State's economy in suitable locations.

Policies

- (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: Camp Pūpūkea is not a coastal dependent development, is not located on the coastline, and is not in the SMA; therefore, these policies are not applicable.

(6) Coastal hazards;

Objective: Reduce hazard to life and property from tsunamis, storm waves, stream flooding, erosion, subsidence, and pollution.

Policies

- (A) *Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and nonpoint source pollution hazards;*
- (B) *Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint 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: Camp Pūpūkea sits far inland from the coastline and will not exacerbate any coastal hazards. The site is located outside of mapped tsunami and flood hazard areas and no adverse

effects during tsunamis, flood or storm wave events are anticipated. The upgrades to Camp Pūpūkea will not exacerbate these hazards for coastal or adjacent properties.

(7) *Managing development;*

Objective: Improve the development review process, communication, and public participation in the management of coastal resources and hazards.

Policies

- (A) *Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;*
- (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: Potential short and long term impacts of the proposed action will be reviewed by the public and agencies through this EA process. Pre-consultation comments were obtained and are reproduced in Appendix A. Further opportunities for agency and public review will be provided through the CDUA process.

(8) *Public participation;*

Objective: Stimulate public awareness, education, and participation in coastal management.

Policies

- (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: The Boy Scouts support and engage young people and community in environmental stewardship and sustainable land use practices. The upgrades to Camp Pūpūkea will allow the Boy Scouts to continue to foster these practices as it relates to public participation and coastal management issues.

(9) Beach protection;

Objective: Protect beaches for public use and recreation.

Policies

- (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;*
- (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: Camp Pūpūkea is located inland and does not involve construction of improvements in the shoreline setback area or erosion-protection structures. Therefore, the upgrades to Camp Pūpūkea will not degrade beaches for public use and recreation.

(10) Marine resources;

Objective: Promote the protection, use, and development of marine and coastal resources to assure their sustainability.

Policies

- (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 to acquire and inventory information necessary to understand how ocean development activities 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.*

Discussion: Although Camp Pūpūkea is located approximately two miles inland, Pākulena Stream and Kālunawaika‘ala Stream originate within the boundaries of the Camp site and eventually empty into the Pacific Ocean. To reduce storm water quality/quantity impacts, improvements to Camp Pūpūkea will maintain existing on-site drainage conditions as much as possible. Depending on the severity of a storm, discharge of storm water runoff from the Camp site into marine waters could occur. If required prior to construction an NPDES permit will be obtained specifying measures to prevent stormwater discharges from affecting coastal water quality. Even if an NPDES permit is not required, temporary best management practices shall be incorporated during construction to prevent storm water discharges from affecting coastal water quality. Facility improvements to Camp Pūpūkea will not significantly increase the amount of impervious surface area and permanent best management practices like erosion controlling vegetation shall be incorporated into the design to limit post construction levels of erosion. Also, facility upgrades are not expected to increase pesticide or fertilizer use on the property.

5.1.4 Hawai‘i State Plan, Chapter 226, Hawai‘i Revised Statutes

The *Hawai‘i State Plan* (Chapter 226, HRS), establishes a set of goals, objectives, and policies that serve as long-range guidelines for the growth and development of the State. The *Hawai‘i State Plan* also improves the coordination of Federal, State, and County plans, policies, programs, projects, and regulatory activities, and establishes a system for the planning, coordination, and integration of major state and county activities. Part I of the Plan lists the State’s long-range goals, objectives, policies and priorities. Part II establishes a statewide planning system to coordinate and implement the plan. Part III establishes priority guidelines to address areas of statewide concern. The relevant State Plan goals, objectives, policies and priority guidelines, along with a discussion of how the project conforms, are discussed below.

HRS §226-15 Objective and policies for the physical environment—land, air, and water quality

Objective: Planning for the State’s physical environment with regard to land, air, and water quality shall be directed toward achievement of the following objectives:

- 1) *Maintenance and pursuit of improved quality in Hawai‘i’s land, air, and water resources.*
- 2) *Greater public awareness and appreciation of Hawaii’s environmental resources.*

To achieve the land, air, and water quality objectives, it shall be the policy of this State to:

- 3) *Promote effective measures to achieve desired quality in Hawaii’s surface, ground, and coastal waters.*

- 8) *Foster recognition of the importance and value of the land, air, and water resources to Hawaii's people, their cultures and visitors.*

Discussion: The facility upgrades to Camp Pūpūkea are not anticipated to have a significant adverse impact on land, air, or water resources, either during its construction or long-term operation. Appropriate measures will be implemented to prevent impacts to air quality, water quality, and environmental resources on land. First, Phase I improvements to Camp Pūpūkea will include new shower and bathroom facilities connected to individual wastewater systems in compliance with EPA regulations. As part of this upgrade, the existing cesspools will also be formally closed. These measures should provide long-term protection against cesspool-related groundwater contamination. Second, to improve coastal water quality, the Boy Scouts plan to follow the Hawai'i Ocean Resources Management Plan's three strategic actions wherever realistically feasible. This type of holistic, land-to-sea approach to watershed management fulfills both the Hawai'i Watershed Guidance Report's guiding principles for watershed management and the Hawai'i Coastal Nonpoint Pollution Control Program. Third, no State or Federal air quality standards will be violated during or after the upgrades. Finally, expansion and upgrades to the camp will benefit the immediate North Shore region and greater O'ahu Island by providing environmental education programs. Phase III will include the construction of a new facility for Natural Science and Environmental Education, which will further the Boy Scouts' ability to foster appreciation of Hawai'i's environmental resources.

HRS §226-15 Objective and policies for facilities systems—solid and liquid wastes

Objective: Planning for the State's facility systems with regard to solid and liquid wastes shall be directed towards the achievement of the following objectives:

- 1) *Maintenance of basic public health and sanitation standards relating to treatment and disposal of solid and liquid wastes.*
- 2) *Provision of adequate sewerage facilities for physical and economic activities that alleviate problems in housing, employment, mobility, and other areas.*

To achieve the solid and liquid waste objective, it shall be the policy of the State to:

- 1) *Encourage the adequate development of sewerage facilities that complement planned growth.*

Discussion: The facility upgrades to Camp Pūpūkea support planning for the State's socio-cultural advancement with regard to liquid waste through the development of adequate sewerage facilities. Phase I improvements to Camp Pūpūkea will include new shower and bathroom facilities connected to individual wastewater systems in compliance with EPA regulations. Previously, the camp had latrines with wastewater disposal handled by 12 large capacity

cesspools. However, since 2005, EPA regulations have required large capacity cesspools to be closed and replaced with an alternative wastewater system. As a result of this requirement, in 2012, the latrines were boarded to make them inaccessible and portable toilets are now used. As part of the upgrade to individual wastewater systems, the existing cesspools will also be formally closed and a Cesspool Closure and Backfilling Report will be submitted to both EPA and the State Department of Health. These measures should provide long-term protection against cesspool-related groundwater contamination.

HRS §226-23 Objective and policies for socio-cultural advancement—education

***Objective:** Planning for the State's socio- cultural advancement with regard to education shall be directed towards achievement of the objective of the provision of a variety of educational opportunities to enable individuals to fulfill their needs, responsibilities, and aspirations*

Policies:

- 1) *Support educational programs and activities that enhance personal development, physical fitness, recreation, and cultural pursuits of all groups.*

Discussion: The upgrades to Camp Pūpūkea will help to strengthen the Boy Scouts' ability to carry out its mission and provide quality scouting opportunities. The long-term result will enhance the social fabric and well-being of the community and contribute to an ethical, moral, and responsible citizenry with the abilities to positively contribute to Hawai'i's social and economic well-being.

HRS §226-23 Objective and policies for socio-cultural advancement—leisure

***Objective:** Planning for the State's socio- cultural advancement with regard to leisure shall be directed towards the achievement of the objective of the adequate provision of resources to accommodate diverse cultural, artistic, and recreational needs for present and future generations*

Policies:

- 1) *Foster and preserve Hawai'i's multi-cultural heritage through supportive cultural, artistic, recreational, and humanities-oriented programs and activities.*
- 2) *Provide a wide range of activities and facilities to fulfill the cultural, artistic, and recreational needs of all diverse and special groups effectively and efficiently.*
- 3) *Enhance the enjoyment of recreational experiences through safety and security measures, educational opportunities, and improved facility design and maintenance.*

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- 4) *Promote the recreational and educational potential of natural resources having scenic, open space, cultural, historical, geological, or biological values while ensuring that their inherent values are preserved.*
- 5) *Ensure opportunities for everyone to use and enjoy Hawaii's recreational resources.*
- 6) *Assure the availability of sufficient resources to provide for future cultural, artistic, and recreational needs.*
- 7) *Provide adequate and accessible physical fitness programs to promote the physical and mental well-being of Hawai'i's people.*

Discussion: The facility upgrades to Camp Pūpūkea support planning for the State's socio-cultural advancement with regard to leisure through the provision of a quality educational and recreational facility for youth and the community. The facility upgrades will better equip the camp to accommodate diverse cultural, artistic, and recreational needs for present and future generations.

The upgrades to Camp Pūpūkea will help to strengthen the Boy Scouts' ability to carry out its mission and provide quality scouting opportunities. The long-term result will enhance the social fabric and well-being of the community and contribute to an ethical, moral, and responsible citizenry with the abilities to positively contribute to Hawai'i's social and economic well-being.

5.2 CITY AND COUNTY OF HONOLULU

County-specific land use plans and ordinances pertaining to the Boy Scouts' Camp Pūpūkea include the City and County of Honolulu General Plan (amended 2002) and the North Shore Sustainable Communities Plan. The following subsections present relevant elements of these plans, accompanied by a discussion of how the subdivision conforms to the plans.

5.2.1 General Plan

The General Plan for the City and County of Honolulu is a statement of long-range social, economic, environmental, and design objectives for the general welfare and prosperity of the people of O'ahu. The General Plan is also a statement of broad policies that facilitate the attainment of the objectives of the Plan. The proposed Camp Pūpūkea facility improvements are in conformance with the relevant General Plan objectives and policies, as discussed below.

III. Natural Environment

Objective A: To protect and preserve the natural environment

Policies:

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- 1) *Protect Oahu's natural environment, especially the shoreline, valleys, and ridges, from incompatible development.*
- 3) *Retain the Island's streams as scenic, aquatic, and recreation resources*
- 4) *Require development projects to give due consideration to natural features such as slope, flood and erosion hazards, water- recharge areas, distinctive land forms, and existing vegetation.*
- 6) *Design surface drainage and flood-control systems in a manner which will help preserve their natural settings.*
- 9) *Protect mature trees on public and private lands and encourage their integration into new developments.*
- 10) *Increase public awareness and appreciation of O'ahu's land, air, and water resources.*

Discussion: The Camp Pūpūkea improvements will not adversely impact the soils of the site relative to the surrounding lands; therefore, no mitigation measures are planned. Additionally, the facility improvements to Camp Pūpūkea will not significantly reduce the amount of natural, pervious surface cover. To reduce storm water quality/quantity impacts, improvements to Camp Pūpūkea will maintain existing on-site drainage conditions as much as possible. Depending on the severity of a storm, discharge of storm water runoff from the Camp site into marine waters could occur. If required prior to construction an NPDES permit will be obtained specifying measures to prevent stormwater discharges from affecting coastal water quality. Even if an NPDES permit is not required, temporary best management practices shall be incorporated during construction to prevent storm water discharges from affecting coastal water quality. Facility improvements to Camp Pūpūkea will not significantly increase the amount of impervious surface area and permanent best management practices like erosion controlling vegetation shall be incorporated into the design to limit post construction levels of erosion. Also, facility upgrades are not expected to increase pesticide or fertilizer use on the property.

Clearing and grading will be necessary for some of the proposed improvements. However, any grading necessary will be kept to a minimum to maintain the existing natural state as much as possible and to keep adjacent lands undisturbed. This measure is consistent with the Best Management Practices (BMPs) adopted by the BLNR for Streamside Management Zones (SMZs). Further, upgrades to the camp are not expected to involve fertilizers, pesticides or similar materials that have the potential to contaminate groundwater. Therefore future use of the camp for Boy Scouts activities are not expected to cause contamination or impact the groundwater resources.

Regarding scenic views, the camp site is surrounded by tall trees and thick vegetation, which prevents any views of the coast below and prevents views of the camp from either Kamehameha Highway or Waimea Bay. The proposed facility upgrades will not affect the tall vegetation surrounding the camp. Therefore, the upgrades will not impact any existing visual resources.

IX. Health and Education

Objective B: *To provide a wide range of educational opportunities for the people of O‘ahu*

Policies:

(1) Support education programs that encourage the development of employable skills.

(2) Encourage the provision of informal education programs for people of all age groups.

Discussion: The upgrades to Camp Pūpūkea enhance the Boy Scout’s ability to prepare boys to be active, contributing members of society who may go on to positively influence the economy. A Gallup poll shows that men who have been Boy Scouts generally report higher average educational attainment, job status, and income than those who have not been Boy Scouts (Johnson & Clifton 2010). Twenty-eight percent of former Boy Scouts report an annual income of \$90,000 or more, compared with 20% of non-Scouts. At the same time, seven percent of non-Scouts report making less than \$12,000 per year, compared with four percent of men who have been Boy Scouts.

Camp Pūpūkea has been used by the Boy Scouts for overnight camping and recreational use since the early 1960s. This former military training area is the largest and busiest Boy Scout activity center in the Pacific. Its summer camp program plays host to Troops from throughout Hawai‘i and the United States Mainland. It is used year-round for camping, training and other nature-related activities. The facility upgrades for Camp Pūpūkea will strengthen the Boy Scouts’ ability to carry out its mission, which includes responsibility for the natural environment.

X. Culture and Recreation

Objective D: *To provide a wide range of recreational opportunities that are readily available to all residents of O‘ahu.*

Policy 7: *Provide for recreation programs that serve a broad spectrum of the population.*

Discussion: The Camp Pūpūkea facility upgrades will enhance the camp’s ability to provide high-quality recreational programs to boys enrolled in Boy Scouts. According to the Boy Scouts of America policy of nondiscrimination, membership in the Boy Scouts is open to anyone who meets the joining requirements regardless of their race or ethnic background. As of 2012, the Aloha Council’s membership includes 12,960 youth (or 12% of the state’s eligible youth).

5.2.2 North Shore Sustainable Communities Plan

The *North Shore Sustainable Communities Plan* is one of eight community-oriented plans designed to help guide public policy, investment, and decision-making. The role of the plan is to

maintain the rural character, agricultural lands, open space, natural environment, recreational resources and scenic beauty of O‘ahu’s northern coast, in contrast to more urbanized areas of O‘ahu such as the Primary Urban Center, East Honolulu, Central O‘ahu, and ‘Ewa. In line with the General Plan’s policies to preserve the open space and country atmosphere of the rural areas, the *North Shore Sustainable Communities Plan* limits growth to “infill” areas within or adjacent to built-up areas to accommodate existing and future and future housing and employment needs, and strives to maintain the region’s population at 1.7 percent of the island-wide population for the year 2025.

The area of the *North Shore Sustainable Communities Plan* extends from Ka‘ena Point in the west to Waiale‘e Gulch near Kawela Bay in the east, with O‘ahu’s shoreline defining the northern edge and Helemano and the slopes of the Wai‘anae and Ko‘olau Mountain Ranges to the south. The region consists mostly of agricultural lands and open space, which surround the country towns of Hale‘iwa and Waialua and the rural residential communities of Mokulē‘ia, Kawailoa, and Sunset/ Pūpūkea.

The *North Shore Sustainable Communities Plan* objectives and policies relevant to Camp Pūpūkea are discussed below.

3.1 OPEN SPACE AND NATURAL ENVIRONMENT

3.1.1 Policies

- *Protect and enhance significant natural features and ecologically sensitive lands, including mountain areas, shoreline areas, wetlands, fishponds, natural gulches, streams and drainageways. Provide protective buffer zones and setbacks around biologically sensitive areas to minimize habitat disturbance.*
- *Protect recreational areas that contribute to the North Shore’s open space quality, including the ocean and its resources, the shoreline and mountain areas, park spaces, and other quasi-public recreational facilities.*
- *Improve and enhance access to mountain and shoreline recreational areas by obtaining use of Federal and State lands and waters and acquiring available excess lands.*
- *Allow outdoor lighting at the minimum level necessary for public safety, security and community aesthetics consistent with the goals of energy conservation and environmental protection.*

Discussion: The upgrades to Camp Pūpūkea will not have a significant adverse impact on Conservation District resources such as watersheds and water resources, scenic or historic areas, parks, wilderness or beach reserves, indigenous or endemic plants, fish, and wildlife.

The facility upgrades for Camp Pūpūkea will protect an important recreational area by enhancing the camp's ability to provide high-quality recreational programs to children enrolled in Boy Scouts. According to the Boy Scouts of America policy of nondiscrimination, membership in the Boy Scouts is open to anyone who meets the joining requirements regardless of their race or ethnic background.

Because of the Camp site's visually remote location, the proposed facility upgrades will have no effect on the existing visual resources. Views from the camp site—both mauka and makai—will still be severely restricted by forest trees, which prevent any coastal views. Similarly, the tall vegetation will continue to block views of the camp site from lower elevations.

3.3 *PARKS AND RECREATION*

3.3.1 *Policies*

- *Provide safe, suitable sites and facilities to meet resident and island-wide recreational needs for a variety of recreational activities on the North Shore.*
- *Expand recreational opportunities by providing greater access to recreational resources in the mountains, at the shoreline and in the ocean. Acquire and maintain additional lands for beach park development and mauka camping and hiking areas, as opportunities occur.*
- *Maintain and improve existing recreational areas and facilities to provide high quality recreational experiences for residents and visitors.*
- *Ensure that parks, recreational resources and recreational activities are compatible with the preservation and protection of open space, rural character, scenic, historic and cultural resources, and environmental quality. Wilderness and wildlife activities should be explored and promoted if appropriate.*
- *Provide safe and convenient access to parks and recreational resources.*
- *Ensure that parks and recreational resources are compatible with surrounding land uses.*

Discussion: Camp Pūpūkea has been used by the Boy Scouts for overnight camping and recreational use for since the early 1960s. This former military training area is the largest and busiest Boy Scout activity center in the Pacific. Its summer camp program plays host to Troops from throughout Hawai'i and the United States Mainland. It is used year-round for camping, training and other nature-related activities. The facility upgrades for Camp Pūpūkea will promote recreational activities in a natural setting and strengthen the Boy Scouts' ability to carry out its mission, which includes responsibility for the natural environment.

Camp Pūpūkea and the proposed upgrades to the Camp enhance the region's recreational and educational potential by: 1) continuing the existing recreational and educational uses on the site;

2) upgrading the facilities to better serve the Boy Scouts membership; and 3) keeping the camp within the same defined area.

4.3 WASTEWATER TREATMENT

4.3.1 Policies

- *Provide adequate public and private wastewater treatment facilities and improve the existing wastewater management services on the North Shore to protect the North Shore's water resources and the health of the community is the highest priority.*
- *Support alternative wastewater technologies that reflect the community's values and rural character.*

Discussion: Phase I improvements to Camp Pūpūkea will include new shower and bathroom facilities connected to individual wastewater systems in compliance with EPA regulations. Previously, the camp had latrines with wastewater disposal handled by 12 large capacity cesspools, a number which was reduced to 11 by 2012. However since 2005, EPA regulations have required large capacity cesspools to be closed and replaced with an alternative wastewater system. As a result of this requirement, in 2012, the latrines were boarded to make them inaccessible and portable toilets are now used. As part of the upgrade to individual wastewater systems, the existing cesspools will also be formally closed and a Cesspool Closure and Backfilling Report will be submitted to both EPA and the State Department of Health. These measures will provide long-term protection against cesspool-related groundwater and shoreline contamination.

5.2.3 City & County of Honolulu Land Use Ordinance

The Land Use Ordinance (LUO) regulates land use to encourage orderly development in accordance with the General Plan and Sustainable Communities Plans and works to protect public health, safety, and welfare. The document establishes zoning, permitted uses, and development standards within the zoning districts. It also regulates development in special districts such as the Flood Hazard District. All lands within the City and County of Honolulu are zoned into specific districts. The Site is zoned P-1 (Restricted Preservation District). The State has imposed development restrictions on lands within this designation to conserve, protect, or preserve the important natural resources of the islands.

5.2.4 Special Management Area

The property is not within the Special Management Area (SMA).

5.3 APPROVALS AND PERMITS

A list of permits and approvals required for the upgrades to Camp Pūpūkea is presented below.

Permit/Approval	Responsible Agency
Chapter 343, HRS Compliance	State Department of Land and Natural Resources
Conservation District Use Permit	
National Pollutant Discharge Elimination System (NPDES) Permit (if over 1 acre of land disturbance)	State Department of Health
Wastewater System	
Building Permits (including electrical, plumbing, civil, and demolition)	City and County of Honolulu, Department of Planning and Permitting

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6 ALTERNATIVES

According to Title 11, Department of Health, Chapter 200, Environmental Impact Statement Rules, Section 11-200-10(6), an environmental assessment must discuss potential alternatives to the proposed action.

Two alternatives to the subdivision were considered: 1) no action and 2) the preferred alternative. These alternatives are discussed below.

6.1 NO ACTION ALTERNATIVE

Under the “no action” alternative, Camp Pūpūkea would continue to operate as a Boy Scout activity center. However, because of the Camp’s heavy use throughout the year, facilities would continue to decline and sanitation and safety may become prevalent issues. Porta-potties would continue to operate as the only usable toilet facilities and the existing cesspools would remain “boarded” (instead of formally closed).

The current shower facilities would remain operable, but without the proposed water-efficient showers, water consumption would remain near current levels. Residential and recreational facilities would continue to serve their designated purposes. However, many current and future Boy Scouts would lose the opportunity for enhanced scouting, educational, and recreational activities. In the long run, such limitations may lessen the Boy Scouts’ ability to carry out its mission of preparing young people to make ethical and moral choices.

The no action alternative is not feasible because important wastewater upgrades would not be made. The current porta-potties are not a sustainable, long-term wastewater option and the boarded cesspools need to be formally closed to prevent contamination of the surrounding natural environment. Further, the current recreational and residential facilities are becoming overused and worn-down. While they remain operable now, failing to make wastewater improvements and upgrade the recreational and residential facilities will cause future health, safety, and sanitary issues. Consequently, the Boy Scouts would no longer be able to adequately provide quality scouting opportunities for Hawai’i’s youth.

6.2 PREFERRED ALTERNATIVE

The preferred alternative is to upgrade Camp Pūpūkea's facilities so that the Boy Scouts can continue to provide high quality recreational and educational opportunities for Hawai'i's youth. Upgrades include infrastructure improvements, renovation or relocation of some existing residential and recreational structures, and new facilities. Improvements are expected to be completed in three phases over a period of 20 or more years. A list of proposed upgrades can be viewed in Section 2.2

The installation of a new wastewater and toilet system combined with the formal closure of cesspools will greatly enhance the safety and sanitary conditions of Camp Pūpūkea, while also preserving a healthy natural environment. Moreover, the renovations and construction of new recreational and residential facilities will allow for enriched scouting programs.

Various studies (detailed in in Sections 3 and 4) have concluded that the proposed improvements will not adversely impact the surrounding natural environment or existing resources. Should any issues arise, the Boy Scouts will work with the appropriate agency(s) to address or mitigate the issue(s) at hand.

7 FINDINGS AND ANTICIPATED DETERMINATION

To determine whether the proposed upgrades to Camp Pūpūkea will have a significant impact on the physical and human environment, all phases and expected consequences of the proposed project have been evaluated, including potential primary, secondary, short-range, long-range, and cumulative impacts. Based on this evaluation, the Approving Agency (State Department of Land and Natural Resources) is anticipated to issue a Finding of No Significant Impact (FONSI). The supporting rationale for this finding is summarized in this chapter.

7.1 SIGNIFICANCE CRITERIA

The discussion below evaluates the significance of the Project's impacts based upon the Significance Criteria set forth in Hawai'i Administrative Rules section 11-200-12.

- (1) *Involves an irrevocable commitment to loss or destruction of any natural or cultural resources;*

Discussion: Camp Pūpūkea is an existing Boy Scouts campground. The proposed upgrades do not incur loss or destruction of natural or cultural resources. While several of the Camp's systems and facilities will be upgraded, these upgrades will not substantially change the camp's footprint or the recreation and nature-based activities that currently take place at the Camp. No federal or State of Hawai'i-listed threatened, endangered, or candidate plant or animal species will be harmed. There may be a significant population of the Endangered Hawaiian hoary bat ('ōpe'ape'a) around Camp Pūpūkea, and so the Boy Scouts will consult with the USFWS to arrive at a plan that will ensure that no bats will be injured or killed in the course of upgrades to the camp.

The Camp has been the subject of archaeological and cultural studies. Both studies determined that there are no resources potentially subject to irrevocable loss as a result of the camp upgrades.

- (2) *Curtails the range of beneficial uses of the environment;*

Discussion: The current use of the site as a campground for the Boy Scouts will not change as a result of the upgrades to Camp Pūpūkea. The site will continue to be utilized as a campground where Boy Scouts interact with the environment as part of their educational and recreational programs. The proposed improvements will also enhance the Camp's ability to provide high-quality, nature-based recreational programs to boys enrolled in Boy Scouts.

CAMP PŪPŪKEA MASTER PLAN
DRAFT ENVIRONMENTAL ASSESSMENT

- (3) *Conflicts with the State’s long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS; and any revisions thereof and amendments thereto, court decisions, or executive orders;*

Discussion: The upgrades to Camp Pūpūkea are consistent with the environmental policies established in Chapter 344, HRS, which seek to “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 health and welfare of humanity, and enrich the understanding of the ecological systems and natural resources important to the people of Hawaii.” The Camp Pūpūkea Master Plan is not expected to significantly impact any natural resources and is expected to enhance the quality of life for families with boys participating in the Boy Scouts program by improving the existing facilities, upgrading wastewater and other systems thereby increasing health and safety, and enhancing the Boy Scouts educational and recreational programs.

- (4) *Substantially affects the economic or social welfare of the community or state;*

Discussion: The Camp Pūpūkea Master Plan will have a positive impact on the social and economic welfare of the community and State by enhancing the Boy Scout’s ability to prepare boys to be active, contributing members of society who may go on to positively influence Hawai‘i’s social and economic well-being. The camp improvements will strengthen the Boy Scouts’ ability to carry out the organization’s mission and provide quality scouting opportunities that will help create an ethical, moral, and responsible citizenry.

- (5) *Substantially affects public health;*

Discussion: The proposed upgrades are expected to have a positive impact on public health because they involve the permanent closure and replacement of large capacity cesspools. Installing individual wastewater units to replace the camp’s cesspools will provide long-term protection against cesspool-related groundwater contamination. The improvements will also enhance the camp’s ability to provide high-quality, nature-based recreational programs to children enrolled in Boy Scouts.

- (6) *Involves substantial secondary impacts, such as population changes or effects on public facilities;*

Discussion: The Camp Pūpūkea Master Plan will not result in a change in population and is not anticipated to generate or stimulate growth. Secondary impacts to infrastructure are minimized through the provision of on-site individual wastewater systems.

CAMP PŪPŪKEA MASTER PLAN
DRAFT ENVIRONMENTAL ASSESSMENT

(7) *Involves a substantial degradation of environmental quality;*

Discussion: The Camp Pūpūkea Master Plan will not substantially degrade environmental quality. One of the primary purposes of the Master Plan is to upgrade the wastewater treatment system at Camp Pūpūkea to comply with EPA and DOH regulations. Construction-period impacts (if any) related to noise and air quality will be temporary and short-term, and will be minimized and mitigated to avoid environmental degradation. Implementation of the master plan will enhance environmental quality in the long-run.

(8) *Is individually limited but cumulatively has considerable effect on the environment, or involves a commitment for larger actions;*

Discussion: The Camp Pūpūkea Master Plan is not part of a larger project, nor does it commit the State or County to any other larger actions; and will not generate any additional actions having a cumulative effect on the environment. Cumulative impacts to site resources such as streams and native species are minimized by maintaining natural drainage where feasible and following USFWS recommendations for native animal species. Cumulative impacts to public infrastructure are minimized through the installation of an on-site wastewater system that provides both primary and secondary water treatment.

(9) *Substantially affects a rare, threatened, or endangered species or its habitat;*

Discussion: No rare, threatened, or endangered species or its habitat will be impacted by the Camp Pūpūkea Master Plan. Because the faunal survey determined that there may be a significant population of the Endangered Hawaiian hoary bat around Camp Pūpūkea, the Boy Scouts will consult with the USFWS to arrive at a plan that will ensure that no bats will be injured or killed in the course of upgrades to the camp.

(10) *Detrimentially affects air or water quality or ambient noise levels;*

Discussion: No State or Federal air quality standards will be violated during or after the construction of the Camp Pūpūkea Master Plan. The only anticipated issues related to air quality would be during construction; however, construction activities would be temporary. Long-term negative impacts related to air quality are not expected.

No State or Federal water quality standards will be violated during or after the construction of the Camp Pūpūkea Master Plan; the upgrades to Camp Pūpūkea will be required to comply with nonpoint source prevention measures through the NPDES permit, when applicable.

Construction activities may create temporary noise impacts. Any temporary noise increase from construction is likely not to cause any annoyances due to the remoteness of the site. If necessary,

CAMP PŪPŪKEA MASTER PLAN
DRAFT ENVIRONMENTAL ASSESSMENT

contractors will employ mitigation measures to minimize those temporary noise impacts including the use of mufflers and implementing construction curfew periods. Pursuant to Chapter 11-46, Hawai‘i Administrative Rules, all construction activities must comply with all community noise controls. Long-term noise impacts are expected to return to preconstruction levels.

(11) *Affects or is likely to suffer damage by being located in an environmentally sensitive area, such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, freshwater, or coastal waters.*

Discussion: The Master Plan area encompasses land that is already being used for Camp Pūpūkea. Camp Pūpūkea is not located in a designated flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, or in fresh waters or coastal waters. Pākūlena Stream and Kālunawaika‘ala Stream, originate within the boundaries of the Camp site and eventually empty into the Pacific Ocean. To reduce storm water quality/quantity impacts, improvements to Camp Pūpūkea will maintain existing on-site drainage conditions as much as possible. Depending on the severity of a storm, discharge of storm water runoff from the Camp site into marine waters could occur. If required prior to construction, an NPDES permit will be obtained specifying measures to prevent stormwater discharges from affecting coastal water quality. Even if an NPDES permit is not required, temporary best management practices shall be incorporated during construction to prevent storm water discharges from affecting coastal water quality. Facility improvements to Camp Pūpūkea will not significantly increase the amount of impervious surface area and permanent best management practices like erosion controlling vegetation shall be incorporated into the design to limit post construction levels of erosion.

(12) Substantially affects scenic vistas and view planes identified in county or state plans or studies;

Discussion: No vistas or view planes will be affected by the proposed upgrades. Views from the camp site—both *mauka* and *makai*—will still be severely restricted by forest trees, which prevent any coastal views. Similarly, the tall vegetation will continue to block views of the camp site from lower elevations.

(13) *Requires substantial energy consumption.*

Discussion: The Camp Pūpūkea Master Plan will not require substantial energy consumption. The proposed upgrades may increase electrical demand slightly; however, Camp Pūpūkea is a wilderness camp and the proposed upgrades will not significantly increase energy demand beyond current levels.

7.2 ANTICIPATED DETERMINATION

Pursuant to Chapter 343, HRS, the approving agency (State Department of Land and Natural Resources) is anticipated to issue a Finding of No Significant Impact (FONSI) for this draft environmental assessment. This finding is founded on the basis of impacts and mitigation measures examined in this document, public comments received during the pre-consultation and public review phases, and analyzed under the above criteria.

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8 CONSULTATION

In the course of planning for the Camp Pūpūkea Master Plan, a meeting with neighborhood stakeholders and pre-consultation comments were solicited from agencies that may have an interest in the proposed improvements.

8.1 PRE-CONSULTATION

Pre-consultation was conducted prior to preparation of the Draft EA. The purpose of the pre consultation period is to consult with individuals, community organizations, private groups, and government agencies with technical expertise, or an interest or will be affected by the proposed action. This process is part of the scoping process for the Draft EA. Comments and input received during this period are used to identify environmental issues and concerns to be addressed in the Draft EA, which in turn will undergo a 30-day public comment period.

As part of the early consultation process, the following agencies and organizations were sent pre-consultation letters. The organizations and individuals were encouraged to distribute the information to their members, friends and neighbors. Copies of the written comments and responses are reproduced in Appendix A.

State of Hawai'i

- Department of Business, Economic Development & Tourism (DBEDT)
- DBEDT – Office of Planning
- Department of Defense
- Department of Hawaiian Homelands
- Department of Health (DOH)
- Department of Land and Natural Resources (DLNR)
- DLNR – Historic Preservation Division
- Department of Transportation
- Office of Hawaiian Affairs
- UH Water Resources Research Center

Federal

- U.S. Army Corps of Engineers – Regulatory Branch
- U.S. Fish and Wildlife Service

City & County of Honolulu

- Board of Water Supply
- Department of Community Services
- Department of Design and Construction
- Department of Environmental Services
- Department of Facility Maintenance

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- Department of Parks and Recreation
- Department of Planning and Permitting
- Department of Transportation Services
- Fire Department
- Police Department

Elected Officials

- State Senator Clayton Hee
- State Representative Richard Lee Fale
- City Councilmember Ernest Martin

8.2 DRAFT ENVIRONMENTAL ASSESSMENT

The Draft EA will be distributed to the following agencies, organizations, and individuals. Comments received on the Draft EA will be included in the Final EA.

State of Hawai'i

- Department of Agriculture
- Department of Accounting and General Services
- Department of Business, Economic Development & Tourism (DBEDT)
- DBEDT – Energy Division
- DBEDT – Office of Planning
- Department of Defense
- Department of Education
- Department of Hawaiian Homelands
- Department of Health (DOH)
- DOH – Office of Environmental Quality Control
- Department of Human Services
- Department of Labor and Industrial Relations
- Department of Land and Natural Resources (DLNR)
- DLNR – Historic Preservation Division
- DLNR – State Parks Division
- Department of Transportation
- Office of Hawaiian Affairs
- UH Water Resources Research Center

Federal

- U.S. Army Corps of Engineers – Regulatory Branch
- U.S. Fish and Wildlife Service
- Federal Emergency Management Agency

City & County of Honolulu

- Board of Water Supply
- Department of Community Services
- Department of Design and Construction
- Department of Environmental Services
- Department of Facility Maintenance
- Department of Parks and Recreation
- Department of Planning and Permitting
- Department of Transportation Services
- Fire Department
- Police Department

Elected Officials

- State Senator Clayton Hee
- State Representative Richard Lee Fale
- City Councilmember Ernest Martin

Libraries

- Hawaii State Library – Hawaii Documents Center
- Waialua Public Library
- UH Hamilton Library

Private Organizations & Individuals

- North Shore Community Land Trust

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Appendix **A**

CONSULTATION

PRE-CONSULTATION COMMENTS RESPONSES

Agencies/Organizations/Individuals	Pre-Consultation Sent	Comment Date
Department of Land and Natural Resources (Approving Agency)	Yes	04-09-2013
OEQC	Yes	-
STATE		
Department of Accounting and General Services	Yes	04-12-2013
Department of Business, Economic Development & Tourism	Yes	-
DBEDT - Office of Planning	Yes	03-21-2013
Department of Defense	Yes	-
Department of Hawaiian Home Lands	Yes	04-04-2013
Department of Health	Yes	03-27-2013
State Historic Preservation Division	Yes	-
Department of Transportation	Yes	04-17-2013
Office of Hawaiian Affairs	Yes	-
UH Water Resources Research Center	Yes	04-03-2013
FEDERAL		
U.S. Army Corps of Engineers- Regulatory Branch	Yes	04-02-2013
U.S. Fish and Wildlife Service	Yes	-
CITY & COUNTY OF HONOLULU		
Board of Water Supply	Yes	04-08-2013
Department of Community Services	Yes	-
Department of Design and Construction	Yes	04-11-2013
Department of Environmental Services	Yes	-
Department of Facility Maintenance	Yes	04-24-2013
Department of Parks and Recreation	Yes	03-28-2013
Department of Planning and Permitting	Yes	04-12-2013
Department of Transportation Services	Yes	04-05-2013
Fire Department	Yes	04-09-2013
Police Department	Yes	04-04-2013

NEIL ABERCROMBIE
GOVERNOR OF HAWAII



WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

April 9, 2013

PBR Hawaii & Associates, Inc.
Attn: Tom Schnell
1001 Bishop Street, Suite 650
Honolulu, HI 96813-3484

via email: tschnell@pbrhawaii.com

Dear Mr. Schnell,

SUBJECT: Pre-Consultation for the Boy Scouts Camp Pupukea Facility located in Waimea, O'ahu, Hawai'i (Tax Map Keys 5-9-05:02 and 5-9-05:77)

Thank you for the opportunity to review and comment on the subject matter. The Department of Land and Natural Resources' (DLNR) Land Division distributed or made available a copy of your report pertaining to the subject matter to DLNR Divisions for their review and comments.

At this time, enclosed are comments from (1) Land Division – Oahu District; (2) Division of State Parks; (3) Office of Conservation and Coastal Lands; and (4) Commission on Water Resource Management. No other comments were received as of our suspense date. Should you have any questions, please feel free to call Supervising Land Agent Steve Molmen at 587-0439. Thank you.

Sincerely,

A handwritten signature in black ink, appearing to read "Russell Y. Tsuji".

Russell Y. Tsuji
Land Administrator

Enclosure(s)



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

March 19, 2013

MEMORANDUM

TO:

DLNR Agencies:

- Div. of Aquatic Resources
- Div. of Boating & Ocean Recreation
- Engineering Division
- Div. of Forestry & Wildlife
- Div. of State Parks
- Commission on Water Resource Management
- Office of Conservation & Coastal Lands
- Land Division – Oahu District
- Historic Preservation

FROM:

Russell Y. Tsuji, Land Administrator

SUBJECT:

Pre-Consultation for the Boy Scouts Camp Pupukea Facility Located in Waimea, O'ahu, Hawai'i

LOCATION:

Waimea, O'ahu, Hawai'i, TMKs: 5-9-05:02 and 5-9-05:77

APPLICANT:

Aloha Council Boy Scouts of America by its consultant, PRR HAWAII & Associates, Inc.

Transmitted for your review and comment on the above-referenced document. We would appreciate your comments on this document.

Please submit any comments by April 8, 2013. If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Supervising Land Agent Steve Molmen at (808) 587-0439. Thank you.

Attachments

- We have no objections.
- We have no comments.
- Comments are attached.

Signed: _____
Print Name: _____
Date: 3/21/2013

c: Central Files

COMMENTS:

WE HAVE NO OBJECTIONS TO THE BOY SCOUTS plans to upgrade their Camp Pupukea Facility. No impact is expected to occur on STATE LAND.

NEIL ABERCROMBIE
GOVERNOR OF HAWAII



RECEIVED
STATE PARKS DIV

WILLIAM J. AHA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT



STATE OF HAWAII '13 MAR 20 10:02
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809
DEPT OF LAND &
NATURAL RESOURCES

March 19, 2013

MEMORANDUM

- TO: **DLNR Agencies:**
- Div. of Aquatic Resources
 - Div. of Boating & Ocean Recreation
 - Engineering Division
 - Div. of Forestry & Wildlife
 - Div. of State Parks
 - Commission on Water Resource Management
 - Office of Conservation & Coastal Lands
 - Land Division – Oahu District
 - Historic Preservation

FROM: Russell Y. Tsuji, Land Administrator

SUBJECT: Pre-Consultation for the Boy Scouts Camp Pupukea Facility Located in Waimea, O'ahu, Hawai'i

LOCATION: Waimea, O'ahu, Hawai'i, TMKs: 5-9-05:02 and 5-9-05:77

APPLICANT: Aloha Council Boy Scouts of America by its consultant, PRR HAWAII & Associates, Inc.

Transmitted for your review and comment on the above-referenced document. We would appreciate your comments on this document.

Please submit any comments by **April 8, 2013**. If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Supervising Land Agent Steve Molmen at (808) 587-0439. Thank you.

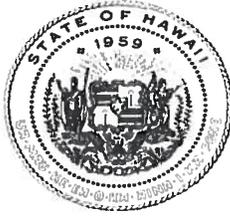
Attachments

- We have no objections.
- We have no comments.
- Comments are attached.

Signed: _____
 Print Name: _____
 Date: _____

c: Central Files

NEIL ABERCROMBIE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

DIVISION OF STATE PARKS
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

March 22, 2013

RECEIVED
LAND DIVISION

2013 MAR 27 PM 2:46

DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
ESTHER KIA'AINA
FIRST DEPUTY
WILLIAM M. TAM
DEPUTY DIRECTOR - WATER
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
ENFORCEMENT AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

MEMORANDUM

To: Russell Y. Tsuji, Land Administrator
Land Division

From: Daniel S. Quinn, State Parks Administrator
Division of State Parks *D. Quinn*

Subject: Pre-Consultation for the Camp Pūpūkea Facility of the Aloha Council Boy Scouts of America, Waimea, O'ahu; TMK: 5-9-05: 02 and 77

We would like to be a consulted party during the preparation of a Master Plan for Camp Pūpūkea. The division has jurisdiction over its neighboring lands, which make up Pūpūkea-Paumalu State Park Reserve.

Thank you for informing us about the pre-consultation.

RECEIVED
LAND DIVISION
2013 MAR 27 PM 2:43
DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

0A-13-124



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

2013 MAR 19 P 2:46

DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

March 19, 2013

MEMORANDUM

TO:

DLNR Agencies:

- Div. of Aquatic Resources
- Div. of Boating & Ocean Recreation
- Engineering Division
- Div. of Forestry & Wildlife
- Div. of State Parks
- Commission on Water Resource Management
- Office of Conservation & Coastal Lands
- Land Division – Oahu District
- Historic Preservation

RECEIVED
LAND DIVISION
2013 APR -2 PM 2:37
DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

FROM:

Russell Y. Tsuji, Land Administrator

SUBJECT:

Pre-Consultation for the Boy Scouts Camp Pupukea Facility Located in Waimea, O'ahu, Hawai'i

LOCATION:

Waimea, O'ahu, Hawai'i, TMKs: 5-9-05:02 and 5-9-05:77

APPLICANT:

Aloha Council Boy Scouts of America by its consultant, PRR HAWAII & Associates, Inc.

Transmitted for your review and comment on the above-referenced document. We would appreciate your comments on this document.

Please submit any comments by **April 8, 2013**. If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Supervising Land Agent Steve Molmen at (808) 587-0439. Thank you.

Attachments

- We have no objections.
- We have no comments.
- Comments are attached.

Signed:

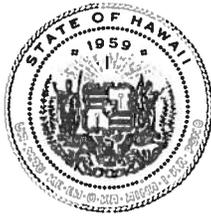
Print Name:

K. Tiger Mills

Date:

April 1, 2013

c: Central Files



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
OFFICE OF CONSERVATION AND COASTAL LANDS
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

REF:OCCL:TM

Correspondence: OA 13-124

MEMORANDUM

APR - 2 2013

TO: Russ Tsuji, Administrator
Land Division

FROM: Sam Lemmo, Administrator
Office of Conservation and Coastal Lands

A large, stylized handwritten signature in black ink, appearing to read "Sam Lemmo".

SUBJECT: Pre-Consultation for the Aloha Council's Boy Scouts Camp Pupukea Located at Waimea, O'ahu, TMKs: (1) 5-9-005: 002 & 077

The Office of Conservation and Coastal Lands (OCCL) has reviewed the correspondence from PBR Hawai'i Inc. regarding the subject matter. According to the information presented, an Environmental Assessment is being prepared for a long-range master plan for the Boy Scouts Camp Pupukea. The location was formerly utilized as military training facilities.

The subject area lies within the General and Resource subzone of the Conservation District. Based upon the preliminary information provided and the current utilization of the subject area, proposed improvements to the existing site is an identified land use pursuant to the Hawaii Administrative Rules, §13-5-22 Structures and Land Use, Existing (D-1) Major alteration of existing structures, facilities, use, and equipment, or topographical features which are different from the original use.

This proposal would require the filing of a Conservation District Use Application (CDUA) for a Board permit. To allow, modify, or deny the CDUA shall be at the Board of Land and Natural Resources discretion. We look forward to the Aloha Council Boy Scouts Camp Pupukea Long Range Master Plan.

Should you have any questions regarding this memorandum, contact Tiger Mills of our Office at (808) 587-0382.



RECEIVED
LAND DIVISION

WILLIAM J. AHA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

2013 APR -8 PM 3:28



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

March 19, 2013

MEMORANDUM

TO: *From:*

DLNR Agencies:

- Div. of Aquatic Resources
- Div. of Boating & Ocean Recreation
- Engineering Division
- Div. of Forestry & Wildlife
- Div. of State Parks
- Commission on Water Resource Management
- Office of Conservation & Coastal Lands
- Land Division – Oahu District
- Historic Preservation

2013 MAR 20 AM 7:45

FROM: *to*

Russell Y. Tsuji, Land Administrator

SUBJECT:

Pre-Consultation for the Boy Scouts Camp Pupukea Facility Located in Waimea, O'ahu, Hawai'i

LOCATION:

Waimea, O'ahu, Hawai'i, TMKs: 5-9-05:02 and 5-9-05:77

APPLICANT:

Aloha Council Boy Scouts of America by its consultant, PRR HAWAII & Associates, Inc.

Transmitted for your review and comment on the above-referenced document. We would appreciate your comments on this document.

Please submit any comments by **April 8, 2013**. If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Supervising Land Agent Steve Molmen at (808) 587-0439. Thank you.

Attachments

- We have no objections.
- We have no comments.
- Comments are attached.

Signed:

Print Name: William M. Tam, Deputy Director

Date: April 8, 2013

c: Central Files



WILLIAM J. AILA, JR.
CHAIRPERSON
WILLIAM D. BALFOUR, JR.
SUMNER ERDMAN
LORETTA J. FUDDY, A.C.S.W., M.P.H.
NEAL S. FUJIWARA
JONATHAN STARR
TED YAMAMURA
WILLIAM M. TAM
DEPUTY DIRECTOR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

April 8, 2013

REF: Boy Scouts Pupukea Pre-Con

TO: Russell Tsuji, Administrator
Land Division

FROM: William M. Tam, Deputy Director
Commission on Water Resource Management

SUBJECT: Pre-Consultation for the Boy Scouts Camp Pupukea Facility Located in Waimea, Oahu, Hawaii

FILE NO.:

TMK NO.: 5-9-05:02 and 5-9-05:77

Thank you for the opportunity to review the subject document. The Commission on Water Resource Management (CWRM) is the agency responsible for administering the State Water Code (Code). Under the Code, all waters of the State are held in trust for the benefit of the citizens of the State, therefore, all water use is subject to legally protected water rights. CWRM strongly promotes the efficient use of Hawaii's water resources through conservation measures and appropriate resource management. For more information, please refer to the State Water Code, Chapter 174C, Hawaii Revised Statutes, and Hawaii Administrative Rules, Chapters 13-167 to 13-171. These documents are available via the Internet at <http://www.hawaii.gov/dlnr/cwrm>.

Our comments related to water resources are checked off below.

1. We recommend coordination with the county to incorporate this project into the county's Water Use and Development Plan. Please contact the respective Planning Department and/or Department of Water Supply for further information.
2. We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.
3. We recommend coordination with the Hawaii Department of Agriculture (HDOA) to incorporate the reclassification of agricultural zoned land and the redistribution of agricultural resources into the State's Agricultural Water Use and Development Plan (AWUDP). Please contact the HDOA for more information.
4. We recommend that water efficient fixtures be installed and water efficient practices implemented throughout the development to reduce the increased demand on the area's freshwater resources. Reducing the water usage of a home or building may earn credit towards Leadership in Energy and Environmental Design (LEED) certification. More information on LEED certification is available at <http://www.usgbc.org/leed>. A listing of fixtures certified by the EPA as having high water efficiency can be found at <http://www.epa.gov/watersense/>.
5. We recommend the use of best management practices (BMP) for stormwater management to minimize the impact of the project to the existing area's hydrology while maintaining on-site infiltration and preventing polluted runoff from storm events. Stormwater management BMPs may earn credit toward LEED certification. More information on stormwater BMPs can be found at <http://hawaii.gov/dbedt/czm/initiative/lid.php>.
6. We recommend the use of alternative water sources, wherever practicable.
7. We recommend participating in the Hawaii Green Business Program, that assists and recognizes businesses that strive to operate in an environmentally and socially responsible manner. The program description can be found online at <http://energy.hawaii.gov/programs/achieving-efficiency/green-business-program>

- 8. We recommend adopting landscape irrigation conservation best management practices endorsed by the Landscape Industry Council of Hawaii. These practices can be found online at http://landscapehawaii.org/library/documents/lich_irrigation_conservation_bmps.pdf
- 9. There may be the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.

Permits required by CWRM:

Additional information and forms are available at http://hawaii.gov/dlnr/cwrn/info_permits.htm.

- 10. The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit is required prior to use of water. The Water Use Permit may be conditioned on the requirement to use dual line water supply systems for new industrial and commercial developments.
- 11. A Well Construction Permit(s) is (are) required before any well construction work begins.
- 12. A Pump Installation Permit(s) is (are) required before ground water is developed as a source of supply for the project.
- 13. There is (are) well(s) located on or adjacent to this project. If wells are not planned to be used and will be affected by any new construction, they must be properly abandoned and sealed. A permit for well abandonment must be obtained.
- 14. Ground water withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.
- 15. A Stream Channel Alteration Permit(s) is (are) required before any alteration(s) can be made to the bed and/or banks of a stream channel.
- 16. A Stream Diversion Works Permit(s) is (are) required before any stream diversion works is (are) constructed or altered.
- 17. A Petition to Amend the Interim Instream Flow Standard is required for any new or expanded diversion(s) of surface water.
- 18. The planned source of water for this project has not been identified in this report. Therefore, we cannot determine what permits or petitions are required from our office, or whether there are potential impacts to water resources.
- OTHER:
The Environmental Assessment should disclose the current water demands for both potable and non-potable water at the existing facility, how those needs may increase with the planned expansion, and identify the proposed water source. Demand calculations should be included.

The headwaters of Kalunawaikoala and Pakulena Streams begin within TMK 5-9-05:02. Any work in the stream channels may require a Stream Channel Alteration Permit from the Commission.

If there are any questions, please contact Lenore Ohye at 587-0216.



PBR HAWAII

& ASSOCIATES, INC.

May 2, 2014

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President

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Executive Vice-President

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Vice-President

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Vice-President

W. FRANK BRANDT, FASLA
Chairman Emeritus

Russell Y. Tsuji, Land Administrator
State of Hawai'i
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawai'i 96809

SUBJECT: THE BOY SCOUTS CAMP PŪPŪKEA FACILITY LOCATED IN PŪPŪKEA-PAUMALU, O'AHU, HAWAI'I (TAX MAP KEYS 5-9-05:02 AND 5-9-05:77)

Dear Mr. Tsuji:

Thank you for your letter dated April 9, 2013 regarding the forthcoming Draft Environmental Assessment (EA) for the proposed upgrades to the Aloha Council Boy Scouts of America's (Boy Scouts) Camp Pūpūkea facility located in Pūpūkea-Paumalu, O'ahu, Hawai'i (Tax Map Keys 5-9-05:02 and 5-9-05:77).

As the planning consultant for the Boy Scouts we are responding to the comments received from the following Department of Land and Natural Resources (DLNR) divisions: 1) Land Division-Oahu District; 2) Division of State Parks; 3) Office of Conservation & Coastal Lands (OCCL); and 4) Commission on Water Resource Management. We understand that no comments from other DLNR Divisions were received as of your suspense date.

Land Division-Oahu District

We understand that the Land Division has no objections to the proposed upgrades to Camp Pūpūkea. No impact is expected to occur on State land. We note that we have met with a representative of the Land Division on April 1, 2013 regarding "Homestead Road" which separates the two parcels owned by the Boy Scouts (Tax Map Key 5-9-05:02 and Tax Map Key 5-9-05:77). We will continue to work with the Land Division on relevant issues.

Division of State Parks

We will include the Division of State Parks as a consulted party during the preparation of the master plan for Camp Pūpūkea. We acknowledge that the Division of State Parks has jurisdiction over the neighboring lands which make up the Pūpūkea-Paumalu State Park Reserve. We have met with the Division of State Parks on April 1, 2013 regarding incorporating access the Pūpūkea-Paumalu State Park Reserve through Camp Pūpūkea and will continue to work with the Division of State Parks on the issue of access and any other relevant issues.

Office of Conservation & Coastal Lands

We thank OCCL for confirming that the Camp Pūpūkea parcels are within the General and Resource Subzones of the Conservation District. We understand that based on the information provided and the current use of the parcels as a Boy Scouts camp, the proposed upgrades to Camp Pūpūkea are an identified use pursuant to Hawaii Administrative Rules, Section 13-5-22, Structures and Land Use, Existing (D-1) Major alteration of existing structures, facilities, use, and equipment, or topographical features which are different from the original use. We further understand that the proposed upgrades to Camp Pūpūkea will require the filing of a Conservation

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Associate

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Mr. Russell Tsuji

SUBJECT: THE BOY SCOUTS CAMP PŪPŪKEA FACILITY LOCATED IN PŪPŪKEA-PAUMALU, O‘AHU, HAWAII (TAX MAP KEYS 5-9-05:02 AND 5-9-05:77)

May 2, 2014

Page 2 of 2

District Use Application (CDUA) for a Board permit, and we will submit a CDUA and seek approval from the Board of Land and Natural Resources for the proposed upgrades.

Commission on Water Resource Management

The existing Boy Scout camp has been in operation since the early 1960s and operates with a private water storage and distribution system. Domestic water to the camp is provided from the City and County of Honolulu Board of Water Supply (BWS) reservoir adjacent to the camp located on the parcel identified by TMK No. 5-9-05:02. A BWS water meter and a Boy Scouts pump are located adjacent to the reservoir site. The Boy Scouts pump water from the BWS reservoir to two 3,000 gallon water storage tanks located at approximately the 950 foot elevation. From there, the Boy Scouts' water distribution system distributes water within the camp. The Draft EA will include: 1) current water demands; 2) future water demands with the proposed improvements; and 3) discussion of proposed improvements to the private water system. As practical, the use of alternative water sources will be considered.

Thank you for your recommendations to install and use water efficient fixtures and to implement water efficient practices. These recommendations will be provided to the Boy Scouts and included in the Draft EA as recommended mitigation measures.

Best management practices will be used for stormwater management to minimize the impact of the upgrades to Camp Pūpūkea to the area's hydrology while maintaining on site filtration and preventing polluted runoff from storms.

We have reviewed the landscape irrigation conservation best management practices endorsed by the Landscape Industry Council of Hawaii. Currently there is no need for irrigation within Camp Pūpūkea as it is a camping facility at an elevation that receives adequate rainfall. Also the majority of the camp property is in a natural state with very few formal landscape areas. The proposed upgrades to Camp Pūpūkea will not change the current situation and no irrigation will be required

Thank you for participating in the pre-consultation process. Your letter will be included in the Draft EA. We will send you a copy of the Draft EA when it is available.

Sincerely,

PBR HAWAII



Tom Schnell, AICP
Senior Associate

cc: Aloha Council Boy Scouts of America

NEIL ABERCROMBIE
GOVERNOR



Dean H. Seki
Comptroller
Maria E. Zielinski
Deputy Comptroller

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES

P.O. BOX 119, HONOLULU, HAWAII 96810-0119

(P)1085.3

APR 12 2013

Mr. Tom Schnell, AICP
PBR Hawaii and Associates, Inc.
1001 Bishop Street, Suite 650
Honolulu, Hawaii 96813-3484

Dear Mr. Schnell:

Subject: Pre-Consultation for the Boys Scouts Camp Pupukea
Facility located in Waimea, Oahu, Hawaii
TMK: 5-9-05:02 and 5-9-05:77

Thank you for the opportunity to provide comments for the subject project. The proposed location does not impact any of the Department of Accounting and General Services' existing facilities in the area, and we have no comments to offer at this time.

If you have any questions, please call me at 586-0400 or your staff may call Mr. Alva Nakamura of the Public Works Division at 586-0488.

Sincerely,

DEAN H. SEKI
Comptroller



PBR HAWAII

& ASSOCIATES, INC.

May 2, 2014

PRINCIPALS

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R. STAN DUNCAN, ASLA
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Vice-President

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W. FRANK BRANDT, FASLA
Chairman Emeritus

Dean H. Seki, Comptroller
State of Hawaii
Department of Accounting and General Services
PO Box 119
Honolulu, Hawaii 96810-0119

**SUBJECT: THE BOY SCOUTS CAMP PŪPŪKEA FACILITY LOCATED IN
PŪPŪKEA-PAUMALU, O‘AHU, HAWAI‘I (TAX MAP KEYS 5-9-05:02
AND 5-9-05:77)**

Dear Mr. Seki:

Thank you for your letter dated April 12, 2013 ((P)1085.3) regarding the forthcoming Draft Environmental Assessment (EA) for the proposed upgrades to the Aloha Council Boy Scouts of America’s (Boy Scouts) Camp Pūpūkea facility located in Pūpūkea-Paumalu, O‘ahu, Hawai‘i (Tax Map Keys 5-9-05:02 and 5-9-05:77). As the planning consultant for the Boy Scouts we are responding to your comment.

We acknowledge that the proposed upgrades to Camp Pūpūkea do not impact any Department of Accounting and General Services’ existing facilities in the area, and you have no comments to offer at this time.

Thank you for participating in the pre-consultation process. Your letter will be included in the Draft EA. We will send you a copy of the Draft EA when it is available.

Sincerely,

PBR HAWAII

Tom Schnell, AICP
Senior Associate

cc: Aloha Council Boy Scouts of America

ASSOCIATES

TOM SCHNELL, AICP
Senior Associate

RAYMOND T. HIGA, ASLA
Senior Associate

KIMI MIKAMI YUEN, LEED®AP BD+C
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Associate

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Associate

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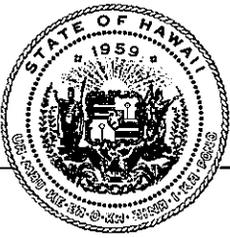
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O:\Job28\2836.01 Boy Scouts of America-Pupukea Camp\EA\Pre-Consultation\Responses\DAGS.docx



OFFICE OF PLANNING STATE OF HAWAII

NEIL ABERCROMBIE
GOVERNOR

JESSE K. SOUKI
DIRECTOR
OFFICE OF PLANNING

235 South Beretania Street, 6th Floor, Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

Telephone: (808) 587-2846
Fax: (808) 587-2824
Web: <http://hawaii.gov/dbedt/op/>

Ref. No. P-13927

March 21, 2013

Mr. Tim Schnell, AICP, Senior Associate
PBR Hawaii & Associates, Inc.
1001 Bishop Street, Suite 650
Honolulu, Hawaii 96813-3484

Dear Mr. Schnell:

Subject: Camp Pupukea Facility Long-Range Master Plan
Pre-Consultation for Environmental Assessment

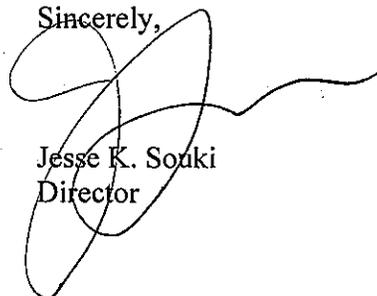
Thank you for the opportunity to provide comments on the proposed Environmental Assessment for the Camp Pupukea Facility Long-Range Master Plan being developed by the Aloha Council, Boy Scouts of America, and your company.

Upon review of the material provided with your letter dated March 15, 2013, the Office of Planning has the following comments to offer:

1. The entire state is defined to be within the Coastal Zone Management Area (Hawaii Revised Statutes (HRS) Section 205A-1 - definition of "coastal zone management area"). The Draft Environmental Assessment should include a discussion of the proposed project's consistency with the objectives and policies set forth in HRS Section 205A-2.
2. We invite the applicant to review the Hawaii Watershed Guidance document, which is available on-line at http://hawaii.gov/dbedt/czm/initiative/nonpoint/Hi_Watershed_Guidance_Final.pdf. The document provides a summary of and links to management measures that may be implemented to minimize coastal nonpoint pollution impact that may result from the project.

We look forward to reviewing the Draft Environmental Assessment when it is completed. Should you have questions or require clarification on the above comments, please contact Leo Asuncion, Planning Program Manager, Coastal Zone Management Program, at 587-2875.

Sincerely,



Jesse K. Souki
Director



PBR HAWAII

& ASSOCIATES, INC.

May 2, 2014

PRINCIPALS

THOMAS S. WITTEN, ASLA
President

R. STAN DUNCAN, ASLA
Executive Vice-President

RUSSELL Y. J. CHUNG, FASLA, LEED®AP BD+C
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VINCENT SHIGEKUNI
Vice-President

GRANT T. MURAKAMI, AICP, LEED®AP BD+C
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W. FRANK BRANDT, FASLA
Chairman Emeritus

Jesse K. Souki, Director
State of Hawai'i
Office of Planning
P.O. Box 2359
Honolulu, Hawai'i 96804

**SUBJECT: THE BOY SCOUTS CAMP PŪPŪKEA FACILITY LOCATED IN
PŪPŪKEA-PAUMALU, O'AHU, HAWAI'I (TAX MAP KEYS 5-9-05:02
AND 5-9-05:77)**

Dear Mr. Souki:

Thank you for your letter dated March 21, 2013 regarding the forthcoming Draft Environmental Assessment (EA) for the proposed upgrades to the Aloha Council Boy Scouts of America's (Boy Scouts) Camp Pūpūkea facility located in Pūpūkea-Paumalu, O'ahu, Hawai'i (Tax Map Keys 5-9-05:02 and 5-9-05:77). As the planning consultant for the Boy Scouts we are responding to your comments.

The Draft EA will include a discussion of the consistency of proposed upgrades to Camp Pūpūkea with the objectives and policies set forth in Section 205A-2, Hawaii Revised Statutes.

Thank you for the invitation to review the Hawaii Watershed Guidance document. We have referenced relevant information from the document in the Draft EA.

Thank you for participating in the pre-consultation process. Your letter will be included in the Draft EA. We will send you a copy of the Draft EA when it is available.

Sincerely,

PBR HAWAII

Tom Schnell, AICP
Senior Associate

cc: Aloha Council Boy Scouts of America

ASSOCIATES

TOM SCHNELL, AICP
Senior Associate

RAYMOND T. HIGA, ASLA
Senior Associate

KIMI MIKAMI YUEN, LEED®AP BD+C
Senior Associate

SCOTT ALIKA ABRIGO, LEED®AP BD+C
Managing Director - Kapolei

ROY TAKEMOTO
Managing Director - Hilo

SCOTT MURAKAMI, ASLA, LEED®AP
Associate

DACHENG DONG, LEED®AP
Associate

MARC SHIMATSU, ASLA
Associate

MICHAEL SHIBATA, AICP
Associate

CATIE CULLISON, AICP
Associate

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NEIL ABERCROMBIE
GOVERNOR
STATE OF HAWAII



JOBIE M. K. MASAGATANI
CHAIRMAN
HAWAIIAN HOMES COMMISSION

STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS

P. O. BOX 1879
HONOLULU, HAWAII 96805

April 4, 2013

Mr. Tom Schnell, AICP Senior Associate
PBR Hawaii & Associates, Inc.
1001 Bishop Street, Suite 650
Honolulu, Hawaii 96813-3484

Dear Mr. Tom Schnell:

Subject: Pre-Consultation for the Boy Scouts Camp Pupukea Facility located in
Waimea, O'ahu, Hawai'i (Tax Map Keys 5-9-05:02 and 5-9-05:77)

Thank you for the opportunity to comment on the Pre-Consultation. The Department of
Hawaiian Home Lands has no comment to offer at this time.

Should you have any questions, please contact the Planning Office at (808) 620-9480.

Aloha,

Darrell C. Yagodich
Planning Program Manager



PBR HAWAII

& ASSOCIATES, INC.

May 2, 2014

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Executive Vice-President

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Vice-President

GRANT T. MURAKAMI, AICP, LEED®AP BD+C
Vice-President

W. FRANK BRANDT, FASLA
Chairman Emeritus

Darrell C. Yagodich, Planning Program Manager
State of Hawai'i
Department of Hawaiian Home Lands
P.O. Box 1879
Honolulu, Hawai'i 96805

SUBJECT: THE BOY SCOUTS CAMP PŪPŪKEA FACILITY LOCATED IN PŪPŪKEA-PAUMALU, O'AHU, HAWAI'I (TAX MAP KEYS 5-9-05:02 AND 5-9-05:77)

Dear Mr. Yagodich:

Thank you for your letter dated April 4, 2013 regarding the forthcoming Draft Environmental Assessment (EA) for the proposed upgrades to the Aloha Council Boy Scouts of America's (Boy Scouts) Camp Pūpūkea facility located in Pūpūkea-Paumalu, O'ahu, Hawai'i (Tax Map Keys 5-9-05:02 and 5-9-05:77). As the planning consultant for the Boy Scouts we acknowledge that the Department of Hawaiian Home Lands has no comment to offer at this time.

Thank you for participating in the pre-consultation process. Your letter will be included in the Draft EA. We will send you a copy of the Draft EA when it is available.

Sincerely,

PBR HAWAII

Tom Schnell, AICP
Senior Associate

cc: Aloha Council Boy Scouts of America

ASSOCIATES

TOM SCHNELL, AICP
Senior Associate

RAYMOND T. HIGA, ASLA
Senior Associate

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STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HI 96801-3378

In reply, please refer to:
File:

13-064
Pupukea

March 27, 2013

Mr. Tom Schnell, AICP
Senior Associate
PBR Hawaii & Associates, Inc.
1001 Bishop Street, Suite 650
Honolulu, Hawaii 96813

Dear Mr. Schnell: *TM*

SUBJECT: Pre-Consultation for the Boy Scouts Camp Pupukea Facility Located in Waimea, Oahu, Hawaii, TMK: (1) 5-9-005: 002 and (1) 5-9-005: 077

The Department of Health (DOH), Environmental Planning Office (EPO), acknowledges receipt of your letter dated March 15, 2013. Thank you for allowing us to review and comment on the subject letter. We have no comments at this time. EPO recommends that you review the Standard Comments (www.hawaii.gov/health/epo under the land use tab). You are required to adhere to all Standard Comments specifically applicable to this application.

EPO suggests that you examine the many sources available on strategies to support the sustainable design of communities, including the:

- U.S. Environmental Protection Agency's sustainability programs: www.epa.gov/sustainability
- U.S. Green Building Council's LEED program: www.new.usgbc.org/leed

The DOH encourages everyone to apply these sustainability strategies and principles early in the planning and review of projects. We also request that for future projects you consider conducting a Health Impact Assessment (HIA). More information is available at www.cdc.gov/healthylives/hia.htm. We request you share all of this information with others to increase community awareness on sustainable, innovative, inspirational, and healthy community design.

We request a written response confirming receipt of this letter and any other letters you receive from DOH in regards to this submission. You may mail your response to 919 Ala Moana Blvd., Ste. 312, Honolulu, Hawaii 96814. However, we would prefer an email submission to epo@doh.hawaii.gov. We anticipate that our letter(s) and your response(s) will be included in the final document. If you have any questions, please contact me at (808) 586-4337.

Mahalo,

A handwritten signature in cursive script, appearing to read "Laura Leialoha Phillips McIntyre".

Laura Leialoha Phillips McIntyre, AICP
Program Manager, Environmental Planning Office



PBR HAWAII

& ASSOCIATES, INC.

May 2, 2014

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Laura Leialoha Phillips McIntyre, AICP
Program Manager, Environmental Planning Office
State of Hawai'i
Department of Health
P.O. Box 3378
Honolulu, Hawai'i 96801-3375

**SUBJECT: THE BOY SCOUTS CAMP PŪPŪKEA FACILITY LOCATED IN
PŪPŪKEA-PAUMALU, O'AHU, HAWAI'I (TAX MAP KEYS 5-9-05:02
AND 5-9-05:77)**

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MARC SHIMATSU, ASLA
Associate

MICHAEL SHIBATA, AICP
Associate

CATIE CULLISON, AICP
Associate

Dear Ms. McIntyre:

Thank you for your letter dated March 27, 2013 (13-064 Pupukea) regarding the forthcoming Draft Environmental Assessment (EA) for the proposed upgrades to the Aloha Council Boy Scouts of America's (Boy Scouts) Camp Pūpūkea facility located in Pūpūkea-Paumalu, O'ahu, Hawai'i (Tax Map Keys 5-9-05:02 and 5-9-05:77). As the planning consultant for the Boy Scouts we are responding to your comments.

We acknowledge that the Department of Health, Environmental Planning Office, has no specific comments at this time. The following are our responses to your recommendations and suggestions:

1. As recommended, the Standard Comments on the Department of Health's website were reviewed for applicability to the proposed upgrades to Camp Pūpūkea.
2. Also, the United State (U.S.) Environmental Protection Agency's sustainability program and U.S. Green Building Council's LEED program websites were reviewed for applicability to the project.
3. The Boy Scouts will consider conducting a Health Impact Assessment for future projects.

Thank you for participating in the pre-consultation process. Your letter will be included in the Draft EA. We will send you a copy of the Draft EA when it is available.

Sincerely,

PBR HAWAII

Tom Schnell, AICP
Senior Associate

cc: Aloha Council Boy Scouts of America

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NEIL ABERCROMBIE
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GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

IN REPLY REFER TO:
STP 8.1175

April 17, 2013

Mr. Tom Schnell, AICP
Senior Associate
PBR Hawaii & Associates, Inc.
1001 Bishop Street, Suite 650
Honolulu, Hawaii 96813-3484

Dear Mr. Schnell:

Subject: Boys Scouts Camp Pupukea Facility
Pre-Consultation for Draft Environmental Assessment (DEA)
TMK: 5-9-005:002 and 077

Thank you for requesting the State Department of Transportation's (DOT) review of the subject project.

DOT understands the Aloha Council Boy Scouts of America is preparing a long-range master plan for their existing 64.8 acre Camp Pupukea facility. The existing camp operates every weekend year-round as well as holds a number of week-long programs accommodating groups from 20 to 385 campers and staff. The long-range plan would allow for an increase in capacity of 100 campers and staff over the next 20 years. The project access is off Pupukea Road, which is located 3 miles from Kamehameha Highway.

While it's not anticipated that the proposed project will have a significant impact on the State highway facilities (Kamehameha Highway) in the area, the DEA should discuss and evaluate the project's contribution to the cumulative traffic impacts on State highways facilities.

DOT appreciates the opportunity to provide comments. If there are any questions, including the need to meet with DOT staff, please contact Mr. Garrett Smith of the DOT Statewide Transportation Planning Office at telephone number (808) 831-7976.

Very truly yours,

A handwritten signature in black ink, appearing to read "Glenn M. Okimoto".

GLENN M. OKIMOTO, Ph.D.
Director of Transportation



PBR HAWAII

& ASSOCIATES, INC.

May 2, 2014

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Chairman Emeritus

Glenn M. Okimoto, Ph. D.
Director of Transportation
State of Hawaii
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813-5097

**SUBJECT: THE BOY SCOUTS CAMP PŪPŪKEA FACILITY LOCATED IN,
PŪPŪKEA-PAUMALU O‘AHU, HAWAI‘I (TAX MAP KEYS 5-9-05:02
AND 5-9-05:77)**

ASSOCIATES

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Senior Associate

RAYMOND T. HIGA, ASLA
Senior Associate

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DACHENG DONG, LEED®AP
Associate

MARC SHIMATSU, ASLA
Associate

MICHAEL SHIBATA, AICP
Associate

CATIE CULLISON, AICP
Associate

Dear Dr. Okimoto:

Thank you for your letter dated April 17, 2013 (STP 8.1175) regarding the forthcoming Draft Environmental Assessment (EA) for the proposed upgrades to the Aloha Council Boy Scouts of America's (Boy Scouts) Camp Pūpūkea facility located in Pūpūkea-Paumalu, O‘ahu, Hawai‘i (Tax Map Keys 5-9-05:02 and 5-9-05:77). As the planning consultant for the Boy Scouts we are responding to your comments.

We acknowledge that the Department of Transportation anticipates no significant impact to occur as a result of the proposed upgrades to Camp Pūpūkea but requests a discussion of the project's contribution to cumulative traffic impacts on State highways facilities. The Draft EA will include a traffic impact assessment report that will evaluate the impact of increased vehicle traffic in the area, including on Kamehameha Highway, as a result of the proposed upgrades to Camp Pūpūkea.

Thank you for participating in the pre-consultation process. Your letter will be included in the Draft EA. We will send you a copy of the Draft EA when it is available.

Sincerely,

PBR HAWAII

Tom Schnell, AICP
Senior Associate

cc: Aloha Council Boy Scouts of America

HONOLULU OFFICE
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UNIVERSITY
of HAWAII®
MĀNOA

April 3, 2013
NC- PAC- 2013-03-15

Mr. Tom Schnell, Senior Associate
PBR Hawaii & Associates, Inc.
1001 Bishop Street, Suite 650
Honolulu, HI 96813
VIA EMAIL TO: tschnell@pbrhawaii.com

Dear Mr. Schnell,

**Pre-Assessment Consultation for an Environmental Assessment
Boy Scouts Camp Pupukea Facility
Waimea, Oahu**

Thank you for your letter dated March 15, 2013 concerning the upgrades proposed for the Boy Scouts Camp Pupukea Facility in Waimea, Oahu. The upgrades proposed would not have an impact on any of our existing or proposed projects, plans, policies or programs. However we look forward to reviewing the Draft Environmental Assessment when it becomes available.

Sincerely,

A handwritten signature in blue ink that reads 'David Penn'.

David Penn
Assistant Specialist

copy: Sara Bolduc, Environmental Center



PBR HAWAII

& ASSOCIATES, INC.

May 2, 2014

PRINCIPALS

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Chairman Emeritus

David Penn, Assistant Specialist
University of Hawai'i
Water Resource Research Center
Environmental Center
2500 Dole Street, Krauss Annex 19
Honolulu, Hawai'i 96822

**SUBJECT: THE BOY SCOUTS CAMP PŪPŪKEA FACILITY LOCATED IN
PŪPŪKEA-PAUMALU, O'AHU, HAWAI'I (TAX MAP KEYS 5-9-05:02
AND 5-9-05:77)**

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MARC SHIMATSU, ASLA
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MICHAEL SHIBATA, AICP
Associate

CATIE CULLISON, AICP
Associate

Dear Mr. Penn:

Thank you for your letter dated April 3, 2013 regarding the forthcoming Draft Environmental Assessment (EA) for the proposed upgrades to the Aloha Council Boy Scouts of America's (Boy Scouts) Camp Pūpūkea facility located in Pūpūkea-Paumalu, O'ahu, Hawai'i (Tax Map Keys 5-9-05:02 and 5-9-05:77).

As the planning consultant for the Boy Scouts we acknowledge that the proposed upgrades to Camp Pūpūkea would not have an impact on any of the Water Resources Center's proposed project, plans, policies, or programs.

Thank you for participating in the pre-consultation process. Your letter will be included in the Draft EA. We will send you a copy of the Draft EA when it is available.

Sincerely,

PBR HAWAII

Tom Schnell, AICP
Senior Associate

cc: Aloha Council Boy Scouts of America

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DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
FORT SHAFTER, HAWAII 96858-5440

REPLY TO
ATTENTION OF:

April 2, 2013

Regulatory Branch

POH-2013-00072

PBR HAWAII
Attn: Tom Schnell, IACP
1001 Bishop St, Suite 650
Honolulu, HI 96813

Dear Mr. Schnell:

This is in response to your March 15, 2013 letter requesting the Department of the Army review and comment on the proposed Boy Scouts Camp Pupukea Facility Master Plan, TMKs: 5-9-005:002 and 77, Waimea, Island of O'ahu, Hawai'i. We have assigned the project the reference number **POH-2013-00072**. Please cite this reference number in any correspondence with us concerning this project.

Your proposed project was reviewed pursuant to Section 10 of the Rivers and Harbors Act of 1899 (Section 10) and Section 404 of the Clean Water Act (Section 404). Section 10 of the Rivers and Harbors Act of 1899 (Section 10) requires that a Department of the Army (DA) permit be obtained from the U.S. Army Corps of Engineers (Corps) prior to undertaking any construction, dredging, and other activities occurring in, over, or under navigable waters of the U.S. For tidal waters, the shoreward limit of the Corps' jurisdiction extends to the Mean High Water Mark. Section 404 of the Clean Water Act (Section 404) of 1972 (33 U.S.C. 1344) requires that a DA permit be obtained for the **discharge, or placement, of dredge and/or fill material** into waters of the U.S., including wetlands. For tidally influenced waters, in the absence of adjacent wetlands, the shoreward limit of the Corps' jurisdiction extends to the High Tide Line, which in Hawaii may be approximated by reference to the Mean Higher High Water Mark. For non-tidal waters, the lateral limits of the Corps' jurisdiction extend to the **Ordinary High Water Mark** or the approved delineated boundary of any adjacent wetlands.

The Corps of Engineers has sole authority to determine if an aquatic feature is/is not a water of the U.S., potentially subject to regulation under Section 10 and/or Section 404. Based on the submitted documents, we are not able to determine the presence of waters of the U.S. subject to Corps regulatory jurisdiction within the project boundaries. Please submit further documentation you may have in regards to Kalunawaikaala Stream, Pakulena Stream and Kaleleiki Stream (pictures, proposed work activities, etc). If any waterbodies on-site are determined to be waters of the U.S., you will need to obtain authorization from the Corps prior to discharging dredge or fill material into these waterbodies. Please contact the Corps to determine if any of the proposed

work constitutes a "discharge of fill." If the fill results in the loss of waters of the U.S. or their associated functions, you may be required to provide compensatory mitigation for any unavoidable impacts.

Should you have any questions, please contact Kaitlyn Seberger of this office at the above address or telephone 808-835-4300 (FAX: 808-835-4301) or by E-Mail at Kaitlyn.R.Seberger@usace.army.mil.

Sincerely,

A handwritten signature in black ink, appearing to read "George P. Young". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

George P. Young, P.E.
Chief, Regulatory Branch



PBR HAWAII

& ASSOCIATES, INC.

May 2, 2014

PRINCIPALS

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President

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Executive Vice-President

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Executive Vice-President

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Vice-President

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Chairman Emeritus

George P. Young, P.E.
Chief, Regulatory Branch
Department of the Army
U.S. Corps of Engineers, Honolulu District
Fort Shafter, Hawai'i 96858-5440

**SUBJECT: THE BOY SCOUTS CAMP PŪPŪKEA FACILITY LOCATED IN
WAIMEA, O'AHU, HAWAI'I (TAX MAP KEYS 5-9-05:02 AND 5-9-05:77)**

Dear Mr. Young:

Thank you for your letter dated April 2, 2013 regarding the forthcoming Draft Environmental Assessment (EA) for the proposed upgrades to the Aloha Council Boy Scouts of America's (Boy Scouts) Camp Pūpūkea facility located in Waimea, O'ahu, Hawai'i (Tax Map Keys 5-9-05:02 and 5-9-05:77). As the planning consultant for the Boy Scouts we are responding to your comments.

We acknowledge that the United States Army Corps of Engineers (Corps) has the sole authority to determine if an aquatic feature is or is not a water of the United States subject to regulation under Section 10 and/or Section 404 of the Clean Water Act. If any waterbodies within the camp are determined to be waters of the United States, authorization from the Corps will be required prior to discharging dredge or fill material into the waterbodies.

Thank you for participating in the pre-consultation process. We will continue to consult with the United States Army Corps of Engineers regarding compliance with Section 10 and/or Section 404 of the Clean Water Act. Your letter will be included in the Draft EA. We will send you a copy of the Draft EA when it is available.

Sincerely,

PBR HAWAII

Tom Schnell, AICP
Senior Associate

cc: Aloha Council Boy Scouts of America

ASSOCIATES

TOM SCHNELL, AICP
Senior Associate

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BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843



April 8, 2013

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ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer

ELLEN E. KITAMURA, P.E.
Deputy Manager and Chief Engineer *elle*

Mr. Tom Schnell, AICP
Senior Associate
PBR HAWAII & Associates, Inc.
1001 Bishop Street, Suite 650
Honolulu, Hawaii 96813-3484

Dear Mr. Schnell:

Subject: Your Letter Dated March 15, 2013, Regarding the Environmental Assessment Pre-Consultation for the Boy Scouts Camp Pupukea Facility in Waimea – Tax Map Key: 5-9-05: 002, 077

Thank you for the opportunity to comment on the Camp Pupukea master plan.

Building permits for the proposed facilities cannot be approved because the parcel is located above the 792-foot service limit elevation of the water system serving this area. Further development of this parcel will require the construction of a complete new water system including booster pumps, transmission mains and a reservoir. The facilities should be constructed to Board of Water Supply Water System Standards and dedicated to the Board of Water Supply. These improvements are quite extensive, and we have no plans to undertake them at this time.

If you have any questions, please contact Robert Chun at 748-5443.

Very truly yours,

ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer



PBR HAWAII

& ASSOCIATES, INC.

May 2, 2014

PRINCIPALS

THOMAS S. WITTEN, ASLA
President

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Executive Vice-President

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Executive Vice-President

VINCENT SHIGEKUNI
Vice-President

GRANT T. MURAKAMI, AICP, LEED®AP BD+C
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W. FRANK BRANDT, FASLA
Chairman Emeritus

Mr. Ernest Y.W. Lau, P.E.
Manager and Chief Engineer
Board of Water Supply
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630 South Beretania Street
Honolulu, HI 96843

**SUBJECT: THE BOY SCOUTS CAMP PŪPŪKEA FACILITY LOCATED IN
PŪPŪKEA-PAUMALU, O‘AHU, HAWAI‘I (TAX MAP KEYS 5-9-05:02
AND 5-9-05:77)**

ASSOCIATES

TOM SCHNELL, AICP
Senior Associate

RAYMOND T. HIGA, ASLA
Senior Associate

KIMI MIKAMI YUEN, LEED®AP BD+C
Senior Associate

SCOTT ALIKA ABRIGO, LEED®AP BD+C
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ROY TAKEMOTO
Managing Director - Hilo

SCOTT MURAKAMI, ASLA, LEED®AP
Associate

DACHENG DONG, LEED®AP
Associate

MARC SHIMATSU, ASLA
Associate

MICHAEL SHIBATA, AICP
Associate

CATIE CULLISON, AICP
Associate

Dear Mr. Lau:

Thank you for your letter dated April 8, 2013 regarding the forthcoming Draft Environmental Assessment (EA) for the proposed upgrades to the Aloha Council Boy Scouts of America's (Boy Scouts) Camp Pūpūkea facility located in Pūpūkea-Paumalu, O‘ahu, Hawai‘i (Tax Map Keys 5-9-05:02 and 5-9-05:77). As the planning consultant for the Boy Scouts we are responding to your comment.

We understand that the Board of Water Supply (BWS) has no plans at this time to provide service above the 792-foot service area in the vicinity of Camp Pūpūkea.

The existing Boy Scout camp has been in operation since the early 1960s and operates with a private water storage and distribution system. Domestic water to the camp is provided from the BWS reservoir adjacent to the camp located on the parcel identified by TMK No. 5-9-05:02. A BWS water meter and a Boy Scout pump are located adjacent to the reservoir site. The Boy Scouts pump water from the BWS reservoir to two 3,000 gallon water storage tanks located at approximately the 950 foot elevation. From there, the Boy Scouts' water distribution system distributes water within the camp. The Draft EA will include discussion of proposed improvements to this private water system.

Thank you for participating in the pre-consultation process. Your letter will be included in the Draft EA. We will send you a copy of the Draft EA when it is available.

Sincerely,

PBR HAWAII

Tom Schnell, AICP
Senior Associate

cc: Aloha Council Boy Scouts of America

HONOLULU OFFICE

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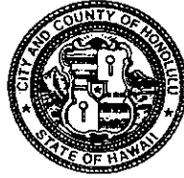
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DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 11TH FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 768-8480 • Fax: (808) 768-4567
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KIRK CALDWELL
MAYOR



CHRIS T. TAKASHIGE, P.E., CCM
DIRECTOR

MARK YONAMINE, P.E.
DEPUTY DIRECTOR

April 11, 2013

PBR Hawaii & Associates, Inc.
1001 Bishop Street, Suite 650
Honolulu, Hawaii 96813

Attn: Tom Schnell

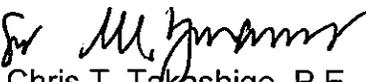
Dear Mr. Schnell:

Subject: Pre-consultation for the Boy Scouts Camp Pupukea Facility located in Waimea, Oahu, Hawaii (Tax Map Keys 5-9-05:02 and 5-9-05:77)

The Department of Design and Construction does not have any comments to offer on the preparation of the environmental assessment.

Thank you for the opportunity to review and comment. Should there be any questions, please contact me at 768-8480.

Sincerely,


Chris T. Takashige, P.E., CCM
Director

CTT: cf (506615)



PBR HAWAII

& ASSOCIATES, INC.

May 2, 2014

PRINCIPALS

THOMAS S. WITTEN, ASLA
President

R. STAN DUNCAN, ASLA
Executive Vice-President

RUSSELL Y. J. CHUNG, FASLA, LEED®AP BD+C
Executive Vice-President

VINCENT SHIGEKUNI
Vice-President

GRANT T. MURAKAMI, AICP, LEED®AP BD+C
Vice-President

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Chairman Emeritus

Chris T. Takashige, P.E., CCM
Director
Department of Design and Construction
City and County of Honolulu
650 South King Street, 11th Floor
Honolulu, Hawaii 96813

**SUBJECT: THE BOY SCOUTS CAMP PŪPŪKEA FACILITY LOCATED IN
PŪPŪKEA-PAUMALU, O‘AHU, HAWAI‘I (TAX MAP KEYS 5-9-05:02
AND 5-9-05:77)**

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Senior Associate

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Senior Associate

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Managing Director - Hilo

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DACHENG DONG, LEED®AP
Associate

MARC SHIMATSU, ASLA
Associate

MICHAEL SHIBATA, AICP
Associate

CATIE CULLISON, AICP
Associate

Dear Mr. Takashige:

Thank you for your letter dated April 11, 2013 regarding the forthcoming Draft Environmental Assessment (EA) for the proposed upgrades to the Aloha Council Boy Scouts of America's (Boy Scouts) Camp Pūpūkea facility located in Pūpūkea-Paumalu, O‘ahu, Hawai‘i (Tax Map Keys 5-9-05:02 and 5-9-05:77).

As the planning consultant for the Boy Scouts we acknowledge that Department of Design and Construction does not have any comments to offer on the preparation of the environmental assessment.

Thank you for participating in the pre-consultation process. Your letter will be included in the Draft EA. We will send you a copy of the Draft EA when it is available.

Sincerely,

PBR HAWAII

Tom Schnell, AICP
Senior Associate

cc: Aloha Council Boy Scouts of America

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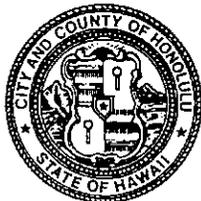
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DEPARTMENT OF FACILITY MAINTENANCE
CITY AND COUNTY OF HONOLULU

1000 Ulu'ohia Street, Suite 215, Kapolei, Hawaii 96707
Phone: (808) 768-3343 • Fax: (808) 768-3381
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KIRK CALDWELL
MAYOR



ROSS S. SASAMURA, P.E.
DIRECTOR AND CHIEF ENGINEER

EDUARDO P. MANGLALLAN
DEPUTY DIRECTOR

IN REPLY REFER TO:
DRM 13-431

April 24, 2013

Mr. Tom Schnell, AICP
PBR Hawaii & Associates, Inc.
1001 Bishop Street, Suite 650
Honolulu, Hawaii 96813-3484

Dear Mr. Schnell:

Subject: Pre-Consultation for the Boy Scouts Camp Pupukea
Facility Located in Waimea, Oahu, TMK: 5-9-05:02 and
TMK: 5-9-05:77

Thank you for the opportunity to review and comment on upgrades to the subject project.

Our comments are:

- Our concern on the impact of the increase of vehicle traffic and its load to the existing roadway pavement area.
- In the subject Title is "Waimea" correct or should it read "Pupukea"?

If you have any questions, please call Dexter Akamine of the Division of Road Maintenance, at 768-3696.

Sincerely,

A handwritten signature in black ink, appearing to read "Ross S. Sasamura".

for Ross S. Sasamura, P.E.
Director and Chief Engineer



PBR HAWAII

& ASSOCIATES, INC.

May 2, 2014

PRINCIPALS

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President

R. STAN DUNCAN, ASLA
Executive Vice-President

RUSSELL Y. J. CHUNG, FASLA, LEED®AP BD+C
Executive Vice-President

VINCENT SHIGEKUNI
Vice-President

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Chairman Emeritus

Ross S. Sasamura, P.E.
Director and Chief Engineer
Department of Facility Maintenance
City and County of Honolulu
1000 Ulu'ohia Street, Suite 215
Kapolei, Hawaii 96707

**SUBJECT: THE BOY SCOUTS CAMP PŪPŪKEA FACILITY LOCATED IN
PŪPŪKEA-PAUMALU, O'AHU, HAWAI'I (TAX MAP KEYS 5-9-05:02
AND 5-9-05:77)**

ASSOCIATES

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Senior Associate

RAYMOND T. HIGA, ASLA
Senior Associate

KIMI MIKAMI YUEN, LEED®AP BD+C
Senior Associate

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ROY TAKEMOTO
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DACHENG DONG, LEED®AP
Associate

MARC SHIMATSU, ASLA
Associate

MICHAEL SHIBATA, AICP
Associate

CATIE CULLISON, AICP
Associate

Dear Mr. Sasamura:

Thank you for your letter dated April 24, 2013 (DRM 13-431) regarding the forthcoming Draft Environmental Assessment (EA) for the proposed upgrades to the Aloha Council Boy Scouts of America's (Boy Scouts) Camp Pūpūkea facility located in Pūpūkea-Paumalu, O'ahu, Hawai'i (Tax Map Keys 5-9-05:02 and 5-9-05:77). As the planning consultant for the Boy Scouts we are responding to your comments.

The Draft EA will include a traffic impact assessment report that will evaluate the impact of increased vehicle traffic in the area as a result of the proposed upgrades to Camp Pūpūkea.

The correct location name is "Pūpūkea-Paumalu" not "Waimea." The draft EA will note the correct location name. Thank you for bringing this to our attention.

Thank you for participating in the pre-consultation process. Your letter will be included in the Draft EA. We will send you a copy of the Draft EA when it is available.

Sincerely,

PBR HAWAII

Tom Schnell, AICP
Senior Associate

cc: Aloha Council Boy Scouts of America

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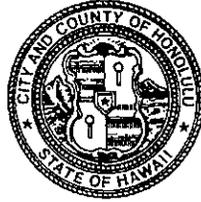
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DEPARTMENT OF PARKS & RECREATION
CITY AND COUNTY OF HONOLULU

1000 Uluohia Street, Suite 309, Kapolei, Hawaii 96707
Phone: (808) 768-3003 • Fax: (808) 768-3053
Website: www.honolulu.gov

KIRK CALDWELL
MAYOR



TONI P. ROBINSON
DIRECTOR

JEANNE C. ISHIKAWA
DEPUTY DIRECTOR

March 28, 2013

Mr. Tom Schnell, Senior Associate
PBR Hawaii & Associates, Inc.
1001 Bishop Street, Suite 650
Honolulu, Hawaii 96813-3484

Dear Mr. Schnell:

Subject: Pre-Consultation for the Boy Scouts Camp Pupukea facility located in Waimea, Oahu, Hawaii (Tax Map Keys: 5-9-05:02 and 5-9-05:77)

Thank you for the opportunity to review and comment on the proposed long range master plan for the existing Camp Pupukea Facility.

The Department of Parks and Recreation has no comment, as the proposed project will have no impact on any program or facility of the Department. You may remove us as a consulted party to the balance of the EIS process.

Should you have any questions please contact Mr. John Reid, Planner at 768-3017.

Sincerely,

A handwritten signature in black ink that reads "Toni P. Robinson". The signature is written in a cursive style.

Toni P. Robinson
Director

TPR:jr
(506881)



PBR HAWAII

& ASSOCIATES, INC.

May 2, 2014

PRINCIPALS

THOMAS S. WITTEN, ASLA
President

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Vice-President

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Chairman Emeritus

Toni P. Robinson, Director
Department of Parks & Recreation
City and County of Honolulu
1000 Uluohia Street, Suite 309
Kapolei, Hawaii 96707

**SUBJECT: THE BOY SCOUTS CAMP PŪPŪKEA FACILITY LOCATED IN
PŪPŪKEA-PAUMALU, O‘AHU, HAWAI‘I (TAX MAP KEYS 5-9-05:02
AND 5-9-05:77)**

Dear Ms. Robinson:

Thank you for your letter dated March 28, 2013 regarding the forthcoming Draft Environmental Assessment (EA) for the proposed upgrades to the Aloha Council Boy Scouts of America’s (Boy Scouts) Camp Pūpūkea facility located in Pūpūkea-Paumalu, O‘ahu, Hawai‘i (Tax Map Keys 5-9-05:02 and 5-9-05:77).

As the planning consultant for the Boy Scouts we acknowledge that the Department of Parks and Recreation has no comment, as the proposed upgrades to Camp Pūpūkea will have no impact on any program or facility of the Department.

Thank you for participating in the pre-consultation process. Your letter will be included in the Draft EA. We will send you a copy of the Draft EA when it is available.

Sincerely,

PBR HAWAII

Tom Schnell, AICP
Senior Associate

cc: Aloha Council Boy Scouts of America

ASSOCIATES

TOM SCHNELL, AICP
Senior Associate

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CATIE CULLISON, AICP
Associate

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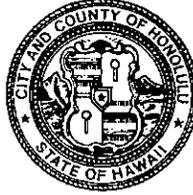
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DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU

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KIRK CALDWELL
MAYOR



GEORGE I. ATTA, FAICP
DIRECTOR DESIGNATE

ARTHUR D. CHALLACOMBE
DEPUTY DIRECTOR

2013/ELOG-570(sn)

April 12, 2013

Mr. Tom Schnell, AICP
PBR Hawai'i
1001 Bishop Street, Suite 650
Honolulu, Hawai'i 96813-3484

Dear Mr. Schnell:

SUBJECT: Pre-Consultation for Environmental Assessment
Boy Scouts Camp Pūpūkea
Tax Map Keys 5-9-5: 2 and 77

This is in response to you March 15, 2013 request for comments on the above project. We have reviewed the information provided and offer the following comments in the preparation of your Environmental Assessment (EA).

1. Provide a discussion on how the project is consistent with the policies and guidelines of the City's General Plan and North Shore Sustainable Communities Plan.
2. The area is not serviced by the municipal sewer system.
3. Document the amount of traffic generated by large events currently being anticipated by Camp Pūpūkea and discuss methods to accommodate the increase in traffic. If large vehicles, such as buses, are expected to transport visitors, provide documentation that these vehicles can negotiate the narrower and winding sections of Pūpūkea Road.

Should you have any questions, please contact Sharon Nishiura of my staff at 768-8031.

Very truly yours,

A handwritten signature in black ink, appearing to read "George I. Atta", is written over a printed name and title.

George I. Atta, FAICP
Director Designate
Department of Planning and Permitting

GIA:bkg
1030911



PBR HAWAII

& ASSOCIATES, INC.

May 2, 2014

PRINCIPALS

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President

R. STAN DUNCAN, ASLA
Executive Vice-President

RUSSELL Y. J. CHUNG, FASLA, LEED®AP BD+C
Executive Vice-President

VINCENT SHIGEKUNI
Vice-President

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Chairman Emeritus

George I. Atta, FAICP
Director Designate
Department of Planning and Permitting
650 South King St., 7th Floor
Honolulu, Hawaii 96813

SUBJECT: THE BOY SCOUTS CAMP PŪPŪKEA FACILITY LOCATED IN PŪPŪKEA-PAUMALU, O‘AHU, HAWAI‘I (TAX MAP KEYS 5-9-05:02 AND 5-9-05:77)

ASSOCIATES

TOM SCHNELL, AICP
Senior Associate

RAYMOND T. HIGA, ASLA
Senior Associate

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Senior Associate

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DACHENG DONG, LEED®AP
Associate

MARC SHIMATSU, ASLA
Associate

MICHAEL SHIBATA, AICP
Associate

CATIE CULLISON, AICP
Associate

Dear Mr. Atta:

Thank you for your letter dated April 12, 2013 (2013/ELOG-570(sn)) regarding the forthcoming Draft Environmental Assessment (EA) for the proposed upgrades to the Aloha Council Boy Scouts of America’s (Boy Scouts) Camp Pūpūkea facility located in Pūpūkea-Paumalu, O‘ahu, Hawai‘i (Tax Map Keys 5-9-05:02 and 5-9-05:77). As the planning consultant for the Boy Scouts we are responding to your comments as follows:

1. The Draft EA will include discussion on how the proposed upgrades to Camp Pūpūkea are consistent with the policies and guidelines of the City’s General Plan and North Shore Sustainable Communities Plan.
2. We acknowledge that Camp Pūpūkea is not serviced by the municipal sewer system. The Draft EA will include discussion of proposed wastewater system improvements, to eliminate the current use of portable toilets and comply with EPA regulations regarding cesspools.
3. The Draft EA will include a traffic impact assessment report that will evaluate the impact of increased vehicle traffic in the area as a result of the proposed upgrades to Camp Pūpūkea. Please note that large buses are not currently used and are not proposed to be used to transport people to Camp Pūpūkea.

Thank you for participating in the pre-consultation process. Your letter will be included in the Draft EA. We will send you a copy of the Draft EA when it is available.

Sincerely,

PBR HAWAII

Tom Schnell, AICP
Senior Associate

cc: Aloha Council Boy Scouts of America

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DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU

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KIRK CALDWELL
MAYOR



MICHAEL D. FORMBY
DIRECTOR

MARK N. GARRITY, AICP
DEPUTY DIRECTOR

TP3/13-506834R

April 5, 2013

Mr. Tom Schnell, AICP
Senior Associate
PBR Hawaii & Associates, Inc.
1001 Bishop Street, Suite 650
Honolulu, Hawaii 96813-3484

Dear Mr. Schnell:

SUBJECT: Pre-Consultation for Draft Environmental Assessment (DEA)
Boy Scouts Camp Pupukea; Tax Map Key (TMK):
5-9-05: 02 and 5-9-05: 77; Waimea, Oahu, Hawaii

In response to your letter of March 15, 2013, we have the following comments:

- The DEA should include a traffic impact assessment report (TIAR) for the full build-out of the camp. The TIAR should discuss traffic impacts on the surrounding roadways as a result of the project, including short-term impacts during construction and proposed mitigating measures.
- The area Neighborhood Board, as well as the area residents, businesses, etc., should be kept apprised of the details of the proposed project and the impacts (particularly during construction) the project may have on the adjoining local street area network.

We reserve further comment pending submission of the DEA.

Thank you for the opportunity to review this matter. Should you have any further questions, please contact Michael Murphy of my staff at 768-8359.

Very truly yours,

A handwritten signature in black ink, appearing to read "Michael D. Formby".

MICHAEL D. FORMBY
Director



PBR HAWAII

& ASSOCIATES, INC.

May 2, 2014

PRINCIPALS

THOMAS S. WITTEN, ASLA
President

R. STAN DUNCAN, ASLA
Executive Vice-President

RUSSELL Y. J. CHUNG, FASLA, LEED®AP BD+C
Executive Vice-President

VINCENT SHIGEKUNI
Vice-President

GRANT T. MURAKAMI, AICP, LEED®AP BD+C
Vice-President

W. FRANK BRANDT, FASLA
Chairman Emeritus

Mr. Michael D. Formby, Director
Department of Transportation Services
City and County of Honolulu
650 South King Street, 3rd Floor
Honolulu, Hawaii 96813

**SUBJECT: THE BOY SCOUTS CAMP PŪPŪKEA FACILITY LOCATED IN
PŪPŪKEA-PAUMALU, O‘AHU, HAWAI‘I (TAX MAP KEYS 5-9-05:02
AND 5-9-05:77)**

Dear Mr. Formby:

Thank you for your letter dated April 5, 2013 regarding the forthcoming Draft Environmental Assessment (EA) for the proposed upgrades to the Aloha Council Boy Scouts of America’s (Boy Scouts) Camp Pūpūkea facility located in Pūpūkea-Paumalu, O‘ahu, Hawai‘i (Tax Map Keys 5-9-05:02 and 5-9-05:77). As the planning consultant for the Boy Scouts we are responding to your comments.

The Draft EA will include a traffic impact assessment report that will evaluate the impact of increased vehicle traffic in the area as a result of the proposed upgrades to Camp Pūpūkea.

The area Neighborhood Board, as well as area residents, and others, will be keep apprised of the proposed upgrades to Camp Pūpūkea and potential impacts to the adjoining local street network through the environmental review process and other means as to be determined.

Thank you for participating in the pre-consultation process. Your letter will be included in the Draft EA. We will send you a copy of the Draft EA when it is available.

Sincerely,

PBR HAWAII

Tom Schnell, AICP
Senior Associate

cc: Aloha Council Boy Scouts of America

ASSOCIATES

TOM SCHNELL, AICP
Senior Associate

RAYMOND T. HIGA, ASLA
Senior Associate

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Senior Associate

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Associate

DACHENG DONG, LEED®AP
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MARC SHIMATSU, ASLA
Associate

MICHAEL SHIBATA, AICP
Associate

CATIE CULLISON, AICP
Associate

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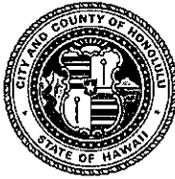
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HONOLULU FIRE DEPARTMENT
CITY AND COUNTY OF HONOLULU

636 South Street
Honolulu, Hawaii 96813-5007
Phone: 808-723-7139 Fax: 808-723-7111 Internet: www.honolulu.gov/hfd

KIRK CALDWELL
MAYOR



MANUEL P. NEVES
FIRE CHIEF

LIONEL CAMARA JR.
DEPUTY FIRE CHIEF

April 9, 2013

Mr. Tom Schnell, AICP
Senior Associate
PBR Hawaii & Associates, Inc.
1001 Bishop Street, Suite 650
Honolulu, Hawaii 96813-3484

Dear Mr. Schnell:

Subject: Preconsultation for the Boy Scouts Camp Pupukea Facility
Waimea, Oahu, Hawaii
Tax Map Keys: 5-9-005: 002 and 077

In response to your letter of March 15, 2013, regarding the above-mentioned subject, the Honolulu Fire Department (HFD) determined that upgrades to Camp Pupukea may impact HFD services. As such, the HFD will apply the requirements of the Fire Code to the upgrades for the proposed Camp Pupukea master plan.

Should you have questions, please contact Battalion Chief Socrates Bratakos of our Fire Prevention Bureau at 723-7151 or sbratakos@honolulu.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Emmitt A. Kane", is written over a horizontal line.

EMMIT A. KANE
Fire Chief

EAK/SY:bh



PBR HAWAII

& ASSOCIATES, INC.

May 2, 2014

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Manuel P. Neves, Fire Chief
Honolulu Fire Department
City and County of Honolulu
636 South Street
Honolulu, Hawaii 96813-5007

SUBJECT: THE BOY SCOUTS CAMP PŪPŪKEA FACILITY LOCATED IN PŪPŪKEA-PAUMALU, O'AHU, HAWAI'I (TAX MAP KEYS 5-9-05:02 AND 5-9-05:77)

Dear Chief Neves:

Thank you for your letter dated April 9, 2013 regarding the forthcoming Draft Environmental Assessment (EA) for the proposed upgrades to the Aloha Council Boy Scouts of America's (Boy Scouts) Camp Pūpūkea facility located in Pūpūkea-Paumalu, O'ahu, Hawai'i (Tax Map Keys 5-9-05:02 and 5-9-05:77). As the planning consultant for the Boy Scouts we are responding to your comments.

We acknowledge that the Honolulu Fire Department (HFD) determined that the proposed upgrades to Camp Pūpūkea may impact HFD services. As such, the Honolulu Fire Department will apply the requirements of the Fire Code to the camp upgrades.

To understand the Fire Code requirements, the Boy Scouts' architect and civil engineer met with Honolulu Fire Department and the following understanding was reached:

- A fire access road 16 feet wide with a turnaround at the end located within 150 feet from the last shower/comfort station will be provided. The surface of the fire lane must be able to support the weight of an 83,000 pound fire truck.
- All family/residential buildings will require protection with a fire sprinkler system or a fire hydrant system. If fire hydrants are installed, fire flow requirements specified by the Board of Water Supply must be met. If a fire sprinkler system is installed, the distance requirements for fire protection coverage can be extended by a factor of 3.
- For the junior staff lodging and family cabins complex, a fire sprinkler system that is connected to the swimming pool pump system is recommended.
- The Phase 1 shower/restroom buildings will be granted variances from the fire sprinkler/fire hydrant requirements but must be readily accessible from the 16 foot wide fire lane.
- Open sided pavilions and structures 400 square feet or less will not require fire sprinkler/fire hydrant protection.

The above information will be included in the Draft EA. Thank you for participating in the pre-consultation process. Your letter also will be included in the Draft EA. We will send you a copy of the Draft EA when it is available.

Sincerely,

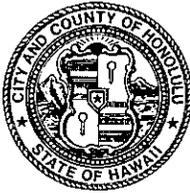
PBR HAWAII

Tom Schnell, AICP
Senior Associate

cc: Aloha Council Boy Scouts of America

POLICE DEPARTMENT
CITY AND COUNTY OF HONOLULU

801 SOUTH BERETANIA STREET · HONOLULU, HAWAII 96813
TELEPHONE: (808) 529-3111 · INTERNET: www.honolulu.police.org



KIRK W. CALDWELL
MAYOR

LOUIS M. KEALOHA
CHIEF

DAVE M. KAJIHIRO
MARIE A. MCCAULEY
DEPUTY CHIEFS

OUR REFERENCE WK-AC

April 4, 2013

Mr. Tom Schnell, AICP
Senior Associate
PBR Hawaii & Associates, Inc.
1001 Bishop Street, Suite 650
Honolulu, Hawaii 96813-3484

Dear Mr. Schnell:

This is in response to your letter dated March 15, 2013, requesting comments on the Pre-Consultation, Environmental Assessment, for the Boy Scouts Camp Pupukea Facility located in Waimea, Oahu.

This project should have no significant impact on the operations of the Honolulu Police Department.

If there are any questions, please call Captain Mark Ward of District 2 (Wahiawa) at 723-8703.

Sincerely,

LOUIS M. KEALOHA
Chief of Police

By 
CLAYTON G. KAU
Assistant Chief
Support Services Bureau



PBR HAWAII

& ASSOCIATES, INC.

May 2, 2014

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Chairman Emeritus

Mr. Clayton G. Kau, Assistant Chief
Support Services Bureau
Police Department
City and County of Honolulu
801 South Beretania Street
Honolulu, Hawaii 96813

**SUBJECT: THE BOY SCOUTS CAMP PŪPŪKEA FACILITY LOCATED IN
PŪPŪKEA-PAUMALU, O‘AHU, HAWAI‘I (TAX MAP KEYS 5-9-05:02
AND 5-9-05:77)**

ASSOCIATES

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DACHENG DONG, LEED®AP
Associate

MARC SHIMATSU, ASLA
Associate

MICHAEL SHIBATA, AICP
Associate

CATIE CULLISON, AICP
Associate

Dear Mr. Kau:

Thank you for your letter dated April 4, 2013 regarding the forthcoming Draft Environmental Assessment (EA) for the proposed upgrades to the Aloha Council Boy Scouts of America's (Boy Scouts) Camp Pūpūkea facility located in Pūpūkea-Paumalu, O‘ahu, Hawai‘i (Tax Map Keys 5-9-05:02 and 5-9-05:77).

As the planning consultant for the Boy Scouts we acknowledge that the proposed upgrades Camp Pūpūkea should have no significant impact on the operations of the Honolulu Police Department.

Thank you for participating in the pre-consultation process. Your letter will be included in the Draft EA. We will send you a copy of the Draft EA when it is available.

Sincerely,

PBR HAWAII

Tom Schnell, AICP
Senior Associate

cc: Aloha Council Boy Scouts of America

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Appendix **B**

FLORA & FAUNA SURVEYS

PUPUKEA CAMP
FLORA AND FAUNA STUDY
PUPUKEA, O'AHU

by:

Robert Hobdy
Environmental Consultant
Kokomo, Maui
December 2012

Prepared for:
THE BOY SCOUTS OF AMERICA
ALOHA COUNCIL

PUPUKEA CAMP
BOY SCOUTS OF AMERICA ALOHA COUNCIL
FLORA AND FAUNA STUDY - PUPUKEA, O'AHU

INTRODUCTION

The Pūpūkea Camp – Boy Scouts of America, Aloha Council project lies on 64.8 acres of mostly forested land in upper Pūpūkea, Ko'olauloa District, O'ahu (TMKs 5-9-05:02 & 77) (see Figures 1 & 2). The project calls for the installation of two septic tank and leach field systems to service their camp facilities. This study was initiated by the Boys Scouts of America in fulfillment of environmental requirements of the planning process.

SITE DESCRIPTION

The Pūpūkea Boy Scout Camp lies on mountainous ridge land that is dissected by the small gulches that are headwaters of the Kalunawaika'ala and the Pakulena Streams that drain to the North Shore. Elevations range between 600 feet and 800 feet above sea level. Access to the Camp is at the top of Pūpūkea Road, and minimally improved interior roads travel down two ridge tops to remote camp sites and a network of trails. The main facilities are located in clearings at the top of the property, but the great majority of the area is densely forested. The soils on the ridge tops are classified as Paalaa silty clay, 3 - 12% slopes while the gulches are classified as Helemano silty clay, 30 – 90% slopes (Foote et al, 1972). Rainfall averages between 60 inches and 65 inches per year with a fairly even year-round distribution (Armstrong, 1983).

BIOLOGICAL HISTORY

The project area was once a diverse native forest with a great variety of trees, shrubs, vines, grasses and ferns clothing the ridge tops and gulches. Early western explorers introduced several species of herbivorous animals in the late 1700s that were initially allowed to reproduce and spread. They soon began to denude Hawaii's lowlands and mountain slopes of their native cover. By the end of the 1800s there was great concern that critical watersheds were being destroyed. In 1904 the Territorial legislature created the Board of Agriculture and Forestry to address this crisis. The Pūpūkea-Paumalu Forest Reserve (among many others) was set aside in 1910 and work began to eradicate goats, sheep and cattle from the area. Then fast growing non-native trees were planted to reforest barren slopes. As these trees grew, other species of introduced plants spread here and began to take over the understory. Today this forest is once again densely grown but the species growing here have completely changed. Only a handful of the hardiest native plants persist within an essentially non-native forest.

SURVEY OBJECTIVES

This report summarizes the findings of a flora and fauna study of the proposed Pupukea Camp Boy Scouts Project that was conducted in December 2012. The objectives of the survey were to:

1. Document what plant and animal species occur on the property or may likely occur in the existing habitat.
2. Document the status and abundance of each species.
3. Determine the presence or likely occurrence of any native flora and fauna, particularly any that are Federally listed as Threatened or Endangered. If such occur, identify what features of the habitat may be essential for these species.
4. Determine if the project area contains any special habitats which if lost or altered might result in a significant negative impact on the native flora and fauna in this part of the island.

BOTANICAL SURVEY REPORT

SURVEY METHODS

A walk-through botanical survey was used to cover this 64.8 acre property. All representative habitats were examined including forests, brushlands, gulch bottoms and developed areas. Close attention was given to ascertaining whether any native Hawaiian plants or Endangered species were present.

DESCRIPTION OF THE VEGETATION

Except for the clearings around the camp facilities, this project area is densely forested. Two tree species are abundant throughout the area. Swamp mahogany (*Eucalyptus robusta*) forms the upper canopy at 60 feet to 80 feet in height. Beneath this canopy, the shade tolerant strawberry guava (*Psidium cattleianum*) forms nearly impenetrable thickets. Another 15 plant species were common in the project area.

Plant species that were abundant

swamp mahogany (*Eucalyptus robusta*)

strawberry guava (*Psidium cattleianum*)

Plant species that were common

(*Christella parasitica*) no common name

pala'ā (*Sphenomeris chinensis*)

bamboo orchid (*Arundina graminifolia*)

Hilo grass (*Paspalum conjugatum*)

narrow-leaved carpetgrass (*Axonopus fissifolius*)

basket grass (*Oplismenus hirtellus*)

(*Bidens alba*) no common name

common ironwood (*Casuarina equisetifolia*)

kaimi clover (*Desmodium incanum*)

padang cassia (*Cinnamomum burmannii*)

Shoebuttan ardisia (*Ardisia elliptica*)

Koster's curse (*Clidemia hirta*)

(*Passiflora suberosa*) no common name

Mexican satinleaf (*Chrysophyllum mexicanum*)

nettle-leaved vervain (*Stachytarpheta cayennensis*)

A total of 123 plant species were recorded during the survey. Of these 6 species were endemic native (plants occurring naturally only in Hawaii), and 9 were indigenous native plants (occurring naturally in Hawaii as well as on other Pacific islands)

Endemic native plants

(*Gahnia aspera* subsp. *globososa*) no common name

koa (*Acacia koa*)

naupaka kuahiwi (*Scaevola gaudichaudiana*)

'ōhi'a (*Metrosideros polymorpha*)

kōpiko (*Psychotria kaduana*)

'ākia (*Wikstroemia oahuensis*)

Indigenous native plants

pala'ā (*Sphenomeris chinensis*)

moa (*Psilotum nudum*)

uluhe (*Dicranopteris linearis*)

'ōkupukupu (*Nephrolepis exaltata*)

'uki'uki (*Dianella sandwicensis*)

hala (*Pandanus tectorius*)

pūkīawe (*Leptecocphylla tameiameiae*)

huehue (*Cocculus orbiculatus*)

alahe'e (*Psydrax odorata*)

An additional 7 plant species were “canoe plants”, brought to Hawaii during the Polynesian migrations:

niu (*Cocos nucifera*)

kī (*Cordyline fruticosa*)

'awapuhi (*Zingiber zerumbet*)

kukui (*Aleurites moluccana*)

milo (*Thespesia populnea*)

ulu (*Artocarpus altilis*)

noni (*Morinda citrifolia*)

The remaining 101 species were all non-native plants. Many of these had been planted as timber trees, fruit trees and ornamentals or in demonstration gardens focusing on Hawaiian cultural plants and on poisonous plants, but the majority of them were invasive weedy species.

DISCUSSION AND RECOMMENDATIONS

The vegetation on this project area is dominated by non-native species. There were, however, 15 native species recorded during the survey. Most of these were found on the ridge top along the east side of the property that overlooks Paumalu Gulch. None of these are considered rare and all are known from more than one island. No Endangered or Threatened plant species were found during the survey, nor were any seen that are candidates for such status. No special native plant habitats were found here either.

Some Endangered plant species are known to occur along Oahu's northern coastlines and others along the Ko'olau summit ridge to the east of the project area, but these are all separated both spatially and biologically from the Pūpūkea Boy Scout Camp. No Critical Habitat for any Endangered plants is designated within the project area. Critical Habitat for two Endangered plants, hāhā (*Cyanea longiflora*) and nioi (*Eugenia koolauensis*) has been delineated to the east and to the north of the project area respectively in the head waters of the Kaunala and 'O'io Streams, but neither of these was found within the project area. The project area is densely overgrown with eucalyptus forest that was planted by the government in the 1930s or 1940s and has been overrun by the highly invasive strawberry guava since that time.

Because of the above site conditions and the absence of Endangered or Threatened plant species there is little of concern regarding the botanical resources in the project area. The proposed project is not expected to have a significant negative impact on the botanical resources in this part of O'ahu.

No special recommendations with reference to plants are deemed appropriate or necessary.

PLANT SPECIES LIST

Following is a checklist of all those vascular plant species inventoried during the field studies. Plant families are arranged alphabetically within each of four groups: Ferns, Conifers, Monocots and Dicots. Taxonomy and nomenclature of the plants are in accordance with Wagner et al. (1999) and Staples & Herbst, 2005.

For each species, the following information is provided:

1. Scientific name with author citation.
2. Common English or Hawaiian name.
3. Bio-geographical status. The following symbols are used:

endemic = native only to the Hawaiian Islands; not naturally occurring anywhere else in the world.

indigenous = native to the Hawaiian Islands and also to one or more other geographic area(s).

non-native = all those plants brought to the islands intentionally or accidentally after western contact.

polynesian = brought by the Hawaiians during Polynesian migrations.

4. Abundance of each species within the project area:

abundant = forming a major part of the vegetation within the project area.

common = widely scattered throughout the area or locally abundant within a portion of it.

uncommon = scattered sparsely throughout the area or occurring in a few small patches.

rare = only a few isolated individuals within the project area.

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
FERNS			
BLECHNACEAE (Chain Fern Family)			
<i>Blechnum appendiculatum</i> Willd.	palm fern	non-native	uncommon
GLEICHENIACEAE (False Staghorn Fern Family)			
<i>Dicranopteris linearis</i> (Burm.f.) Underw.	uluhe	indigenous	rare
<i>Sphenomeris chinensis</i> (L.) Maxon	pala'ā	indigenous	common
NEPHROLEPIDACEAE (Sword Fern Family)			
<i>Nephrolepis brownii</i> (Desv.) Hovenc. & Miyam.	Asian sword fern	non-native	uncommon
<i>Nephrolepis exaltata</i> (L.) Schott	'ōkupukupu	indigenous	rare
POLYPODIACEAE (Polypody Fern Family)			
<i>Phlebodium aureum</i> (L.) J. Sm.	rabbit's-foot fern	non-native	uncommon
<i>Phymatosorus grossus</i> (Langsd. & Fisch.) Brownlie	laua'e	non-native	rare
PSILOTACEAE (Whisk Fern Family)			
<i>Psilotum nudum</i> (L.) P. Beauv.	moa	indigenous	uncommon
THELYPTERIDACEAE (Marsh Fern Family)			
<i>Christella dentata</i> (Forssk.) Brownsey & Jermy	pai'i'ihā	non-native	rare
<i>Christella parasitica</i> (L.) H. Lev.	-----	non-native	common
CONIFERS			
ARAUCARIACEAE (Araucaria Family)			
<i>Araucaria columnaris</i> (G. Forster) J.D. Hooker	Cook pine	non-native	uncommon
MONOCOTS			
ARACEAE (Aroid Family)			
<i>Dieffenbachia maculata</i> (Loddiges) D. Don	spotted dumb cane	non-native	rare
<i>Epipremnum pinnatum</i> (L.) Engler	taro vine	non-native	uncommon
<i>Monstera deliciosa</i> Liebmann	monstera	non-native	rare
ARECACEAE (Palm Family)			
<i>Cocos nucifera</i> L.	niu, coconut	Polynesian	rare
<i>Dyopsis lutescens</i> (Wendl.) Beentje & Dransfield	golden fruited palm	non-native	rare
<i>Phoenix x dactylifera</i>	hybrid date palm	non-native	rare
<i>Veitchia merrillii</i> (Becc.) Moore	Manila palm	non-native	rare
ASPARAGACEAE (Asparagus Family)			
<i>Asparagus densiflorus</i> (Kunth.) Jessop	asparagus fern	non-native	rare
<i>Cordyline fruticosa</i> (L.) A. Chev.	kī, ti	Polynesian	uncommon
CYPERACEAE (Sedge Family)			
<i>Gahnia aspera</i> Spreng subsp. <i>globosa</i> (H.Mann) J.Kern			
DRACAENACEAE (Dracaena Family)			
<i>Dracaena fragrans</i> (L.) Ker-Gawler	no common name	endemic	rare
<i>Dracaena marginata</i> Lamark	fragrant dracaena	non-native	rare
	money tree	non-native	rare
HELICONIACEAE (Heliconia Family)			
<i>Heliconia bihai</i> (L.) L.	lobster claw	non-native	rare
LILIACEAE (Lily Family)			
<i>Dianella sandwicensis</i> Hooker & Arnott	'uki'uki	indigenous	rare
MUSACEAE (Banana Family)			
<i>Musa acuminata x balbisiana</i> Colla	cultivated banana	non-native	rare

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
ORCHIDACEAE (Orchid Family)			
<i>Arundina graminifolia</i> (D.Don) Hochr.	bamboo orchid	non-native	common
<i>Phaius tankarvilleae</i> (Banks) Blume	Chinese ground orchid	non-native	rare
<i>Spathoglottis plicata</i> Blume	Phillipine ground orchid	non-native	uncommon
PANDANACEAE (Screwpine Family)			
<i>Pandanus tectorius</i> S. Parkinson ex Z.	hala, pūhala	indigenous	rare
POACEAE (Grass Family)			
<i>Andropogon virginicus</i> L.	broomsedge	non-native	rare
<i>Axonopus compressus</i> (Sw.) P.Beauv.	broad-leaved carpetgrass	non-native	uncommon
<i>Axonopus fissifolius</i> (Raddi) Kuhlm	narrow-leaved carpetgrass	non-native	common
<i>Bambusa vulgaris</i> Wendland	common bamboo	non-native	rare
<i>Cynodon dactylon</i> (L.) Pers.	Bermuda grass	non-native	uncommon
<i>Eragrostis pectinacea</i> (Michx.) Nees	Carolina lovegrass	non-native	uncommon
<i>Eremochloa ophiuroides</i> (Munro) Hackel	centipede grass	non-native	uncommon
<i>Hyparrhenia rufa</i> (Nees) Stapf	jaragua	non-native	rare
<i>Megathyrsus maximus</i> (Jacq.) Simon & Jacobs	Guinea grass	non-native	uncommon
<i>Oplismenus hirtellus</i> (L.) P.Beauv.	basket grass	non-native	common
<i>Paspalum conjugatum</i> Poir.	Hilo grass	non-native	common
<i>Paspalum dilatatum</i> Poir.	Dallis grass	non-native	rare
<i>Paspalum macrophyllum</i> Kunth	-----	non-native	rare
<i>Phyllostachys aurea</i> A. & C. Riviere	dwarf bamboo	non-native	rare
<i>Sacciolepis indica</i> (L.) Chase	Glenwood grass	non-native	uncommon
<i>Setaria parviflora</i> (Poir.) Kerguelen	yellow foxtail	non-native	rare
<i>Sporobolus diander</i> (Retz.) P. Beauv.	Indian dropseed	non-native	uncommon
<i>Sporobolus indicus</i> (L.) R. Br.	West Indian dropseed	non-native	uncommon
ZINGIBERACEAE (Ginger Family)			
<i>Alpinia purpurata</i> (Veillard) K. Schumann	red ginger	non-native	rare
<i>Alpinia zerumbet</i> (Persoon) Burt & Smith	shell ginger	non-native	rare
<i>Zingiber zerumbet</i> (L.) Sm.	'awapuhi	Polynesian	rare
DICOTS			
ACANTHACEAE (Acanthus Family)			
<i>Aphelandra sinclairiana</i> Nees	coral aphelandra	non-native	uncommon
<i>Ruellia brevifolia</i> (Pohl) C. Ezcurra	-----	non-native	rare
ANACARDIACEAE (Mango Family)			
<i>Mangifera indica</i> L.	mango	non-native	rare
<i>Schinus terebinthifolius</i> Raddi	Christmas berry	non-native	uncommon
APIACEAE (Parsley Family)			
<i>Centella asiatica</i> (L.) Urb.	Asiatic pennywort	non-native	rare
APOCYNACEAE (Dogbane Family)			
<i>Plumeria rubra</i> L.	plumeria	non-native	rare
<i>Thevetia peruviana</i> (Persoon) K. Schumann	be-still tree	non-native	rare
ARALIACEAE (Panax Family)			
<i>Schefflera actinophylla</i> (Endl.) Harms	octopus tree	non-native	uncommon
<i>Schefflera arboricola</i> (Hayata) Merrill	dward schefflera	non-native	rare

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
ASTERACEAE (Sunflower Family)			
<i>Ageratum conyzoides</i> L.	maile hohono	non-native	rare
<i>Bidens alba</i> (L.) DC.	-----	non-native	common
<i>Crassocephalum crepidioides</i> (Bentham) S. Moore	red-flowered ragleaf	non-native	rare
<i>Erigeron belliioides</i> DC.	-----	non-native	rare
<i>Pluchea carolinensis</i> (Jacq.) G. Don	sourbush	non-native	rare
<i>Pseudelephantopus spicatus</i> (Juss.) Baker	-----	non-native	rare
<i>Sphagneticola trilobata</i> (L.) Pruski	wedelia	non-native	uncommon
<i>Synedrella nodiflora</i> (L.) Gaertner	node weed	non-native	rare
<i>Taraxicum officinale</i> W.W. Weber	common dandelion	non-native	rare
BIGNONIACEAE (Bignonia Family)			
<i>Tabebuia heterophylla</i> (A.P. de Candolle) Britton	pink tecoma	non-native	rare
CAMPANULACEAE (Bellflower Family)			
<i>Hippobroma longiflora</i> (L.) G. Don	star-or-Bethlehem	non-native	rare
CASUARINACEAE (She-oak Family)			
<i>Casuarina equisetifolia</i> L.	common ironwood	non-native	common
CONVOLVULACEAE (Morning Glory Family)			
<i>Ipomoea ochracea</i> (Lindl.) G. Don	-----	non-native	rare
ERICACEAE (Heath Family)			
<i>Leptecophylla tameiameia</i> (Cham. & Schlechtend) Weiler	pūkiawe	indigenous	rare
EUPHORBIACEAE (Spurge Family)			
<i>Aleurites moluccana</i> (L.) Willd.	kukui	Polynesian	uncommon
<i>Euphorbia tirucalli</i> L.	pencil plant	non-native	rare
FABACEAE (Pea Family)			
<i>Acacia koa</i> A. Gray	koa	endemic	uncommon
<i>Chamaecrista nictitans</i> (L.) Moench	partridge pea	non-native	rare
<i>Desmodium incanum</i> DC.	ka'imi clover	non-native	common
<i>Falcataria moluccana</i> (Miq.) Barneby & Grimes	albizia	non-native	rare
<i>Lablab purpureus</i> (L.) Sweet	pāpapa bean	non-native	rare
<i>Leucaena leucocephala</i> (Lam.) de Wit	koa haole	non-native	uncommon
GOODENIACEAE (Goodenia Family)			
<i>Scaevola gaudichaudiana</i> Chamisso	naupaka kuahiwi	endemic	rare
LAURACEAE (Laurel Family)			
<i>Cinnamomum burmannii</i> (Nees) Blume	padang cassia	non-native	common
<i>Persea americana</i> Mill.	avocado	non-native	rare
MALVACEAE (Mallow Family)			
<i>Hibiscus x rosa-sinensis</i>	hybrid hibiscus	non-native	rare
<i>Sida acuta</i> N.L. Burm.	milo	Polynesian	rare
MELASTOMATACEAE (Melastoma Family)			
<i>Clidemia hirta</i> (L.) D. Don	Koster's curse	non-native	common
MENISPERMACEAE (Moonseed Family)			
<i>Cocculus orbiculatus</i> (L.) DC.	huehue	indigenous	rare
MORACEAE (Mulberry Family)			
<i>Artocarpus altilis</i> (Z.) Fosberg	ulu, breadfruit	Polynesian	rare

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
<i>Ficus microcarpa</i> L. fil.	Chinese banyan	non-native	uncommon
<i>Ficus platypoda</i> (A. Cunn.) A. Cunn.	rock fig	non-native	rare
MYRSINACEAE (Myrsine Family)			
<i>Ardisia crenata</i> Sims	Hilo holly	non-native	rare
<i>Ardisia elliptica</i> Thunb.	shoebuttan ardisia	non-native	common
MYRTACEAE (Myrtle Family)			
<i>Eucalyptus camaldulensis</i> Dehnh.	river red gum	non-native	rare
<i>Eucalyptus robusta</i> Sm.	swamp mahogany	non-native	abundant
<i>Melaleuca quinquenervia</i> (Cav.) S.T.Blake	paper bark	non-native	rare
<i>Metrosideros polymorpha</i> Gaud.	'ōhi'a lehua	endemic	rare
<i>Psidium cattleianum</i> Sabine	strawberry guava	non-native	abundant
<i>Syzygium cumini</i> (L.) Skeels	Java plum	non-native	rare
<i>Syzygium jambos</i> (L.) Alston	rose apple	non-native	rare
PASSIFLORACEAE (Passion Flower Family)			
<i>Passiflora edulis</i> Sims	passion fruit	non-native	rare
<i>Passiflora suberosa</i> L.	-----	non-native	common
PHYLLANTHACEAE (Phyllanthus Family)			
<i>Breynia disticha</i> R. & G. Forster	snowbush	non-native	rare
PLANTAGINACEAE (Plantain Family)			
<i>Plantago major</i> L.	broad-leaved plantain	non-native	rare
POLYGALACEAE (Milkwort Family)			
<i>Polygala paniculata</i> L.	fragrant polygala	non-native	rare
RUBIACEAE (Coffee Family)			
<i>Coffea arabica</i> L.			
<i>Morinda citrifolia</i> L.	noni	Polynesian	rare
<i>Psychotria kaduana</i> (Cham&Schlecht.) Fosb.	kōpiko	endemic	rare
<i>Psydrax odorata</i> (G. Forst.) Smith & Darwin	alahe'e	indigenous	rare
<i>Spermacoce assurgens</i> Ruiz & Pav.	buttonweed	non-native	rare
<i>Spermacoce</i> sp.	-----	non-native	rare
RUTACEAE (Citrus Family)			
<i>Citrus auranticum</i> L.	Seville orange	non-native	rare
<i>Citrus reticulata</i> Blanco	tangerine	non-native	rare
SAPOTACEAE (Sapodilla Family)			
<i>Chrysophyllum mexicanum</i> T. Brandegee	Mexican satinleaf	non-native	common
SOLANACEAE (Nightshade Family)			
<i>Solanum torvum</i> Swartz	pea aubergine	non-native	rare
THYMELAEACEAE ('Akia Family)			
<i>Wikstroemia oahuensis</i> (A. Gray) Rock	'ākia	endemic	rare
URTICACEAE (Nettle Family)			
<i>Cecropia obtusifolia</i> A. Bertolini	guarumo	non-native	uncommon
VERBENACEAE (Verbena Family)			
<i>Lantana camara</i> L.	lantana	non-native	rare
<i>Stachytarpheta cayennensis</i> (L.Richard) Vahl	nettle-leaved vervain	non-native	uncommon
<i>Tectona grandis</i> L. fil.	teak	non-native	rare

FAUNA SURVEY REPORT

SURVEY METHOD

A fauna survey was conducted in conjunction with the flora survey. Observations were made with the aid of binoculars and a bat detector was used during an evening visit. Notes were made on species, numbers, distribution and behavior as well as trails, tracks, scat and signs of feeding.

RESULTS

MAMMALS

Three mammal species were detected during two site visits to the project area. Taxonomy and nomenclature follow Tomich (1986). During the daytime survey sign of feral pigs (*Sus scrofa*) was observed in the bottom of the gulches, and dog (*Canis familiaris*) tracks were found along the ridge top roads.

A special effort was made to look for the Endangered Hawaiian hoary bat or 'ōpe'ape'a (*Lasiurus cinereus semotus*) by conducting an evening survey using both visual and electronic techniques. When present in an area these bats can sometimes be seen in the glow of twilight as they begin to forage for flying insects that become active during the evening hours. In addition, a bat detecting device (Batbox IIID) was used after dark, set to the frequency of 27,000 Hertz that these bats are known to use for echolocation. No bat activity was seen at twilight, but later after dark at least three bats were detected using the Batbox over a clearing near the top of the property. Echolocation “calls” in modulated pulses, sometimes overlapping and sometimes louder or fainter as they passed back and forth in an out of the Batbox’s range as they searched for flying insects. This activity was closely monitored for several minutes. A significant bat population is indicated. This corroborates a personal communication volunteered by a former Boy Scout that used to attend this camp in the 1980s.

Other mammals that would likely be found in this project area, but which were not observed during the survey, include rats (*Rattus* spp.), mice (*Mus domesticus*), mongoose (*Herpestes auropunctatus*) and domestic cats (*Felis catus*). Rats and mice feed on seeds, fruits and herbaceous vegetation, while the mongoose and cats would prey on these rodents and birds.

BIRDS

Birdlife was moderate both in numbers of species present and in the numbers of individuals seen. Eight non-native bird species were observed during two site visits to the project area. Identifications were made with the aid of binoculars and by listening to vocalizations. Taxonomy and nomenclature follow the American Ornithologists’ Union (2011).

Two bird species were of common occurrence: the Japanese white-eye (*Zosterops japonicus*) and wild chickens (*Gallus gallus*). The six remaining species were uncommon or rare in occurrence (see fauna species list).

A few other non-native birds may also occasionally use this property. The habitat, however, is not suitable for O’ahu’s native forest birds which are presently restricted to good quality native forests at higher elevations. The habitat is also not suitable for native seabirds such as the Endangered ‘ua’u (*Pterodroma sandwichensis*) and the Threatened ‘a’o (*Puffinus newelli*) which nest in dense, wet fern shrubland near the summits of the mountains.

INSECTS

Insect life was rather sparse in the dense non-native forest that covers most of the property. Just eight insect species were observed during two site visits in the project area. Five insect Orders were represented. Taxonomy and nomenclature follow Nishida et al (1992).

Only one insect species was common throughout the area, the house mosquito (*Culex quinquefasciatus*). Less common were the passion flower butterfly (*Agraulis vanillae*) and the small rice grasshopper (*Oxya japonica*). The other five species were all rare occurrences. No native insect species were seen.

DISCUSSION AND RECOMMENDATIONS

The fauna in this project area was rather sparse in diversity and mostly non-native. No native birds were recorded and only one native mammal, the 'ōpe'ape'a or Hawaiian bat was detected during the evening survey. This endemic and Endangered bat was found to have what is likely a significant population around the Pūpūkea Boy Scout Camp. The 'ōpe'ape'a's Endangered Species status brings it under the jurisdiction of the U.S. Fish and Wildlife Service. It is recommended that the applicant arrange a consultation with U.S.F.W.S. to arrive at a plan that will ensure that no bats will be injured or killed as this project moves forward.

No other concerns with regards to fauna species or habitats are apparent and no other recommendations are deemed appropriate or necessary.

ANIMAL SPECIES LIST

Following is a checklist of the animal species inventoried during the field work. Animal species are arranged in descending abundance within three groups: Mammals, Birds and Insects. For each species the following information is provided:

1. Common name
2. Scientific name
3. Bio-geographical status. The following symbols are used:

endemic = native only to Hawaii; not naturally occurring anywhere else in the world.

indigenous = native to the Hawaiian Islands and also to one or more other geographic area(s).

migratory = bird species that spend the fall and winter months in Hawaii and the spring and summer months breeding in the arctic.

non-native = all those animals brought to Hawaii intentionally or accidentally after western contact.

4. Abundance of each species within the project area:

abundant = many flocks or individuals seen throughout the area at all times of day.

common = a few flocks or well scattered individuals throughout the area.

uncommon = only one flock or several individuals seen within the project area.

rare = only one or two seen within the project area.

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
MAMMALS			
<i>Sus scrofa</i> L.	feral pig	non-native	uncommon
<i>Canis familiaris</i> L.	domestic dog	non-native	rare
<i>Lasiurus cinereus semotus</i> Allen	'ōpe'ape'a, Hawaiian hoary bat	endemic	uncommon
BIRDS			
<i>Zosterops japonicus</i> Temminck & Schlegel	Japanese white-eye	non-native	common
<i>Gallus gallus</i> L.	chicken	non-native	common
<i>Acridotheres tristis</i> L.	common myna	non-native	uncommon
<i>Geopelia striata</i> L.	zebra dove	non-native	uncommon
<i>Streptopelia chinensis</i> Scopoli	spotted dove	non-native	uncommon
<i>Pycnonotus jocosus</i> L.	red-whiskered bulbul	non-native	uncommon
<i>Pycnonotus cafer</i> L.	red-vented bulbul	non-native	rare
<i>Lonchura malacca</i> L.	chestnut mannikin	non-native	rare

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
INSECTS			
Order ARANAE - true spiders			
ARANEIDAE (Aranid Spider Family)			
<i>Gasteracantha mammosa</i> Koch	Asian spiny-backed spider	non-native	rare
Order DIPTERA - flies			
CULICIDAE (Mosquito Family)			
<i>Culex quinquefasciatus</i> Say	house mosquito	non-native	common
Order HYMENOPTERA - bees & wasps			
SPHECIDAE (Sphecid Wasp Family)			
<i>Ampulex compressa</i> Fabricius	jewel wasp	non-native	rare
Order LEPIDOPTERA - butterflies & wasps			
NOCTUIDAE (Owlet Moth Family)			
<i>Ascalapha odorata</i> L.	black witch moth	non-native	rare
NYMPHALIDAE (Brush-footed Butterfly Family)			
<i>Agraulis vanillae</i> L.	passion flower butterfly	non-native	uncommon
<i>Danaus plexippus</i> L.	monarch butterfly	non-native	rare
PAPILIONIPAE (Swallowtail Butterfly Family)			
<i>Papilio xutha</i> L.	Asian swallowtail butterfly	non-native	rare
Order ORTHOPTERA - grasshoppers & crickets			
ACRIDIDAE (Grasshopper Family)			
<i>Oxya japonica</i> Thunberg	small rice grasshopper	non-native	uncommon



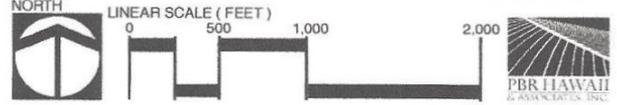
LEGEND

 Pūpūkea Camp

Tax Map Key

Pūpūkea Camp

The Boy Scouts of America, Aloha Council ISLAND OF O'AHU



Source: City and County of Honolulu hcentral.com (2004)
 Disclaimer: This map has been prepared for general planning purposes only.
 Path: Q:\Oahu\Pupukea Camp\GIS\Project\Tax Map Key Template.mxd



Figure 1



Figure 2

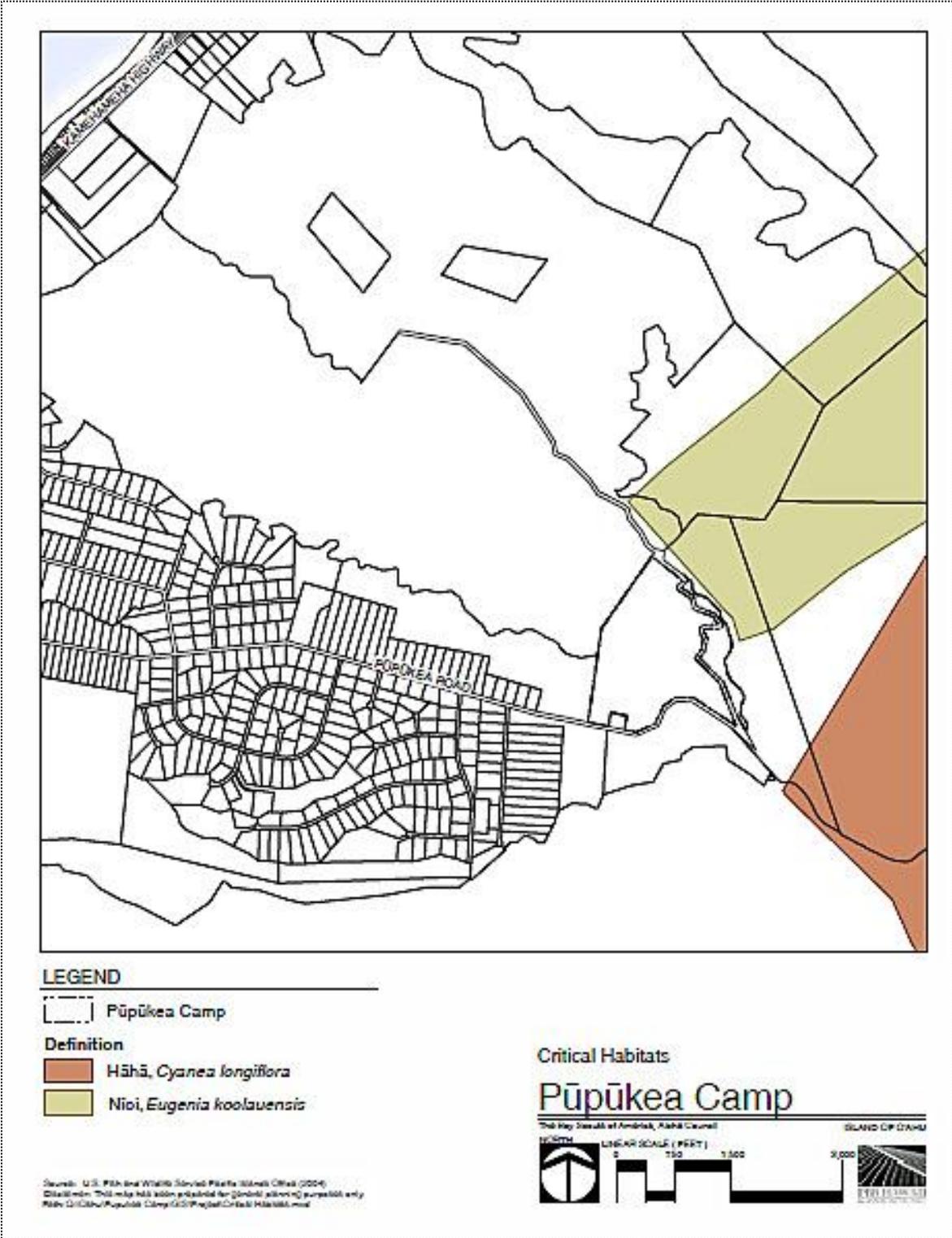


Figure 3

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Appendix **C**

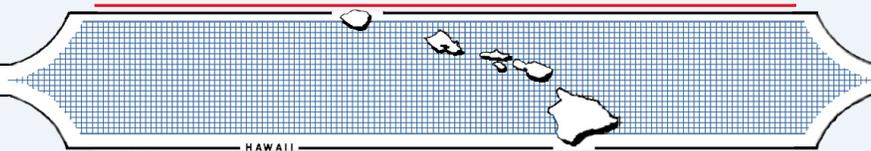
ARCHEOLOGICAL INVENTORY SURVEY

**AN ARCHAEOLOGICAL INVENTORY SURVEY REPORT
FOR THE BOY SCOUTS OF AMERICA, CAMP PUPUKEA,
PŪPŪKEA AHUPUA`A, KO`OLAULOA DISTRICT,
O`AHU ISLAND, HAWAII
[TMK: (1) 5-9-005:002 AND 077]**

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September 2013
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ABSTRACT

At the request of the Aloha Council Boy Scouts of America, Scientific Consultant Services, Inc. (SCS) conducted an Archaeological Inventory Survey of the existing Boy Scouts' Camp Pupukea, Pūpūkea Ahupua`a, Ko`olauloa District, O`ahu Island, Hawai`i [TMK: (1) 5-9-005:002 and 077]. The 64.798 acre project area is situated on two adjacent parcels; TMK: (1) 5-9-005:002 is comprised of 56.962 acres and TMK: (1) 5-9-005:077 consists of 7.836 acres. Homestead Road (TS-15) bisects the two parcels and the area of Homestead Road between the two parcels was included as part of this survey.

The Archaeological Inventory Survey was conducted in advance of proposed improvements to the existing Camp Pupukea to determine the presence of historic properties (over 50 years old), and if sites are present, to document each site and gather sufficient information to evaluate the significance of the historic properties' features and to assess the function, age, and construction methods of those features in accordance with Hawaii Administrative Rules (HAR) §13-276. During the survey fifteen new archaeological sites (State Site 5-80-01-7460 through State Site 50-80-01-7474), comprised of a total of thirty surface features, were newly identified. Twenty-four artifacts were recovered from the ground surface. Based on feature type, construction methods, and construction materials, all fifteen archaeological sites were interpreted as associated with the United States Military Fleet Defense System. Based on a Walter E. Wright (1904) map, State Site 50-80-01-7474 was also interpreted as a historic road associated with the development of Pupukea-Paumalu Homesteads. Laboratory analysis indicated that all twenty-four artifacts were associated with the United States Army and that the project area was utilized by the U.S. Army prior to, during, and after World War II.

These findings are consistent with historical records, which confirm that the Camp Pupukea site was occupied by the US Military from approximately 1927-1953. State Sites 50-80-01-7460 through 50-80-01-7474 have been evaluated for significance, as outlined in Hawai`i Administrative Rules §13-275-6, and found to be significant under Criterion D, for information content. Thus, no further archaeological work is recommended for current project area.

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INTRODUCTION

At the request of the Aloha Council Boy Scouts of America, Scientific Consultant Services, Inc. (SCS) conducted an Archaeological Inventory Survey of the existing Boy Scouts of America, Camp Pupukea, Pūpūkea Ahupua`a, Ko`olauloa District, O`ahu Island, Hawai`i [TMK: (1) 5-9-005:002 and 077]. The 64.798 acre project area is situated on two adjacent parcels; TMK: (1) 5-9-005:002 is comprised of 56.962 acres and TMK: (1) 5-9-005:077 consists of 7.836 acres (Figure 1 through Figure 3). Homestead Road bisects the two parcels and the area of Homestead Road between the two parcels was included as part of this survey.

Fieldwork, consisting of a pedestrian survey and the manual excavation of four shovel probes, was conducted from February 12 through February 18, 2013 by SCS archaeologists Guerin Tome, B.A., and Stephanie Medrano, B.A., under the direction of Robert L. Spear, Ph.D., Principal Investigator. The Archaeological Inventory Survey was performed in order to identify and document archaeological sites; to gather sufficient information on the sites; to evaluate the significance of the sites, and to compile the information in accordance with Hawaii Administrative Rules (HAR) §13-276.

During the survey fifteen archaeological sites (State Site 50-80-01-7460 through 50-80-01-7474), comprised of thirty features, were newly identified. Twenty-four artifacts were recovered from the ground surface during the Archaeological Inventory Survey including porcelain jug sherds which fit together; one knob and tube porcelain electrical insulator; one possible electrical insulator sherd; one possible subsurface utility stoneware pipe sherd; bottle glass base sherd utilized between 1929 and 1954; a complete clear glass bottle with a bottle manufacturing date of 1943; milk glass jar rim sherd; milk glass vessel body sherd; bottle glass base sherd with a bottle manufacturing date of 1943; live brass 0.45-caliber pistol cartridge with bullet with cartridge manufacture date of 1941; brass 5-round clip stripper clip; live brass 0.30-caliber rifle round with bullet with cartridge manufacture date of 1918; ferrous metal nail; ferrous metal flat can; ferrous metal bottle cap; ferrous metal can (possible oil can); ferrous metal safety pin; porcelain bowl rim/base sherd which was manufactured for the United States (U.S.) Army Quartermaster's Corps; ferrous metal can fragment; ferrous metal can; and a green glass Wildroot Cream Oil hair tonic bottle with manufacturer's symbol indicating utilization between 1929 and 1954. Based on feature type, construction methods, and construction materials, State Site 50-80-01-7460 through 50-80-01-7474 all fifteen archaeological sites were interpreted as associated with the U.S. Army. Based on a Walter E. Wright (1904) map, State Site 50-80-01-7474 was also interpreted as a historic road associated with the development of Pupukea-Paumalu Homesteads. Laboratory analysis indicated that twenty-four artifacts were interpreted as associated with the U.S. Army.

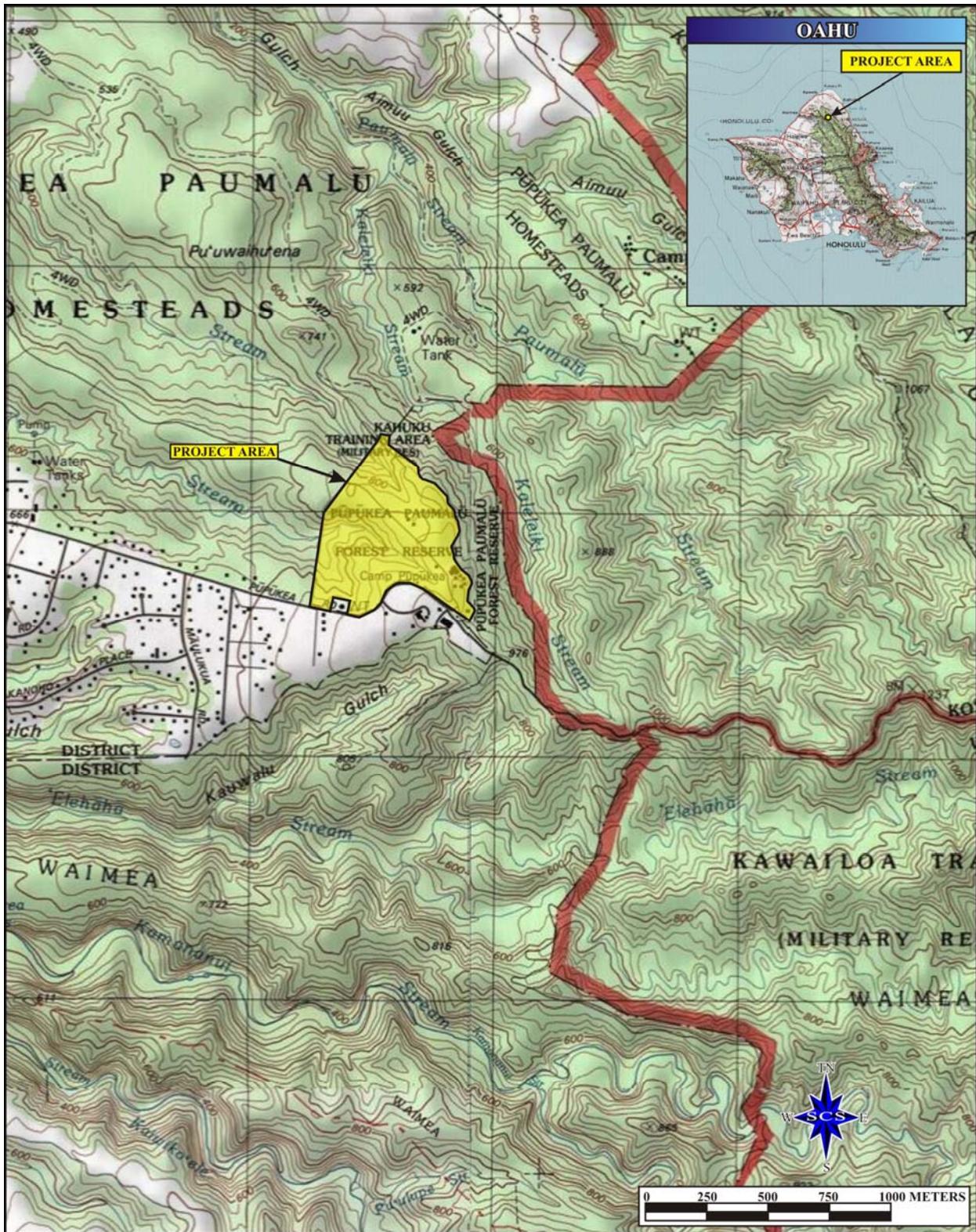


Figure 1: USGS Quadrangle (Waimea 1998) Map Showing Project Area Location.

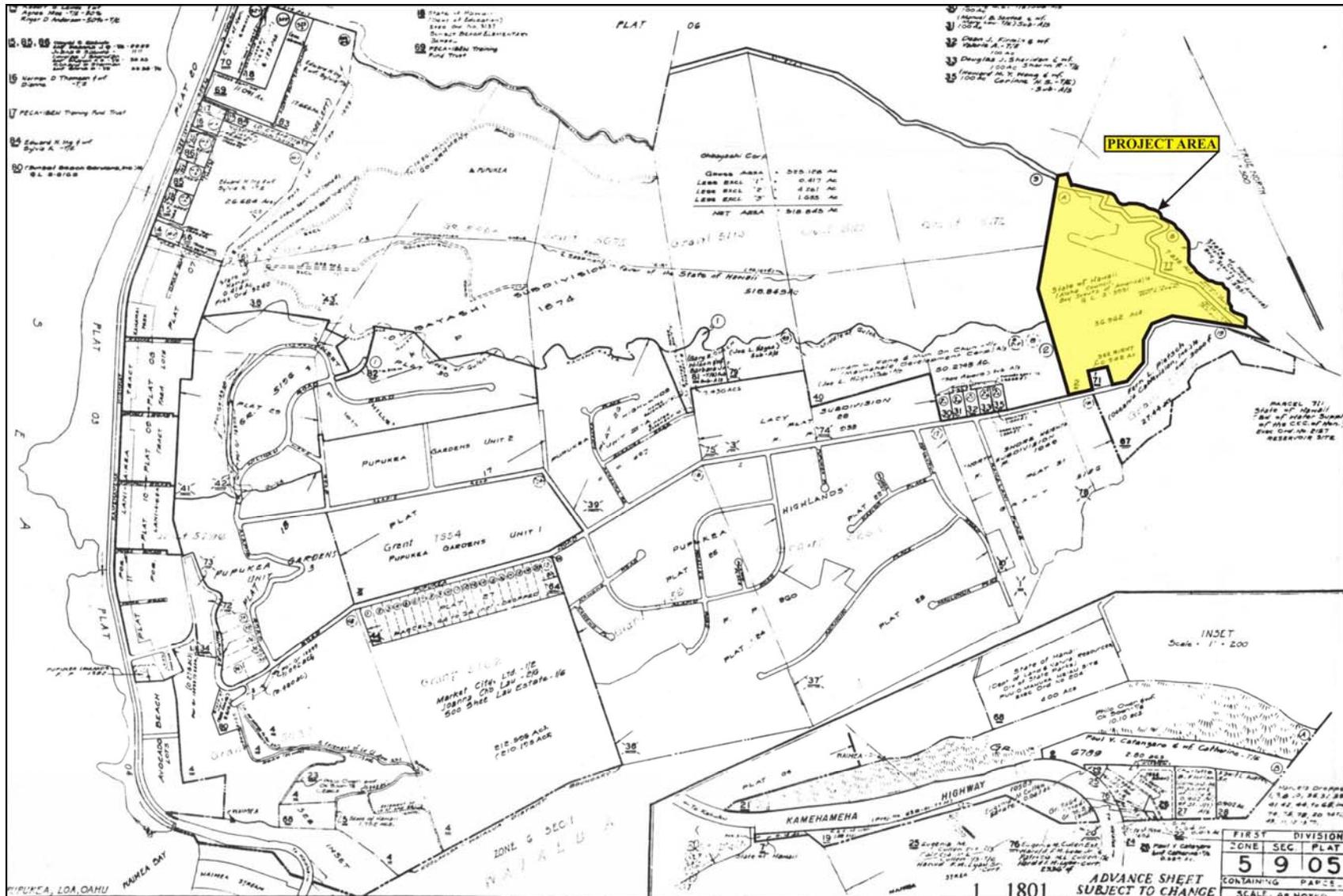


Figure 2: Tax Map Key [TMK: (1) 5-9-005] Map Showing Project Area Location.



Figure 3: Google Earth Image (2013) Showing Project Area Location

ENVIRONMENTAL SETTING

The project area is located on the North Shore of the island of O`ahu. At its farthest point, the project area is located approximately 2.4 miles (3,863 meters) from the coast and situated approximately 681 to 1093 feet above mean sea level (amsl).

PROJECT AREA

Camp Pupukea is located in the Ko`olou Mountains above Waimea Bay, on the North Shore of the island of O`ahu, immediately adjacent and north of the eastern terminus of Pūpūkea Road. The Pupukea Boy Scout Camp is situated within the Pūpūkea-Paumalu Forest Reserve. Pūpūkea Road forms the southern project area boundary; the Kahuku Training Area forms the northern and upper western boundaries; and the Pūpūkea-Paumalu Homesteads and the Pūpūkea-Paumalu State Park Reserve form the western project area boundary.

SOILS

According to Foote *et al.* (1972: 40, 105, 106, 110, and 111; Sheet Map 37) three Soil Series (Helemano, Paalooa, and Paumalu) are represented within the project area. The Helemano Soil Series typically are comprised of well-drained colluvial and alluvial soils of volcanic origin. Soils of the Helemano Series occur on alluvial fans and on the sides of gulches exhibiting 30 to 90 percent slopes, at elevations ranging from 500 to 1,200 feet amsl in areas receiving annual rainfall of 30 to 60 inches. Helemano silty clay (HLMG) soils within the project area occur on V-shaped gulches and exhibit moderately rapid permeability, medium to very rapid runoff, and a severe to very severe erosion hazard. The HLMG soils are utilized as ranchlands, forests, and as wildlife habitats (Foote *et al.* 1972: 40).

Soils of the Paalooa Series are well-drained volcanic soils occurring in upland regions at elevations ranging from 1,000 to 1,700 feet amsl in areas with annual rainfall of 70 to 90 inches. Soils of the Paalooa Series specific to the project area are Paalooa silty clay (PaC) which occurs on 3 to 12 percent slopes. The PaC soils exhibit moderately rapid permeability, slow to medium runoff, and a slight to moderate erosion hazard. Typically, the PaC soils are utilized as ranchlands and for the production of sugarcane (*ibid*: 106).

Soils of the Paumalu Series are also, well-drained volcanic soils occurring in the upland regions between 700 to 1,000 feet amsl in regions receiving 50 to 70 inches of rainfall annually (*ibid*: 110). Soils of the Paumalu Series specific to the project area are of the Paumalu-Badland complex (Pz) which occurs on 10 to 70 percent slopes. The Badland soils consist "of nearly

barren land that has remained after the Paumalu soils were removed by wind and water erosion (*ibid*:111). Thus, the Pz soils exhibit rapid runoff and a high erosion hazard. The Badland soils are utilized as ranchlands and by the military (*ibid*).

CLIMATE

Temperatures in the project area can range from the high 40 degrees Fahrenheit (F), during the winter months, to the low 90 degrees in the summer (Armstrong 1980: 58). Rainfall can range from 10 to 30 inches during winter and from 10 to 12 inches during the summer months (*ibid*: 56).

VEGETATION

Vegetation observed within the study area during the Archaeological Inventory Survey primarily consisted of introduced species including *koa haole* (*Leucaena glauca*); eucalyptus (*Eucalyptus deglupta*); ironwood (*Casuarina equisetifolia*); Florida beggarweed; *Desmodium tortuosum*); heliconia (*Heliconiaceae*); wedelia (*Sphagneticola trilobata*); Koster's curse (*Clidemia hirtia*); strawberry guava (*Psidium cattleianum*); umbrella tree (*Schefflera actinophylla*); and Christmas Berry (*Schinus terebinthifolius*). Native plants (*ti*, *Cordyline fruticosa*; pandanus, *Pandanus tectorius*; and *kukui* (*Aleurites moluccana*) were also present in the project area, but appeared to serve an ornamental function. Decomposing vegetation was present throughout the project area.

CULTURAL HISTORICAL CONTEXT

The island of O`ahu ranks third in size of the eight main islands in the Hawaiian Archipelago. The Wai`anae and Ko`olau Mountain ranges were formed by two volcanoes. Through the millennia the constant force of water carved fertile amphitheater-headed valleys and rugged passes eroded at lower elevations providing access from one side of the island to another (Macdonald and Abbott 1970).

PAST POLITICAL BOUNDARIES

Traditionally, the division of O`ahu's land into districts (*moku*) and sub-districts (*`ili*) was said to be performed by Mā`ilikukahi, a ruling chief of O`ahu, who was chosen by the chiefs to be the *mō`īho`oponopono o ke aupuni* (administrator of the government; Kamakau 1961). It was Mā`ilikukahi who had the Island of O`ahu thoroughly surveyed, and permanently defined the boundaries between the different divisions and lands (Fornander 1969:89; Kame`eleihiwa 1992:26; Beckwith 1985: 383). Cordy (2002: 23) places Mā`ilikukahi's reign over O`ahu at the beginning of the 16th century. Mā`ilikukahi created six districts and six district chiefs (*ali`i`ai*

moku). Land was considered the property of the king or *ali`i`ai moku* (chief who rules a *moku*) (Pukui and Elbert 1986: 20), which he held in trust for the gods. The title of *ali`i`ai moku* ensured rights and responsibilities to the land, but did not confer absolute ownership. The king kept the parcels he wanted, his higher chiefs received large parcels from him and, in turn, distributed smaller parcels to lesser chiefs. The *maka`āinana* (commoners) worked the individual plots of land. It is said that Mā`ilikukahi gave land to *maka`āinana* all over the island of O`ahu.

In general, several terms, such as *moku*, *ahupua`a*, *ili* or *ili`āina* were used to delineate various land sections. A district (*moku*) contained smaller land divisions (*ahupua`a*) that customarily continued inland from the ocean and upland into the mountains. Extended household groups living within the *ahupua`a* were therefore able to harvest from both the land and the sea. Ideally, this situation allowed each *ahupua`a* to be self-sufficient by supplying needed resources from different environmental zones (Lyons 1875:111). The *ili`āina* or *ili* were smaller land divisions next in importance to the *ahupua`a* and were administered by the chief who controlled the *ahupua`a* in which it was located (Lyons 1875:33; Lucas 1995:40). The *mo`o`āina* were narrow strips of land within an *ili*. The land holding of a tenant or *hoa`āina* residing in an *ahupua`a* was called a *kuleana* (Lucas 1995:61). The project area was located in the *ahupua`a* of Pūpūkea, which literally means “white shell” (Pukui *et al.* 1974:195).

TRADITIONAL SETTLEMENT PATTERN

Archaeological settlement pattern data suggests that initial colonization and occupation of the Hawaiian Islands first occurred on the windward shoreline areas of the main islands between A. D. 850 and 1100, with populations eventually settling in drier leeward areas during later periods (Kirch 2011). Although coastal settlement was dominant, Native Hawaiians began cultivating and living in the upland *kula* (plains) zones. Greater population expansion to inland areas began around the 14th century and continued through the 16th century. Large scale or intensive agriculture was implemented in association with habitation, religious, and ceremonial activities.

The Hawaiian economy was based on agricultural production and marine exploitation, as well as raising livestock and collecting wild plants and birds. Extended household groups settled in various *ahupua`a*. During the pre-Contact Period (pre-1778), there were primarily two types of agriculture, wetland and dry land, both of which were dependent upon geography and physiography. River valleys provided ideal conditions for wetland *kalo* (*Colocasia esculenta*) agriculture that incorporated pond fields and irrigation canals. Other cultigens, such as *kō* (sugar cane, *Saccharum officinarum*) and *mai`a* (banana, *Musa* sp.), were also grown and, where

appropriate, such crops as `uala (sweet potato, *Ipomoea batatas*) were cultivated. This was the typical agricultural pattern seen during traditional times on all the Hawaiian Islands (Kirch and Sahlins 1992, Vol. 1:5, 119; Kirch 1985).

The generally accepted paradigm of Hawaiian settlement is that the earliest settlements were located in the wet, windward regions. As population pressure increased or politics changed, populations began to branch out into leeward, less hospitable regions of Hawai`i, adapting their cultivation strategies as they moved into dryer climates (Cordy 2002).

MO`OLELO

According to ancient Hawaiian memories gathered and published in 19th century Hawaiian newspapers, Pele, the volcano goddess sent her sister, Hi`iaka, to Kaua`i to bring her love, Lohiau to Hawai`i Island (*Ka Leo O ka Lahui* 1893). While on O`ahu, she traveled with her companion Wahineoma`o, around the north side of the island. Along the way, she chanted the delights of the places she visited, praising their special qualities and beauty and in the vicinity of Pūpūkea, informed travelers of its many marine resources that reflected its value:

They continued to the plain of Kulima and watched the sea of Pupukea throwing its sprays upward. It swept over the leaves of the ilima, yellowing them, then Hiiaka chanted:

He kai kapi ike one
Ko Kalamaula i Pupukea
Ua hele a pala i ke kai
Ke oho o ka ilima
E hiki aku ai i Kapi
E iho aku ai i Piliamaama la
Aia e pili wale -----e
Aia la kelele ala
Aohe i ka welo-----e. [<http://nupepa.org> 2011a]

The sea sprays up over the sand,
The yellowing sea of Pupukea,
Yellowes the leaves of the ilima,
With its sprays,
This is the way to Kapi,
This the trail to Pilia`ama.
(last three lines not translated from the Hawaiian) [*Ka Leo O ka Lahui*
1893 in Sterling and Summers 1978:144]

At Pupukea they spied Piliaama fishing and as they watched Hiiaka called:

O Piliaaama kanaka lawaia o ka pali
Hee puewai o Waimea
Onohiki aku o Ihikoko
Lawaia hi-aku o Kaipahu la
He aha ua ia? [http://nupepa.org 2011b]

O Piliaama fisherman of the cliffs
Who surfs to the mouth of the stream of Ihukoko
Who catches aku fish
What fish are you catching now? [*Ka Leo O ka Lahui* 1893 in Sterling and Summers 1978:144]

He answered that he was catching some kala, moi, oio and aholé. She called again:

O Piliaaama o kanaka lawaia
Kane hiialo oe a Kapuewai
Laweia akua Kapapaiki la
He aha ua ia e? [http://nupepa.org 2011b]

O Piliaama, fisherman,
Beloved husband of Kapuewai,
Who fishes for aku at Kapapaiki,
What else do you catch?

He answered, “some uhu, opelu, manini, hinane and also some crabs. I do all kinds of fishing here.” [*Ka Leo O ka Lahui* 1893 in Sterling and Summers 1978:144]

McAllister (1933:146-147) recorded information from Hookala, born in 1846 and a resident of the area, concerning the many sites along the north coastal region. At the bottom of Pūpūkea Hill, near what is now the Catholic Church (previously a rock-crusher, quarry), was a rock commemorating Piliaama. Hookala said there was an impression of a footprint and a crab left in the boulder when Piliaama disappeared, while running from an *ali`i* woman who had become enamored with him (*ibid*:150).

Hookala informed McAllister about Kalua o Maua, a stone with special significance. It was located in the water, at the first inlet on the Kahuku side of Waimea Bay. This would place the site at what is presently called “Three Tables”, which is part of Pūpūkea Beach Park. According to Hookala, the rock represented a woman known for her fishing abilities. Her husband was unable to see her one night from the side of the hill as she fished the waters, so he

searched for her and found, "...her in the form of this stone swimming about in the water. It is said that wherever this stone is found there is fresh water in the ocean" (McAllister 1933:151).

Located approximately 3 miles west of Camp Pupukea, situated on Pūpūkea Hill, Pu`u o Mahuka, a *luakini* (human sacrifice) *heiau* (place of worship), overlooks Waimea Valley. Said to be the largest *heiau* on the island of O`ahu (Handy and Handy 1972: 464), the construction and consecration of a structure of such prominence could only have occurred at the behest of a paramount chief (Valeri 1985: 179, 234-235). Pu`u o Mahuka Heiau was first recorded by Thrum, but little was known of its actual origins. It was said to have been built by *menehune* and, "...the fierceness of its dedicatory fires warmed the hills of Kauai. This gives a clue to its type as of the severe pookanaka or human sacrifice class" (Thrum 1923:30).

In 1792, Pu`u o Mahuka Heiau may have been the recipient of the offering of crew member(s) from George Vancouver's supply ship, the *Daedalus*. It was before Kamehameha had possession of O`ahu, and Kahekili's warriors, the *pahupu*, were in charge of the "back country" (Kamakau 1961:163). Although Pu`u o Mahuka would seem the obvious choice of place to dispose of the remains, according to Kamakau, who stated he had met one of the men who did the killing, they were deposited elsewhere (*ibid*: 163, 164). He said: "The men were killed to get the guns..." and "the two men [there were three] who were killed were dragged along from Waimea to Waialua and from there to Mokuleia. . . (Kamakau 1961:164). Possibly, the third man was an offering at Pu`u o Mahuka. (At this time, Kahekili and Kamehameha were at war and guns were of the utmost importance.)

HISTORICAL BACKGROUND

After the tragic misunderstanding that resulted in Captain James Cook's death on Hawai'i Island, Captain Charles Clerke sailed the Resolution around the north side of O`ahu in search of water before leaving the islands for Kamchatka. On February 28, 1779, he sailed past Kahuku and into Waimea Bay and included the first recorded description of this area in his journals:

...the eastern shore of which was far the most beautiful country we have as yet seen among these Isles, here was a fie expanse of Low Land bounteously cloath'd with Verdure, on which were situate many large Villages and extensive plantations; at the Water side it terminated in a fine sloping, sandy Beach...On landing I was reciev'd with every token of respect and friendship by a great number of the Natives who were collected upon the occasion...[Beaglehole 1967 Vol. III Part one:572].

James King, also on the HMS Resolution, stated:

The appearance of so fine a river running thro: a deep Valley made us drop Anchor...I walkd a little farther & observed it to be the produce of 2 branches, or small streams or rivers, that came down 2 Valleys...the bank of this river as well as the face of this NW part of Wo'ahoo was as beautiful as any Island we have seen & appear'd very well Cultivated & Popular (populous); they told us here that most of the Men were gone to Morotoi (Moloka`i) to fight Tahyteree (Kahekili) ...[*ibid.*:584, 585].

Pūpūkea hill is located on the North Shore of O`ahu Island in Pūpūkea Ahupua`a, Ko`olauloa District. The hill was associated with the district and *ahupua`a* boundary, as well as the significant Waimea Ahupua`a to the west, that was given by Kamehameha (*āina pana la`au*; conquered land given by Kamehameha) to his *kahuna nui* (high priest), Hewa Hewa, after 1895, marking his triumph over O`ahu troops (Kamakau 1961). Kamakau (1961:230, 231) stated:

When Oahu came under the rule of Kama-pua`a, he gave the land containing the word *wai* to the kahuna Lono-a-wohi; but later the land was redistributed by Kahiki`ula and the older brothers of Kama-pua`a because the kahunas had a monopoly of the well-watered lands, and the kahuna class were given the lands of Waimea, Pupukea, Waiahole, and Hakipu`u in perpetuity, and these were held by them until the days of Ka-ahana. Ka-hekili and Ka-lani-u-pule confirmed this gift to the kahunas, and so did Kamehameha.

THE MĀHELE

In the 1840s, traditional land tenure shifted drastically with the introduction of private land ownership based on western law. While it is a complex issue, many scholars believe that in order to protect Hawaiian sovereignty from foreign powers, Kauikeaouli (Kamehameha III) was forced to establish laws changing the traditional Hawaiian economy to that of a market economy (Kame`eleihiwa 1992:169-70, 176; Kelly 1983:45, 1998:4; Daws 1968:111; Kuykendall 1938 Vol. I:145). The Māhele of 1848 divided Hawaiian lands between the king, the chiefs, the government, and began the process of private ownership of lands. The subsequently awarded parcels were called Land Commission Awards (LCAs).

Once lands were thus made available and private ownership was instituted, the *maka`āinana* (commoners), if they had been made aware of the procedures, were able to claim the plots on which they had been cultivating and living. These claims did not include any previously cultivated but presently fallow land, `okipū (on O`ahu only), stream fisheries, or many other resources necessary for traditional survival (Kelly 1983; Kame`eleihiwa 1992:295; Kirch and Sahlins 1992). If occupation could be established through the testimony of two witnesses,

the petitioners were awarded the claimed LCA and issued a Royal Patent after which they could take possession of the property (Chinen 1961:16).

Kauikeaouli (Kamehameha III) was awarded Pūpūkea Ahupua`a. However, his listed awards on O`ahu include only Kona, Ko`olau Poko, and `Ewa, suggesting he gave up Pūpūkea to the government (Waihona `Aina database 2013, Chinen 1961: 26). This is substantiated by the Boundary Commission Documents, specifically Boundary Commission Document (BCId): 14985, which indicated that Pūpūkea Ahupua`a was Crown Lands. Thirty-one *kuleana* claims were recorded for the *ahupua`a*, nine of which were un-awarded. Eighteen of the awarded LCAs were located between Ka Awa ika ala and Waihuena Gulches and extended from the *mauka* cliffs to the shore. This area received water from the mountains through the two gulches, creating excellent conditions for agriculture. This section of the coast is now residential/agriculture and the home of Sunset Elementary School. Land Court Award 08165, awarded to Hiipei, was located below Pu`u o Mahuka Heiau and the Pūpūkea cliffs, and was claimed as a house site. No LCAs could be identified in or near the project area. However, archival research indicated that Land Grant 5172, comprised of 109.7 acres immediately adjacent and west of the project area, was purchased by H.M. Stalnaker for \$1,371, on May 2, 1909.

In the second half of the 19th century, sugar cane planting became a lucrative endeavor. Its cultivation quickly spread throughout the islands, as more and more large land sections became available for lease and purchase. Plantations located on the more isolated North Shore benefited from a railway system built by Benjamin Dillingham in 1889 (Dorrance and Morgan 2000:44). The O.R. & L. Railroad eventually extended from Honolulu to Kahuku, stopping at the various sugar plantations along the way. The Waimea Railroad Station, known as Maunawai Station, was located at the junction of the government road and the Pūpūkea Road.

In the early 1900s, farming in upland Pūpūkea became profitable now that there was a train to transport crops to the city. Large tracts of land were sold by the government and Frederick Haley, Sr. planted 400 acres in avocado trees, eventually growing 11,000 trees of many different varieties (Clark 1977: 123). Three Tables Cove, previously known for the Kalua o Maua stone, was called Avocado Beach, as mule-powered wagons full of ripe avocados, slowly descended the steep, dirt road along the cliffs to the Maunawai train stop at the bottom (*ibid*:124). After Haley sold most of his farm to Libby, McNeil, and Libby, pineapple was cultivated in the Pūpūkea highlands. These were also taken by mule-wagons down the cliffs, known by then as “Jackass Hill,” to the Maunawai train station (*ibid*).

A search of Executive Orders on the Internet produced Executive Order 5175, which was signed by President Hoover on August 21, 1929. Executive Order 5175 amended Executive Order 4679. Apparently, the earlier Executive Order 4679, signed by President Calvin Coolidge on June 29, 1927, had set aside lands in the Republic of Hawaii, including lands in Pūpūkea, as U.S. Military Reservations. As these were private lands which had been ceded to the U.S., land surveys were conducted to set the metes and bounds of these properties. Subsequently, the Pūpūkea land survey was found to be erroneous and President Hoover signed into effect Executive Order 5175 in order to re-describe the boundaries of the Pupukea Military Reservation. On December 14, 1929, President Hoover signed into effect Executive Order 5240 which corrected the previous land surveyed boundaries (http://en.wikisource.org/wiki/Executive_Order_5240).

On October 14, 1953, President Dwight D. Eisenhower signed into effect Executive Order 10496 which pertained to public lands which had been ceded to and transferred to the U.S. by the Republic of Hawaii and restored the possession, use, and control of these lands to the Territory of Hawaii. This included a small portion of land in the Pupukea Military Reservation (<http://www.presidency.ucsb.edu/ws/?pid=60574>). Copies of Executive Orders 5175, 5240, and 10496 are presented in Appendix B.

By 1919, land along the beach, named the Pūpūkea-Paumalū Beach Tract, was sold for residential property. These houses were mostly vacation homes for those who lived in Honolulu. Pūpūkea Road was paved by 1943, but the highlands remained in pineapple cultivation until the 1950s and 60s when plantation agriculture began to decline in the area. Lots were sold for residential purposes and the community expanded throughout and into the 1970s. The exceptional waves along the North Shore, attracted surfers from all over the world, and its popularity gave rise to vacation rentals for, not only the surfers, but the tourists who came to see them and the monstrous waves. Pūpūkea remains residential, with a few small commercial businesses, and some agriculture in the highlands.

PREVIOUS ARCHAEOLOGY

In the 1930s, J. Gilbert McAllister (1933) investigated and recorded archaeological sites on the island of O`ahu. Pu`u o Mahuka Heiau, State Site 50-80-01-249, was described, mapped, and photographed. It was included in the National Register of Historic Places in 1962 and as a National Historic Landmark in 1966. Much later, Smith and Yent (1991) conducted additional mapping, as well as subsurface testing at Pu`u o Mahuka Heiau. Intact cultural deposits were

noted and two paving episodes for the Pu`u o Mahuka Heiau were documented. Based on radiocarbon analysis, the latter construction episode was interpreted as occurring in the late 1700s to early 1800s (Stroat *et al.* 2010).

McAllister identified Site 251, rock shelters located in the cliff between Pu`u o Mahuka Heiau and Hiipei's LCA 08165 (McAllister 1933: 150. McAllister recorded:

Rock shelters on the face of the cliff upon which stands Puu o Mahuka heiau (Site 249) have been used as burial caves. Only one of those visited now contains skeletal material. It appears to have been disturbed. The shelter is about 10 feet deep and 3 feet high and wide. It looks as though it had once been walled up. It contained a portion of a wooden platter, badly damaged, which was slightly more than 1 foot wide and probably 3 feet or more long. At one end is a suggestion of ornamentation. Here were also three pointed saplings. The longest is 6.1 feet in length, 1 inch in diameter, and has one end artificially pointed. Though it is a rough sapling, it may represent a spear. Another is 4.3 feet long with one end pointed. The smallest is 2.2 feet long and appears to be artificially shaped. It is badly decayed. All appear to be of great age, and as the site is dry the material may have been preserved for a long time [*ibid*].

Denison (1979) conducted an Archaeological Reconnaissance of property across from Pupukea Beach Park. During the survey, an historic stone-walled enclosure (State Site 50-80-01-3364) was identified in the area *mauka* (east) of the Pūpūkea Beach Park, below the Pūpūkea cliffs. This study was located in an area was comprised of the same environmental characteristics as other studies which have identified rockshelter burials along the gulches and cliffs from Pūpūkea to Sunset Beach Neighborhood Park, including Carson (2000), Mayberry and Haun (1988), Haun and Henry (2001).

During the Kamehameha Highway/Waimea Bay Emergency Rockfall Mitigation Project, six rock shelters along the mountain face, below the Pu`u o Mahuka Heiau were identified (McIntosh and Cleghorn 2000). All six of the caves contained cultural material, four of the caves contained human skeletal remains, and were believed to have been used in both the pre-Contact and the Historic Periods (State Site 50-80-01-5847, Features 1-6).

Cultural Surveys Hawai'i conducted an Archaeological Inventory Survey for the Pūpūkea Road Rockfall Mitigation Project (Tulchin and Hammatt 2009). A 100% pedestrian inspection identified five historic properties, consisting of 12 features. State Site 50-80-01-7034 is the present Pūpūkea Road; State Site 50-80-01-7035 is the old Pūpūkea Road that extended north from the present hairpin turn, along the edge of the cliff; State Site 50-80-01-7036 is a trail

segment extending *mauka/makai*; State Site 50-80-01-7037 consists of two modified rock overhangs; State Site 50-80-01-7038 is a cluster of six rock overhangs and one lava tube. State Site -50-80-01-7038, Feature A, consisted of a human burial; Features B through G, include five burial caves and one temporary habitation shelter.

Scientific Consultant Services, Inc. conducted Archaeological Monitoring for the Pūpūkea Road Rockfall Mitigation Project, Phase I, Pūpūkea Ahupua`a, Ko`olauloa District, Island of O`ahu [TMK: (1) 5-9-005 and 011] (McGerty and Spear 2011). However, no new archaeological sites were identified during the Archaeological Monitoring program.

EXPECTED FINDINGS WITHIN THE SURVEY AREA

According to Handy and Handy (1972: 464), breadfruit trees indicated the locations of old house sites on the ridge above Waimea Valley, suggesting additional house sites may be present. Handy and Handy (*ibid*), also state that "[t]his area had an upland hinterland where many semi-wild and wild food plants must have flourished...[and]... many localities where *wauke* and *olona* were abundant." Based on Handy and Handy's (*ibid*) ethnographic data, the findings of the previous archaeological work conducted in the area, and on archaeological investigations in similar environments, expected findings would include trails; trail markers; temporary, and possibly permanent, habitation structures.

FIELD METHODS

FIELD METHODOLOGY

Multiple field tasks were completed during the current Archaeological Inventory Survey. A pedestrian survey was conducted from February 12 through February 18, 2013, by SCS archaeologists Guerin Tome, B.A., and Stephanie Medrano, B.A., under the direction of Robert L. Spear, Ph.D., Principal Investigator. Transect spacing of ten to fifteen meters (32.8 to 49.2 feet) intervals was employed as ground visibility was moderate. Once surface archaeological features were identified, they were marked with biodegradable flagging tape. During the pedestrian survey, results were compiled on standard graphing paper as well as with digital photography. Based on spatial context (*i.e.*, proximity) surface architectural features were consolidated into sites. Each site was given an SCS temporary site designation (e.g., TS-1) and plotted on a United States Geological Survey (USGS) map with a handheld Garmin GPSMap60CSx global positioning system (GPS) unit. The datum and coordinate system used for the GPS unit was NAD83 and UTM (Universal Transverse Mercator). The GPS data for each site is presented in Table 1. True north compass orientation was also employed. All

Table 1: GPS Coordinates for State Sites 50-80-01-7460 through 50-80-01-7474

State Site	Feature	Easting	Northing	Accuracy
50-80-01-7460	1	0600655	2394195	±3
50-80-01-7460	2	0600670	2394134	±2
50-80-01-7460	3	0600648	2394148	±2
50-80-01-7461	1	0600711	2394159	±3
50-80-01-7462	1	0600770	2393900	±3
50-80-01-7463	1	0600685	2393993	±3
50-80-01-7464	1	0600749	2393804	±3
50-80-01-7464	2	0600275	2393823	±3
50-80-01-7465	1	0600768	2393773	±2
50-80-01-7466	1	0600789	2393669	±4
50-80-01-7466	2	0600777	2393673	±4
50-80-01-7466	3	0600783	2393677	±4
50-80-01-7467	1	0600716	2393713	±3
50-80-01-7467	2	0600719	2393725	±4
50-80-01-7468	1	0600635	2393746	±4
50-80-01-7468	2	0600637	2393750	±3
50-80-01-7468	3	0600639	2393751	±4
50-80-01-7468	4	0600647	2393752	±3
50-80-01-7469	1	0600583	2393756	±3
50-80-01-7470	1	0600528	2393691	±4
50-80-01-7470	2	0600531	2393701	±3
50-80-01-7470	3	0600500	2393701	±4
50-80-01-7471	1	0600472	239632	±3
50-80-01-7471	2	0600458	2393619	±3
50-80-01-7471	3	0600458	2393618	±4
50-80-01-7471	4	0600472	2393621	±4
50-80-01-7472	1	0600439	2393634	±3
50-80-01-7472	2	0600441	2393616	±4
50-80-01-7473	1	0600396	2393608	±3
50-80-01-7473	2	0600393	2393614	±4
50-80-01-7474	1	0600629	2394201	±2

measurements were recorded in metric units. Individual sites were also documented in plan view. Site boundaries were primarily determined by spatial distance between surface feature clusters.

Limited excavation was conducted during the current Archaeological Inventory Survey, in the form of four manually excavated shovel probes, in order to identify human alteration, archaeological features, and associated artifacts in subsurface contexts. All excavated materials were visually inspected for the presence of cultural materials. Equipment utilized to perform these excavations included shovel, trowel, pick ax, whisk broom, and metric tape measure. Soil matrices were recorded using United States Department of Agriculture (USDA) Munsell (2000) soil color descriptions.

LABORATORY METHODOLOGY

All field notes and digital photographs were curated at the SCS laboratory, Honolulu. Representative plan view sketches showing location and morphology of identified sites/features/deposits were illustrated. Artifacts were scanned or photographed and classified for qualitative analysis. All metric measurements and weights were also recorded for quantitative analysis. All data were clearly recorded on standard laboratory forms that included numbers and weights (as appropriate) of each constituent category. No definitive archaeological food midden samples were observed within the excavations, therefore none were available for analysis. Artifact analysis data is presented in Appendix C and selected artifact photographs are presented in Appendix D.

ARCHAEOLOGICAL INVENTORY SURVEY RESULTS

The current Archaeological Inventory Survey was conducted on approximately 65-acres of land at the existing Boy Scouts of America, Camp Pupukea, Pūpūkea Ahupua`a, Ko`olauloa District, O`ahu Island, Hawai`i [TMK: (1) 5-9-005:002 and 077]. The 64.798 acre project area is situated on two adjacent parcels; TMK: (1) 5-9-005:002 is comprised of 56.962 acres and TMK: (1) 5-9-005:077 consists of 7.836 acres. Homestead Road bisects the two parcels and the area of Homestead Road between the two parcels was included as part of this survey.

During the survey fifteen archaeological sites (State Site 50-80-01-7460 through 50-80-01-7474), comprised of thirty features, were newly identified (Figure 4 and Figure 5). Based on feature type, construction methods, and construction materials, State Sites 50-80-01-7460 through 50-80-01-7474 were interpreted associated with the U.S. Army Fleet Defense. Based on a Walter E. Wright (1904) map, State Site 50-80-01-7474 was also interpreted as a historic road associated with the development of Pupukea-Paumalu Homesteads. A total of twenty-four artifacts were recovered from the ground surface during the survey from the ground surface. Based on artifact type, material, and context, all artifacts were interpreted as historic artifacts and support the interpretation of the sites' association with the U.S. Army Fleet Defense system (Appendices A and B).

These findings and the results of the limited subsurface testing and artifact analysis are discussed in detail below.

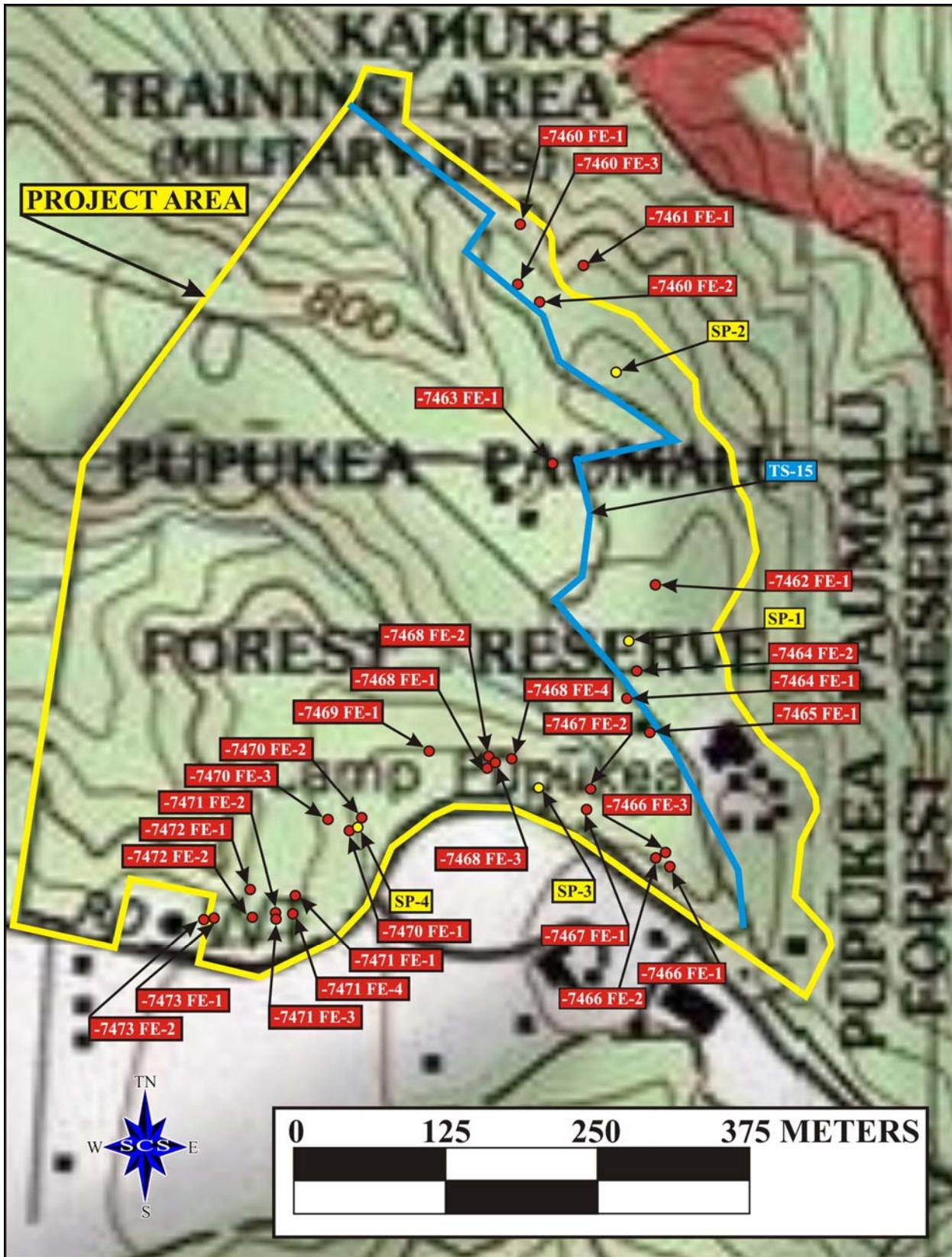


Figure 4: Portion of USGS Quadrangle (Waimea 1998) Map Showing Site Locations.

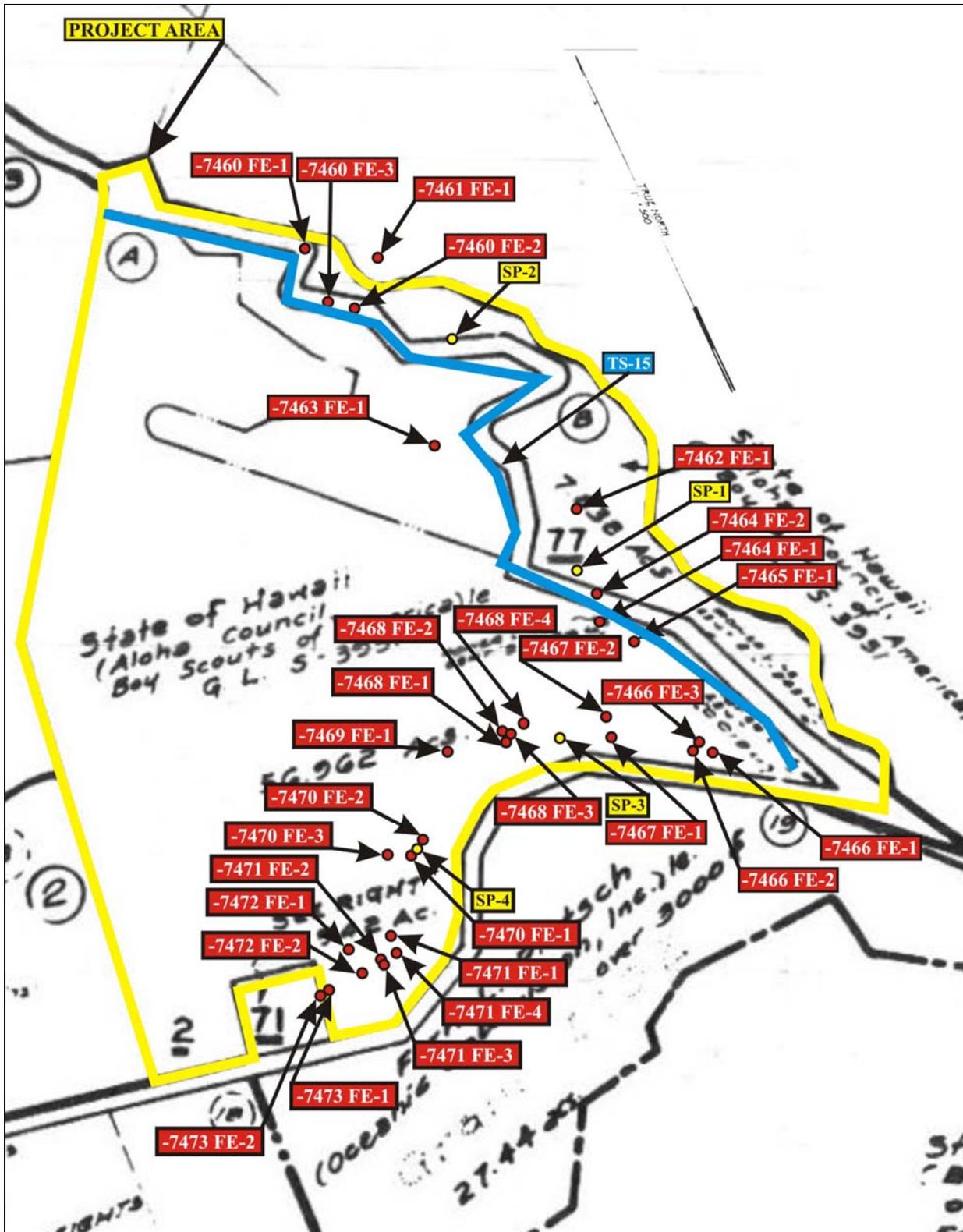


Figure 5: Portion of Tax Map Key ([TMK: (1) 5-9-005:002 and 077; 5-9-005:002]) Depicting the Project Area and Locations of Newly Documented Resources.

SITE DESCRIPTIONS

STATE SITE 50-80-01-7460

State Site 50-80-01-7460 was comprised of three features (Feature 1, a concrete bunker, Feature 2, a concrete foundation remnant, and Feature 3, a concrete brick wall remnant). Overall, State Site 50-80-01-7460 measured 47.0 meters (m) long by 14.0 m wide and oriented in a northeast/southwest (054/234 degrees, true) direction. Based on feature type, construction materials, and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, State Site 50-80-01-7460 was interpreted as associated an observation post with the U.S. Army.

Although State Site 50-80-01-7460 exhibited the effects of weathering, it remains in good condition. State Site 50-80-01-7460 was evaluated for significance, as outlined in Hawai'i Administrative Rules §13-275-6, and found to be significant under Criterion D, for information content, only.

State Site 50-80-01-7460, Feature 1

State Site 50-80-01-7460, Feature 1 consisted of a partially subterranean, concrete bunker built into the side of an approximate 50 degree southwest to northeast downslope. Soil immediately upslope of the bunkers position has covered the majority of the bunker's top surface. The bunker's long axis was oriented northwest/southeast (054/234 degrees, true) direction and measured 3.80 m long by 3.75 m wide with varying above ground surface heights from 9 to 50 centimeters (cm) (Figure 6 and Figure 7). Feature 1 exhibited two horizontal slits. The slit on the east face of the bunker measured 1.75 m long with varying widths between 0.25 to 0.35 m. The slit on the south face of the bunker measured 2.0 m long by 0.25 m wide. Based on shape (*i.e.*, long, narrow, rectangular), the slit was interpreted to be used for observation related to fire (artillery) control. The feature's horizontal interior was an irregular, five-sided polygonal shape with an ingress/egress that consisted of a vertical opening constructed of concrete and milled wood located on the west side of the feature. Currently, an earthen ditch leads to the bunker's ingress/egress; this ditch may have been a tunnel prior to its current state. No door was observed attached to the bunker's ingress/egress and collapse of soil surrounding the ingress/egress had fallen into the pathway of the vertical opening. The bunker's interior ground surface displayed soil and decomposing vegetation. No cultural material was observed on around or in the feature. Although State Site 50-80-01-7460, Feature 1 exhibited the effects of weathering and minimal compromised structural integrity, the feature remains in good



Figure 6: Photographic Overview State Site 50-890-01-7460, Feature 1 Showing Observation Slits. View to Southwest.

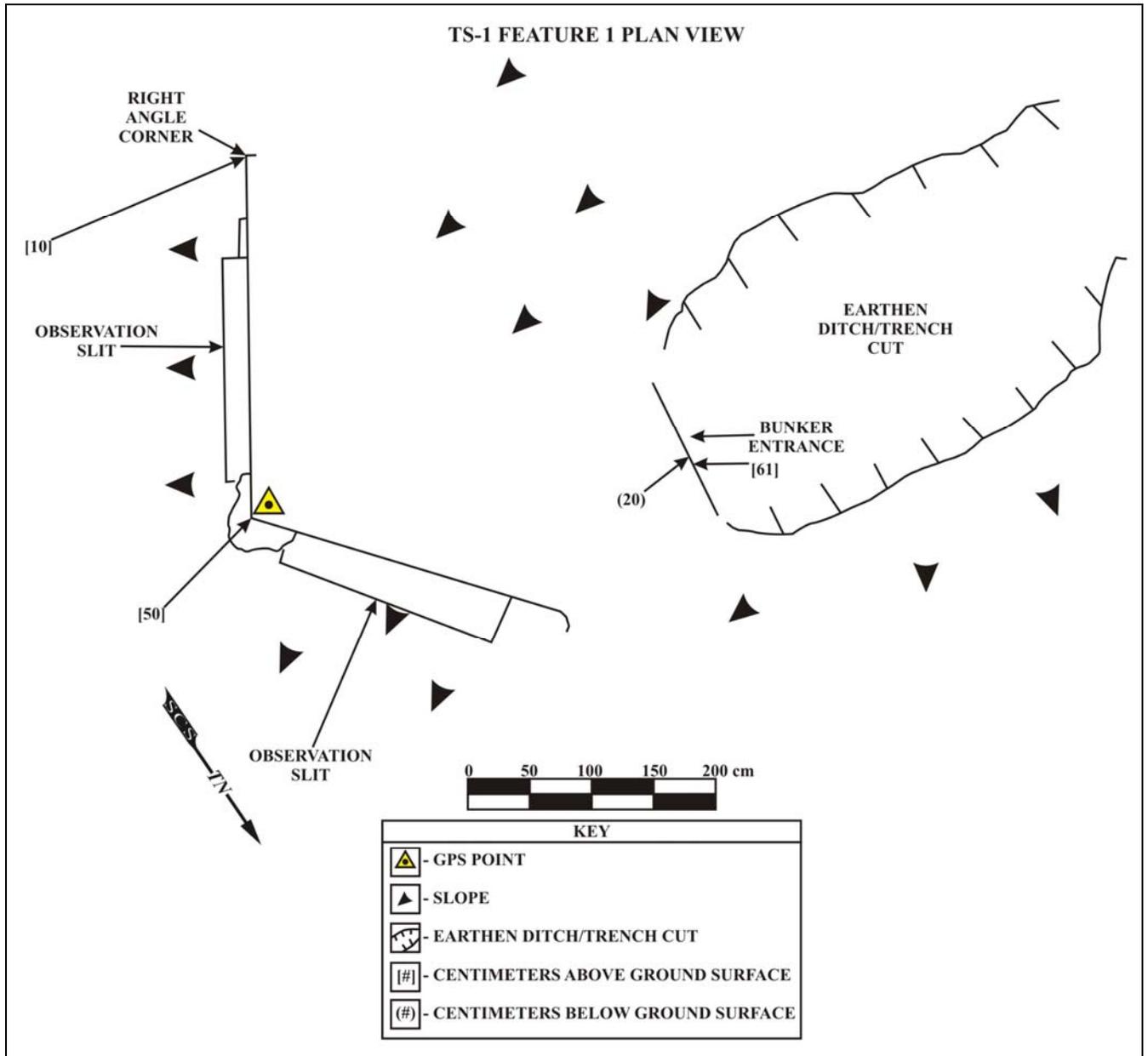


Figure 7: Plan View Drawing of State Site 50-80-01-7460, Feature 1.

condition. Feature 1 is positioned on the southern rim of Paumalū Gulch overlooking the Pacific Ocean in the `Ehukai Beach area. Based on feature type, construction materials, feature architectural attributes, and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, Feature 1 was interpreted as associated with the U.S. Army.

State Site 50-80-01-7460, Feature 2

State Site 50-80-01-7460, Feature 2 consisted of a rectangular, concrete foundation remnant measuring 1.28 m long by 0.60 m wide with varying above ground surface heights ranging from 0 to 0.15 m (Figure 8 and Figure 9). The feature's interior horizontal dimensions were approximately 1.15 m long by 0.45 m. Feature 2's long axis was oriented in a northeast/southwest direction (030/210 degrees, true). No cultural material was observed with the feature. Although State Site 50-80-01-7460, Feature 2 exhibited the effects of weathering, it remains in fair condition. Based on feature type, construction materials, small horizontal size, proximity to the Feature 1 concrete bunker, and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, Feature 2 was interpreted as a possible foundation remnant associated with the U.S. Army. However, as Feature 2 was a remnant, feature function could not be definitively ascertained.

State Site 50-80-01-7460, Feature 3

State Site 50-80-01-7460, Feature 3 consisted of an L-shaped wall remnant with the longer leg oriented on a northeast/southwest (050/230 degrees, true) direction (Figure 10 and Figure 11). The feature's long axis, constructed of a single alignment of abutting refractory ceramic bricks, which measured 1.18 m long by 0.12 m wide by a maximum of 0.05 m above the ground surface. The short axis, constructed of hollow tile brick with cement filler measured 0.80 m long by 0.20 m wide with varying above ground surface heights from 0.06 to 0.09 m high. No cultural material was observed with the feature. State Site 50-80-01-7460, Feature 3 exhibited the effects of weathering and was in poor condition. Based on feature type, construction materials, small horizontal size, proximity to the Feature 1 concrete bunker, and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, Feature 3 was interpreted as a structural remnant associated with the U.S. Army. However, as Feature 3 was a remnant, feature function could not be definitely determined.



Figure 8: Photographic Overview State Site 50-890-01-7460, Feature 2. View to Southwest.

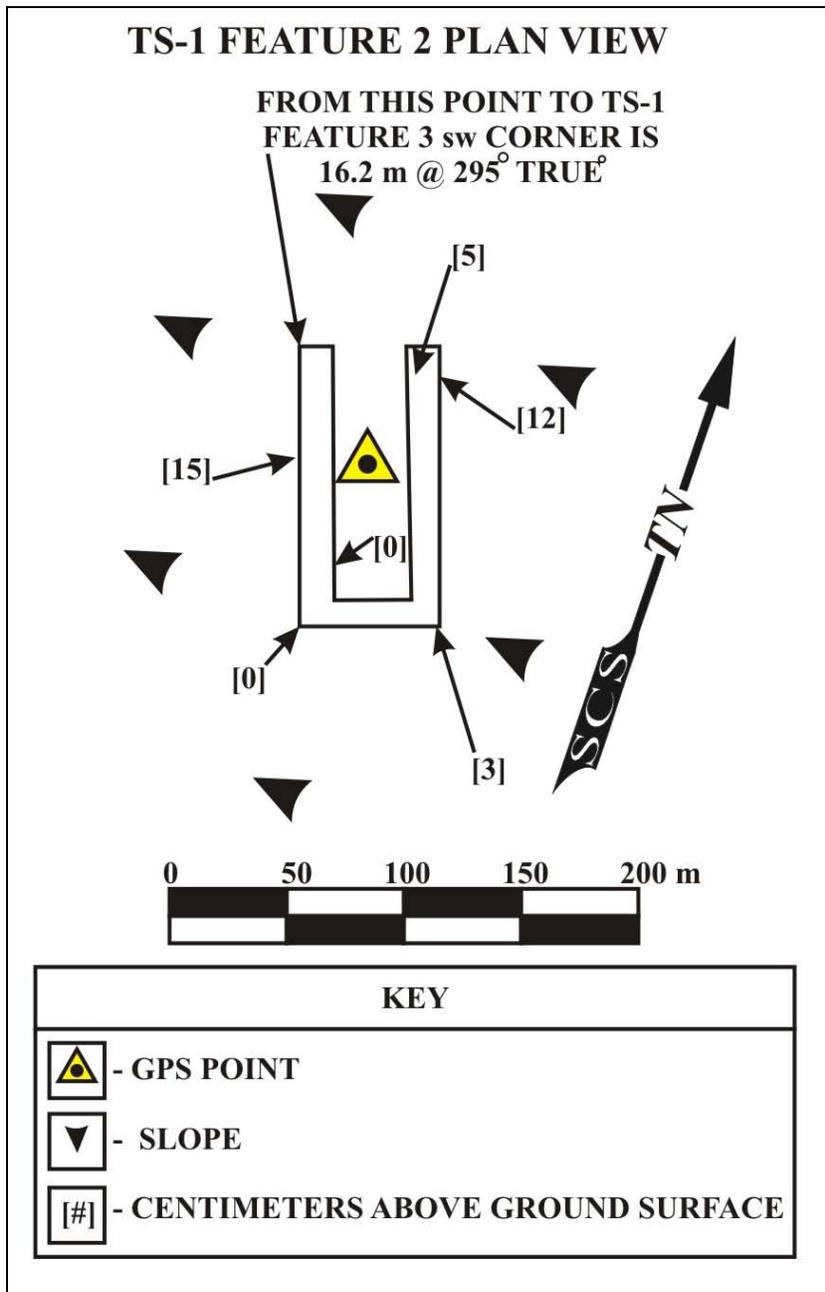


Figure 9: Plan View Drawing of State Site 50-80-01-7460, Feature 2.



Figure 10: Photographic Overview State Site 50-890-01-7460, Feature 3. View to Northeast.

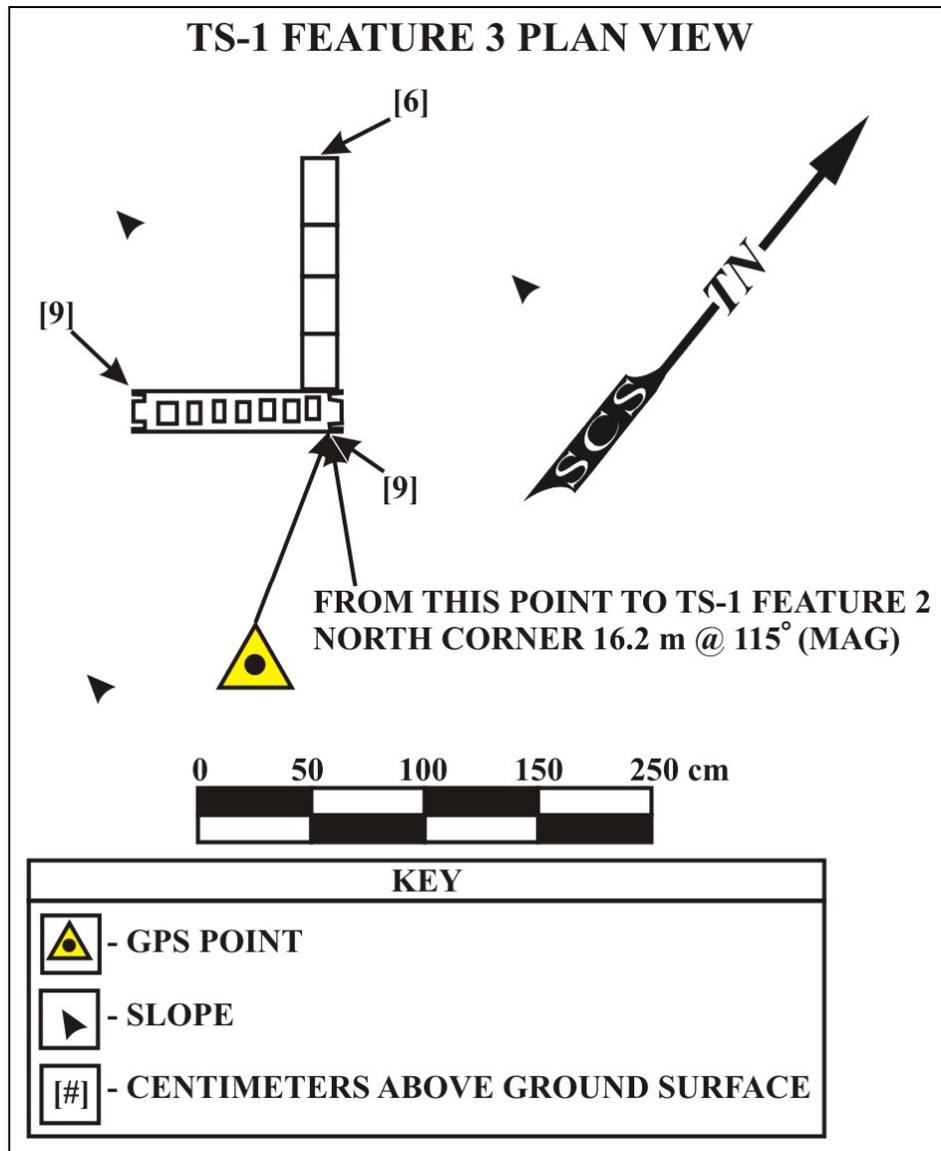


Figure 11: Plan View Drawing of State Site 50-80-01-7460, Feature 3.

STATE SITE 50-80-01-7461

State Site 50-80-01-7461 consisted of a concrete bunker that measured approximately 3.4 m long by 3.4 m wide with above ground surface heights ranging from 0 to 0.75 m. The concrete bunker was constructed into an approximate 20 degree northeast to southwest downslope (Figure 12 and Figure 13). State Site 50-80-01-7461's long axis was oriented in a southeast/northwest (170/350 degrees, true) direction. State Site 50-80-01-7461 exhibited two horizontal slits. The slit on the northeast face of the feature measured 1.75 m long with a varying width between 0.10 to 0.25 m. The slit on the northwest side measured 1.75 m long by 0.25 m wide. The feature's horizontal interior was an irregular, four-sided polygonal shape with two ingresses/egresses that consisted of vertical openings constructed of concrete located on the south and southwest sides of the feature. Currently, two skylights located a few meters south of the southern ingress/egress suggested that the pathway leading to the south ingress/egress may have previously been an earthen tunnel prior to its current state. No doors were observed attached to either of the bunker's ingress/egress loci and collapse of soil surrounding both ingresses/egresses had fallen into the pathway of the vertical openings. The bunker's interior ground surface displayed soil and decomposing vegetation. No cultural material was observed on around or in the feature. Although State Site 50-80-01-7461 exhibited minimal effects of weathering, the feature remains in good condition. Feature 1 is positioned on the southern rim of Paumalū Gulch overlooking the Pacific Ocean in the `Ehukai Beach area. Based on feature type, construction materials, feature architectural attributes, , and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, State Site 50-80-01-7461 was interpreted as associated with the U.S. Army.

State Site 50-80-01-7461 was located a few meters outside the current project area boundary (see Figure 4 and Figure 5). However, based on close proximity to the project area boundary, State Site 50-80-01-7461 was included in the Archaeological Inventory Survey. Although Site 50-80-01-7461 exhibited the effects of weathering and soil erosion, the feature remains in good condition. State Site 50-80-01-7461 was evaluated for significance, as outlined in Hawai'i Administrative Rules §13-275-6, and found to be significant under Criterion D, for information content, only.



Figure 12: Photographic Overview State Site 50-890-01-7461 Showing Entrance. View to Northeast.

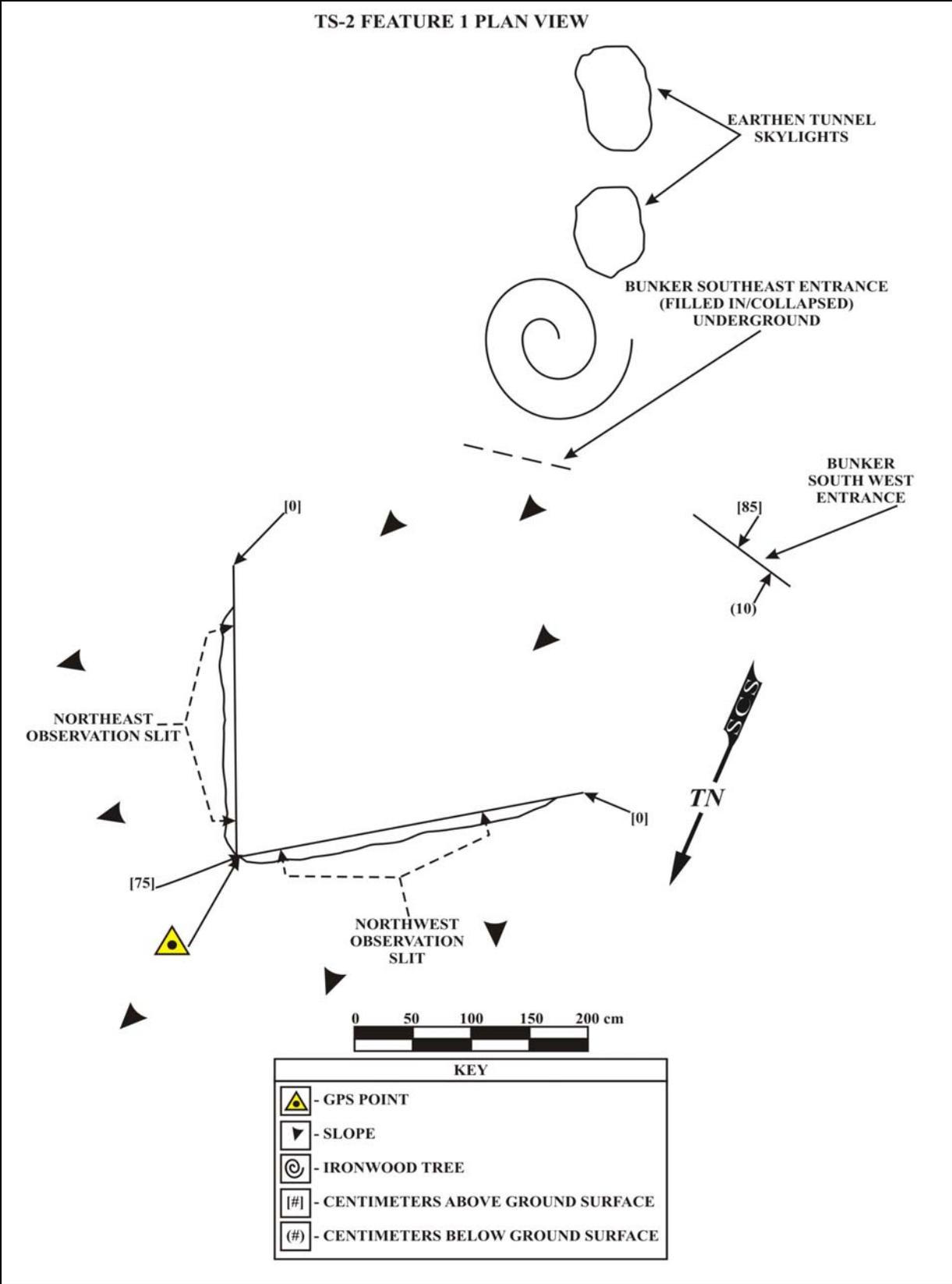


Figure 13: Plan View Drawing of State Site 50-80-01-7461.

STATE SITE 50-80-01-7462

State Site 50-80-01-7462 consisted of an L-shaped concrete remnant with its long axis oriented in a northwest/southeast (022/202 degrees, true) direction. The long leg of State Site 50-80-01-7462 measured 0.50 m long by 0.10 cm wide while the short leg measured 0.40 m long by 0.10 m wide with above ground surface heights were ranging between 0 to 0.01 m (Figure 14 and Figure 15). The foundation remnant exhibited the effects of weathering and was in poor condition. Green nylon rope (i.e., commonly referred to as "parachute cord") was observed partially buried in the soil located near the interior bend of the feature. Based on feature type, construction materials, , and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, State Site 50-80-01-7462 was interpreted as a possible foundation remnant associated with the U.S. Army. However, as State Site 50-80-01-7462 was a remnant feature, function could not be definitively determined. State Site 50-80-01-7462 was evaluated for significance, as outlined in Hawai'i Administrative Rules §13-275-6, and found to be significant under Criterion D, for information content, only.

STATE SITE 50-80-01-7463

State Site 50-80-04-7463 consisted of an historic artifact scatter oriented along a southeast/northwest (130/310 degrees, true) axis with horizontal dimensions of 30.0 m long by 11.0 m wide (Figure 16 through Figure 18). State Site 50-80-04-7463 was exposed in a southwest facing road-cut situated on a 30 to 60 degree slope.

Historic artifacts recovered from State Site 50-80-01-7463 included multiple porcelain jug sherds which fit together; one knob and tube porcelain electrical insulator, which was manufactured from the 1880 to the 1930s; one possible electrical insulator sherd; one possible subsurface utility stoneware pipe sherd; bottle glass base sherd utilized between 1929 and 1954; a complete clear glass bottle with a bottle manufacturing date of 1943; milk glass jar rim sherd; milk glass vessel body sherd; bottle glass base sherd with a bottle manufacturing date of 1943; live, brass 0.45-caliber pistol cartridge with bullet with cartridge manufacture date of 1941; brass 5-round clip stripper clip; live, brass 0.30-caliber rifle cartridge with bullet with cartridge manufacture date of 1918; ferrous metal nail; ferrous metal flat can; ferrous metal bottle cap; ferrous metal can (possible oil can); and a ferrous metal safety pin (see Appendices A and B).

In addition, four stratigraphic layers were exposed in the road cut that showed where State Site 50-80-04-7463 stratigraphically terminated (see Figure 16). The stratigraphic layers are described below. State Site 50-80-01-7463 exhibited the effects of soil erosion and was in



Figure 14: Photographic Oblique Plan View of State Site 50-80-01-7462. View to Northwest.

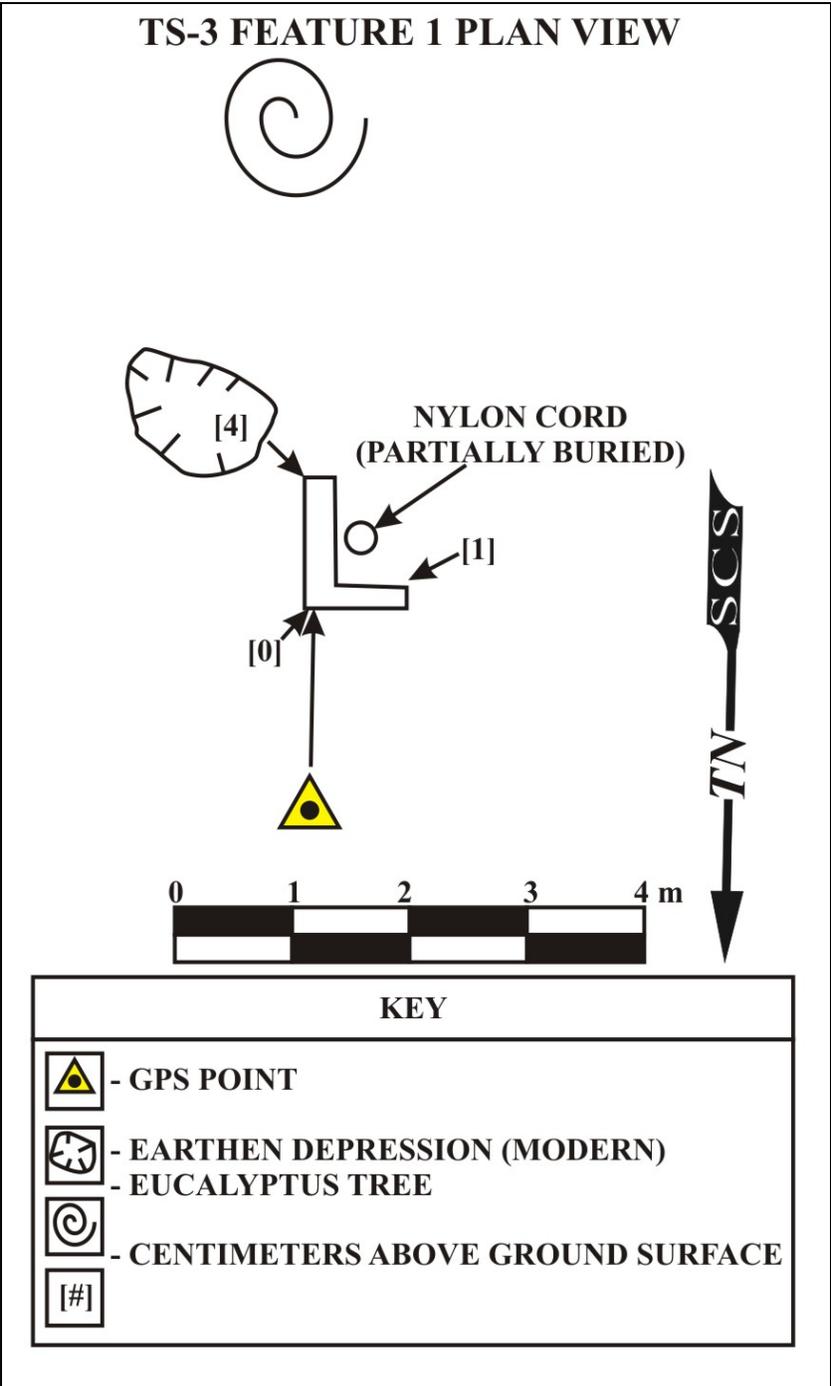


Figure 15: Plan View Drawing of State Site 50-80-01-7462.



Figure 16: Photographic View of State Site 50-80-01-7463 Exposed in Southwest Facing Roadcut. View to Northeast.

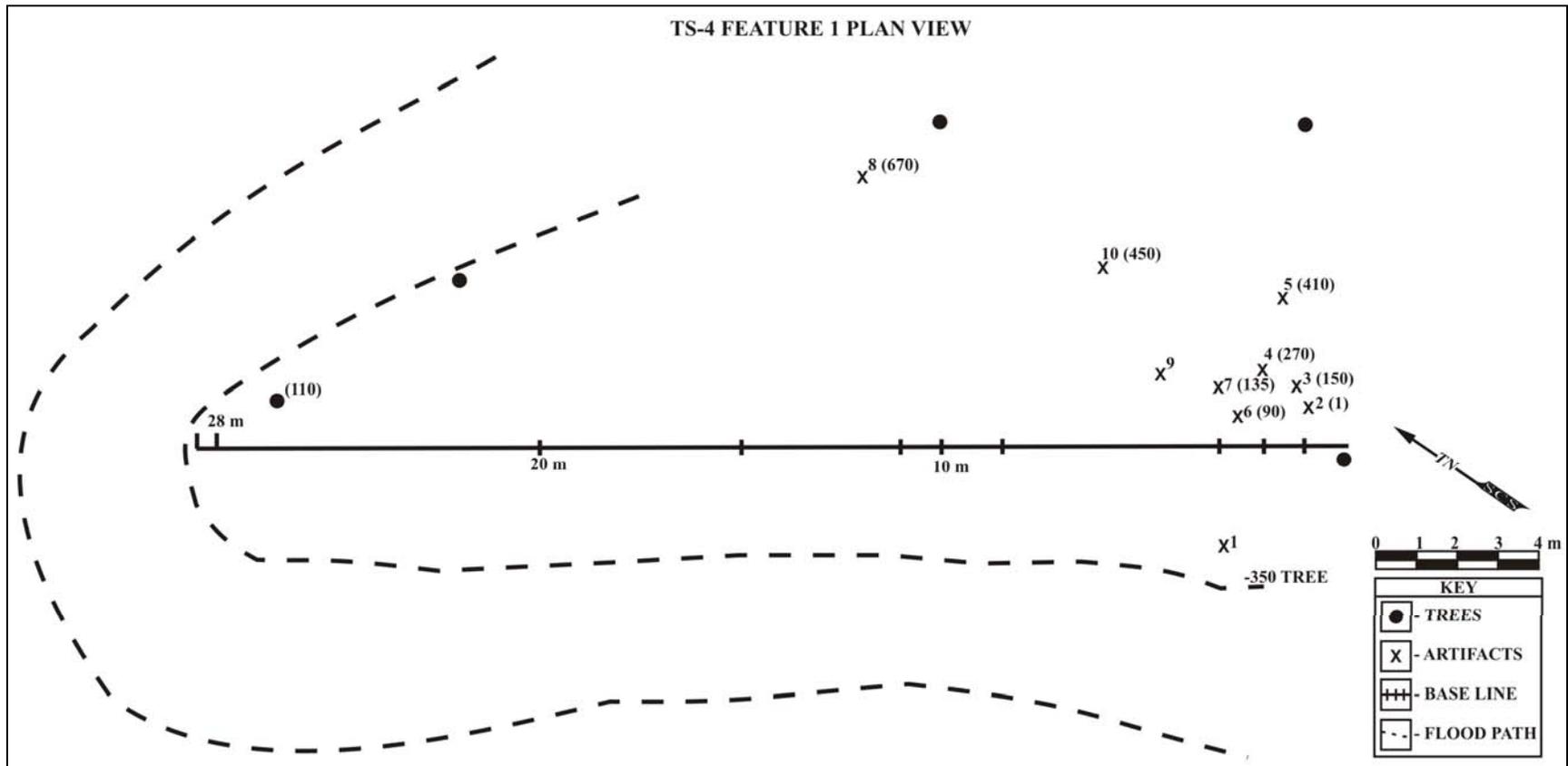


Figure 17: State Site 50-80-01-7463 Roadcut Plan View Drawing. Southwest Facing.



Figure 18: Photographic Close-up of State Site 50-80-01-7463 Showing 5-Round Stripper Clip and Live .30-Caliber Round. View to Northeast.

fair condition. Based on feature type, artifact types present, , and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, State Site 50-80-01-7463 was interpreted as a refuse dump associated with the U.S. Army. State Site 50-80-01-7463 was evaluated for significance, as outlined in Hawai'i Administrative Rules §13-275-6, and found to be significant under Criterion D, for information content, only.

SITE STRATIGRAPHY

Layer I

Layer I (0-110 cmbs) consisted semi-compact dark reddish brown (2.5YR 3/3, dry) loamy clayey silt with vertical roots. World War II Era artifacts (one 5-round stripper clip; one live 0.30-caliber rifle round; one steel wire nail; one metal safety tin; one steel sardine can; one steel bottle cap; one steel can; non-diagnostic steel fragments; amber bottle glass body sherd, non-diagnostic; limestone pebbles; and 1/16-inch wire mesh) were observed in Layer I. As artifacts are dispersed throughout the stratum, Layer I was interpreted as local fill or mechanical push. The boundary between Layers I and II was clear and abrupt.

Layer II

Layer II (110-150 cmbs) consisted of compact, dark, reddish brown (2.5YR 3/3, dry) silt with vertical roots. No cultural materials were observed in Layer II. The boundary between Layer II and Layer III was diffuse, indicating a naturally occurring stratum. The clear, abrupt boundary between Layers I and II suggests that Layer II was truncated or that Layer I was I was mechanically pushed onto Layer II, over a brief period of time.

Layer III

Layer III (150-196 cmbs) consisted of compact, red (2.5YR 4/6, dry) clayey silt. No cultural materials were observed. The boundaries between Layers I and II and Layers II and IV are diffuse. Thus, Layer III was interpreted as a natural stratum.

Layer IV

Layer IV (196-200 cmbs) consisted of compact, dark, reddish brown (2.5YR 3/3, dry) clayey silt. No cultural materials were observed. The boundary between Layers III and IV was diffuse. Thus, Layer IV was interpreted as a natural stratum.

STATE SITE 50-80-01-7464

State Site 50-80-01-7464 was comprised consisted of two surface features and measured 8.60 m long by 3.30 m wide and was oriented in a northeast/southwest (030/210 degrees, true) direction (Figure 19 through Figure 23). Feature 1 consisted of a square-shaped concrete structure with metal doors and a ventilation shaft located within a wire fence enclosure.



Figure 19: Photographic Overview of State Site 50-80-01-7464 Showing Feature 1 in Background and Feature 2 in Foreground. View to Southwest.



Figure 20: Photographic Overview of State Site 50-80-01-7464, Feature 1. View to Northwest.

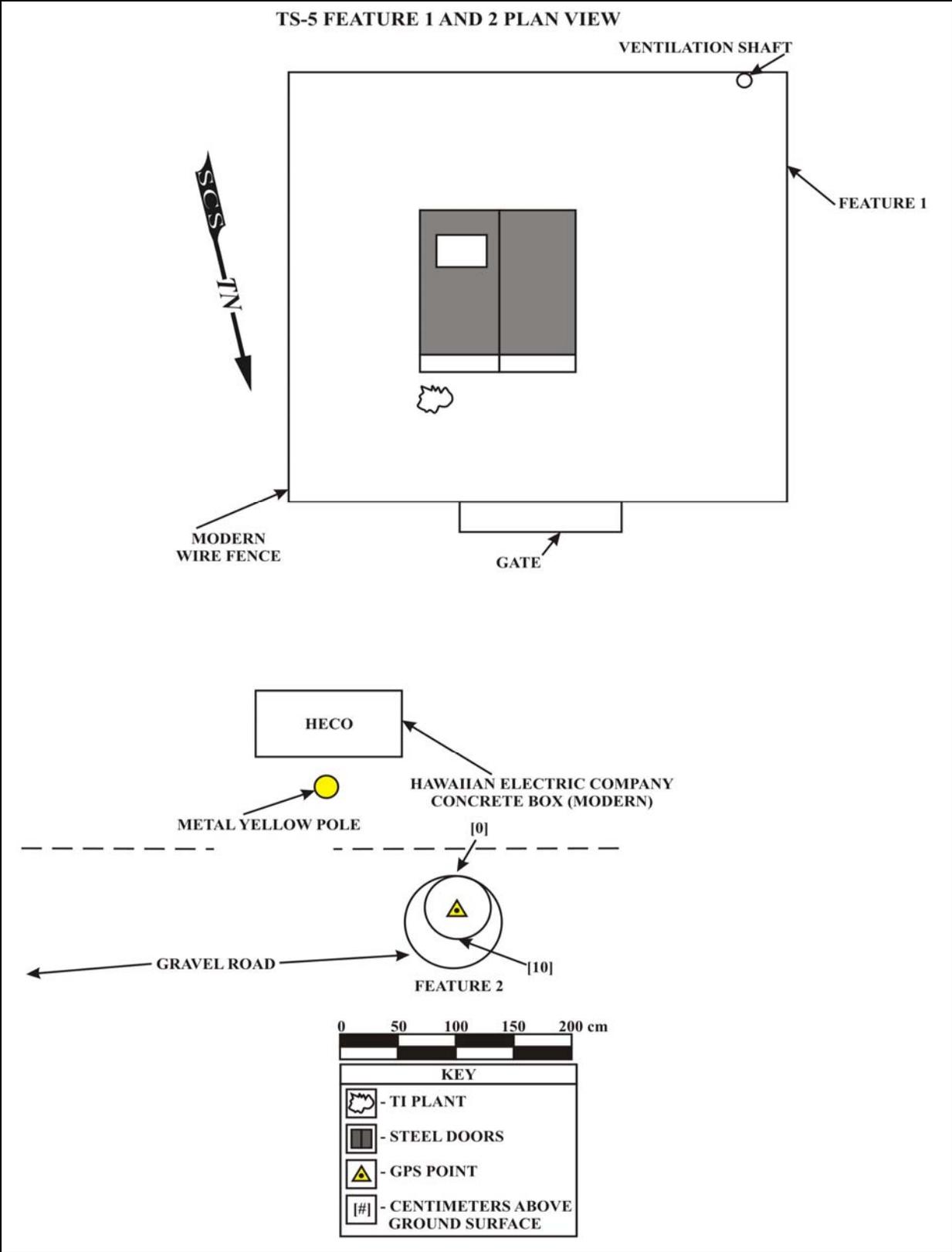


Figure 21: Plan View Drawing of State Site 50-80-01-7464, Features 1 and 2.



Figure 22: Photographic Close-up of State Site 50-80-01-7464, Air Vent. View to Northwest.



Figure 23: Photographic Overview of State Site 50-80-01-7464, Feature 2. View to Northeast.

The wire fence portion of State Site 50-80-01-7464 is a modern component to the site. Feature 2 consisted of a concrete manhole with a metal lid. Based on signage displayed on Features 1 and 2, both features were interpreted as communications features (see Figure 20 and Figure 23). Although State Site 50-80-01-7464 exhibited the effects of minimal weathering, the site remains in good condition. Based on feature type, construction material, , and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, State Site 50-80-01-7464 was interpreted as communications facility associated with the U.S. Army. State Site 50-80-01-7464 was evaluated for significance, as outlined in Hawai‘i Administrative Rules §13-275-6, and found to be significant under Criterion D, for information content, only.

State Site 50-80-01-7464, Feature 1

State Site 50-80-01-7464, Feature 1 was a square-shaped concrete structure with horizontal dimensions of 4.35 m square located a few meters to the southeast of an existing soil and basalt gravel road. Since Feature 1 was encompassed by a secured wire fence, above ground surface heights could not be obtained. The view of the feature from outside of the wire fence relayed that the concrete portion of Feature 1 was slightly above the ground surface and that the metal doors connected to the southern side of the feature’s concrete. A ferrous metal ventilation shaft of approximately 60 cm tall above ground surface was observed within the southwest corner interior of the wire fence enclosure (see Figure 19, 21, and 22). The east side of Feature 1 was oriented in a northeast/southwest (030/210 degrees, true) direction. Although Feature 1 exhibited minimal effects of weathering, it remains in good condition. Based on feature type, construction materials, and modern sign identifying the feature as a Joint Tracking System Hut (JTS), the proximity to the Feature 2 Signal Corps concrete manhole, and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, Feature 1 was interpreted as part of the U.S. Army communications network.

State Site 50-80-01-7464, Feature 2

State 50-80-01-7464, Feature 2 consisted of a partially exposed concrete manhole with an inset circular ferrous metal cover located near the south edge of an existing soil and basalt gravel road (see Figure 20 and Figure 22). The metal portion of Feature 2 measured 0.80 m in diameter by a maximum of 0.10 m above the ground surface (see Figure 21 and Figure 23). The ferrous metal cover displayed the words “SIGNAL CORPS MC-85 U.S.A.” The concrete portion of the feature appears to be dome shaped and is physically supporting the metal manhole cover. Although not fully exposed, the northwest face of the concrete portion of the feature displays a person’s possible initials. Those combinations of letters of the initials are these: RTF, BTF, RJF,

and BJJ). The exposed portion of Feature 2 is in good condition. Based on feature type, construction materials, identification on the manhole cover as belonging to the Signal Corps, close proximity to the Feature 1 JTS hut, , and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, Feature 2 was interpreted as part of the U.S. Army communications network.

STATE SITE 50-80-01-7465

State Site 50-80-01-7465 consisted of a square, concrete platform with horizontal dimensions of 5.5 m long by 5.0 m wide and between 0 to 0.45 m high above ground surface. The feature's southwest side had a long axis oriented along a southeast/northwest (145/325 degrees, true) direction (Figure 24 and Figure 25). Connected to the southwest side of the platform is a semi-enclosed area that contains an area of soil. The definitive purpose of the enclosed area is unknown at this time but based on the presence of soil, it could be surmised that this portion of the feature may have been utilized for plants. Although State Site 50-80-01-7465 exhibited the effects of weathering and compromised structural integrity, the structure remains in good condition. Based on construction materials , and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, State Site 50-80-01-7465 was interpreted as a foundation for a structure of undetermined function associated with the U.S. Army. State Site 50-80-01-7465 was evaluated for significance, as outlined in Hawai'i Administrative Rules §13-275-6, and found to be significant under Criterion D, for information content, only.

STATE SITE 50-80-01-7466

State Site 50-80-01-7466 measured approximately 20.0 m long by 10.0 m wide and was comprised of three features: Feature 1 consisted of an irregular, notched concrete platform; Feature 2 consisted of a U-shaped concrete structure connected by a ferrous metal pipe to a shallow, rectangular concrete structure; and Feature 3 consisted of a 2-tiered concrete block terrace (Figure 26 through Figure 32). State Site 50-80-01-7466's long axis was oriented along a northwest/southeast (109/289 degrees, true) direction. Although State Site 50-80-01-7466 exhibited minimal effects of weathering and compromised structural integrity, the site remains in fair condition. Based on construction materials, the presence of a U.S. Army Quartermaster Corps bowl fragment in Feature 1, , and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, all three features of State Site 50-80-01-7466 are interpreted as associated with the U.S. Army. State Site 50-80-01-7466 was evaluated for significance, as outlined in Hawai'i Administrative Rules §13-275-6, and found to be significant under Criterion D, for information content, only.



Figure 24: Photographic Oblique Plan View of State Site 50-890-01-7465. View to Southeast.

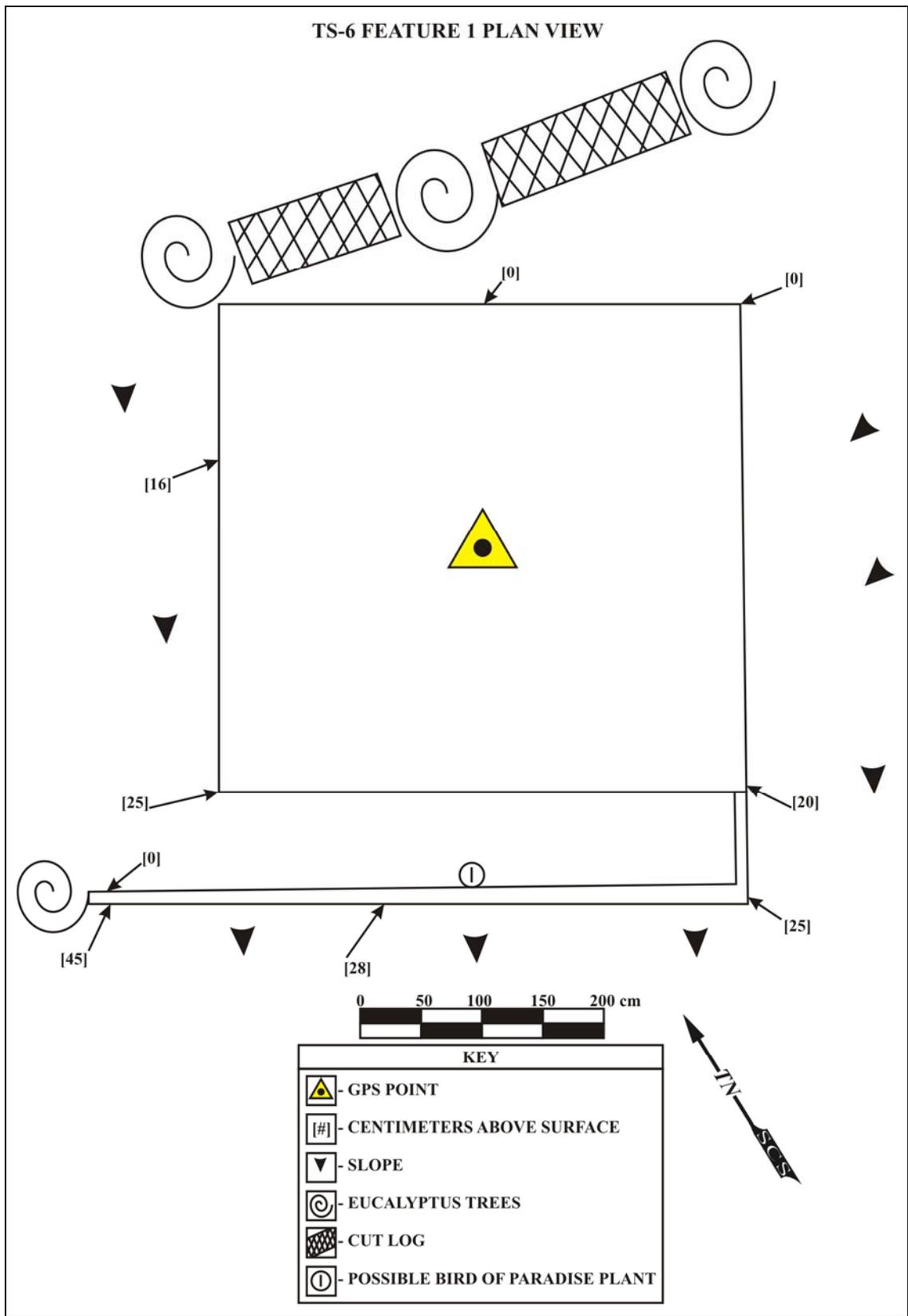


Figure 25: Plan View Drawing of State Site 50-80-01-7465.



Figure 26: Photographic Overview of State Site 50-80-01-7466, Feature 1. View to North.



Figure 27: Photographic Overview of State Site 50-80-01-7466, Feature 1. View to East.

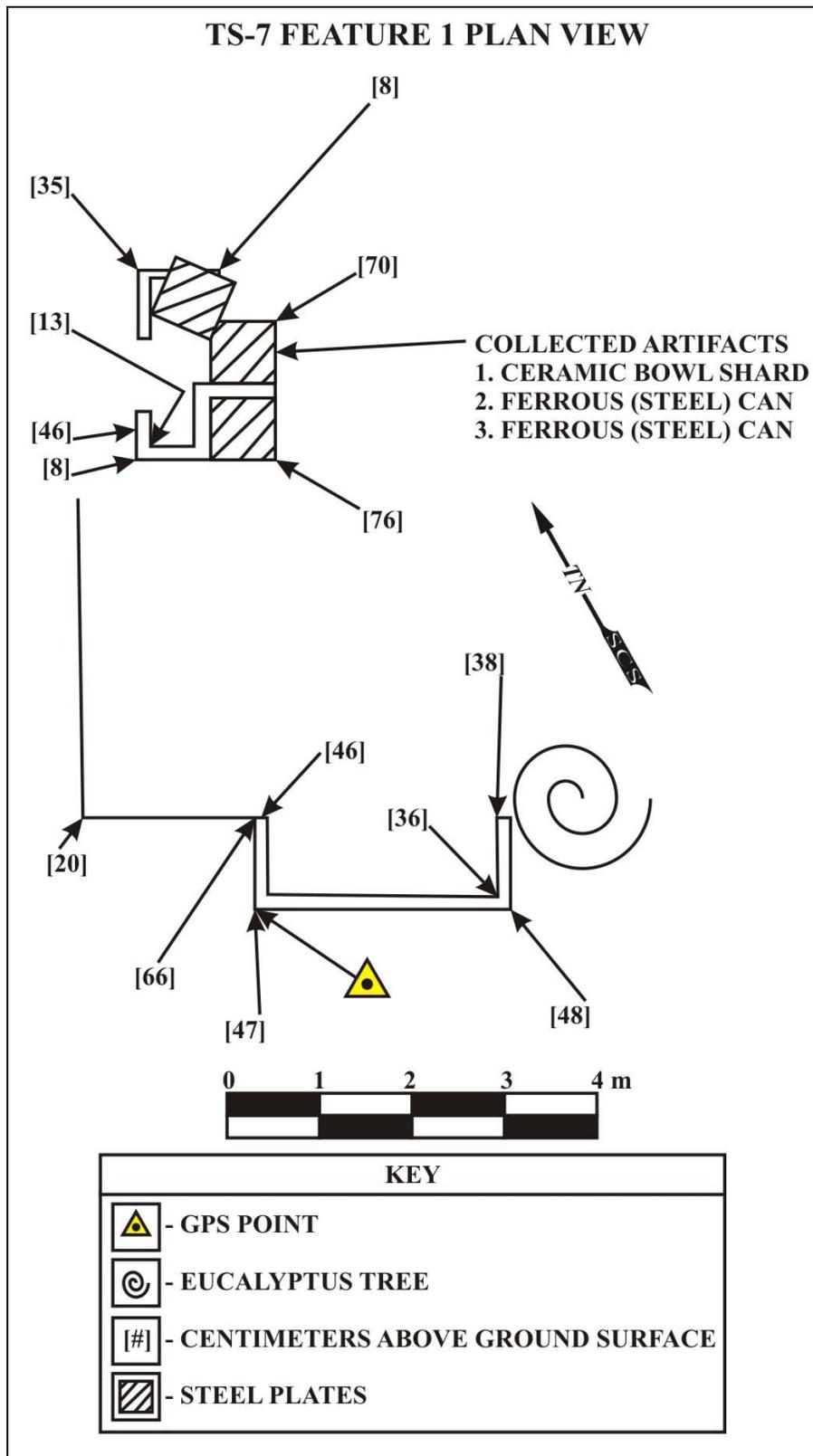


Figure 28: Plan View Drawing of State Site 50-80-01-7466, Feature 1.



Figure 29: Photographic Overview of State Site 50-80-01-7466, Feature 2. View to Northeast.



Figure 30: Photographic Overview of State Site 50-80-01-7466, Feature 2. View to Northeast.

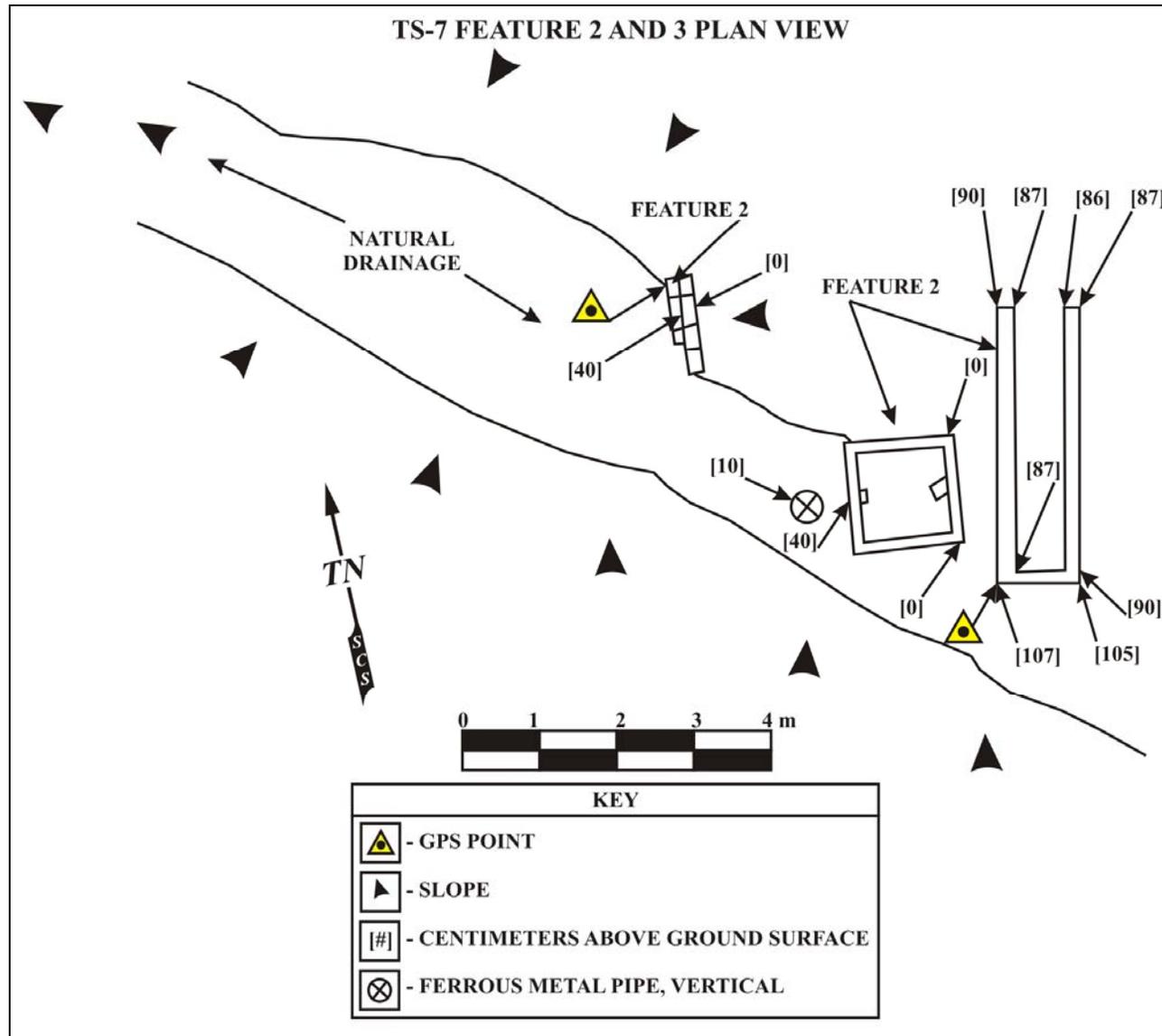


Figure 31: Plan View Drawing of State Site 50-80-01-7466, Features 2 and 3.



Figure 32: Photographic Overview of State Site 50-80-01-7466, Feature 3. View to Northeast.

State Site 50-80-01-7466, Feature 1

State Site 50-80-01-7466, Feature 1 consisted of an irregular-shaped concrete platform that measured approximately 7.20 m long by 4.65 meters wide and above ground surface heights varying between 0.08 m to 0.20 m. The concrete platform's long axis was oriented in a southwest/northwest (155/335 degrees, true) direction and located on a relatively flat area southwest of an approximate 75 degree northeast to southwest downslope covered with wet and decomposing vegetation. The concrete platform had a minimum of one notched corner; the decomposing vegetation was so dense such that the horizontal extents of the feature were not visible. Site 50-80-01-7466, Feature 1, was in poor condition and exhibited the effects of weathering and compromised structural integrity.

Directly constructed on the Feature 1 platform were two walled concrete structures. The south side of the concrete platform had a concrete U-shaped wall positioned onto the concrete platform while the north side of the concrete platform had a single structure comprised of a walled concrete enclosure horizontally connected to a partially covered compartment with three approximately 0.02 m thick steel plates with horizontal dimensions of 0.70 m square (see Figure 26 through Figure 28). This northern structure was approximately 2.10 m long by 1.50 m wide with above ground surface heights ranging between 0.13 m to 0.76 m. An opening on the northwest side of the structure allowed access into the walled enclosure. Access points to the compartmentalized portion of the structure were located at the northeast and southwest ends. Historic-type artifacts retrieved from the compartment under one of the steel plates were identified as one possible bowl/rim base sherd manufactured by the U.S. Army Quartermaster's Corps, one ferrous metal can fragment and one ferrous metal can (lid missing) were recovered (see Appendices A and B). A pile of white ash was observed within the compartment covered by the steel plate. Based on construction materials, associated artifacts, presence of white ash within the compartmentalized structure, and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, Feature 1 was interpreted as a possible kitchen facility associated with the U.S. Army.

State Site 50-80-01-7466, Feature 2

State Site 50-80-01-7466, Feature 2 consisted of two concrete structures physically connected by a 0.08 m (3-inch) diameter ferrous metal pipe with an overall horizontal measurement of approximately 3.7 m long by 3.0 m wide and above ground surface heights ranging between 0 and 1.07 m. Feature 2 was oriented along a northeast/southwest (009/189 degrees, true) direction and situated in a shallow, natural drainage. The east structure was a U-shaped concrete structure that measured approximately 3.7 m long by 1.0 m wide with above

ground surface heights ranging between 0.86 m and 1.07 m; the structure's wall thickness was approximately 0.20 m. Access points to the interior of the east structure were located at the northeast and southwest ends. The northeast end of the structure was open while the southwest end was partially walled with a vertical, rectangular opening on the bottom half and an approximate 0.15 m diameter hole on the upper half.

The west structure of Feature 2 was comprised of a partially subterranean, hollow interior concrete structure that measured 1.4 m square with above ground surface heights ranging between 0 and 0.40 m; the structure's wall thickness was approximately 0.20 m. Both structures of Feature 2 were connected by a ferrous metal 0.08 m pipe (see Figure 29 through Figure 31). Site 50-80-01-7466, Feature 2, exhibited the effects of weathering and compromised structural integrity, was in fair condition. Based on construction materials, feature location within a natural drainage, , and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, Feature 2 was interpreted as a water processing feature associated with the U.S. Army.

State Site 50-80-01-7466, Feature 3

State Site 50-80-01-7466, Feature 3 consisted of a 2-tiered concrete brick terrace that measured approximately 1.30 m long by 0.40 m wide with above ground surface heights ranging between 0 and 0.60 m. Feature 3's long axis was situated in a north/south (000/180 degrees, true) direction on an approximate 20 degree northeast to southwest downslope (see Figure 31 and Figure 32). Based on construction , and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, Feature 2 was interpreted as a soil retention feature associated with the U. S. Army. Although Feature 3 exhibited the effects of weathering, the feature remains in good condition.

STATE SITE 50-80-01-7467

State Site 50-80-01-7467 measured approximately 16.0 m long by 5.0 m wide and was composed of two features: Feature 1 consisted of a concrete U-shaped structure remnant; Feature 2 consisted of a walled rectangular concrete platform (Figure 33 through Figure 36). State Site 50-80-01-7467's long axis was oriented in a northeast/southwest (014/194 degrees, true) direction and situated on an approximate 75 degree southwest to northeast downslope covered with live and decomposing vegetation. Based on construction materials, topographic location, , and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, State Site 50-80-01-7467 was interpreted as a possible water



Figure 33: Photographic Overview of State Site 50-80-01-7467, Feature 1. View to Southwest.

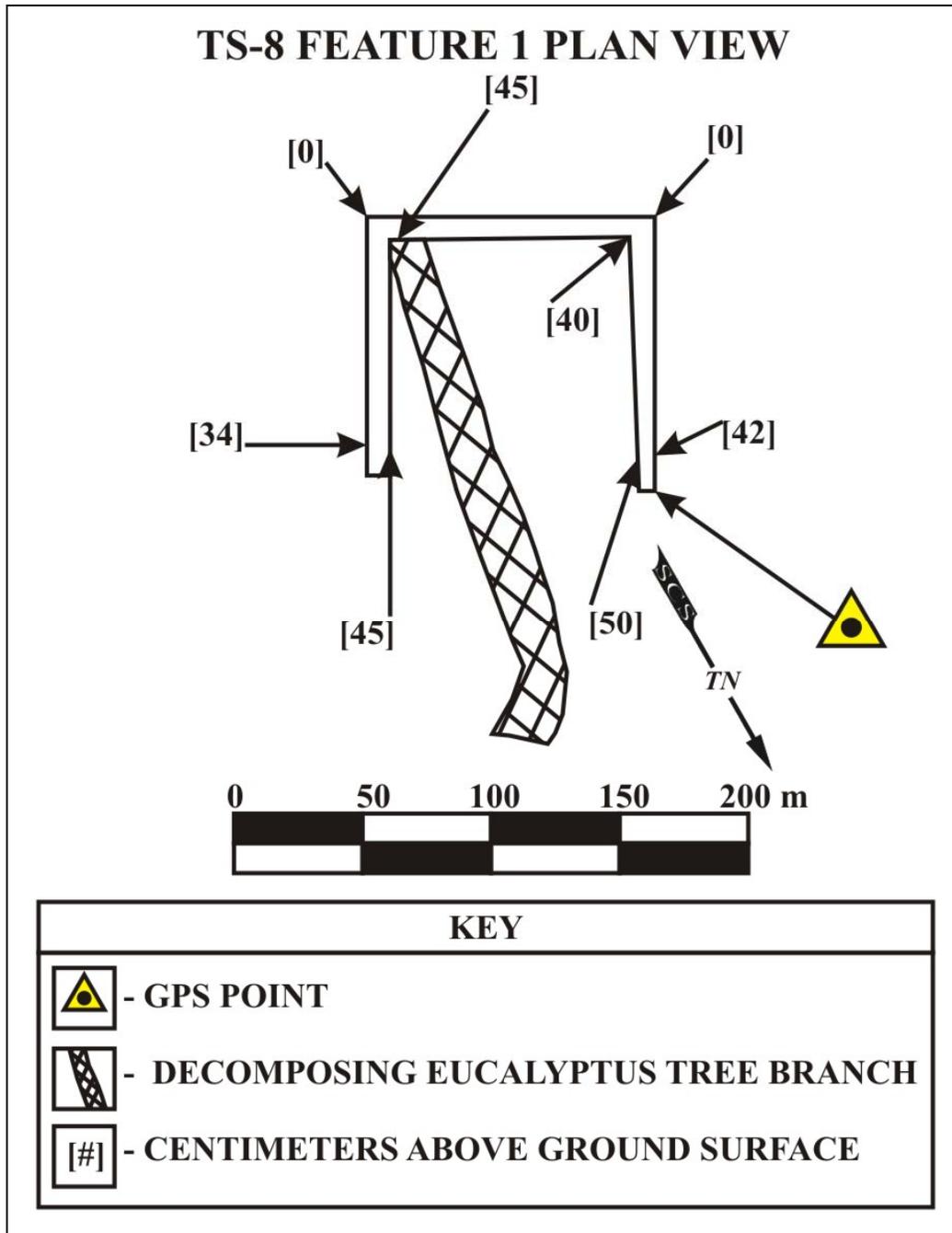


Figure 34: Plan View Drawing of State Site 50-80-01-7467, Feature 1.



Figure 35: Photographic Overview of State Site 50-80-01-7467, Feature 2. View to Southwest.

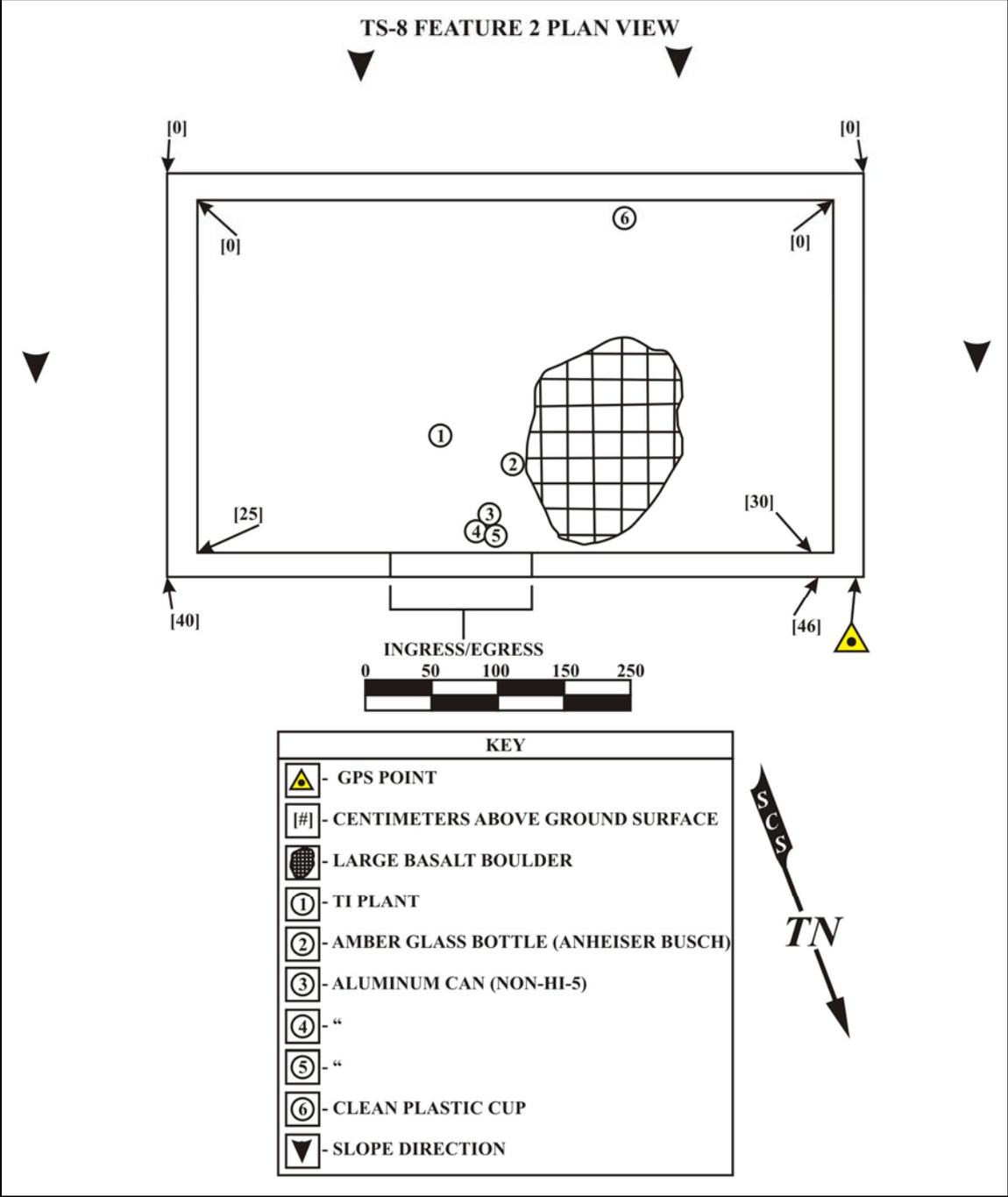


Figure 36: Plan View Drawing of State Site 50-80-01-7467, Feature 2.

processing site associated with the U.S. Army. Although State Site 50-80-01-7467 exhibited the effects of weathering and compromised structural integrity, the site remains in fair condition. State Site 50-80-01-7467 was evaluated for significance, as outlined in Hawai‘i Administrative Rules §13-275-6, and found to be significant under Criterion D, for information content, only.

State Site 50-80-01-7467, Feature 1

State Site 50-80-01-7467, Feature 1 consisted of a concrete U-shaped structure remnant with a long axis oriented in a northeast/southwest (031/211 degrees, true) direction and measured approximately 1.80 m long by 1.20 m wide with above ground surface heights ranging from 0 to 0.50 m. Feature 1 was situated within an earthen cut on an approximate 75 degree southwest to northeast downslope (see Figure 33 and Figure 34). The south side of the feature was covered with soil erosion. The opening of the U-shaped feature faced toward the northeast. The surface of the east and west legs of Feature 1 displayed an exposed rusted ferrous metal pipes of approximately 0.05 m diameter. A 0.16 m square hole was observed in the feature’s south wall and was interpreted as a possible ingress point for an unknown feature component. Based on feature construction materials, and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, Feature 1 was interpreted as possibly associated with water diversion associated with the U.S. Army. Although State Site 50-80-01-7467, Feature 1 exhibited the effects of weathering and compromised structural integrity, the feature remains in fair condition.

State Site 50-80-01-7467, Feature 2

State Site 50-80-01-7467, Feature 2 consisted of a walled rectangular concrete platform that measured approximately 5.0 m long by 3.1 m wide with above ground surface heights ranging between 0 to 0.46 m and placed into an earthen cut of an approximate 75 degree southwest to northeast downslope. The south side of the feature was covered with soil erosion. Feature 2’s long axis was oriented in a northeast/southwest (104/284 degrees, true) direction (see Figure 35 and Figure 36). Modern cultural materials observed in close proximity to Feature 2 included an amber glass bottle, three aluminum cans, and a plastic cup. A large sub-rounded basalt boulder was observed on the interior of the feature. An ingress/egress opening was observed near the center of the feature’s north wall. Based on construction materials, and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, Feature 2 was interpreted as foundation possibly associated with water diversion given the positioning and proximity to Feature 1; both features are likely associated with the U.S. Army. Although State Site 50-80-01-7467, Feature 2 exhibited the effects of weathering and compromised structural integrity, the feature remains in fair condition.

STATE SITE 50-80-01-7468

State Site 50-80-01-7468 was composed of four features: Feature 1 consisted of a large concrete platform; Feature 2 consisted of a terrace constructed of stacked limestone cobbles; Feature 3 consisted of a three-sided soil platform encompassed by piled limestone cobbles; Feature 4 consisted of a three-sided soil platform encompassed by piled limestone cobbles (Figure 37 through Figure 42). State Site 50-80-01-7468 measured approximately 26.0 m long by 16.0 m wide with above ground surface heights ranging from 0 to 1.4 m. In addition, State Site 50-80-01-7467 was situated on an approximate 10 percent south to north downslope and oriented along a northeast/southwest (058/238 degrees, true) direction. Based on construction materials, feature types, , and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, State Site 50-80-01-7467 was interpreted as a motor pool associated with the U.S. Army. Although State Site 50-80-01-7467 exhibited the effects of weathering and compromised structural integrity, the site remains in fair condition. State Site 50-80-01-7467 was evaluated for significance, as outlined in Hawai'i Administrative Rules §13-275-6, and found to be significant under Criterion D, for information content, only.

State Site 50-80-01-7468, Feature 1

State Site 50-80-01-7468, Feature 1 consisted of a large rectangular shaped concrete platform with a smaller, rectangular shaped concrete platform attached to its northwest corner. Although Feature 1 exhibited the effects of weathering and compromised structural integrity, the feature remains in fair condition. Feature 1's long axis was oriented in a north/south (000/180 degrees, true) direction with overall horizontal dimensions of approximately 12.0 m long by 7.0 m wide and above ground surface heights ranging between 0 to 0.30 m. The larger concrete platform encompassed a rectangular shaped trench that measured approximately 5.0 m long by 1.0 m wide with a maximum below concrete surface depth of 0.84 m. The smaller, rectangular shaped concrete platform attached to the larger concrete platform had horizontal dimensions of (2.4 m long by 1.8 m wide with above ground surface heights ranging from 0.14 m to 0.30 m (see Figure 37, Figure 38, and Figure 42). The tires within the trench suggested that the feature was a mechanics trench. Based on construction materials, feature types within the site, , and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, Feature 1 was interpreted as a foundation for a motor pool used as for vehicle maintenance associated with the U.S. Army.

State Site 50-80-01-7468, Feature 2

State Site 50-80-01-7468, Feature 2 consisted of an L-shaped linear terrace that measured approximately 3.2 m long by 1.2 m wide with above ground surface heights ranging from 0 to 0.40 m. Feature 2's long axis was oriented in a north/south (000/180 degrees, true)



Figure 37: Photographic Overview of State Site 50-80-01-7468, Feature 1. View to Southeast.



Figure 38: Photographic Overview of State Site 50-80-01-7468, Feature 1. View to Northeast.



Figure 39: Photographic Overview of State Site 50-80-01-7468, Feature 2. View to Southeast.



Figure 40: Photographic Overview of State Site 50-80-01-7468, Feature 3. View to Southeast.



Figure 41: Photographic Overview of State Site 50-80-01-7468, Feature 4. View to Southeast.

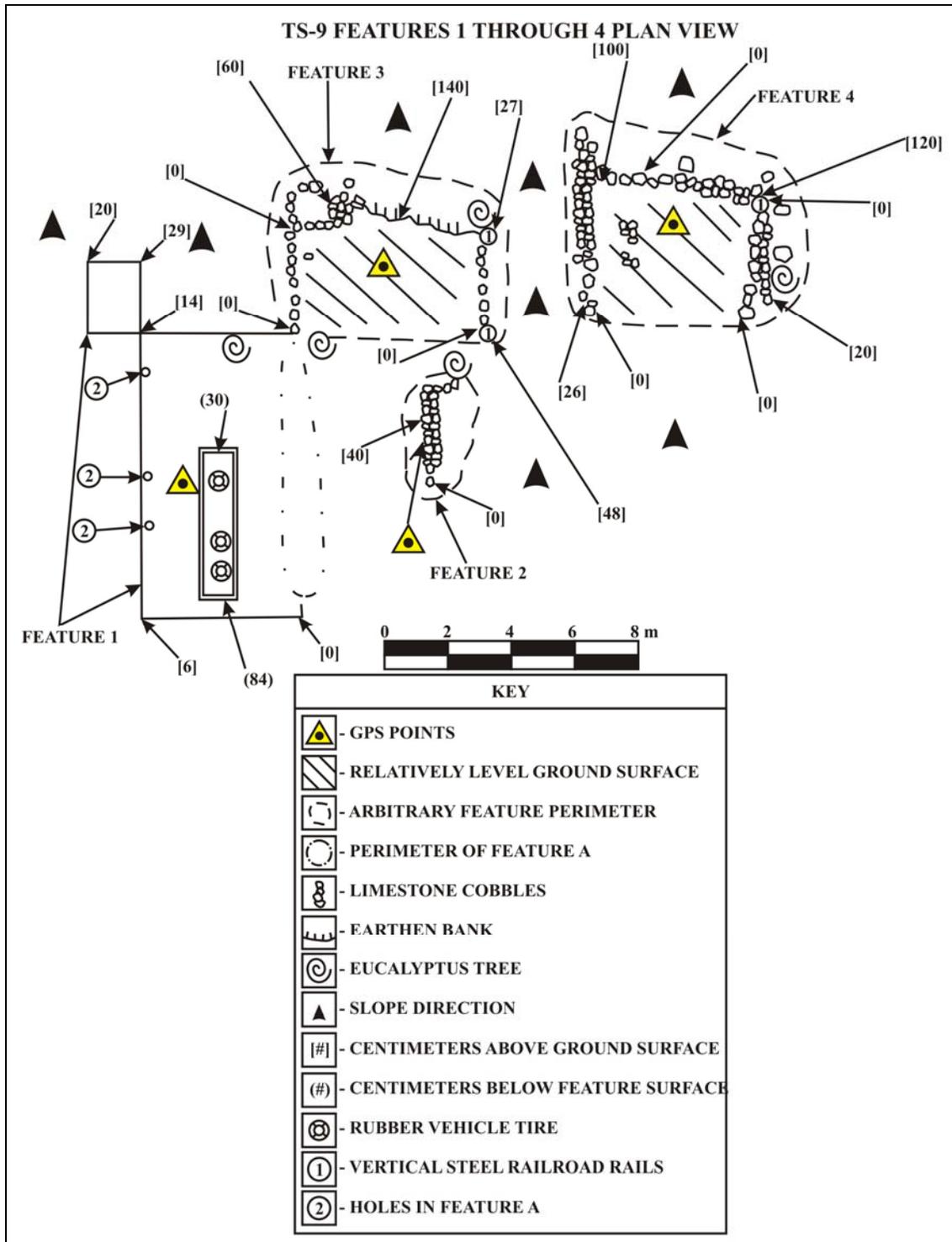


Figure 42: Plan View Drawing of State Site 50-80-01-7468), Features 1 through 4.

direction, constructed of stacked limestone cobbles two to three courses high, and situated on a south to north approximate 2 degree slope (see Figure 39 and Figure 42). No cultural material was observed with the feature. Although Feature 2 exhibited minimal effects of weathering, the feature remains in fair condition. Based on construction materials, close proximity to the Feature 1 concrete platform and other features in State Site 50-80-01-7468, , and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, Feature 2 was interpreted as an auxiliary soil retention feature associated the U.S. Army.

State Site 50-80-01-7468, Feature 3

State Site 50-80-01-7468, Feature 3 consisted of a U-shaped rectangular soil platform that measured approximately 6.0 m long by 5.2 m wide with above ground surface heights ranging from 0 to 1.4 m (see Figure 40 and Figure 42). The feature's east and west perimeters were constructed of limestone cobbles between one to five courses. The lower coursing existed at the south ends of the feature's east and west perimeters while the north and north ends of east and west perimeters contained the higher coursing. While the west half of the feature's north wall was partially constructed of limestone cobbles, the east half of the feature's north wall appears to have collapsed and left a vertical earthen short cliff face. Directly under the cliff face is a rectangular earthen pit partially filled with decomposing vegetation in which cultural material was not observed. The function of the earthen pit is not known. The interior of the feature is comprised of soil in which the topography south of the feature continues toward the north perimeter of the feature. Feature 3's long axis was oriented along an east/west (90/270 degrees, true) direction. The only cultural material observed with the feature was identified as two vertically protruding ferrous metal railroad rails located at both ends of the feature's east perimeter; these rails were likely utilized as fence posts. Although Feature 3 exhibited the effects of weathering and compromised structural integrity, the feature remains in fair condition. Based on construction materials, close proximity to the Feature 1 concrete platform that contains a mechanic's trench, , and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, Feature 3 was interpreted as a possible vehicle parking area associated with the U.S. Army.

State Site 50-80-01-7468, Feature 4

State Site 50-80-01-7468, Feature 4 consisted of a U-shaped rectangular soil platform that measured approximately 6.0 m long by 6.0 m wide with above ground surface heights ranging from 0 to 1.0 m (see Figure 41 and Figure 42). The feature's north, east, and west walls were constructed of stacked limestone cobbles while the interior of the feature is comprised of soil in which the topography south of the feature continues toward the north perimeter of the feature. The highest stacking, six courses, exists at the feature's north perimeter while the

feature's lowest stacking, a single course, is located at the feature's southeast and southwest corners. A short, approximate 2.0 m long extension of the feature's west wall architecture extends toward the north. The inclusion of this short extension makes the feature a horizontal square shape. Not utilizing this short extension, the feature's long axis becomes oriented along an east/west (90/270 degrees, true) direction. No cultural material was observed with Feature 4. Although Feature 4 exhibited the effects of weathering and compromised structural integrity, the feature remains in fair condition. Based on construction materials, close proximity to the Feature 1 concrete platform and the possible parking area designated as Feature 3, , and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, Feature 4 was interpreted as a possible vehicle parking area associated with the U.S. Army.

STATE SITE 50-80-01-7469

State Site 50-80-01-7469 consisted of eleven linear concrete rows with an overall observed horizontal site dimension of 5.0 m long by 4.8 m wide with above ground surface heights ranging between 0 to 0.17 m. The individual width of a concrete row was 0.20 m. State Site 50-80-01-7469 was oriented along a northeast/southwest (010/190 degrees, true) direction and situated on an undulating ground surface (Figure 43 and Figure 44). The south side of the site's architecture was obscured from view with soil and vegetation (live and decomposing) such that the exact horizontal could not be calculated. No cultural material was observed with the site. Based on feature type, construction methods and materials, a 1952 USGS (Waimea Quadrangle) map showing the location of a water tank in the proximity of the site, and the knowledge that the U.S. Army previously owned and operated in the now-Boy Scout camp, State Site 50-80-01-7469 was interpreted as a water tank foundation associated with the U.S. Army. Although State Site 50-80-01-7469 exhibited the effects of weathering and compromised structural integrity, the site remains in fair condition. State Site 50-80-01-7469 was evaluated for significance, as outlined in Hawai'i Administrative Rules §13-275-6, and found to be significant under Criterion D, for information content.

STATE SITE 50-80-01-7470

State Site 50-80-01-7470 measured approximately 30.0 m long by 12.0 m wide and was comprised of three features: Feature 1 consisted of a linear concrete chute; Feature 2 consisted of a square concrete platform; Feature 3 consisted of a walled concrete foundation with interior compartments (Figure 44 through Figure 49). State Site 50-80-01-7470 was situated on a 5 to 15 degree slope and oriented along in an east/west (090/270 degrees, true) direction. Based on construction materials , and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, State Site 50-80-01-7470 was interpreted as associated with the U.S. Army. Although State Site 50-80-01-7470 exhibited the effects of weathering,



Figure 43: Photographic Overview of Representative Section of State Site 50-80-01-7469. View to Southwest.

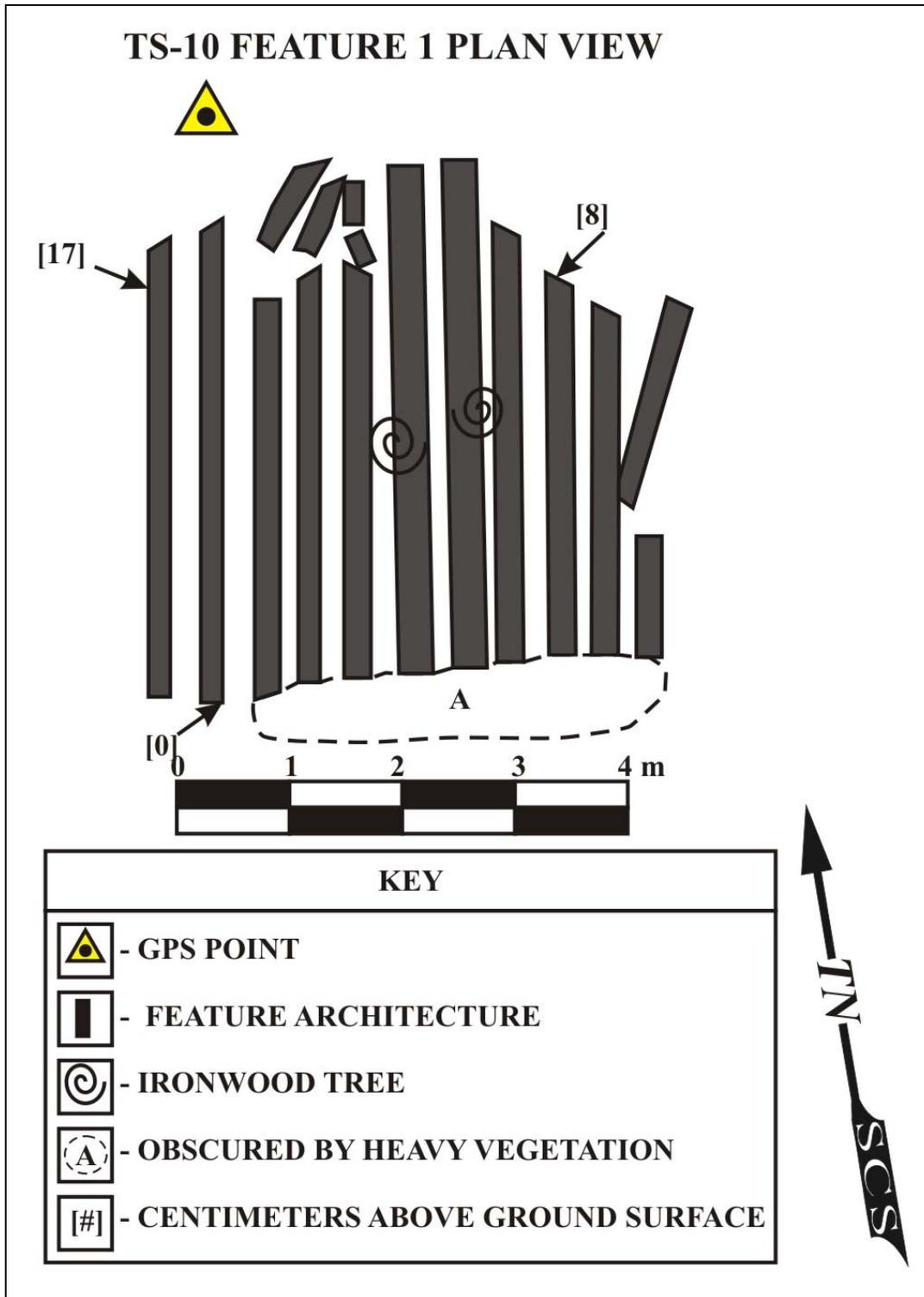


Figure 44: Plan View Drawing of State Site 50-80-01-7469



Figure 45: Photographic Overview of Representative Section of State Site 50-80-01-7470, Feature 1. View to North.

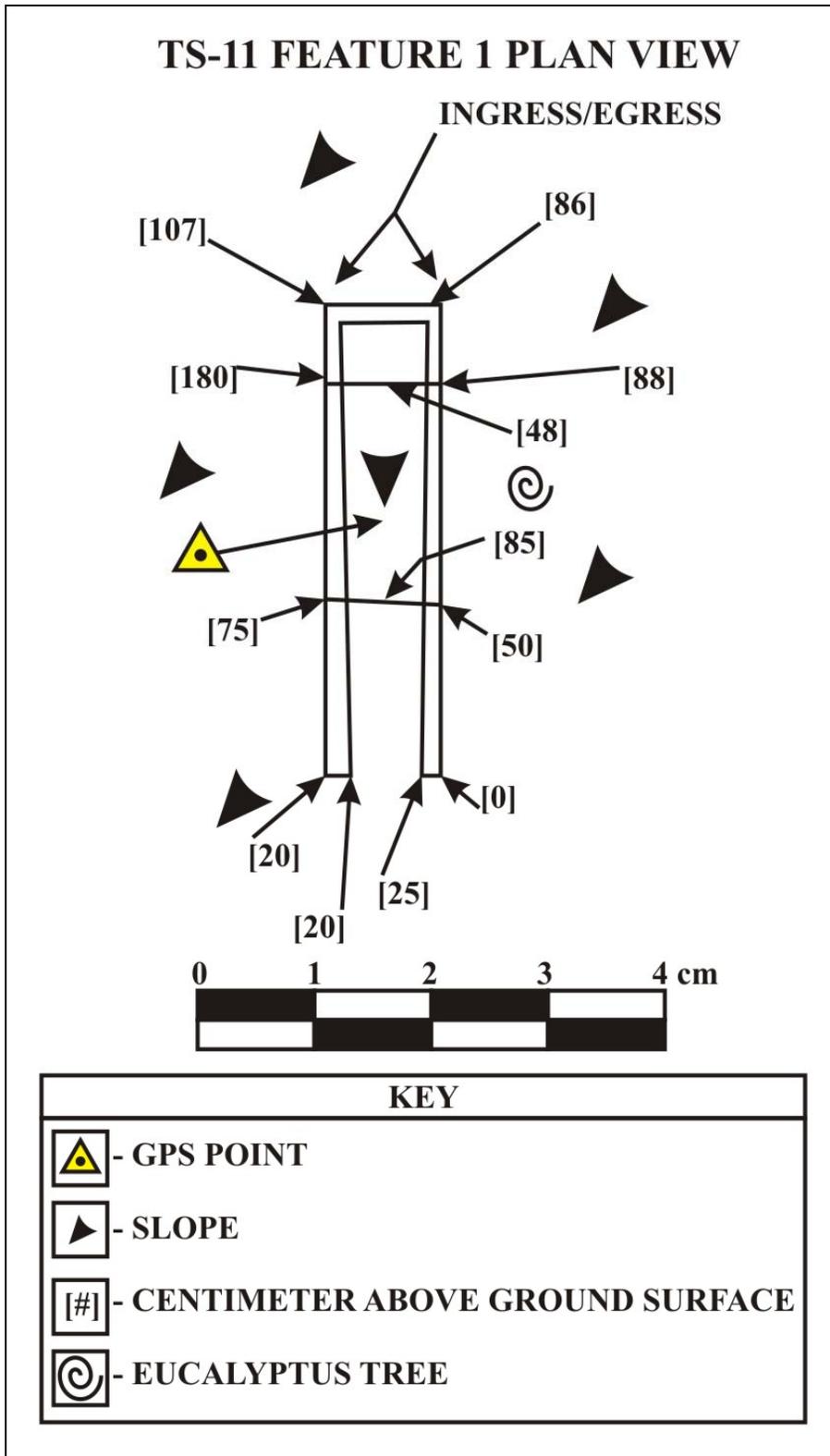


Figure 46: Plan View Drawing of State Site 50-80-01-7470, Feature 1.



Figure 47: Photographic Overview of Representative Section of State Site 50-80-01-7470, Feature 2. View to Northwest.

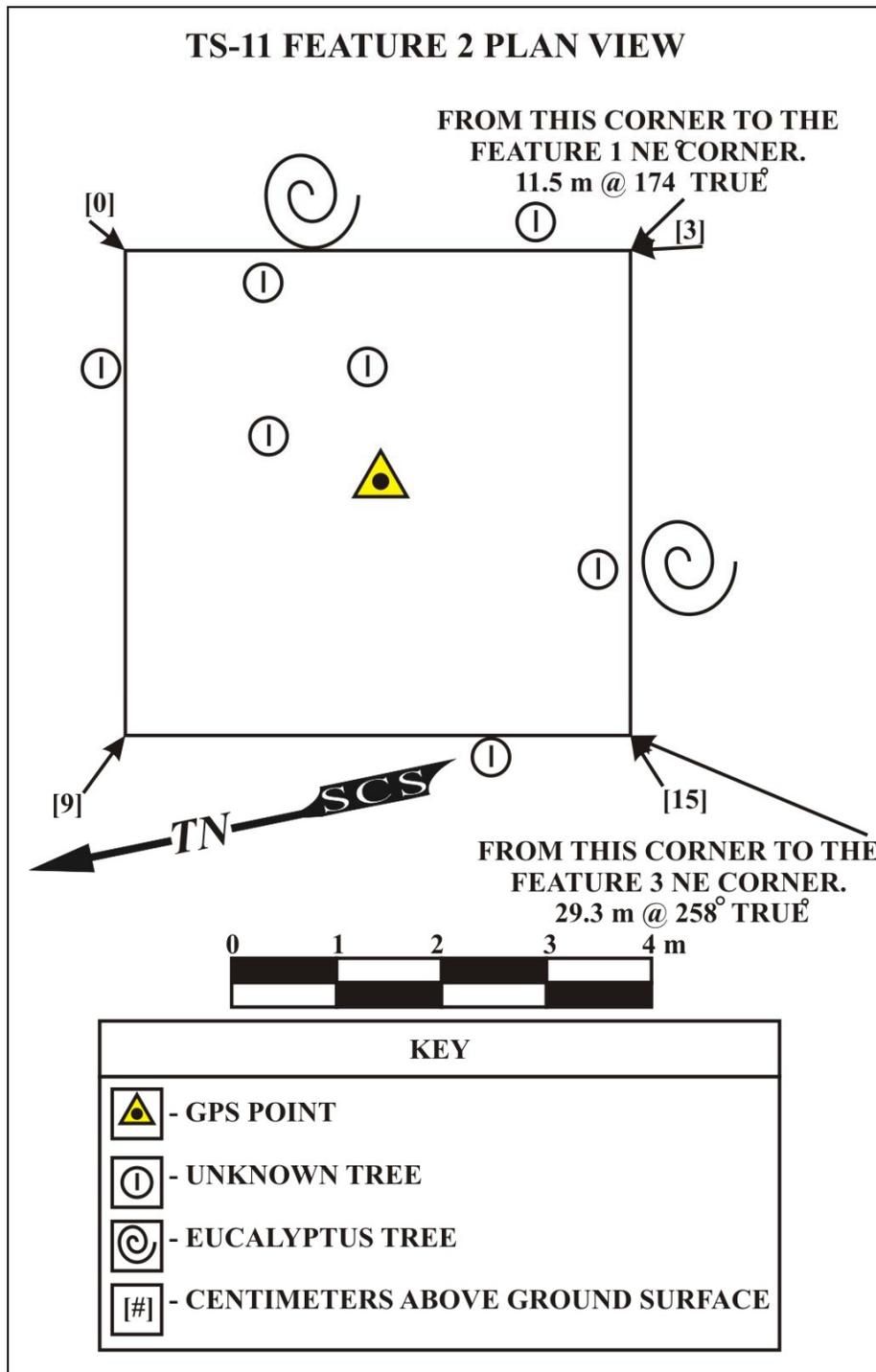


Figure 48: Plan View Drawing of State Site 50-80-01-7470, Feature 2.



Figure 49: Photographic Overview of Representative Section of State Site 50-80-01-7470, Feature 3. View to Northwest.

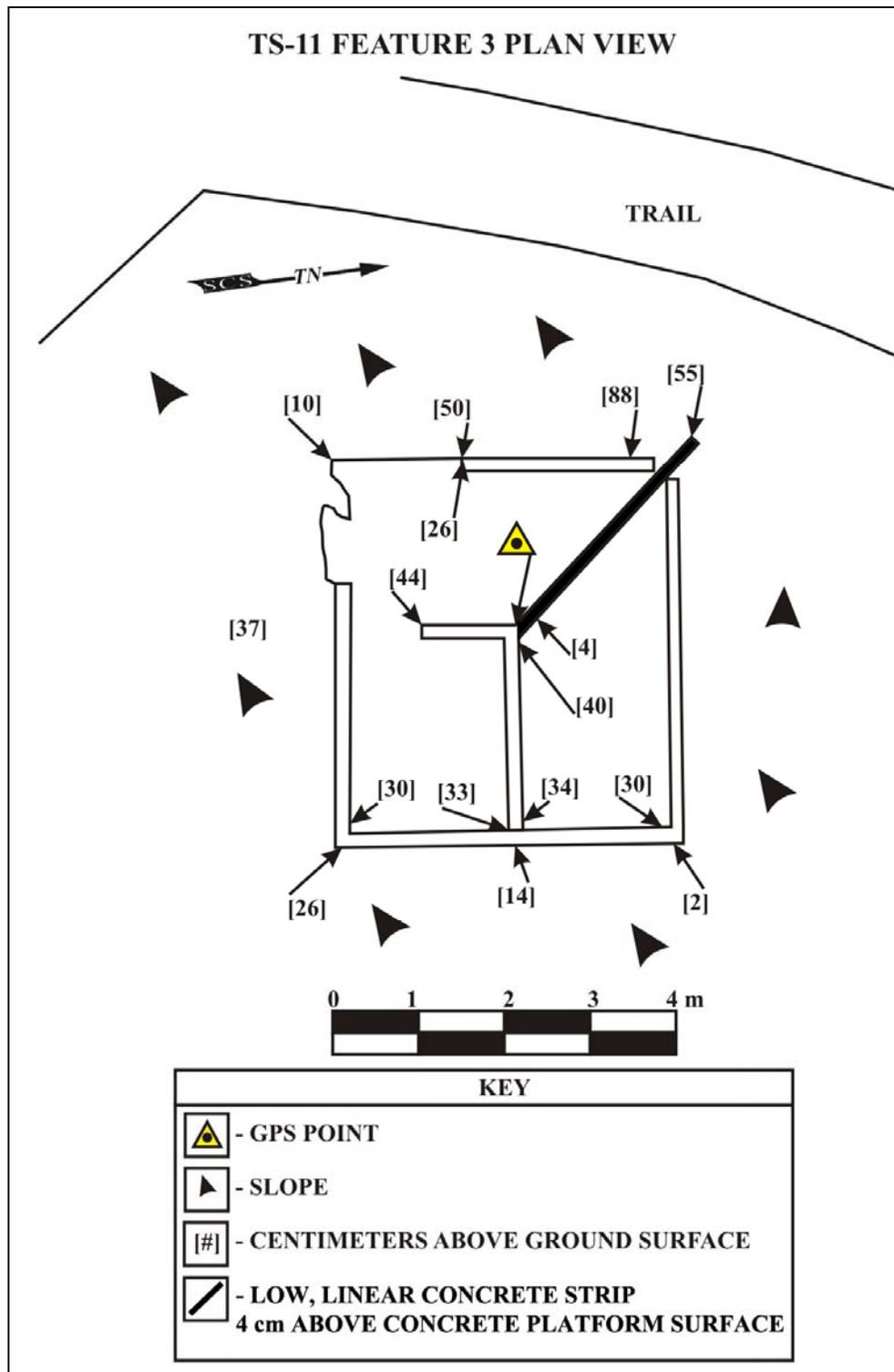


Figure 50: Plan View Drawing of State Site 50-80-01-7470, Feature 3.

bioturbation, and compromised structural integrity, the site remains in fair condition. State Site 50-80-01-7470 was evaluated for significance, as outlined in Hawai'i Administrative Rules §13-275-6, and found to be significant under Criterion D, for information content, only.

State Site 50-80-01-7470, Feature 1

State Site 50-80-01-7470, Feature 1 consisted of a rectangular concrete structure that measured approximately 4.0 m long by 1.0 m wide with above ground surface heights ranging between 0 to 1.1 m (see Figure 45 and Figure 46). Feature 1 was positioned on an approximate 10 degree southwest to northeast downslope and on oriented in a southeast/northwest (178/358 degrees, true) direction. The south side of the feature contained an open-aired ingress location while the feature sloped downward toward the north where the chute did not have a covered surface. Based on construction materials, feature design, and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, Feature 1 was interpreted as a possible chute associated with the U.S. Army. Although Feature 1 exhibited the effects of weathering and compromised structural integrity, the feature remains in fair condition.

State Site 50-80-01-7470, Feature 2

State Site 50-80-01-7470, Feature 2 consisted of a square concrete platform that measured approximately 5.0 meters square with above ground surface heights ranging between 0 to 0.15 m (see Figure 47 and Figure 48). Feature 2 was placed in an earthen cut within a 5 to 10 percent slope. The south perimeter of the feature was oriented in a southeast/northwest (100/280 degrees, true) direction. No cultural materials were observed with the feature. Based on construction materials, presence amongst other concrete features and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, Feature 2 was interpreted as a foundation associated with the U.S. Army. Although Feature 2 exhibited the effects of bioturbation and minimal compromised structural integrity, the feature remains in fair condition.

State Site 50-80-01-7470, Feature 3

State Site 50-80-01-7470, Feature 3 consisted of a compartmentalized walled concrete platform that measured approximately 4.6 m long by 4.0 m wide with above ground surface heights ranging from 0.02 to 0.88 m (see Figure 49 and Figure 50). Feature 3 was oriented with its north wall in a northeast/southwest (093/273 degrees, true) direction and placed into an earthen cut within a 5 to 10 percent northeast to southwest downslope. Two interior compartments were observed and arranged with the larger compartment being L-shaped while the smaller compartment was rectangular shaped. The feature's interior was accessed through an opening located at the feature's southwest corner. The smaller of the two compartment's was

accessed through the smaller compartment's southwest corner. A concrete strip that measured approximately 3.2 m long by 0.20 m wide with a above concrete platform height of 0.04 m extended from the smaller compartment's northwest corner toward the feature's interior northwest corner and continuing approximately 0.40 m outside of the feature was observed although the function of the strip was unknown. Based on construction materials, presence amongst other concrete features, and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, Feature 3 was interpreted as a foundation for an unknown use associated with the U.S. Army. Although Feature 3 exhibited the effects of weathering and compromised structural integrity, the feature remains in fair condition.

STATE SITE 50-80-01-7471

State Site 50-80-01-7471 measured approximately 21.0 m long by 14.0 m wide and was comprised of four features: Feature 1 consisted of a concrete platform; Feature 2 consisted of a walled concrete platform; Feature 3 consisted of a concrete alignment, and Feature 4 consisted of a stepped concrete walkway (Figure 51 through Figure 56). State Site 50-80-01-7471 was oriented along a northeast/southwest (009/189 degrees, true) direction and situated on an approximate 5 to 15 percent northeast to southwest downslope. State Site 50-80-01-7471 was located approximately 88.0 m at 042 degrees (true) to State Site 50-80-01-7470. Based on construction materials and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, State Site 50-80-01-7471 was interpreted as being associated with the U.S. Army. Although State Site 50-80-01-7471 exhibited the effects of weathering and compromised structural integrity, the site remains in good condition. State Site 50-80-01-7471 was evaluated for significance, as outlined in Hawai'i Administrative Rules §13-275-6, and found to be significant under Criterion D, for information content, only.

State Site 50-80-01-7471 Feature 1

State Site 50-80-01-7471, Feature 1 consisted of a rectangular concrete platform that measured approximately 6.1 m long by 5.1 m wide with above ground surface heights ranging from 0.02 to 0.19 m (see Figure 51 and Figure 52). Feature 1 was positioned along in a northeast/ southwest (004/184 degrees, true) direction and situated on slightly undulating terrain that sloped downward approximately 2 to 4 degrees from the east to the west. No cultural material was observed with the feature. Based on construction materials, feature type, and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, Feature 1 was interpreted as a foundation associated with the U.S. Army. Although State Site 50-80-01-7471 Feature 1 exhibited the effects of minimal compromised structural integrity, the feature remains in good condition.



Figure 51: Photographic Overview of Representative Section of State Site 50-80-01-7471 Feature 1. View to Northeast.

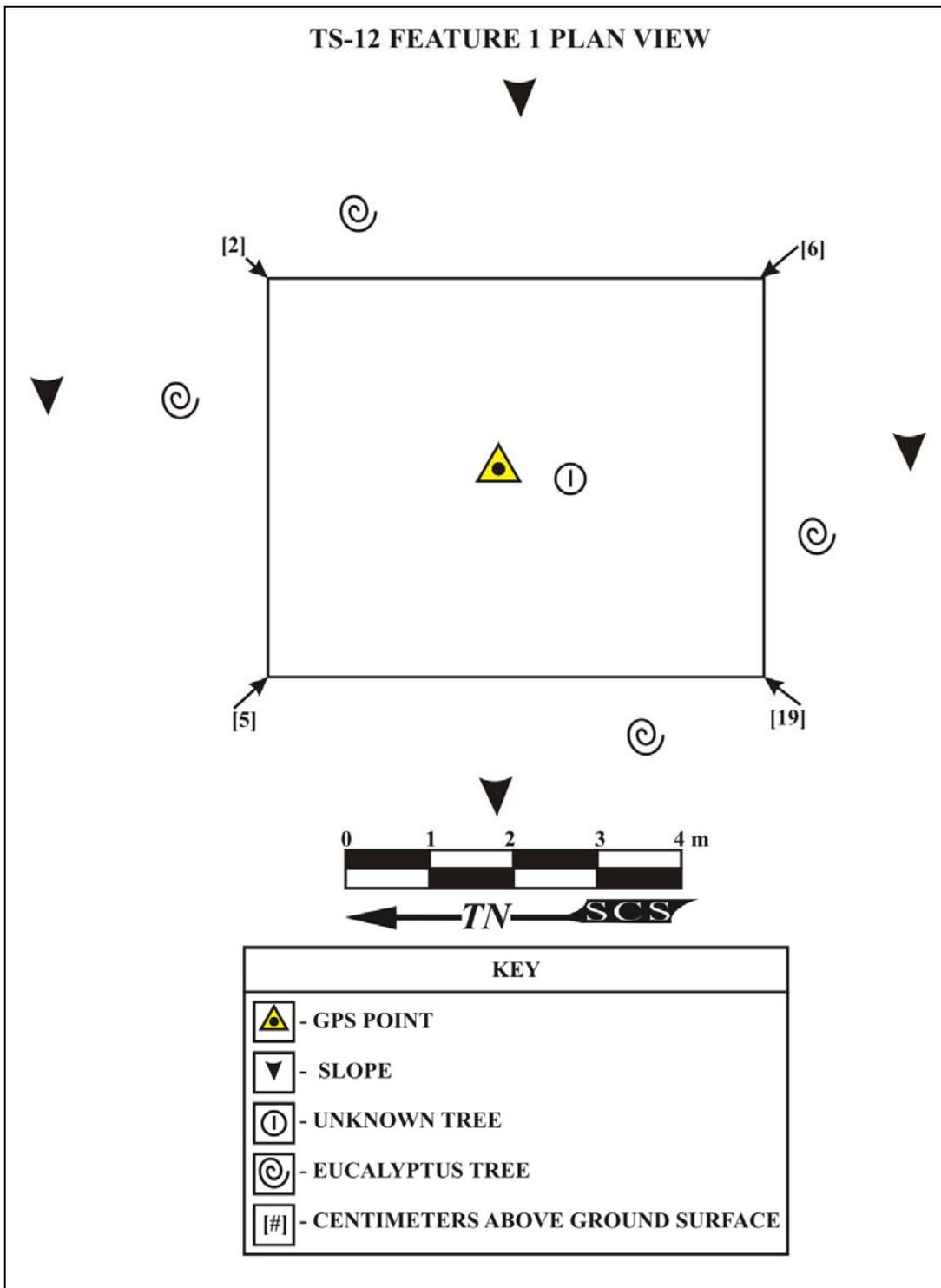


Figure 52: Plan View Drawing of State Site 50-80-01-7471, Feature 1.



Figure 53: Photographic Overview of Representative Section of State Site 50-80-01-7471, Feature 2. View to Southwest.



Figure 54: Photographic Overview of Representative Section of State Site 50-80-01-7471, Feature 3. View to Southeast.



Figure 55: Photographic Overview of Representative Section of State Site 50-80-01-7471, Feature 4. View to Southeast.

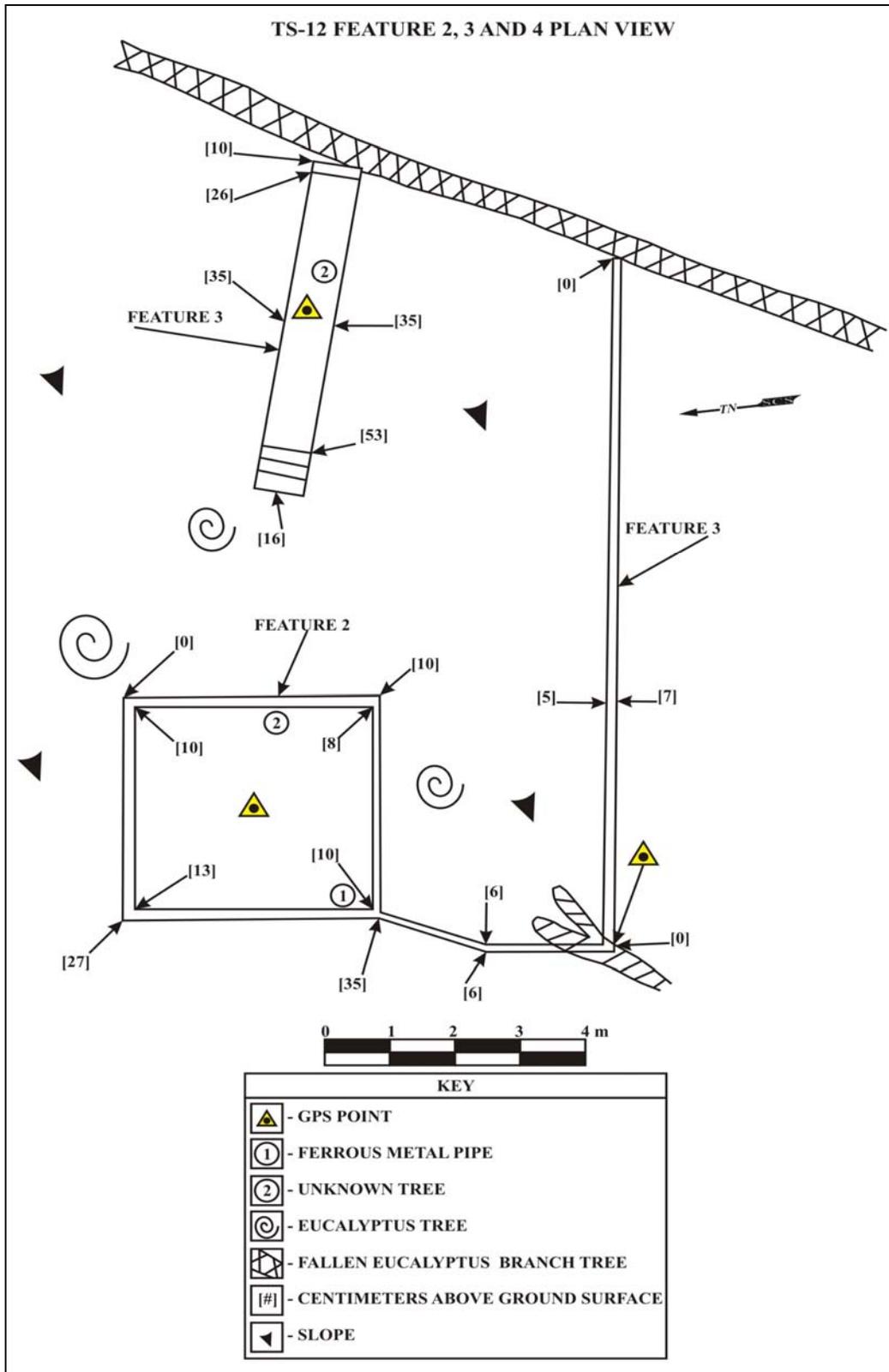


Figure 56: Plan View Drawing of State Site 50-80-01-7471, Features 2, 3 and 4.

State Site 50-80-01-7471, Feature 2

State Site 50-80-01-7471, Feature 2 consisted of a walled concrete platform that measured approximately 4.10 m long by 3.96 m wide with above ground surface heights ranging from 0 to 0.35 m high (see Figure 52 and Figure 55). Feature 2's long axis was positioned in a northeast/ southwest (006/186 degrees, true) direction and situated on slightly undulating terrain that sloped downward approximately 2 to 4 degrees from east to west. The walled platform was rectangular in plan view and one tier high. Steel bolts vertically protruded from the walls of the structure suggesting that wooden walls may have been in place. A ferrous metal pipe was observed on the ground surface approximately 3.5 m south of southwest corner of structure (see Figure 55). Based on construction materials, feature type, and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, Feature 2 was interpreted as a foundation associated with the U.S. Army. The presence of a ferrous metal pipe suggested that the feature may have had plumbing. Although State Site 50-80-01-7471, Feature 2 exhibited the effects of weathering and bioturbation, the feature remains in good condition.

State Site 50-80-01-7471, Feature 3

State Site 50-80-01-7471, Feature 3 consisted of a J-shaped concrete alignment that measured approximately 12.5 m long by 0.10 m wide and a maximum above ground surface height of 0.07 m high (see Figure 53 and Figure 56). Feature 3 was positioned in a southeast/northwest (096/276 degrees, true) direction (feature end to end) and situated on slightly undulating terrain that sloped downward approximately 2 to 4 degrees from east to west. Feature 3's west end abuts the southwest corner of the Feature 2 walled concrete platform and was constructed one course high. The feature was likely constructed in a small linear trench, as the feature was not situated on the ground surface. The northwest end of Feature 3 abuts Feature 2 suggesting Feature 3 delineated a boundary. The southeast terminus of the feature was obscured by a large, fallen eucalyptus tree branch. Based on construction materials, presence amongst other concrete features, and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, Feature 3 was interpreted as a delineation feature associated with the U.S. Army. Although State Site 50-80-01-7471, Feature 3 exhibited the effects of weathering, the feature remains in good condition.

State Site 50-80-01- 7471, Feature 4

State Site 50-80-01-7471, Feature 4 consisted of an elevated, linear concrete stand with steps at opposite ends with an overall feature horizontal measurement of approximately 5.90 m long by 0.70 m wide with above ground surface heights ranging from 0.10 to 0.53 m high (see Figure 55 and Figure 56). Feature 4 was positioned in a northeast/southwest (104/284 degrees, true) direction and situated on slightly undulating terrain that sloped downward approximately 2

to 4 degrees from east to west. The north side of the feature displayed an undercut beneath the concrete stand and the presence of such suggested that another structure was abutting the north side of Feature 4. The soil on the south side of the feature was not undercut. The east end of the feature displayed two steps while the west end of the feature displayed four steps. Feature 4 was interpreted as an access feature to a larger structure which was not present at the time of the Archaeological Inventory Survey. Based on construction materials, presence amongst other concrete features, and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, Feature 4 was interpreted as associated with the U.S. Army. Although State Site 50-80-01-7471, Feature 4 exhibited the effects of weathering and bioturbation, the feature remains in good condition.

STATE SITE 50-80-01-7472

State Site 50-80-01-7472 measured approximately 22.0 m long by 7.0 m wide and was comprised of two walled concrete platforms arbitrarily labeled during the Archaeological Inventory Survey as Features 1 and 2 (Figure 57 through Figure 60). State Site 50-80-01-7472 was situated on a slight 2 percent downslope and oriented along a northwest/southeast (177/357 degrees, true) direction. State Site 50-80-01-7471 was located 25.0 m, at 109 degrees, (True North) from State Site 50-80-01-7472. One historic artifact, a complete green glass Wildroot Cream oil hair tonic bottle with a manufacturer's symbol indicating the utilization between 1929 and 1954, was recovered from the ground surface of State Site 50-80-01-7472, Feature 1 (see Appendices A and B). Based on construction materials and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, State Site 50-80-01-7472 was interpreted as associated with the U.S. Army. State Site 50-80-01-7472 exhibited the effects of weathering and bioturbation and was in poor condition. State Site 50-80-01-7472 was evaluated for significance, as outlined in Hawai'i Administrative Rules §13-275-6, and found to be significant under Criterion D, for information content, only.

State Site 50-80-01-7472, Feature 1

State Site 50-80-01-7472, Feature 1 consisted of a walled concrete platform that measured approximately 4.3 m long by 4.0 m wide with above ground surface heights ranging from 0.12 to 0.35 m; the feature's wall thickness was 0.10 m (see Figure 58 and Figure 59). Feature 1's long axis was oriented in a southeast/northwest (104/284 degrees, true) direction and situated on an approximately 2 percent, east to west downslope, adjacent to a drop-off exhibiting an approximate 40 percent east to west downslope. A depression located in the center of the feature suggested the feature's floor collapsed; the cause of the collapse may be due to



Figure 57: Photographic Overview of Representative Section of State Site 50-80-01-7472, Feature 1. View to Northwest.

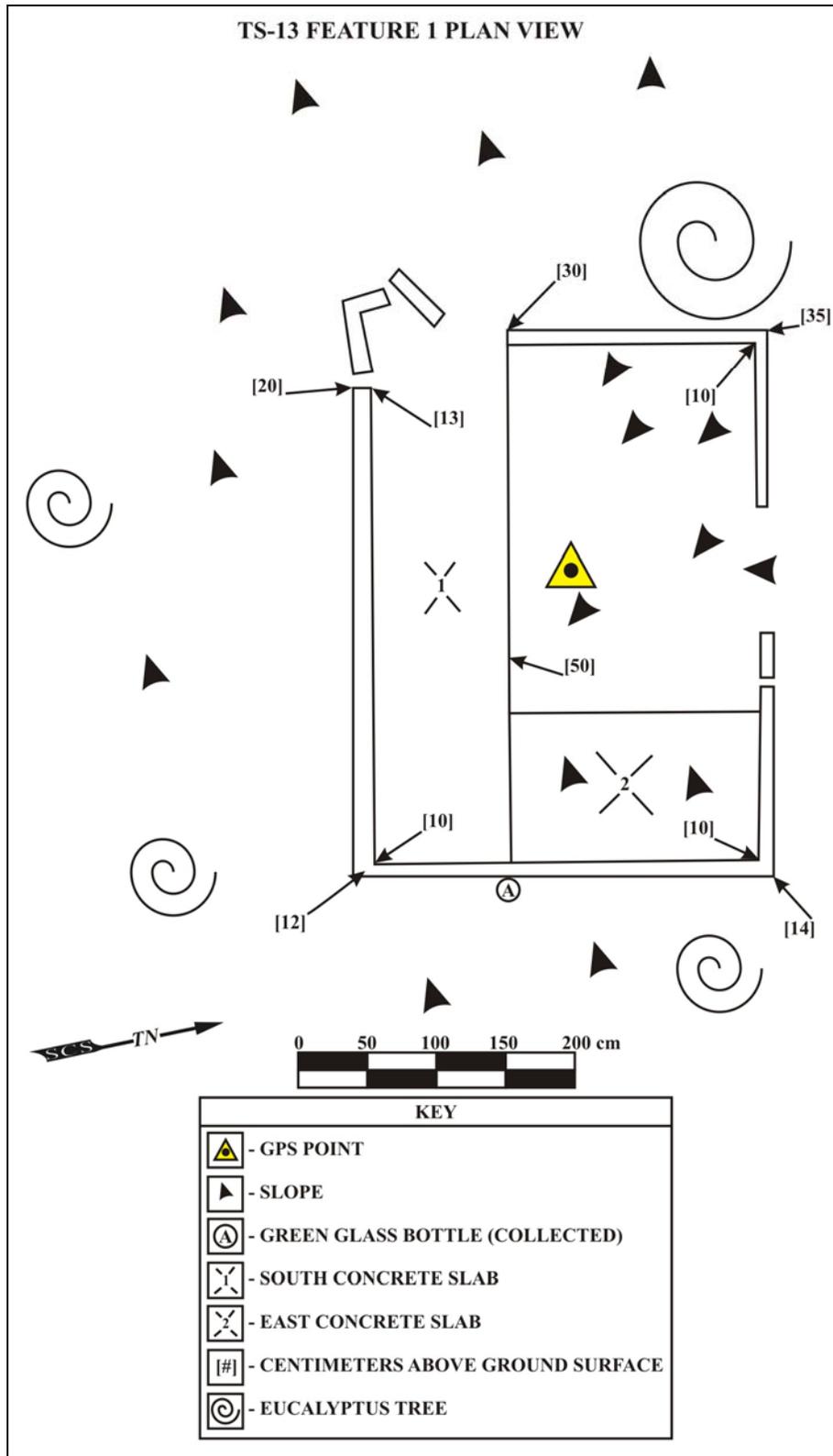


Figure 58: Plan View Drawing of State Site 50-80-01-7472, Feature 1.



Figure 59: Photographic Overview of Representative Section of State Site 50-80-01-7472, Feature 2. View to Northeast.

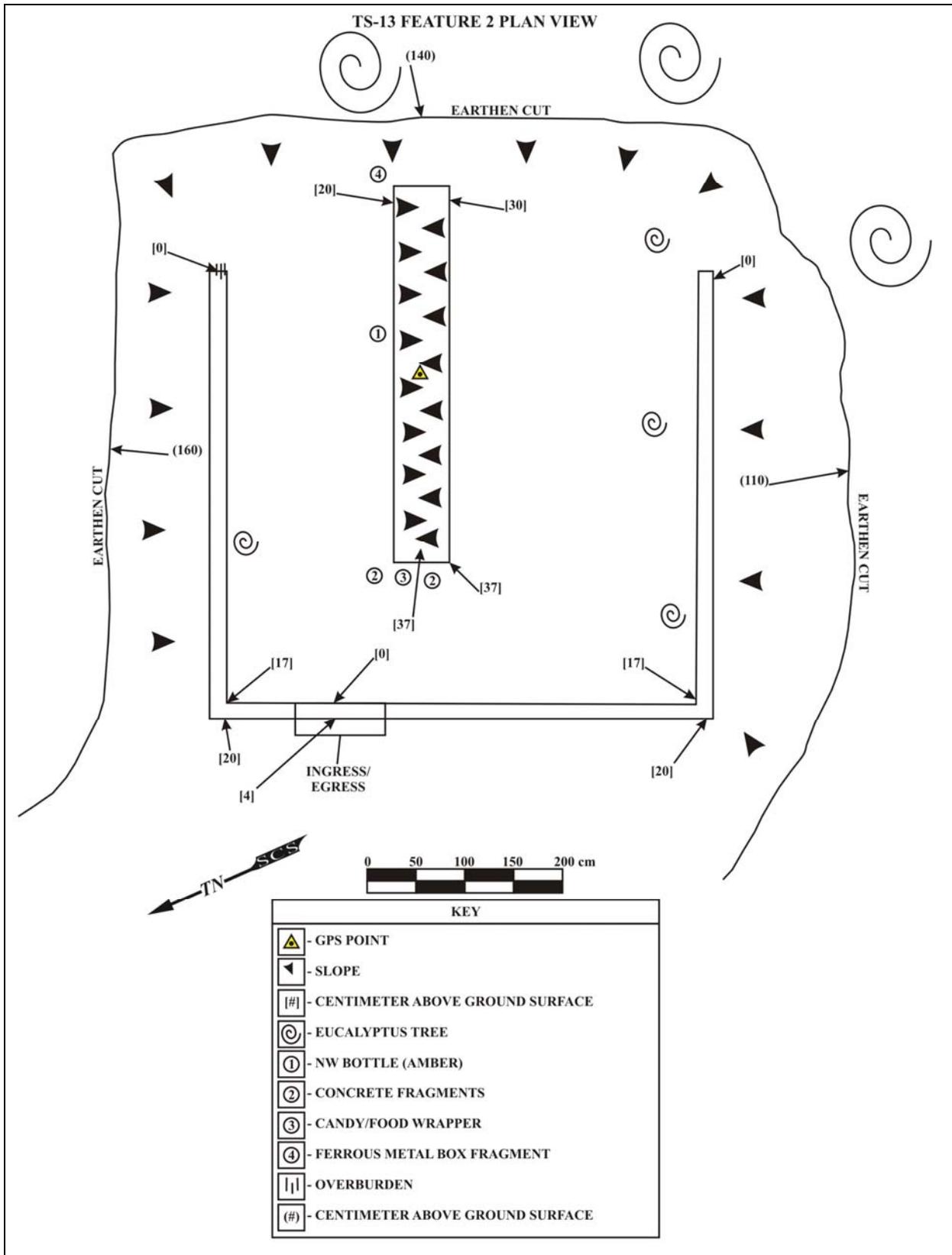


Figure 60: Plan View Drawing of State Site 50-80-01-7472, Feature 2.

bioturbation of large eucalyptus tree roots. The feature's wall was constructed using two courses of concrete. The first course consisted of a low strip of concrete upon which another course of concrete (approximately 0.15 m thick) was applied. Cultural material observed with the feature included one historic artifact, a complete green glass Wildroot Cream oil hair tonic bottle with a manufacturer's symbol indicating the utilization between 1929 and 1954, and a modern plastic candy wrapper, was observed on the ground surface of, and near, the feature. Based on construction materials and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, Feature 1 was interpreted as a foundation associated with the U.S. Army. State Site 50-80-01-7472, Feature 1 exhibited the effects of weathering and bioturbation and was in poor condition.

State Site 50-80-01-7472, Feature 2

State Site 50-80-01-7472, Feature 2 consisted of a walled rectangular concrete platform that measured approximately 5.1 m long by 4.6 m wide with above ground surface heights ranging from 0 to 0.20 m and a wall thickness of approximately 0.16 m. Feature 2 was oriented in a southeast/northwest (119/299 degrees, true) direction and placed in an earthen cut within an approximate 20 degree southeast to northwest downslope. Several ferrous, possibly steel, vertical bolts were utilized in the construction of the feature and were positioned in the wall surrounding the platform. The presence of the vertical bolts suggested that the feature likely had wooden walls. A trough-like structure was observed on the center of the platform (3.75 m long by 0.60 m wide with above concrete platform surfaces ranging from 0.20 to 0.37 m (see Figure 59 and Figure 60). The interior surface of the concrete-like trough had multiple notches and the presence of such suggested that there might have been some sort of stationary machinery placed in the notches over the trough-like feature. The center of the trough-like feature was depressed into the shape of a V. The structural integrity of the trough-like feature was compromised likely during the removal of the wood portion covering the entire feature. The eastern portion of Feature 2 was obscured by eroding soil. Based on construction materials, presence of a trough-like feature, and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, Feature 2 was interpreted as foundation that contained an unknown stationary machine associated with the U.S. Army. Although State Site 50-80-01-7472, Feature 2 exhibited the effects of weathering, soil erosion, and bioturbation, the feature was considered in fair condition.

STATE SITE 50-80-01-7473

State Site 50-80-01-7473 measured approximately 12.0 m long by 3.5 m wide and was comprised of two features: Feature 1 consisted of a cluster of linear concrete rows and Feature 2 consisted of a concrete structure (Figure 61 through Figure 64). State Site 50-80-01-7473 was

oriented along a northeast/southwest (077/257 degrees, true) direction. Based on construction materials and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, State Site 50-80-01-7473 was interpreted as associated with the U.S. Army. State Site 50-80-01-7473 exhibited the effects of weathering and was in fair condition. State Site 50-80-01-7473 was evaluated for significance, as outlined in Hawai'i Administrative Rules §13-275-6, and found to be significant under Criterion D, for information content, only.

State Site 50-80-01-7473, Feature 1

State Site 50-80-01-7473, Feature 1 consisted of a cluster of seven linear concrete rows with an overall feature horizontal dimension of approximately 4.0 m long by 3.5 m wide with above ground surface heights ranging from 0 to 0.30 m (see Figure 61 and Figure 62). Each of the concrete strips was approximately 0.30 m wide. The north side of the feature was covered with soil such that the entire feature horizontal dimensions could not be seen. Feature 1 was positioned on a relatively level area which had been cut into a 45 degree northeast to southwest downslope and oriented along a northeast/southwest (014/194 degrees, true) direction. Based on construction materials, feature type similar to State Site 50-80-01-7469, and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, Feature 1 was interpreted as a water tank foundation associated with the U.S. Army. State Site 50-80-01-7473, Feature 1 exhibited the effects of weathering and compromised structural integrity and was considered in fair condition.

State Site 50-80-01-7473, Feature 2

State Site 50-80-01-7473, Feature 2 consisted of a square concrete structure that measured approximately 2.4 m square with above ground surface heights ranging from 0 to 2.0 m and a wall thickness of approximately 0.18 m (see Figure 63 and Figure 64). Feature 2's southeast side was oriented along a northeast/southwest (014/195 degrees, true) direction while the feature was positioned on a level area within an earthen cut into a 50 to 60 degree southwest to northeast downslope. Although no observation slits such as those found at State Site 50-80-01-7460 and State Site 50-80-01-7461 concrete bunkers were observed on the exposed facets of State Site 50-80-01-7473, Feature 2, a total of six square holes (each measuring 0.10 m square; three holes on each side of the ingress/egress) were observed parallel to the vertical sides of the feature's vertical ingress/egress. The bottom sides of each of the six holes are slanted downward from the interior of the feature to the exterior of the feature. Although the definitive function of these square holes is not known, given the size of the holes, the likely function of these square holes is for ventilation. The function of the feature is likely storage given the feature's



Figure 61: Photographic Overview of Representative Section of State Site 50-80-01-7473, Feature 1. View to West.

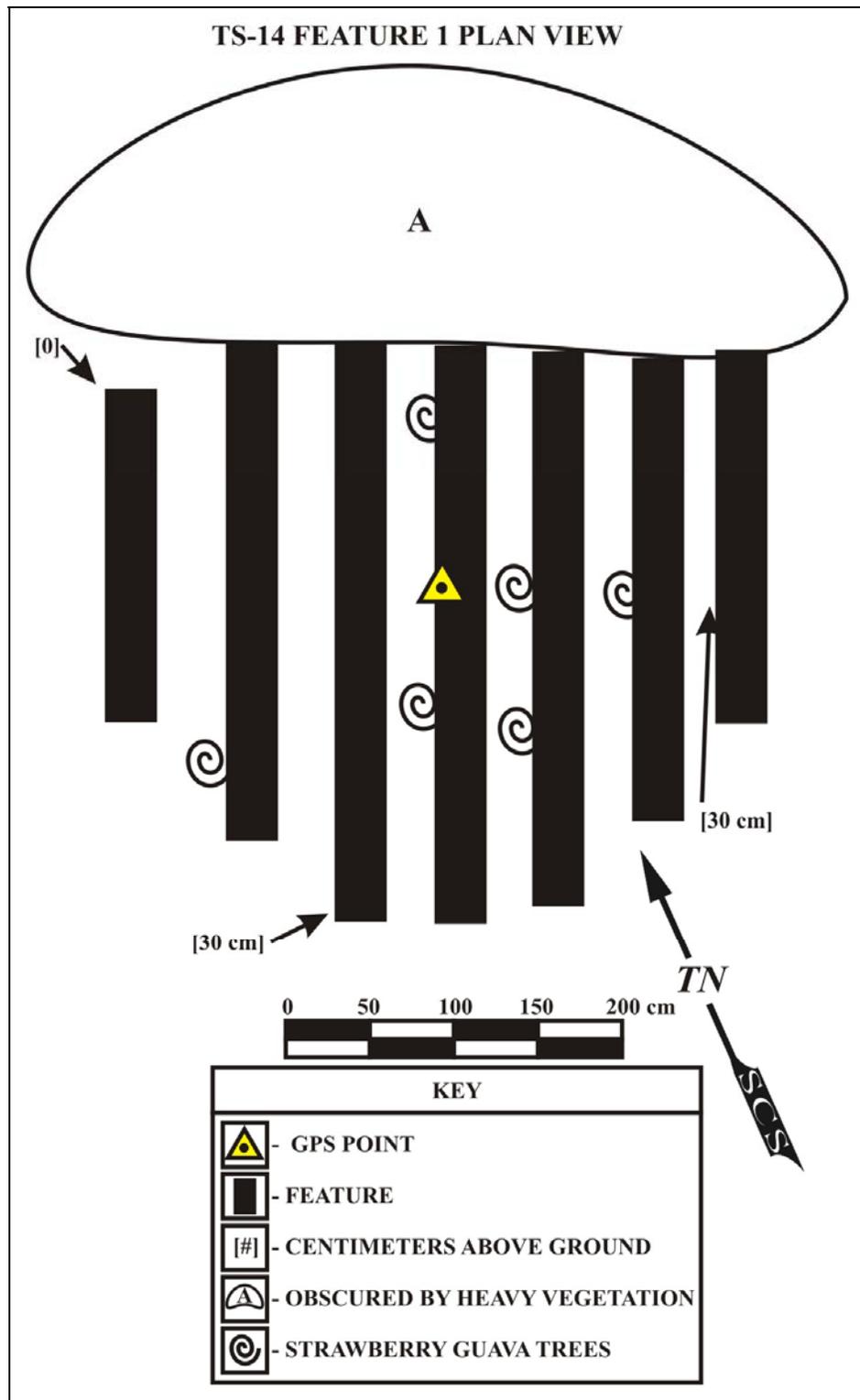


Figure 62: Plan View Drawing of State Site 50-80-01-7473, Feature 1.



Figure 63: Photographic Overview of Representative Section of State Site 50-80-01-7473, Feature 2. View to South.

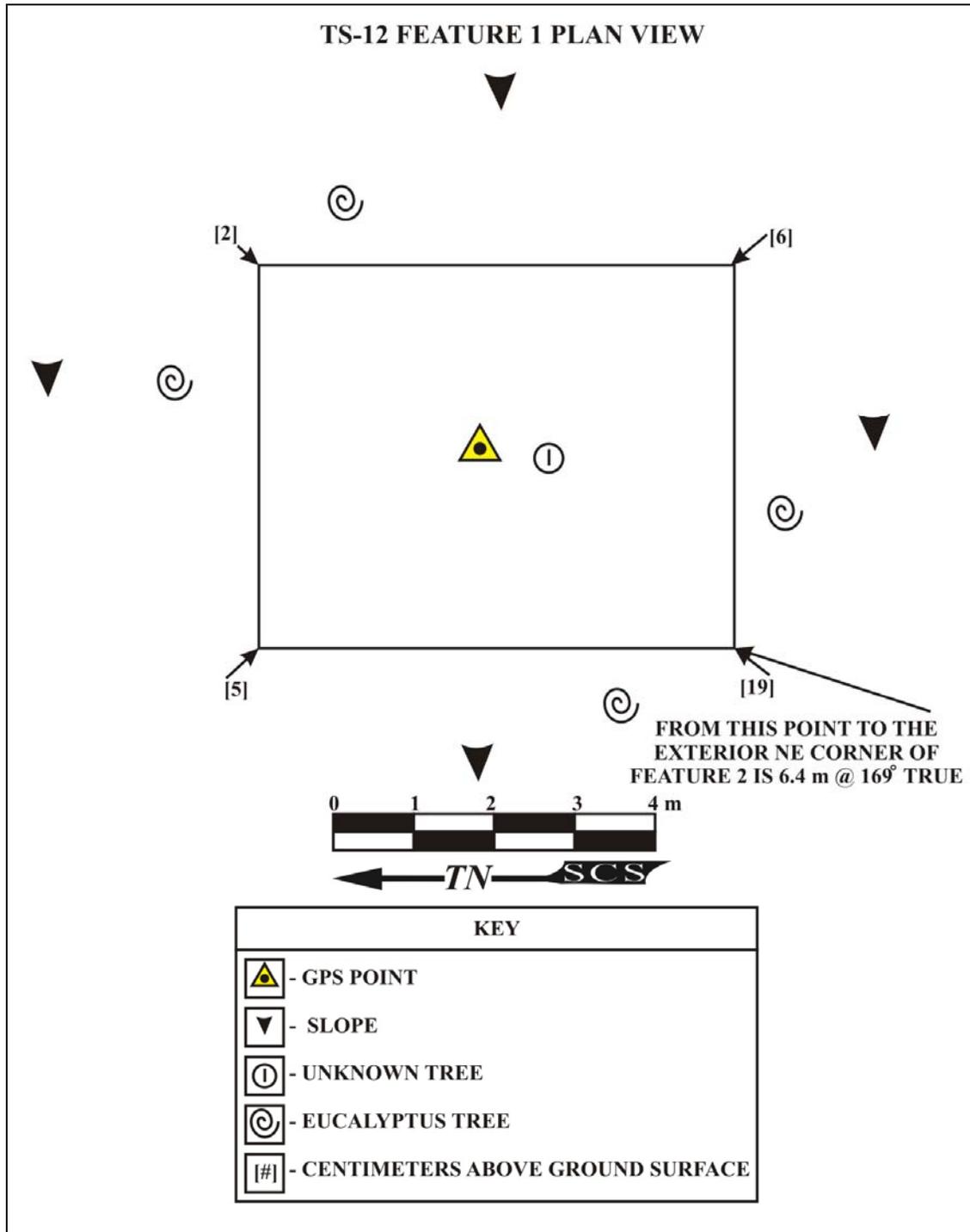


Figure 64: Plan View Drawing of State Site 50-80-01-7473, Feature 2.

topographic location on a medium downslope near Pupukea Road. Based on construction materials and the knowledge that the U.S. Army previously owned and operated in the area that is now the Boy Scout camp, Feature 2 was interpreted as a possible storage facility associated with the U.S. Army. State Site 50-80-01-7473, Feature 2 exhibited the effects of minimal weathering and was considered in fair condition. Modern cultural materials on the ground surface in the interior of Feature 2 included plastic bags and a wooden shelf which suggested the feature is being utilized as a temporary habitation feature (*e.g.*, a dry place out of the weather).

STATE SITE 50-80-01-7474

State Site 50-80-01-7474 consisted of an unimproved historic (the roadway is marked on a 1904 map of the Pupukea-Paumalu Homesteads [Figure 65]) roadway corridor, 950.0 m by 3.0 to 9.0 m wide, most of which is still utilized (Figure 66) within the Boy Scouts Camp, but not to obtain access to the Pupukea-Paumalu Homesteads or the Pupukea-Paumalu State Park Reserve as an alternative, more direct route through the Camp Pupukea exists. The straight distance between the historic roadway corridors two ends is oriented in a southeast/northwest (155/335, true) direction and situated on an approximately 2 to 3 degree, northwest/southeast trending slope. The surface of the historic roadway corridor extends between the Pupukea Boy Scout Camp parking lot and the northwest corner of the Boy Scouts Camp property. Although an approximate 84.0 m portion of the historic roadway corridor located between the current camp parking lot to the front of the current Harry and Jeanette Weinberg cafeteria was covered with manicured grass, linear depressions suggesting vehicular traffic were visible. Overall, the historic roadway corridor was curvilinear with no tiers or courses.

The surface of the roadway corridor was primarily comprised of basalt gravel and soil. However, portions of the road surface consisted of limestone pebbles mixed with basalt gravel. The northwestern portion of the roadway surface was comprised of earth. Thus, this section of the roadway was subject to erosion, especially where the roadway was on an approximate 40 degree southeast to northwest downslope. Besides the basalt gravel and the limestone pebbles, no cultural materials were found in association with State Site 50-80-01-7474. Based on construction methods and materials and the Walter E. Wright (1904) map (Figure 65) of the Pupukea-Paumalu Homesteads, State Site 50-80-01-7474 was interpreted as a historic road associated with the development of the Homesteads. An Army Corps of Engineers Record of Completed Works (August 1927) (Figure 75) Map suggests the possibility that Homestead Road may have subsequently been utilized by the military for various other military operations. State Site 50-80-01-7474 exhibited the effects of weathering and was in fair condition. State Site 50-

80-01-7474 was evaluated for significance, as outlined in Hawai'i Administrative Rules §13-275-6, and found to be significant under Criterion D, for information content.

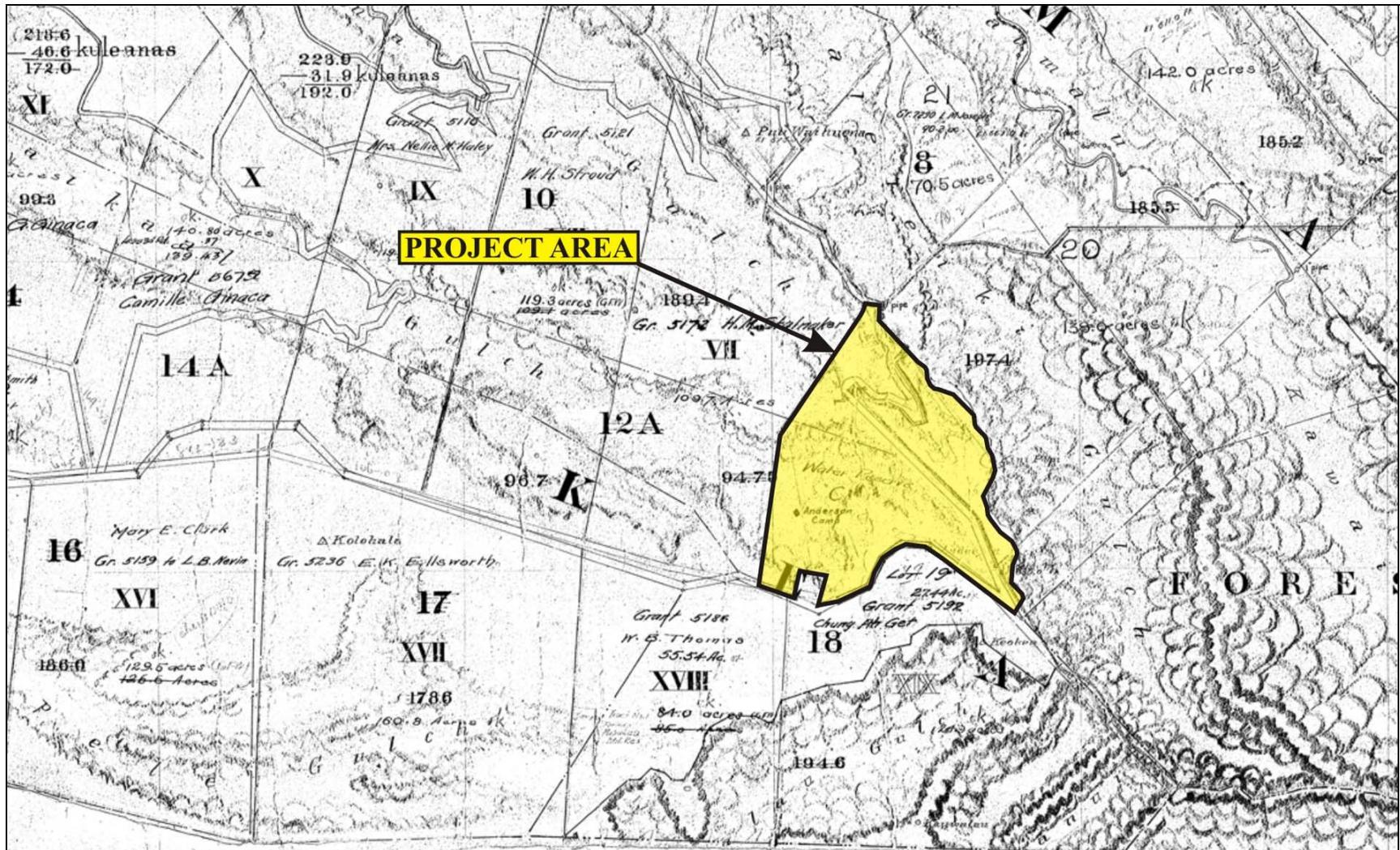


Figure 65. Portion of Wright's 1904 map of the Pupukea-Paumalu Homesteads (Registered Map Number 2252), showing the project area marked in yellow, State Site 50-80-01-7474 (Homestead Road) crosses from the bottom right corner of the project area to the top corner.



Figure 66: Photographic overview of State Site 50-80-01-7474. View to Northeast.

TESTING RESULTS

Limited subsurface testing was conducted during the current Archaeological Inventory Survey in order to identify human alteration, archaeological features, and associated artifacts in subsurface contexts. For the purpose of addressing these issues, four shovel probes (SP-1 through SP-4) were manually excavated during the current survey. All excavations produced negative results. A description of each Shovel Probe is presented below. The GPS point associated with SP-1 through SP-4 are presented in Table 2.

Table 2: Shovel Probe GPS Locations

Shovel Probe	Easting	Northing	Accuracy
1	0600749	2393846	±3
2	0600734	2394068	±4
3	0600675	2393731	±4
4	0600527	2393694	±4

SHOVEL PROBE 1 (SP-1)

Shovel Probe 1 (SP-1) (0.35 m diameter by 0.44 m deep) was placed on a level ground surface southwest of a closed out-house within the Pupukea Boy Scout Camp (see Figure 4). Shovel Probe 1 was surrounded by eucalyptus trees and decomposing brush. Shovel Probe 1 contained two culturally sterile stratigraphic layers which are described below (Figure 67 and Figure 68).

Layer I

Layer I (0-32 cmbs) consisted of compact dark, reddish gray (5YR 4/2, dry) loamy clayey silt. Eucalyptus tree roots were present throughout Layer I. As the lower boundary was diffused, Layer I was interpreted as a natural stratum. Layer I was culturally sterile.

Layer II

Layer II (32-44 cmbs) consisted of compact dark, reddish gray (5YR 3/4, dry) clayey silt with few Eucalyptus tree roots. Layer II was interpreted as a natural stratum. Layer II was culturally sterile. Based on the absence of cultural materials excavation of SP-1 was terminated at 44 cmbs.

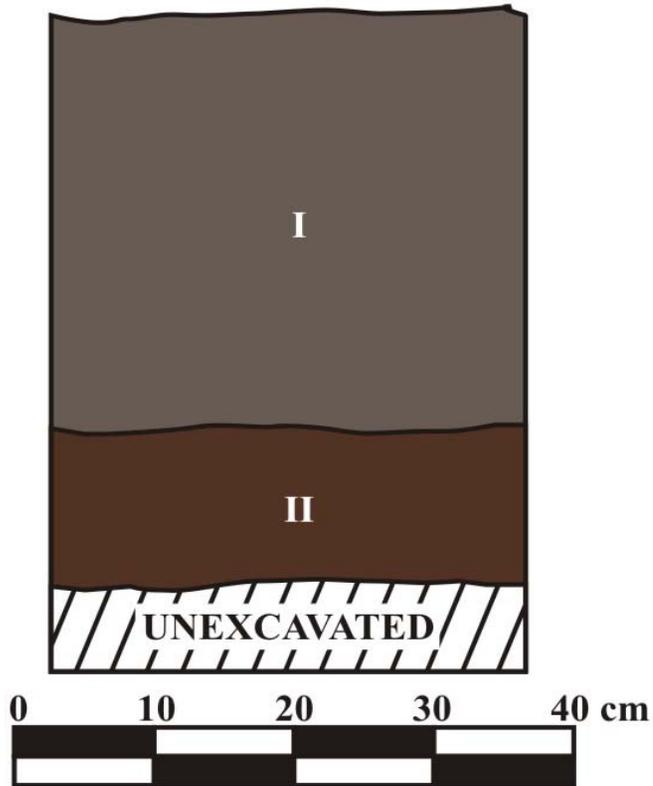
SHOVEL PROBE 2 (SP-2)

Shovel Probe 2 (SP-2) (0.30 m diameter by 0.35 m deep) was placed in the western half of Imaka Camp B, within the Pupukea Boy Scout Camp (see Figure 4). Shovel Probe 2 was situated on a slight (5 degree) northeast/southwest trending slope.



Figure 67: Photographic View of Shovel Probe 1 (SP-1) South Wall Profile. View to Southeast.

SP-1 SOUTH WALL PROFILE



KEY

- I** - LAYER I: DARK REDDISH GRAY (5YR 4/2, DRY) LOAMY CLAYEY SILT
- II** - LAYER II: DARK REDDISH BROWN (5YR 3/4, DRY) CLAYEY SILT

Figure 68: Shovel Probe 1 (SP-1) Profile Drawing, South Wall.



Figure 69: Photographic View of Shovel Probe 2 (SP-2) West Wall Profile. View to West.

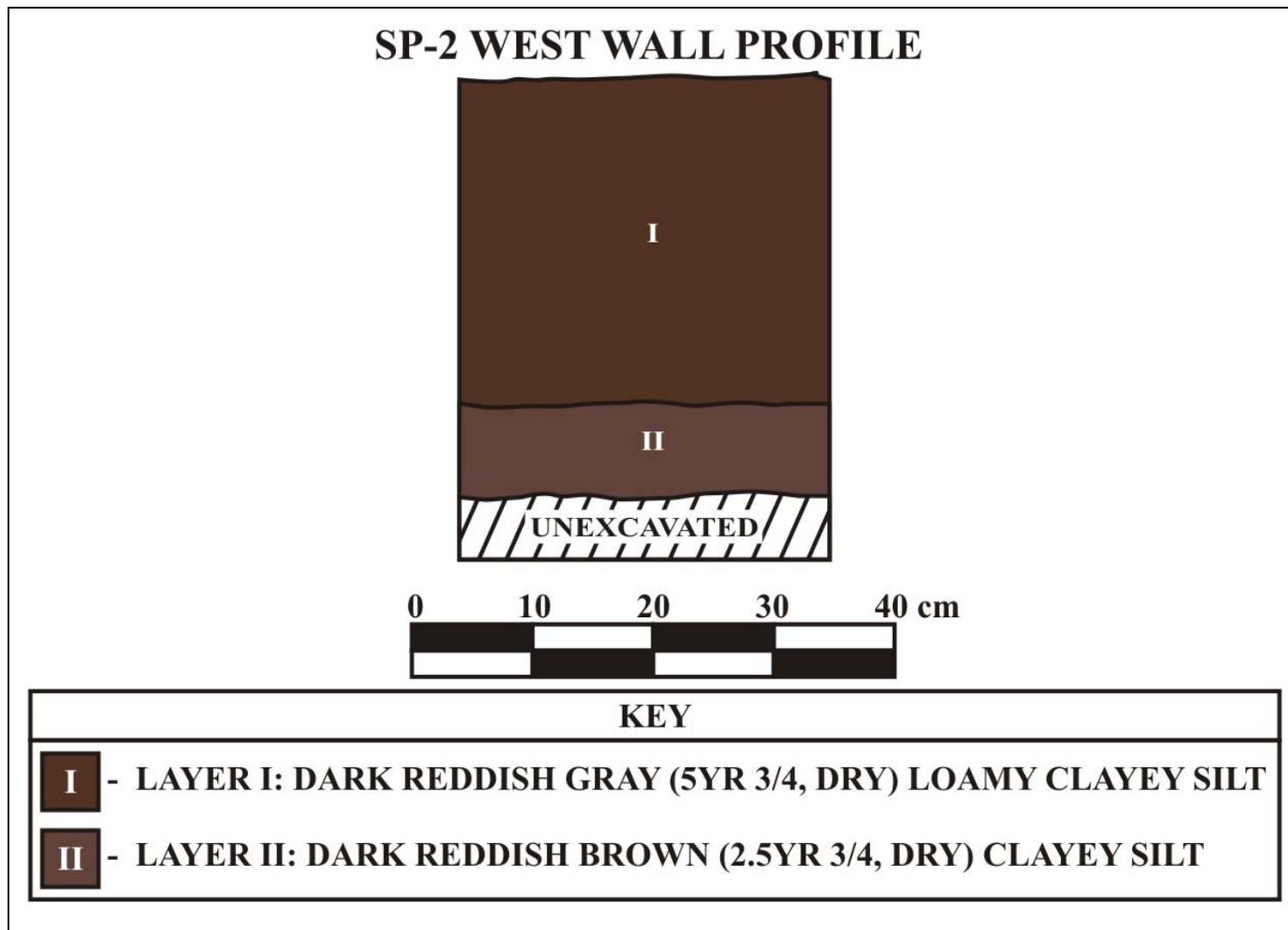


Figure 70: Shovel Probe 2 (SP-2) Profile Drawing, West Wall.

Like SP-1, SP-2 was surrounded by eucalyptus trees and decomposing brush. Shovel Probe 2 contained two stratigraphic layers which are described below (Figure 69 and Figure 70).

Layer I

Layer I (0-27 cmbs) consisted of compact dark, reddish brown (5YR 3/4, dry) loamy clayey silt. Eucalyptus tree roots were present throughout Layer I. One angular piece of basalt gravel was observed on the surface of SP-2. One piece of charcoal was present within Layer I. Both the single piece of basalt gravel and one piece of charcoal were interpreted as modern cultural materials. The presence of these materials suggests Layer I was a natural stratum with the upper portion disturbed by modern activities, such as campfires and the modern importation of construction material (*i.e.*, gravel) for the installation of a near-by spigot. A non-diagnostic amber bottle glass sherd was observed in the backfill material.

Layer II

Layer II (27-35 cmbs) consisted of compact dark, reddish brown (2.5YR 3/4, dry) clayey silt with few pine and Eucalyptus tree roots. The boundary between Layer I and Layer II was diffuse. Thus, Layer II was interpreted as a natural stratum. Layer II was culturally sterile. Based on the absence of cultural materials excavation of SP-2 was terminated at 35 cmbs.

SHOVEL PROBE 3 (SP-3)

Shovel Probe 3 (SP-3) (0.28 diameter by 0.28 deep) was placed between State Sites 50-80-01-7467 and 50-80-01-7468, approximately 5 northwest of the main road (see Figure 4). Shovel Probe 3 was situated on a slight (5 degree) north/south trending slope. Shovel Probe 3 placed in an area of heavy vegetation, decomposing vegetation, weeds, ferns, and young strawberry guava trees, and eucalyptus trees. Shovel Probe 3 contained two culturally sterile stratigraphic layers which are described below (Figure 71 and Figure 72).

Layer I

Layer I (0-24 cmbs) consisted of compact dark, reddish brown (5YR 3/4, dry) loamy clayey silt. Roots, including strawberry guava, were present throughout Layer I. The lower boundary of Layer I was diffuse suggesting Layer I was a natural stratum. Layer I was culturally sterile.

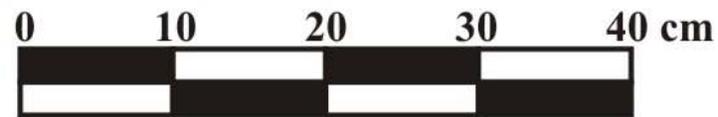
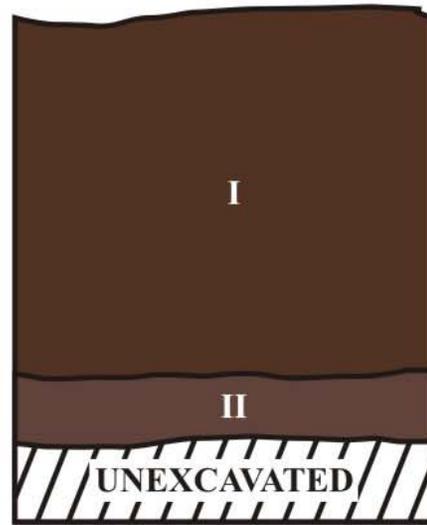
Layer II

Layer II (24-28 cmbs) consisted of very compact dark, reddish brown (2.5YR 3/4, dry) clayey silt with strawberry guava tree roots. The boundary between Layer I and Layer II was diffuse. Thus, Layer II was interpreted as a natural stratum. Layer II was culturally sterile. Based on the absence of cultural materials excavation of SP-3 was terminated at 28 cmbs.



Figure 71: Photographic View of Shovel Probe 3 (SP-3) West Wall Profile. View to West.

SP-3 WEST WALL PROFILE



KEY

- I** - LAYER I: DARK REDDISH BROWN (5YR 3/4, DRY) LOAMY CLAYEY SILT
- II** - LAYER II: DARK REDDISH BROWN (2.5YR 3/4, DRY) SILTY CLAY

Figure 72: Shovel Probe 3 (SP-3) Profile Drawing, West Wall.

SHOVEL PROBE 4 (SP-4)

Shovel Probe 4 (SP-4) (0.20 diameter by 0.36 deep) was placed near State Site 50-80-01-7470, adjacent to Features 1 and 2 (see Figure 4). Shovel Probe 4 was situated on a slight (5 degree) northwest/southeast trending slope. Shovel Probe 4 placed in an area of heavy vegetation, decomposing vegetation, weeds, ferns, and young strawberry guava trees, and eucalyptus trees. Shovel Probe 4 contained three stratigraphic layers which are described below (Figure 73 and Figure 74).

Layer I

Layer I (0-24 cmbs) consisted of compact dark, reddish brown (5YR 3/2, dry) loamy clayey silt. Numerous roots were present throughout Layer I. Approximately 20 percent of Layer I consisted of angular basalt gravel. No other cultural material was observed. The base of the Layer I/Layer II boundary was strong and well defined. Layer I was interpreted as a natural stratum as it was consistent with that of Layer I within SP-1, SP-2, and SP-3. The presence of basalt gravel suggests that Layer I was subjected to historic mechanical disturbance and re-deposited over an impacted Layer II stratum.

Layer II

Layer II (24-30 cmbs) consisted of very compact very pale brown (10YR 7/4, dry) crushed limestone fill. No roots or cultural material was observed. The upper and lower boundaries of Layer II were well defined. Thus, Layer II was interpreted as comprised of imported fill material.

Layer III

Layer III (30-36 cmbs) consisted of compact, dark reddish brown (2.5YR 3/4, dry) silty clay with no roots or cultural material. Layer III may have been mechanically truncated in preparation for the placement of Layer III. Layer III was interpreted as a natural stratum.

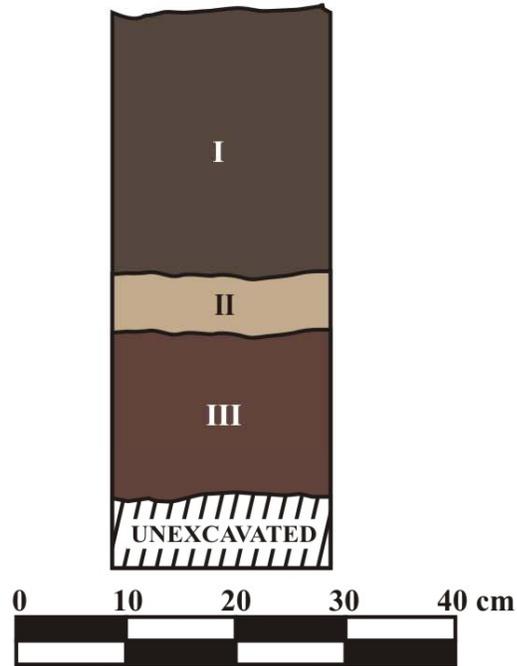
DISCUSSION AND CONCLUSIONS

Scientific Consultant Services, Inc. (SCS) conducted an Archaeological Inventory Survey of the 64.798 acre project area situated within the existing Boy Scouts of America, Camp Pupukea, Pūpūkea Ahupua`a, Ko`olauloa District, O`ahu Island, Hawai`i [TMK: (1) 5-9-005:002 and 077]. During the survey a total of thirty surface architectural features were identified. Based on spatial context, the thirty features were consolidated into fifteen new archaeological sites (State Site 50-80-01-7460 through State Site 50-80-01-7474). A total of twenty-four artifacts were recovered from the ground surface during the current survey. Twenty artifacts were recovered from the ground surface of State Site 50-80-01-7463 three porcelain jug sherds which fit together; one knob and tube porcelain electrical insulator, which was manufactured from the



Figure 73: Photographic View of Shovel Probe 4 (SP-4) Northwest Wall Profile. View to Northeast.

SP-4 NORTHWEST WALL PROFILE



KEY

- I** - LAYER I: DARK REDDISH GRAY (7.5YR 3/2, DRY) LOAMY CLAYEY SILT
- II** - LAYER II: VERY PALE BROWN (10YR 7/4, DRY) CRUSHED LIMESTONE FILL
- III** - LAYER III: DARK REDDISH BROWN (2.5YR 3/4, DRY) SILTY CLAY

Figure 74: Shovel Probe 4 (SP-4) Profile Drawing, Northwest Wall.

1880 to the 1930s; one possible electrical insulator sherd; one possible subsurface utility stoneware pipe sherd; bottle glass base sherd utilized between 1929 and 1954; a complete clear glass bottle with a bottle manufacturing date of 1943; milk glass jar rim sherd; milk glass vessel body sherd; bottle glass base sherd with a bottle manufacturing date of 1943; live brass 0.45-caliber pistol cartridge with bullet with cartridge manufacture date of 1941; brass 5-round clip stripper clip; live brass 0.30-caliber rifle round with bullet with cartridge manufacture date of 1918; ferrous metal nail; ferrous metal flat can; ferrous metal bottle cap; ferrous metal can (possible oil can); ferrous metal safety pin; limestone pebbles; and 1/16-inch wire mesh. Three were recovered from the ground surface of State Site 50-80-01-7466 Feature 1: one possible bowl/rim base sherd manufactured for the U.S. Army Quartermaster's Corps, one ferrous metal can fragment, and one ferrous metal can, with the lid missing. One artifact was recovered from the ground surface of State Site 50-80-01-7472 a complete green glass Wildroot Cream oil hair tonic bottle with a manufacturer's symbol indicating the utilization between 1929 and 1954.

Laboratory analysis indicated that all collected cultural materials were historic-type artifacts, primarily associated with the U.S. Army. Based on construction methods and materials, context, and the absence of Traditional-type cultural materials, State Sites 50-80-01-7460 through -7474 were interpreted as historic sites utilized by the U.S. Army Fleet Defense. With the exception of the live brass 0.30-caliber rifle round with bullet with cartridge manufacture date of 1918 and one knob and tube porcelain electrical insulator which was manufactured from the 1880 to the 1930s, all of the diagnostic artifacts recovered from the current project area were manufactured between 1929 and 1954. This time frame places the artifacts well within the 1907 to 1950 period when the U.S. Army built "an island fortress" to defend Pearl Harbor (Williford and McGovern 2003:4). These findings all suggest that the project area was utilized by the United States Army prior to, during, and after World War II.

According to Williford and McGovern (2003:4), the U.S. Army became involved with the Hawaiian Islands in 1898, with the onset of the Spanish American War, as the Hawaiian Islands. Given the strategic location of the Islands and that O`ahu offered "the best natural port", the U.S. government, subsequently, realized the establishment of military bases in the Hawaiian Islands, Alaska, and in close proximity to the Panama Canal could provide a "defensive border thousands of miles of miles from the West Coast." The U.S. government also realized that these bases would need to be provided with supplies on a regular basis and a support base would, also, need to be established. The United States initiated the development of a defense system on O`ahu in the early 1900s, over thirty years before the 1941 attack on Pearl Harbor by the Japanese.

So, "once the U.S. Navy committed to establishing a major base [on O`ahu], the U.S. Army was assigned and... undertook the mission to defend [the base] against all known threats"(*ibid*). Between 1907 and 1950, the U.S. Army built "an island fortress with sophisticated artillery defenses, multiple airfields, underground command centers, beach defenses, mobile troop formations, and large supply centers...", and fire control stations (*ibid*: 4, 5, 26). As part of the Army's defense system, Camp Pūpūkea was occupied by the U.S. Military from approximately 1927 - 1953.

Based on construction methods and materials and artifact types, it can be surmised that the features and sites identified during the Archaeological Inventory Survey are associated with the U.S. Army Fleet Defense System, which was in operation from 1907 through 1950 (Williford and McGovern 2003). However, State Site 50-80-01-7474 (Homestead Road) was interpreted as a historic road associated with the development of the homesteads based on construction methods and materials and the Walter E. Wright (1904) map (Figure 65) of the Pupukea-Paumalu Homesteads (Registered Map Number 2252). An Army Corps of Engineers Record of Completed Works (August 1927) (Figure 75) Map suggests the possibility that Homestead Road may have subsequently been utilized by the military for various other military operations. State Site 50-80-01-7460, Feature 1, and 50-80-01-7461 were positioned on the south rim of Paumalū Gulch, overlooking the Pacific Ocean in the `Ehukai Beach area, and are associated with Pupukea Battery Emplacements 1 and 2, which were in use from 1927 to 1946 (Williford and McGovern 2003: 65), the U.S. Army positioned men in State Site 50-80-01-7460, Feature 1, and 50-80-01-7461 to spot enemy ships approaching O`ahu from the north. This information would then be communicated to Pupukea Battery Emplacements 1 and 2, which are located approximately 1.0 mile to the southwest (see Figure 75). The paucity of intact structures identified during the Archaeological Inventory Survey hinders the interpretation of the individual feature and site function. However, the remaining sites identified within the project area have been interpreted as in support of the Fire Control Station's mission of identifying and communicating the approach of enemy ships from the North.

SIGNIFICANCE ASSESSMENTS AND RECOMMENDATIONS

State Sites 50-80-01-7460 through -7474 have been evaluated for significance, as outlined in Hawai'i Administrative Rules §13-275-6. To be assessed as significant a site must be characterized by one or more of the following five criteria:

- (A) It must be associated with events that have made a significant contribution to the broad patterns of our history, or be considered a traditional cultural property.

- (B) It must be associated with the lives of persons significant in the past.
- (C) It must embody distinctive characteristics of a type, period, or method of construction, or represent a significant and distinguishable entity whose components may lack individual distinction.
- (D) It must have yielded or may be likely to yield, information important in prehistory or history.
- (E) It must have important value to native Hawaiian people or other ethnicities in the state, due to associations with cultural practices and traditional beliefs that were, or still are, carried out.

State Site 50-80-01-7460 through State Site 50-80-01-7474 were evaluated and found to be significant under Criterion D, for information, only. Based on the findings of the survey, it seems unlikely that new information would be gleaned from additional study of the area. Thus, no further archaeological work is recommended for the 64.798 acre project area situated within the existing Boy Scouts of America, Camp Pupukea, Pūpūkea Ahupua`a, Ko`olauloa District, O`ahu Island, Hawai`i [TMK: (1) 5-9-005:002 and 077].

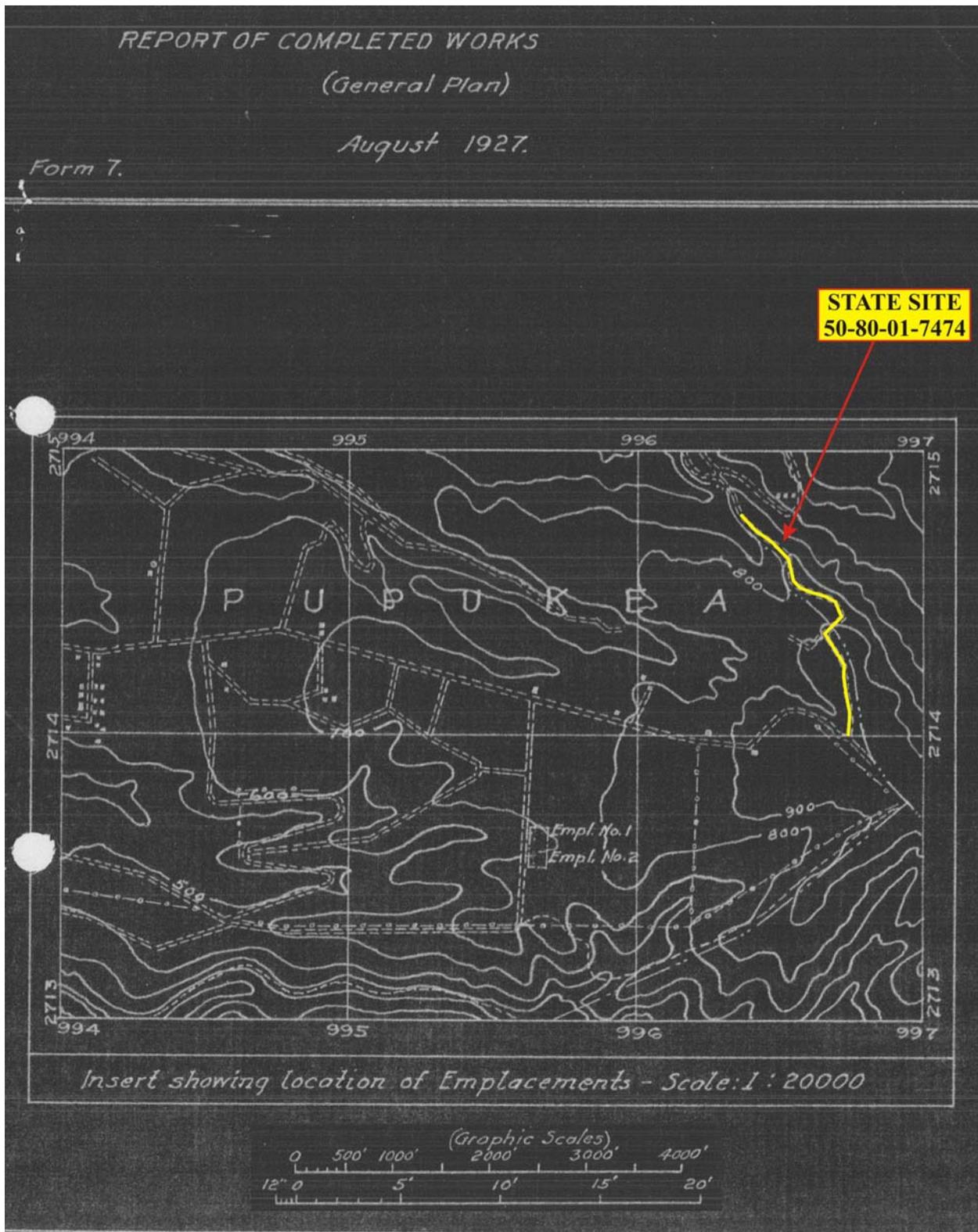


Figure 75: Army Corps of Engineers Record of Completed Works (August 1927) Map Showing Site 50-80-01-7474 (identified as TS-15) and the location of two 155mm gun emplacements (marked Empl. No. 1 and Empl. No. 2).

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APPENDIX A: BOUNDARY COMMISSION DOCUMENT

DOCUMENT DELIVERY
Boundary Commission Documents

BCId: 14985

Certification #:	006	Plants/Trees:	No
Lele:		Wall/Fence:	No
Ili/Area:		Fishing Rights:	No
Ahupua`a	Paumalu & Pupukea	Road Trail:	No
District:	Koolauloa	Cultivating Grounds/Taro	No
Island	Oahu	Structure(s):	No
Ownership:	Crown	Kama`aina Testimony:	No
Bird Catcher/Canoe Maker	No	Misc:	
Burial Grave:	No	Year:	1874
Cave:	No		

Paumalu and Pupukea Ahupuaa, District of Koolauloa, Island of Oahu, Boundary Commission, Oahu, Volume 2, No. 1, pps 137-138

Sundry Crown Lands

Application for the Settlement of Boundaries of sundry Crown Lands

Filed July 14

Honolulu, July 14th 1873

L. McCully, Esquire, Komisina o na Palena Aina, Apana Hookolokolo Ekahi
 Me ka Mahalo

Kakauia malalo, kekahi o na Komisina o na Aina Moi (Aina Lei Ulii), ke waiho ahu nei imua ou I keia palapala me ke noi aku. E hooopnopo Koke ia na Palena o na aina Moi ma ka Mokupuni Oahu nei e like me ia I koike ia malalo nei. Oia na Inoa:

[margin note: See page 524]

1. Papaa, Ili Aina ma Waikele, Ewa, Oahu
2. ½ Pouhala, Proceedings on page 241
3. Weloka, Ili aina ma Waimano, Ewa, Oahu
4. Hanokawailani, Ili aina ma Waiau, Ewa, Oahu
5. Kauhihau, Ili aina ma Waiau, Ewa, Oahu
6. Kaukahoku, Ili aina ma Kapalama, Kona Oahu

7. Kamookahi, Ili aina ma Kapalama, Kona, Oahu
 8. Kumupali, Ili aina ma Kapalama, Kona, Oahu
 9. ½ Paepaealii, Ili aina ma Kapalama, Kona, Oahu
 10. Kawaiki, Ili aina ma Honolulu, Kona, Oahu [margin note see page 316]
 11. Hauhaukoi, Ili aina ma Honolulu, Kona, Oahu [margin note see page 317]
 12. ½ Kahaumakaawe, Ili aina ma Manoa, Kona, Oahu
 13. Kahalauluahine, Ili aina ma Manoa, Kona, Oahu
 14. Kalokoeli, Ili aina ma Manoa, Kona, Oahu
[page 138]
 15. Kamookahi, Ili aina ma Waikiki, Kona, Oahu
 16. Piliamoo, Ili Aina ma Waikiki, Kona, Oahu
 17. ½ Poloke, Ili aina ma Waikiki, Kona, Oahu; settlement on page 266
 18. Waimanalo ahupuaa, Koolaupoko
 19. Kawailoa, Ili Aina ma Kailua, Koolaupoko
 20. Halekou, Ili aina ma Kaneohe, Koolaupoko [margin note: No. 72]
 21. Kahalekauila, Ili Aina me Kaneohe, Koolaupoko
 22. Kuou, Ili aina ma Kaneohe, Koolaupoko
 23. Kanohouluwi, Ili aina ma Kaneohe, Koolaupoko [margin note: No. 72]
 24. Kaluapuhi, Ili aina ma Kaneohe, Koolaupoko [margin note: No. 72]
 25. Waikalua, Ili aina ma Kaneohe, Koolaupoko [margin note: No. 72]
 26. Maluaka, Ili aina ma Waihee, Koolaupoko
 27. Makawai, Ili aina ma Waiohole, Koolaupoko
 28. Hopekea, Ili aina ma Waiohole, Koolaupoko
 29. Hauula, Ahupuaa, Koolauloa
 30. Kawela, ahupuaa, Koolauloa, settled by Deed of Kamehameha III to Mr. Gordon Hopkins;
H.A.W.'s land
 31. Waialee, Ahupuaa, Koolauloa, settlement on page 235 [margin note: No. 19]
 32. Paumalu, Settlement on page 237 [margin note: No. 6]
 33. Pupukea, settlement on page 237 [margin note: No. 6]
- Me ka mahalo,
John O. Dominis, Crown Commissioner & Land Agent

Paumalu and Pupukea Ahupuaa, District of Koolauloa, Island of Oahu, Boundary Commission, Oahu, Volume 2, No. 2, pp. 237-238

In the matter of the Boundaries of Paumalu and Pupukea Ahupuaas of Koolauloa

Court House, Honolulu, October 9th 1873

These are Crown lands applied for in the general petition as recorded in pages 137-138, lying adjacent to each other, and which may be awarded in solid[?] – Paumalu is bordered on one side, the east, by Kaulana; the property of H.A. Widemann; the line of which is settled by award of Boundary Commission to which both H.A. Widemann and J.O. Dominis, agent for the Crown Lands, refer. The mauka end of Paumalu is cut off by Waimea, to where it joins Pupukea. The West side of Paumalu being the East side of Pupukea, runs thence to the sea, and needs no

description, the lands being taken together. From the aforesaid junction of Pupukea and Paumalu with Waimea, Pupukea follows the line of Waimea to the sea; a part of the way Waimea is defined in Royal Patent No. 880 to Kaelewai, From the junction of Waimea and Pupukea at the sea, the line follows the coast along Pupukea & Paumalu to point of commencement.

The only part then requiring further definition is the Waimea line above where it is now defined by survey and patent. This portion is surveyed in the two leases of Kamehameha III to R. Moffitt, of Pupukea & Paumalu for 50 years from 1852, now held by H.A. Widemann, which give the areas of these two lands, viz. Pupukea 2353 acres, Paumalu 2010 acres.

I. The line of Paumalu joining Kaulana, as determined on page 98 of this volume is as follows (and incorporated in Royal Patent 5389.

Commencing at a stone on the sea shore, the East boundary of this land runs thence
South 51° 28' East 2190 feet along Kaunala to top of pali
South 43° 45' East 1215 feet along Kaunala;
South 46° East 2750 feet along Kaunala;
South 62° 15' East 2215 feet along Kaunala;
South 54° 50' East 1342 feet;
South 43° 40' East 1185 feet;
North 88° 50' East 288 feet;
North 82° East 584 feet; thence up ridge on the boundary of Paumalu in a Southeasterly direction to the boundary of Waimea.

II. Returning to initial point the boundary of these lands [page 238] follows up the sea coast to the corner of Waimea.

III. Following the survey in Royal Patent No. 880 to Kaelewai, of Waimea.

From point on bank of shore North 70° West 1.56 chains distant from a rock on beach at low water mark, and from which the mauka side of the outermost rocky Island on the opposite side of the bay bears South 53° 30' West, and running

South 67° 15' East 12.50 chains along up stream joining ~~Pupukea~~ Waimea

South 25° 15' East 4.05 chains along the stream joining Waimea

South 53° 30' East 12.50 chains to large rock in wall near foot of pali;

North 77° 20 East 42 chains up pali to point of junction of road up pali with road coming from sea;

North 87° 15' East 9.75 chains along Road;

South 85° 00' East 9.17 chains along ridge;

South 86° 00' East 23.20 chains along ridge;

North 77° 30' East 33.70 chains along ridge;

North 80° 15' East 70 chains along ridge to top of hill "Kalaekoa"

The above following & joining line of Waimea. The remainder of Course III, from "Kalaekoa" to the end of Course I where it meets the Waimea line is not yet determined or agreed on.

October 15th 1874

Upon further consideration of this case, it appears that the line from “Kalaekoa” up to the end of Paumalu, along Waimea is along Government land; that this line is fixed by a Royal Lease for 50 years; that it has been so held for 22 years, that in the lease it is sufficiently well described as by ridges and has both ends well fixed. I find for this remainder according to the survey in the lease of these lands, from the hill Kalaekoa to the upper intersection of Paumalu with Waimea and award accordingly.

Certificate No. 6

Office of the Commissioner of Boundaries, Oahu

In the matter of the boundaries of Paumalu & Pupukea, Ahupuaa of Koolauloa

Proper application having been made and all parties in interest notified, in the proofs taken I find and certify the boundaries of the aforesaid lands, jointly as follows, to wit.

I. the line of Paumalu joining “Kaunala” commencing at a stone on the sea shore the East boundary runs:

To Folio 315

Paumalu and Pupukea Ahupuaa, District of Koolauloa, Island of Oahu, Boundary Commission, Oahu, Volume 2, pp. 315

Paumalu & Pupukea

From folio 238

South 51° 28' East 2190 feet along Kuuhalā to top of Pali

South 43° 45' East 1215 feet along Kaunala;

South 46° 00' East 2750 feet along Kaunala;

South 62° 15' East 2215 feet along Kaunala;

South 54° 50' East 1342 feet along Kaunala;

South 45° 40' East 1185 feet along Kaunala;

North 88° 50' East 288 feet along Kaunala;

North 82° 00' East 584 feet; thence up ridge on the boundary of Paumalu in a South Easterly direction to the boundary of Waimea;

II. Returning to initial point of the boundary of these lands follows the sea coast to the corner of Waimea.

III. Thence following the line of Waimea as defined in Royal Patent No. 880 to Kaelewai, from point on banks of sea shore, which is North 70° West 1.56 chains distant from a rock on beach at low water mark, and from which the mauka side of the outermost rocky on the opposite side of the Bay, bears

South 67° 15' East 12.50 chains along the stream joining Waimea;

South 25° 15' East 4.05 chains along the stream joining Waimea;

South 53° 30' East 12.50 chains to a large rock in wall near foot of Pali;

North 77° 30' East 42.00 chains up Pali to point of junction of Road up Pali with road coming

from sea;

North 87° 15' East 9.75 chains along road;

South 85° - East 9.17 chains along ridge;

South 86° - East 23.20 chains along ridge;

North 77° 30' East 33.70 chains along ridge;

North 80° 15' East 70 chains along to top of Hill "Kalaekoa" from thence along Waimea following ridge to the junction of Paumalu with Waimea at the end of Course 1 as aforesaid and the three courses bound these lands, being triangular.

Area of Paumalu 2010 acres, more or less

Area of Pupukea 2353 acres, more or less

Total area 4363 acres, more or less

In witness whereof I have hereunto set my hand this 15th day of October A.D. 1874

L. McCully, Commissioner of Boundaries, Oahu

[No. 6, Paumalu and Pupukea Ahupuaa, District of Koolauloa, Island of Oahu, Boundary Commission, Paumalu 2010 acres, Pupukea 2353 acres; Total 4363 acres; 1874]

APPENDIX B: EXECUTIVE ORDERS

Amending Executive Order No. 4679 of June 29, 1927, Describing the Boundaries of Pupukea Military Reservation, Territory of Hawaii

[Executive Order 5175](#)→

Signed by President [Herbert Hoover](#) August 21, 1929

[External Information about this EO](#)

 [more info.](#)

See the [Notes](#) section for a list of Executive Orders affected by or related to the issuance of this Executive Order.

WHEREAS, by [Executive Order No. 4679](#), dated June 29, 1927, certain lands at Pupukea, District of Koolualoa, Island of Oahu, Territory of Hawaii, were withdrawn and set aside for military purposes; and

WHEREAS, the description of the Pupukea Military Reservation, as given in said [Executive Order No. 4679](#), dated June 29, 1927, has been found to be inaccurate and a resurvey has been made of the reservation; and

WHEREAS, it is desired that said [Executive Order No. 4679](#), dated June 29, 1927, be amended so as to accurately describe said Pupukea Military Reservation;

NOW THEREFORE, it is hereby ordered that the said [Executive Order No. 4679](#), dated June 29, 1927, be and the same is hereby amended with respect to the description of the Pupukea Military Reservation, so as to read as follows:

TRACT No. 1

Beginning at concrete monument No. 1, said point is by true azimuth and distance to concrete monument "D" 08° 12' 00"—270.45 ft. The azimuths and distances referred to the following U. S. C. & G. S. Triangulation Stations:

Puena-61° 28' 01"—27,448 ft.

Maili-25° 01' 23"—47,153 ft.

and thence running by true azimuths and distances, as follows:

273° 43' 00"—196.8 ft. to a concrete monument No. 2, thence

183° 43' 00"—447.6 ft. to a concrete monument No. 3, thence

93° 43' 00"—196.8 ft. to a concrete monument No. 4, thence

03° 43' 00"—447.6 ft. to the point of beginning, containing an area of 2.022 acres, more or less.

TRACT No. 2

Beginning at concrete monument No. 1, said point is by true azimuth and distance to concrete monument "O" $309^{\circ} 08'$ —38.4 ft. The azimuth and distance referred to U. S. C. & G. S. Triangulation Station Pupukea being $275^{\circ} 28' 02''$ —2740.46 ft., and thence running by true azimuths and distances, as follows:

$16^{\circ} 44'$ —129.1 ft. to a concrete monument No. 2, thence
 $286^{\circ} 37'$ —81.1 ft. to a concrete monument No. 3, thence
 $232^{\circ} 32'$ —101.4 ft. to a concrete monument No. 4, thence
 $192^{\circ} 21'$ —86.0 ft. to a concrete monument No. 5, thence
 $90^{\circ} 29' 30''$ —139.4 ft. to the point of beginning, containing an area of 418 acres,
more or less.



HERBERT HOOVER

THE WHITE HOUSE,
August 21, 1929.

Executive Order 5240

by [President of the United States](#)

[Executive Order 5241](#) →

Correcting the Description of Pupukea Military Reservation, Territory of Hawaii

Signed by President [Herbert Hoover](#) December 14, 1929

[External Information about this EO](#)

 [more info.](#)

See the [Notes](#) section for a list of Executive Orders affected by or related to the issuance of this Executive Order.

WHEREAS, by [Executive Order No. 4679](#), dated June 29, 1927, certain lands at Pupukea, District of Koolauloa, Island of Oahu, Territory of Hawaii, were withdrawn and set aside for military purposes; and

WHEREAS, the description of the Pupukea Military Reservation, as given in said [Executive Order No. 4679](#), dated June 29, 1927, has been found to be inaccurate and a resurvey has been made of the reservation; and

WHEREAS, it is desired that said [Executive Order No. 4679](#), dated June 29, 1927, be amended so as to accurately describe said Pupukea Military Reservation; and

WHEREAS, it is desired to amend [Executive Order No. 5174](#), dated August 21, 1929, amending said [Executive Order No. 4679](#), dated June 29, 1927;

NOW THEREFORE, it is hereby ordered that said [Executive Order No. 5174](#), dated August 21, 1929, be and the same is hereby revoked and that said [Executive Order No. 4679](#), dated June 29, 1927, be and the same is hereby amended, with respect to the description of Pupukea Military Reservation, to read as follows:

TRACT No. 1

Beginning at concrete monument No. 1,

said monument bearing by true azimuth and distance (azimuths refer to south point) from concrete monument "D," 8° 12' 00"—270.45 ft.;

from said concrete monument "D" the azimuths and distances to U. S. C. & G. S. Triangulation Stations are:

To Puena 61° 28' 01"—27,448 ft.,

To Maili 25° 01' 23"—47,153 ft.;

thence 273° 43' 00''—196.8 ft. to concrete monument No. 2;
thence 183° 43' 00''—447.6 ft. to concrete monument No. 3;
thence 93° 43' 00''—196.8 ft. to concrete monument No. 4;
thence 3° 43' 00''—447.6 ft. to the point of beginning;
containing an area of 2.022 acres, more or less.

TRACT No. 2

Beginning at concrete monument No. 1,

said concrete monument bearing by true azimuth and distance (azimuths refer to south point) from concrete monument "O," 129° 08' 00''—38.4 ft.;
from said concrete monument "O" the azimuth and distance to U. S. C. & G. S. Triangulation Station Pupukea is 275° 28' 02''—2,740.46 ft.;

thence 16° 44' 00''—129.1 ft. to concrete monument No. 2;
thence 286° 37' 00''—81.1 ft. to concrete monument No. 3;
thence 232° 32' 00''—101.4 ft. to concrete monument No. 4;
thence 192° 21' 00''—86.0 ft. to concrete monument No. 5;
thence 90° 29' 30''—139.4 ft. to the point of beginning;
containing an area of 0.414 acres, more or less.



HERBERT HOOVER

THE WHITE HOUSE,
December 14, 1929.

Executive Order 10496 - RESTORING CERTAIN LANDS RESERVED FOR MILITARY PURPOSES TO THE JURISDICTION OF THE TERRITORY OF HAWAII
October 14, 1953

EXECUTIVE ORDER 10496

RESTORING CERTAIN LANDS RESERVED FOR MILITARY PURPOSES TO THE JURISDICTION OF THE TERRITORY OF HAWAII

WHEREAS certain lands on the Island of Oahu, Territory of Hawaii, which form a part of the public lands ceded and transferred to the United States by the Republic of Hawaii under the joint resolution of annexation of July 7, 1898, 30 Stat. 750, were reserved for military purposes by Executive orders of the President; and

WHEREAS, pursuant to authority of the act of January 31, 1922, 42 Stat. 360, as amended by the act of March 3, 1925, 43 Stat. 1115, such lands were exchanged by the United States for privately-owned lands, and the lands so acquired were thereafter set apart by the President for military purposes of the United States; and

WHEREAS the lands so acquired by exchange are no longer needed for military purposes, and it is deemed desirable and in the public interest that the possession, use, and control thereof be restored to the Territory of Hawaii:

NOW, THEREFORE, by virtue of the authority vested in me by section 91 of the act of April 30, 1900, 31 Stat. 159, as amended by section 7 of the act of May 27, 1910, 36 Stat. 447, it is ordered as follows:

The following-described parcels of land on the Island of Oahu, Territory of Hawaii, are hereby restored to the possession, use, and control of the Territory of Hawaii:

Parcel No. 1

That part of the Pupukea Military Reservation described as Tract No. 1 in Executive Order No. 5240 of December 14, 1929, containing an area of 2.022 acres.

Parcel No. 2

All of the Kaaawa Military Reservation described in Executive Order No. 4679 of June 29, 1927, being two tracts, containing an area of 3.67 acres and .0918 of an acre, respectively, together with appurtenant rights of way.

Parcel No. 3

That part of the Fort Ruger Military Reservation described in paragraph I of subparagraph 2 of Executive Order No. 4679 of June 29, 1927, containing an area of .126 of an acre.

Parcel No. 4

That part of the Fort Ruger Military Reservation described as Tract No. 6 in Executive Order No. 6408 of November 7, 1933, containing an area of 1.055 acres, more or less.

DWIGHT D. EISENHOWER
THE WHITE HOUSE,
October 14, 1953.

Exec. Order No. 10496, 18 FR 6586, 1953 WL 6022 (Pres.)

APPENDIX C: MATERIAL CULTURE ANALYSIS

SCS PROJECT 1367 CULTURAL MATERIAL INVENTORY									
Lab Bag	Site 50-80-01-	Feature	Artifact Locus	Layer/ Level	Depth (cmbs)	Collected Item	Measurements	Count	Remarks
1	7463	1	1	Surface	-	Porcelain Jug Base Sherd	-	1	Base interior glazed off-white and crackled, sherd exterior not glazed; artifact fits with artifact from Artifact Locus #5
2	7463	1	2	Surface	-	Knob and Tube Porcelain Electrical Insulator	Length: 4.5 cm Diameter: 3.0 cm Weight with corroded nail: 66.4 g	1	Corroded ferrous metal nail positioned lengthway though center of insulator, artifact top half stamped BULL DOG and a triangle. This type of insulator was manufactured from the 1880s to the 1930s.
3	7463	1	3	Surface	-	Possible Porcelain Electrical Insulator Sherd		1	Exterior glazed brown
4	7463	1	4	Surface	-	Possible Subsurface Utility Stoneware Pipe Sherd		1	Exterior and interior glazed brown, visible sherd temper identified as < 1 mm diameter quartz-like crystals
5	7463	1	5	Surface	-	Porcelain Jug Sherds	Jug #1: 19.0 cm height Jug #2: incomplete	2	Interior of most sherds glazed off-white; sme sherds fitted to make two container-like vessels. Artifact from Artifact Locus #1 fitted with artifacts from Artifact Locus #5
6	7463	1	6	Surface	-	Bottle Glass Base Sherd	Base diameter: 5.7 cm	1	See below.

SCS PROJECT 1367 CULTURAL MATERIAL INVENTORY									
Lab Bag	Site 50-80-01-	Feature	Artifact Locus	Layer/ Level	Depth (cmbs)	Collected Item	Measurements	Count	Remarks
Amber colored, body textured with dots, base textured with dots and embossed. Base embossment: 1st line (horizontal, cursive): Duraglas; 2nd line (horizontal): 6 manufacturer's stamp 4; 3rd line (horizontal): 2. The manufacturer's symbol is a vertical oval intersected by a horizontal diamond and within the intersection is a capital I. The manufacturer's symbol was utilized by Owens Illinois Glass Company of Toledo, Ohio. The manufacturer's symbol was utilized between 1929 and 1954.									
7	7463	1	7	Surface	-	Glass Bottle	Overall height: 17.3 cm Body height: 8.4 cm Mouth diameter (inner); 1.6 cm Base diameter: 5.8 cm	1	See below.
Complete, clear glass bottle, automatic machine made (base and two sides), crown top finish, steep shoulders, shoulders and body textured with dots, body near shoulders embossed, base embossed. Body near shoulder embossment: NOT TO BE FILLED NO DEPOSIT NO RETURN . Base embossment: 1st line (horizontal): 8565 ; 2nd line (horizontal): 3 manufacturer's symbol 43 ; 3rd line (horizontal): 15 . The manufacturer's symbol is a vertical anchor with a capital H on the anchor's shaft. The manufacturer's symbol was utilized by Anchor Hocking Glass Corporation of Lancaster, Ohio. Bottle manufacture date (based on 43 on right side of the manufacturer's symbol): 1943.									
8	7463	1	8	Surface	-	Milk Glass Jar Rim Sherd	-	1	Short neck
8	7463	1	8	Surface	-	Unknown Milk Glass Vessel Body Sherd	-	1	Sherd exterior has a raised eight pedal flower and at least one leaf
8	7463	1	8	Surface	-	Unknown Milk Glass Vessel Body Sherd	-	1	Undulated exterior and interior surfaces
9	7463	1	9	Surface	-	Bottle Glass Base Sherd	Diameter: 5.7 cm	1	See below.

SCS PROJECT 1367 CULTURAL MATERIAL INVENTORY									
Lab Bag	Site 50-80-01-	Feature	Artifact Locus	Layer/ Level	Depth (cmbs)	Collected Item	Measurements	Count	Remarks
Clear, embossed. Embossment: 1st line (horizontal): 8565 ; 2nd line (horizontal): 3 manufacturer's symbol 43 ; 3rd line (horizontal): 7 . The manufacturer's symbol is a vertical anchor with a capital H on the anchor's shaft. The manufacturer's symbol was utilized by Anchor Hocking Glass Corporation of Lancaster, Ohio. Bottle manufacture date (based on 43 on right side of the manufacturer's symbol): 1943.									
10	7463	1	10	Surface	-	Brass 0.45-Caliber Pistol Cartridge with Bullet	Cartridge with bullet length: 3.6 cm Diameter: 1.2 cm Cartridge without bullet: 2.3 cm	1	Live, cartridge is rimless and straight, Type 1 headstamp (WCC at the 12 o'clock position, 41 at the 6 o'clock position). Cartridge manufacturer: Western Cartridge Company of East Alton, Illinois. Cartridge manufacture date (based on the 41 on base of cartridge): 1941.
11	7463	1	A	I	20	Brass 5-Round Stripper Clip	Length: 5.9 cm Width: 1.5 cm Height: 0.5 cm Weight: 8.9 g	1	-
12	7463	1	B	I	40	Brass 0.30-Caliber Rifle Round with Bullet	Length: 7.5 cm Diameter: 1.3 cm Weight: 25.9 g Cartridge length: 6.3 cm	1	Live, cartridge is rimless and bottlenecked, Type 1 headstamp (U.S.C. Co at the 12 o'clock position, 18 at the 6 o'clock position). Cartridge manufacturer: United States Cartridge Company of Lowell, Massachusetts. Cartridge manufacture date (based on the 18 on the cartridge base): 1918.
13	7463	1	C	I	29	Ferrous Metal Nail	Minimum length: 13.7 cm	1	Corroded
14	7463	1	D	I	30	Ferrous Metal Flat Can	-	1	Corroded; possible sardine can

SCS PROJECT 1367 CULTURAL MATERIAL INVENTORY										
Lab Bag	Site 50-80-01-	Feature	Artifact Locus	Layer/ Level	Depth (cmbs)	Collected Item	Measurements	Count	Remarks	
15	7463	1	E	I	20	Ferrous Metal Bottle Cap	Diameter: 2.8 cm Height: 0.8 cm	1	Corroded	
16	7463	1	F	I	6	Ferrous Metal Can	Height: 11.6 cm Diameter: 8.6 cm	1	Corroded, one triangular hole punched on top of can; opposite side of can displays a slit for air; possible oil can	
17	7463	1	G	I	10	Ferrous Metal Safety Pin	-	1	Corroded, extended	
18	7466	1 Possible oven/ cupboard feature	-	-	-	Porcelain Bowl Rim/ Base Sherd	-	1	Exterior and interior glazed; ringfoot present; rim exterior has a buldge; partial blue colored manufacturer's stamp (...S.Q.) present under glaze within ringfoot interior. The bowl was manufactured for the U.S. Army Quartermaster's Corps. The bowl manufacture and date are unknown.	
19	7466	1 Possible oven/ cupboard feature	-	-	-	Ferrous Metal Can Fragment	Height: 5.3 cm Diameter: 8.2 cm	1	Corroded	
20	7466	1 Possible oven/ cupboard feature	-	-	-	Ferrous Metal Can	Height: 2.1 cm Diameter: 7.4 cm	1	Corroded, lid missing	

SCS PROJECT 1367 CULTURAL MATERIAL INVENTORY									
Lab Bag	Site 50-80-01-	Feature	Artifact Locus	Layer/ Level	Depth (cmbs)	Collected Item	Measurements	Count	Remarks
21	7472	1	-	Surface	-	Glass Bottle	Overall height: 14.2 cm Body height: 10.7 cm Mouth diameter (inner): 0.6 cm Base dimensions: 5.4 cm X 2.6 cm	1	See below.
<p>Complete, green glass Wildroot cream oil hair tonic bottle, automatic machine made, screw top finish, short neck, nearly square shoulders, embossed gripped body near shoulders and on heel, embossed monarch-type base. Shoulder embossment: FILL TO HERE. Heel embossment: A6505 WILDROOT. Base embossment: 1st line (along one short side of bottle): 3 manufacturer's symbol 3; 2nd line (lengthways of bottle): 5FL.OZS.; 3rd line (along one short side of bottle): C or G. The manufacturer's symbol was utilized by Owens Illinois Glass Company of Toledo, Ohio. The manufacturer's symbol was utilized between 1929 and 1954.</p>									

APPENDIX D: SELECTED ARTIFACTS



Selected Artifacts

1. Lab Bag #1 and Lab Bag #5 State Site 50-80-01-7463 Historic Artifact Scatter Artifact Locus #1 fitted with Locus #5: porcelain jug base sherd (Locus #1) and body sherds (Locus #5).
2. Lab Bag #7 State Site 50-80-01-7463 Historic Artifact Scatter Artifact Locus #7: glass bottle.
3. Lab Bag #14 State Site 50-80-01-7463 Historic Artifact Scatter Artifact Locus #14: ferrous metal flat can.
4. Lab Bag #21 State Site 50-80-01-7472, Feature 1 Walled Concrete Platform/Foundation: glass bottle.



Selected Artifacts

5. Lab Bag #2 State Site 50-80-01-7463 Historic Artifact Scatter Artifact Locus #2: porcelain knob and tube electrical insulator.

6. Lab Bag #10 State Site 50-80-01-7463 Historic Artifact Scatter Artifact Locus #10: live, brass .45-caliber bullet with casing.

7. Lab Bag #11 State Site 50-80-01-7463 Historic Artifact Scatter Stratigraphic Profile Artifact A: .30-caliber brass 5-round stripper clip.

8. Lab Bag #12 State Site 50-80-01-7463 Historic Artifact Scatter Stratigraphic Profile Artifact B: .30-caliber rifle bullet with brass casing.

9. Lab Bag #17 State Site 50-80-01-7463 Historic Artifact Scatter Stratigraphic Profile Artifact G: ferrous metal safety pin.

Appendix **D**

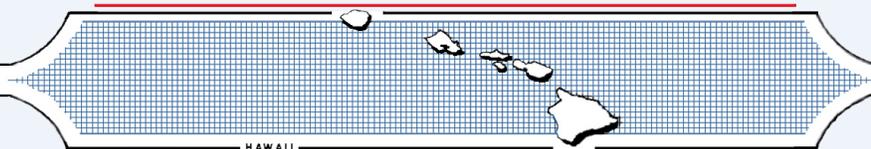
CULTURAL IMPACT ASSESSMENT

**A CULTURAL IMPACT ASSESSMENT
FOR THE BOY SCOUTS OF AMERICA, CAMP PUPUKEA,
PŪPŪKEA AHUPUA`A, KO`OLAULOA DISTRICT,
O`AHU ISLAND, HAWAII
[TMK: (1) 5-9-005:002 AND 077]**

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January 2014
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INTRODUCTION

At the request of the Boy Scouts of America, Scientific Consultant Services, Inc. (SCS) prepared a Cultural Impact Assessment (CIA) for proposed improvements to the existing Boy Scouts' Camp Pupukea, Pūpūkea Ahupua`a, Ko`olauloa District, O`ahu Island, Hawai`i [TMK: (1) 5-9-005:002 and 077]. The 64.798 acre project area is situated on two adjacent parcels; TMK: (1) 5-9-005:002 is comprised of 56.962 acres and TMK: (1) 5-9-005:077 consists of 7.836 acres (Figures 1 through 3).

The Constitution of the State of Hawai`i clearly states the duty of the State and its agencies is to preserve, protect, and prevent interference with the traditional and customary rights of Native Hawaiians. Article XII, Section 7 (2000) requires the State to “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.” In spite of the establishment of the foreign concept of private ownership and western-style government, Kamehameha III (Kauikeaouli) preserved the peoples traditional right to subsistence. As a result in 1850, the Hawaiian Government confirmed the traditional access rights to Native Hawaiian *ahupua`a* tenants to gather specific natural resources for customary uses from undeveloped private property and waterways under the Hawaiian Revised Statutes (HRS) 7-1. In 1992, the State of Hawai`i Supreme Court, reaffirmed HRS 7-1 and expanded it to include, “native Hawaiian rights...may extend beyond the *ahupua`a* in which a Native Hawaiian resides where such rights have been customarily and traditionally exercised in this manner” (Pele Defense Fund v. Paty, 73 Haw.578, 1992).

Act 50, enacted by the Legislature of the State of Hawai`i (2000) with House Bill (HB) 2895, relating to Environmental Impact Statements, proposes 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... [H.B. NO. 2895].

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 and practices, and resources of Native Hawaiians as well as other ethnic groups. Act 50 also requires state agencies and other developers to assess the effects of proposed land use or shoreline developments on the “cultural practices of the community and State” as part of the HRS Chapter 343 (2001) environmental review process.

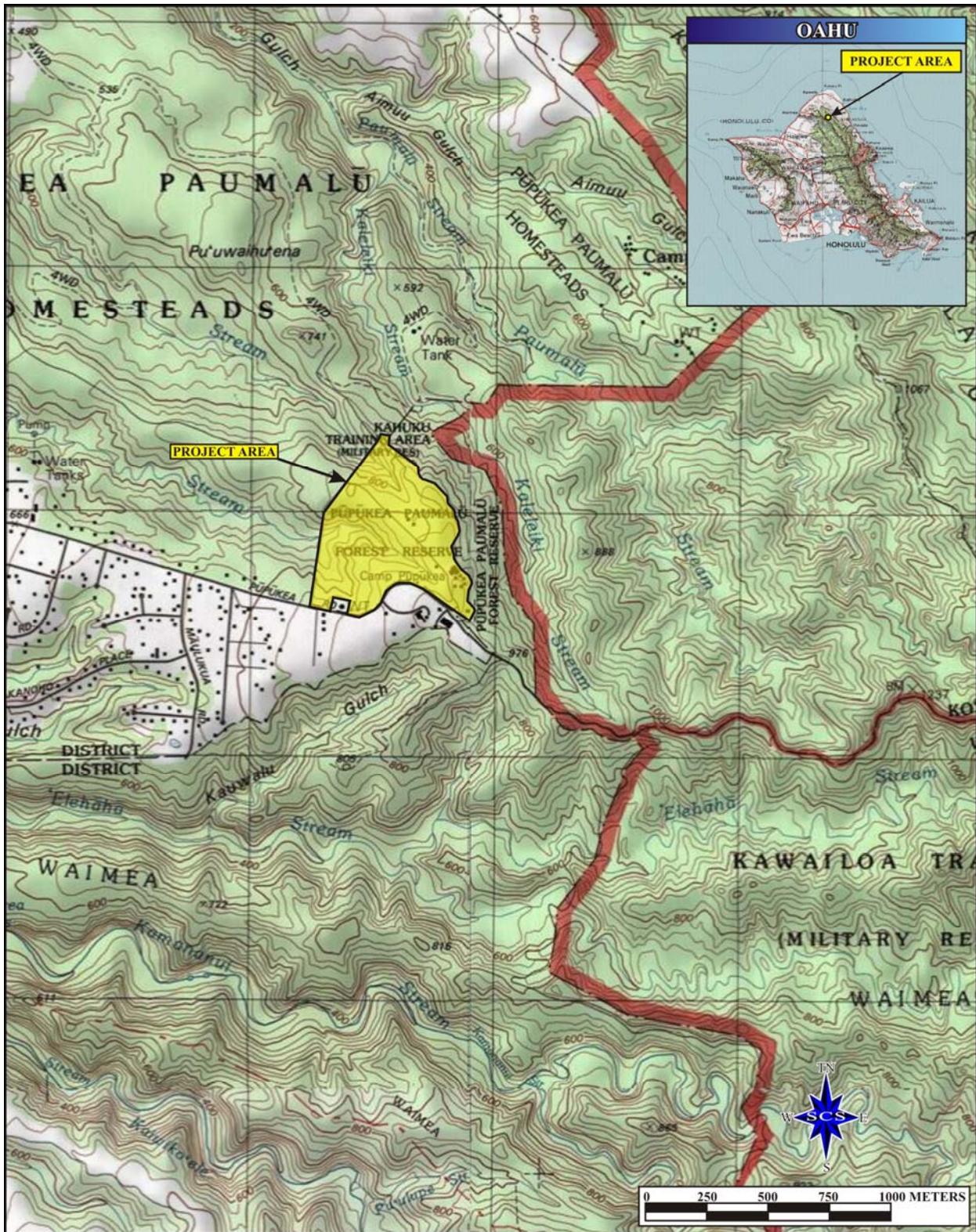


Figure 1: USGS Quadrangle (Waimea 1998) Map Showing Project Area Location.

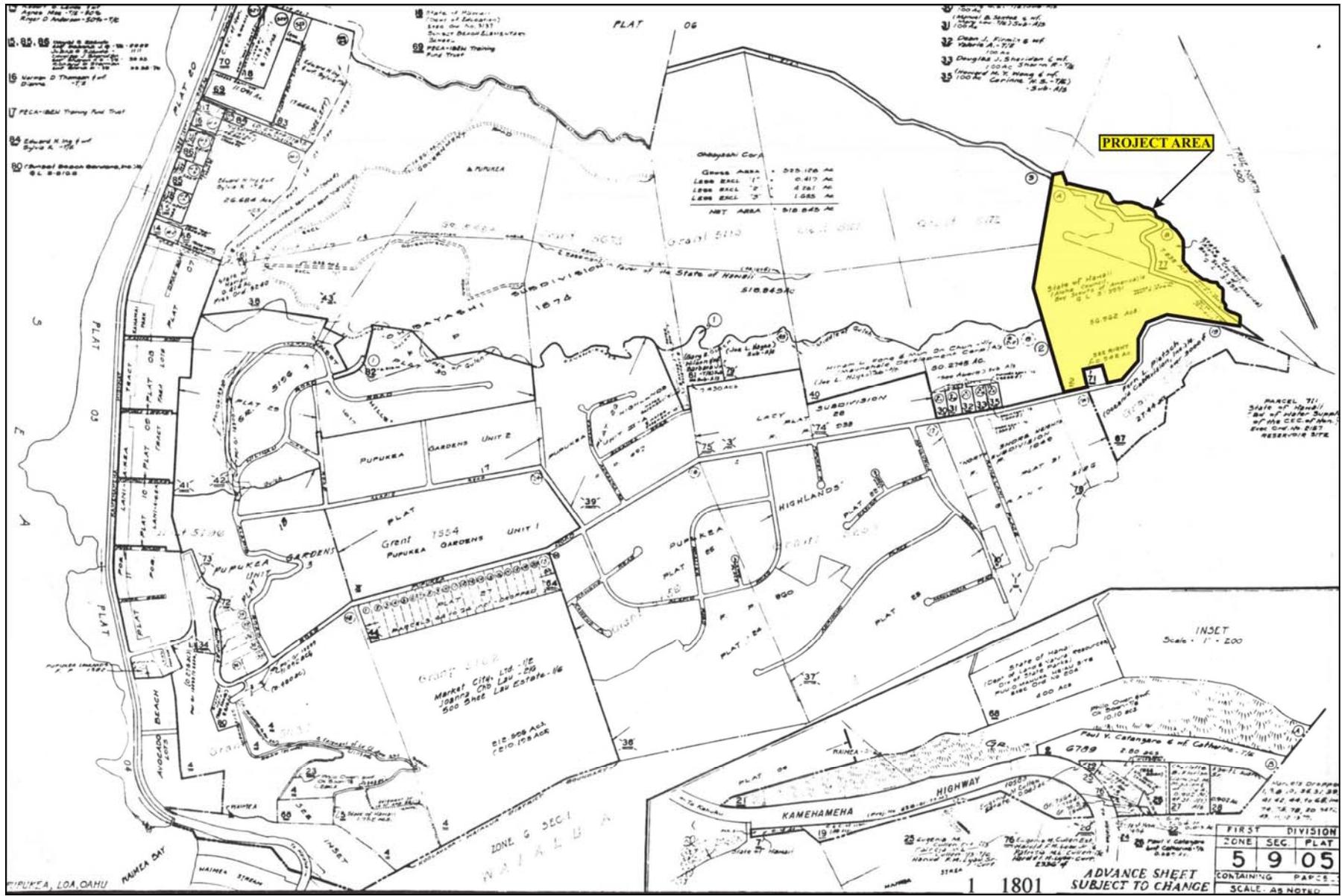


Figure 2: Tax Map Key [TMK: (1) 5-9-005] Map Showing Project Area Location.



Figure 3: Google Earth Image (2013) Showing Project Area Location.

It also re-defined the definition of “significant effect” to include “the sum of effects on the quality of the environment including actions impact a natural resource, limit the range of beneficial uses of the environment, that are contrary to the State’s environmental policies . . . or adversely affect the economic welfare, social welfare or cultural practices of the community and State” (H.B. 2895, Act 50, 2000). Cultural resources can include a broad range of often overlapping categories, including places, behaviors, values, beliefs, objects, records, stories, etc. (H.B. 2895, Act 50, 2000).

Thus, Act 50 requires that an assessment of cultural practices and the possible impacts of a proposed action be included in Environmental Assessments and Environmental Impact Statements, and to be taken into consideration during the planning process. As defined by the Hawaii State Office of Environmental Quality Control (OEQC), the concept of geographical expansion is recognized by using, as an example, “the broad geographical area, e.g. district or *ahupua`a*” (OEQC 1997). It was decided that the process should identify ‘anthropological’ cultural practices, rather than ‘social’ cultural practices. For example, *limu* (edible seaweed) gathering would be considered an anthropological cultural practice, while a modern-day marathon would be considered a social cultural practice.

Therefore, the purpose of a Cultural Impact Assessment is to identify the possibility of on-going cultural activities and resources within a project area, or its vicinity, and then assessing the potential for impacts on these cultural resources. The CIA is not intended to be a document of in depth archival-historical land research, or a record of oral family histories, unless these records contain information about specific cultural resources that might be impacted by a proposed project.

According to the Guidelines for Assessing Cultural Impacts established by the Hawaii State Office of Environmental Quality Control (OEQC 1997):

The types of cultural practices and beliefs subject to assessment may include subsistence, commercial, residential, agricultural, access-related, recreational, and religions and spiritual customs. The types of cultural resources subject to assessment may include traditional cultural properties or other types of historic sites, both manmade and natural, which support such cultural beliefs.

The meaning of “traditional” was explained in *National Register Bulletin*:

Traditional” in this context refers to those beliefs, customs, and practices of a living community of people that have been passed down through the generations’, usually orally or through practice. The traditional cultural significance of a historic property then is significance derived from the role the property plays in a community’s historically rooted beliefs, customs, and practices. . . . [Parker and King 1990:1]

METHODOLOGY

This Cultural Impact Assessment was prepared as much as possible in accordance with the suggested methodology and content protocol in the Guidelines for Assessing Cultural Impacts (OEQC 1997). In outlining the “Cultural Impact Assessment Methodology”, the OEQC states that:

“...information may be obtained through scoping, community meetings, ethnographic interviews and oral histories...”

This report contains archival and documentary research, as well as communication with organizations having knowledge of the project area, its cultural resources, and its practices and beliefs. An example letter of inquiry is presented in Appendix A; copies of posted legal notices are presented in Appendix B; an example of the follow-up letters of inquiry is presented in Appendix C; responses to the letters of Inquiry are presented in Appendix D, and the Information Release Forms are presented in Appendix E. The assessment concerning cultural impacts may include, but not be limited to, the following matters:

- (1) If consultation is available, a discussion of the methods applied and results of consultation with individuals and organizations identified by the preparer as being familiar with cultural practices and features associated with the project area, including any constraints or limitations which might have affected the quality of the information obtained;
- (2) A description of methods adopted by the preparer to identify, locate, and select the persons interviewed, including a discussion of the level of effort undertaken;
- (3) If conducted, interview procedures, including the circumstances under which the interviews were conducted, and any constraints or limitations which might have affected the quality of the information obtained;
- (4) Biographical information concerning the individuals and organizations consulted, their particular expertise, and their historical and genealogical relationship to the project area, as well as information concerning the persons submitting information or

- (5) A discussion concerning historical and cultural source materials consulted, the institutions and repositories searched, and the level of effort undertaken, as well as the particular perspective of the authors, if appropriate, any opposing views, and any other relevant constraints, limitations or biases;
- (6) A discussion concerning the cultural resources, practices and beliefs identified, and for the resources and practices, their location within the broad geographical area in which the proposed action is located, as well as their direct or indirect significance or connection to the project site;
- (7) A discussion concerning the nature of the cultural practices and beliefs, and the significance of the cultural resources within the project area, affected directly or indirectly by the proposed project;
- (8) An explanation of confidential information that has been withheld from public disclosure in the assessment;
- (9) A discussion concerning any conflicting information in regard to identified cultural resources, practices and beliefs;
- (10) An analysis of the potential effect of any proposed physical alteration on cultural resources, practices, or beliefs; the potential of the proposed action to isolate cultural resources, practices, or beliefs from their setting; and the potential of the proposed action to introduce elements which may alter the setting in which cultural practices take place, and;
- (11) The inclusion of bibliography of references, and attached records of interviews which were allowed to be disclosed.

If on-going cultural activities and/or resources are identified within the project area, assessments of the potential effects on the cultural resources in the project area and recommendations for mitigation of these effects can be proposed.

ARCHIVAL RESEARCH

Archival research focused on a historical documentary study involving both published and unpublished sources. These included legendary accounts of native and early foreign writers; early historical journals and narratives; historic maps, land records, such as Land Commission Awards, Royal Patent Grants, and Boundary Commission records; historic accounts, and previous archaeological reports.

INTERVIEW METHODOLOGY

Interviews are conducted in accordance with Federal and State laws, and guidelines, when knowledgeable individuals are able to identify cultural practices in, or in close proximity to, the project area. If they have knowledge of traditional stories, practices and beliefs associated with a project area or if they know of historical properties within the project area, they are sought out for additional consultation and interviews. Individuals who have particular knowledge of traditions passed down from preceding generations and a personal familiarity with the project area are invited to share their relevant information concerning particular cultural resources. Often people are recommended for their expertise, and indeed, organizations, such as Hawaiian Civic Clubs, the Island Branch of Office of Hawaiian Affairs (OHA), historical societies, Island Trail clubs, and Planning Commissions are depended upon for their recommendations of suitable informants. These groups are invited to contribute their input, and suggest further avenues of inquiry, as well as specific individuals to interview. It should be stressed again that this process does not include formal or in-depth ethnographic interviews or oral histories as described in the OEQC's *Guidelines for Assessing Cultural Impacts* (1997). The assessments are intended to identify potential impacts to on-going cultural practices, or resources, within a project area or in its close vicinity.

If knowledgeable individuals are identified, personal interviews are sometimes taped and then transcribed. These draft transcripts are returned to each of the participants for their review and comments. After corrections are made, each individual signs a release form, making the interview available for this study. When telephone interviews occur, a summary of the information is usually sent for correction and approval, or dictated by the informant and then incorporated into the document. If no cultural resource information is forthcoming and no knowledgeable informants are suggested for further inquiry, interviews are not conducted.

ENVIRONMENTAL SETTING

The project area is located on the North Shore of the island of O`ahu. At its farthest point, the project area is located approximately 2.4 miles (3,863 meters) from the coast and situated and approximately 681 to 1,093 feet above mean sea level (amsl).

PROJECT AREA

Camp Pupukea is located in the Ko`olou Mountains above Waimea Bay, on the North Shore of the island of O`ahu, immediately adjacent and north of the eastern terminus of Pūpūkea Road. The Pupukea Boy Scout Camp is situated within the Pūpūkea-Paumalu Forest Reserve. Pūpūkea Road forms the southern project area boundary; the Kahuku Training Area forms the

northern and upper western boundaries; and the Pūpūkea-Paumalu Homesteads and the Pūpūkea-Paumalu State Park Reserve form the western project area boundary.

SOILS

According to Foote *et al.* (1972: 40, 105, 106, 110, and 111; Sheet Map 37) three Soils Series (Helemano, Paalooa, and Paumalu) are represented within the project area. The Helemano Soil Series typically are comprised of well-drained colluvial and alluvial soils of volcanic origin. Soils of the Helemano Series occur on alluvial fans and on the sides of gulches exhibiting 30 to 90 percent slopes, at elevations ranging from 500 to 1,200 feet amsl in areas receiving annual rainfall of 30 to 60 inches. Helemano silty clay (HLMG) soils within the project area occur on V-shaped gulches and exhibit moderately rapid permeability, medium to very rapid runoff, and a severe to very severe erosion hazard. The HLMG soils are utilized as ranchlands, forests, and as wildlife habitats (Foote *et al.* 1972: 40).

Soils of the Paalooa Series are well-drained volcanic soils occurring in upland regions at elevations ranging from 1,000 to 1,700 feet amsl in areas with annual rainfall of 70 to 90 inches. Soils of the Paalooa Series specific to the project area are Paalooa silty clay (PaC) which occur on 3 to 12 percent slopes. The PaC soils exhibit moderately rapid permeability, slow to medium runoff, and a slight to moderate erosion hazard. Typically, the PaC soils are utilized as ranchlands and for the production of sugarcane (*ibid*: 106).

Soils of the Paumalu Series are also, well-drained volcanic soils occurring in the upland regions between 700 to 1,000 feet amsl in regions receiving 50 to 70 inches of rainfall annually (*ibid*: 110). Soils of the Paumalu Series specific to the project area are of the Paumalu-Badland complex (Pz) which occur on 10 to 70 percent slopes. The Badland soils consist "of nearly barren land that has remained after the Paumalu soils were removed by wind and water erosion (*ibid*:111). Thus, the Pz soils exhibit rapid runoff and a high erosion hazard. The Badland soils are utilized as ranchlands and by the military (*ibid*).

CLIMATE

Temperatures in the project area can range from the high 40 degrees Fahrenheit (F), during the winter months, to the low 90 degrees in the summer (Armstrong 1980: 58). Rainfall can range from 10 to 30 inches during winter and from 10 to 12 inches during the summer months (*ibid*: 56).

VEGETATION

Vegetation observed within the study area during the Archaeological Inventory Survey primarily consisted of introduced species including *koa haole* (*Leucaena glauca*); eucalyptus (*Eucalyptus deglupta*); ironwood (*Casuarina equisetifolia*); Florida beggarweed; *Desmodium tortuosum*); heliconia (*Heliconiaceae*); wedelia (*Sphagneticola trilobata*); Koster's curse (*Clidemia hirtia*); strawberry guava (*Psidium cattleianum*); umbrella tree (*Schefflera actinophylla*); and Christmas Berry (*Schinus terebinthifolius*). Native plants (*ti*, *Cordyline fruticosa*; pandanus, *Pandanus tectorius*; and *kukui* (*Aleurites moluccana*) were also present in the project area, but appeared to serve an ornamental function. Decomposing vegetation was present throughout the project area.

CULTURAL HISTORICAL CONTEXT

The island of O`ahu ranks third in size of the eight main islands in the Hawaiian Archipelago. The Wai`anae and Ko`olau Mountain ranges were formed by two volcanoes. Through the millennia the constant force of water carved fertile amphitheater-headed valleys and rugged passes eroded at lower elevations providing access from one side of the island to another (Macdonald and Abbott 1970).

PAST POLITICAL BOUNDARIES

Traditionally, the division of O`ahu's land into districts (*moku*) and sub-districts (*`ili*) was said to be performed by Mā`ilikukahi, a ruling chief of O`ahu, who was chosen by the chiefs to be the *mō`īho`oponopono o ke aupuni* (administrator of the government; Kamakau 1961). It was Mā`ilikukahi who had the Island of O`ahu thoroughly surveyed, and permanently defined the boundaries between the different divisions and lands (Fornander 1969:89; Kame`eleihiwa 1992:26; Beckwith 1985: 383). Cordy (2002: 23) places Mā`ilikukahi's reign over O`ahu at the beginning of the 16th century. Mā`ilikukahi created six districts and six district chiefs (*ali`i`ai moku*). Land was considered the property of the king or *ali`i`ai moku* (chief who rules a *moku*) (Pukui and Elbert 1986: 20), which he held in trust for the gods. The title of *ali`i`ai moku* ensured rights and responsibilities to the land, but did not confer absolute ownership. The king kept the parcels he wanted, his higher chiefs received large parcels from him and, in turn, distributed smaller parcels to lesser chiefs. The *maka`āinana* (commoners) worked the individual plots of land. It is said that Mā`ilikukahi gave land to *maka`āinana* all over the island of O`ahu.

In general, several terms, such as *moku*, *ahupua`a*, *`ili* or *`ili`āina* were used to delineate various land sections. A district (*moku*) contained smaller land divisions (*ahupua`a*) that customarily continued inland from the ocean and upland into the mountains. Extended household

groups living within the *ahupua`a* were therefore able to harvest from both the land and the sea. Ideally, this situation allowed each *ahupua`a* to be self-sufficient by supplying needed resources from different environmental zones (Lyons 1875:111). The *`ili `āina* or *`ili* were smaller land divisions next in importance to the *ahupua`a* and were administered by the chief who controlled the *ahupua`a* in which it was located (Lyons 1875:33; Lucas 1995:40). The *mo`o`āina* were narrow strips of land within an *`ili*. The land holding of a tenant or *hoa`āina* residing in an *ahupua`a* was called a *kuleana* (Lucas 1995:61). The project area was located in the *ahupua`a* of Pūpūkea, which literally means “white shell” (Pukui *et al.* 1974:195).

TRADITIONAL SETTLEMENT PATTERN

Archaeological settlement pattern data suggests that initial colonization and occupation of the Hawaiian Islands first occurred on the windward shoreline areas of the main islands between A. D. 850 and 1100, with populations eventually settling in drier leeward areas during later periods (Kirch 2011). Although coastal settlement was dominant, Native Hawaiians began cultivating and living in the upland *kula* (plains) zones. Greater population expansion to inland areas began around the 14th century and continued through the 16th century. Large scale or intensive agriculture was implemented in association with habitation, religious, and ceremonial activities.

The Hawaiian economy was based on agricultural production and marine exploitation, as well as raising livestock and collecting wild plants and birds. Extended household groups settled in various *ahupua`a*. During the pre-Contact Period (pre-1778), there were primarily two types of agriculture, wetland and dry land, both of which were dependent upon geography and physiography. River valleys provided ideal conditions for wetland *kalo* (*Colocasia esculenta*) agriculture that incorporated pond fields and irrigation canals. Other cultigens, such as *kō* (sugar cane, *Saccharum officinaruma*) and *mai`a* (banana, *Musa* sp.), were also grown and, where appropriate, such crops as *`uala* (sweet potato, *Ipomoea batatas*) were cultivated. This was the typical agricultural pattern seen during traditional times on all the Hawaiian Islands (Kirch and Sahlins 1992, Vol. 1:5, 119; Kirch 1985).

The generally accepted paradigm of Hawaiian settlement is that the earliest settlements were located in the wet, windward regions. As population pressure increased or politics changed, populations began to branch out into leeward, less hospitable regions of Hawai`i, adapting their cultivation strategies as they moved into dryer climates (Cordy 2002).

MO'OLELO

According to ancient Hawaiian memories gathered and published in 19th century Hawaiian newspapers, Pele, the volcano goddess sent her sister, Hi'iaka, to Kaua'i to bring her love, Lohiau to Hawai'i Island (*Ka Leo O ka Lahui* 1893). While on O'ahu, she traveled with her companion Wahineoma'o, around the north side of the island. Along the way, she chanted the delights of the places she visited, praising their special qualities and beauty and in the vicinity of Pūpūkea, informed traveler of its many marine resources that reflected its value:

They continued to the plain of Kulima and watched the sea of Pupukea throwing its sprays upward. It swept over the leaves of the ilima, yellowing them, then Hiiaka chanted:

He kai kapi ike one
Ko Kalamaula i Pupukea
Ua hele a pala i ke kai
Ke oho o ka ilima
E hiki aku ai i Kapi
E iho aku ai i Piliamaama la
Aia e pili wale -----e
Aia la kelele ala
Aohe i ka welo-----e. [<http://nupepa.org> 2011a]

The sea sprays up over the sand,
The yellowing sea of Pupukea,
Yellows the leaves of the ilima,
With its sprays,
This is the way to Kapi,
This the trail to Pilia'ama.
(last three lines not translated from the Hawaiian) [*Ka Leo O ka Lahui*
1893 in Sterling and Summers 1978:144]

At Pupukea they spied Piliaama fishing and as they watched Hiiaka called:

O Piliaaama kanaka lawaia o ka pali
Hee puewai o Waimea
Onohiki aku o Ihikoko
Lawaia hi-aku o Kaipahu la
He aha ua ia? [<http://nupepa.org> 2011b]

O Piliaama fisherman of the cliffs
Who surfs to the mouth of the stream of Ihukoko
Who catches aku fish

What fish are you catching now? [*Ka Leo O ka Lahui* 1893 in Sterling and Summers 1978:144]

He answered that he was catching some kala, moi, oio and aholé. She called again:

O Piliaaama o kanaka lawaia
Kane hiialo oe a Kapuewai
Laweia akuo Kapapaiki la
He aha ua ia e? [<http://nupepa.org> 2011b]

O Piliaama, fisherman,
Beloved husband of Kapuewai,
Who fishes for aku at Kapapaiki,
What else do you catch?

He answered, “some uhu, opelu, manini, hinane and also some crabs. I do all kinds of fishing here.” [*Ka Leo O ka Lahui* 1893 in Sterling and Summers 1978:144]

McAllister (1933:146-147) recorded information from Hookala, born in 1846 and a resident of the area, concerning the many sites along the north coastal region. At the bottom of Pūpūkea Hill, near what is now the Catholic Church (previously a rock-crusher, quarry), was a rock commemorating Piliaama. Hookala said there was an impression of a footprint and a crab left in the boulder when Piliaama disappeared, while running from an *ali`i* woman who had become enamored with him (*ibid*:150).

Hookala informed McAllister about Kalua o Maua, a stone with special significance. It was located in the water, at the first inlet on the Kahuku side of Waimea Bay. This would place the site at what is presently called “Three Tables”, which is part of Pūpūkea Beach Park. According to Hookala, the rock represented a woman known for her fishing abilities. Her husband was unable to see her one night from the side of the hill as she fished the waters, so he searched for her and found, “...her in the form of this stone swimming about in the water. It is said that wherever this stone is found there is fresh water in the ocean” (McAllister 1933:151).

Located approximately three mile west of Camp Pupukea, situated on Pūpūkea Hill, Pu`u o Mahuka, a *luakini* (human sacrifice) *heiau* (place of worship), overlooks Waimea Valley. Said to be the largest *heiau* on the island of O`ahu (Handy and Handy 1972: 464), the construction and consecration of a structure of such prominence could only have occurred at the behest of a paramount chief (Valeri 1985: 179, 234-235). Pu`u o Mahuka Heiau was first recorded by

Thrum, but little was known of its actual origins. It was said to have been built by *menehune* and, "...the fierceness of its dedicatory fires warmed the hills of Kauai. This gives a clue to its type as of the severe pookanaka or human sacrifice class" (Thrum 1923:30).

In 1792, Pu`u o Mahuka Heiau may have been the recipient of the offering of crew member(s) from George Vancouver's supply ship, the *Daedalus*. It was before Kamehameha had possession of O`ahu, and Kahekili's warriors, the *pahupu*, were in charge of the "back country" (Kamakau 1961:163). Although Pu`u o Mahuka would seem the obvious choice of place to dispose of the remains, according to Kamakau, who stated he had met one of the men who did the killing, they were deposited elsewhere (*ibid*: 163, 164). He said: "The men were killed to get the guns..." and "the two men [there were three] who were killed were dragged along from Waimea to Waialua and from there to Mokuleia. . . (Kamakau 1961:164). Possibly, the third man was an offering at Pu`u o Mahuka. (At this time, Kahekili and Kamehameha were at war and guns were of the utmost importance.)

HISTORICAL BACKGROUND

After the tragic misunderstanding that resulted in Captain James Cook's death on Hawai`i Island, Captain Charles Clerke sailed the Resolution around the north side of O`ahu in search of water before leaving the islands for Kamchatka. On February 28, 1779, he sailed past Kahuku and into Waimea Bay and included the first recorded description of this area in his journals:

...the eastern shore of which was far the most beautiful country we have as yet seen among these Isles, here was a fine expanse of Low Land bounteously cloath'd with Verdure, on which were situate many large Villages and extensive plantations; at the Water side it terminated in a fine sloping, sandy Beach...On landing I was reciev'd with every token of respect and friendship by a great number of the Natives who were collected upon the occasion...[Beaglehole 1967 Vol. III Part one:572].

James King, also on the HMS Resolution, stated:

The appearance of so fine a river running thro: a deep Valley made us drop Anchor...I walkd a little farther & observed it to be the produce of 2 branches, or small streams or rivers, that came down 2 Valleys...the bank of this river as well as the face of this NW part of Wo`ahoo was as beautiful as any Island we have seen & appear'd very well Cultivated & Popular (populous); they told us here that most of the Men were gone to Morotoi (Moloka`i) to fight Tahyteree (Kahekili) ...[*ibid*.:584, 585].

Pūpūkea hill is located on the North Shore of O`ahu Island in Pūpūkea Ahupua`a, Ko`olauloa District. The hill was associated with the district and *ahupua`a* boundary, as well as the significant Waimea Ahupua`a to the west, that was given by Kamehameha (*āina pana la`au*; conquered land given by Kamehameha) to his *kahuna nui* (high priest), Hewa Hewa, after 1895, marking his triumph over O`ahu troops (Kamakau 1961). Kamakau (1961:230, 231) stated:

When Oahu came under the rule of Kama-pua`a, he gave the land containing the word *wai* to the kahuna Lono-a-wohi; but later the land was redistributed by Kahiki`ula and the older brothers of Kama-pua`a because the kahunas had a monopoly of the well-watered lands, and the kahuna class were given the lands of Waimea, Pupukea, Waiahole, and Hakipu`u in perpetuity, and these were held by them until the days of Ka-ahana. Ka-hekili and Ka-lani-u-pule confirmed this gift to the kahunas, and so did Kamehameha.

THE MĀHELE

In the 1840s, traditional land tenure shifted drastically with the introduction of private land ownership based on western law. While it is a complex issue, many scholars believe that in order to protect Hawaiian sovereignty from foreign powers, Kamehameha III was forced to establish laws changing the traditional Hawaiian economy to that of a market economy (Kame`eleihiwa 1992:169-70, 176; Kelly 1983:45, 1998:4; Daws 1968:111; Kuykendall 1938 Vol. I:145). The Māhele of 1848 divided Hawaiian lands between the king, the chiefs, the government, and began the process of private ownership of lands. The subsequently awarded parcels were called Land Commission Awards (LCAs).

Once lands were thus made available and private ownership was instituted, the *maka`āinana* (commoners), if they had been made aware of the procedures, were able to claim the plots on which they had been cultivating and living. These claims did not include any previously cultivated but presently fallow land, *okipū* (on O`ahu only), stream fisheries, or many other resources necessary for traditional survival (Kelly 1983; Kame`eleihiwa 1992:295; Kirch and Sahlins 1992). If occupation could be established through the testimony of two witnesses, the petitioners were awarded the claimed LCA and issued a Royal Patent after which they could take possession of the property (Chinen 1961:16).

Kauikeaouli (Kamehameha III) was awarded Pūpūkea Ahupua`a. However, his listed awards on O`ahu include only Kona, Ko`olau Poko, and `Ewa, suggesting he gave up Pūpūkea to the government (Waihona `Aina database 2013, Chinen 1961: 26). This is substantiated by the Boundary Commission Documents, specifically Boundary Commission Document (BCId): 14985, which indicated that Pūpūkea Ahupua`a was Crown Lands. Thirty-one *kuleana* claims

were recorded for the *ahupua`a*, nine of which were un-awarded. Eighteen of the awarded LCAs were located between Ka Awa ika ala and Waihuena Gulches and extended from the *mauka* cliffs to the shore. This area received water from the mountains through the two gulches, creating excellent conditions for agriculture. This section of the coast is now residential/agriculture and the home of Sunset Elementary School. Land Court Award 08165, awarded to Hiipei, was located below Pu`u o Mahuka Heiau and the Pūpūkea cliffs, and was claimed as a house site. No LCAs could be identified in or near the project area. However, archival research indicated that Land Grant 5172, comprised of 109.7 acres immediately adjacent and west of the project area, was purchased by H.M. Stalnaker for \$1,371, on May 2, 1909.

In the second half of the 19th century, sugar cane planting became a lucrative endeavor. Its cultivation quickly spread throughout the islands, as more and more large land sections became available for lease and purchase. Plantations located on the more isolated North Shore benefited from a railway system built by Benjamin Dillingham in 1889 (Dorrance and Morgan 2000:44). The O.R. & L. Railroad eventually extended from Honolulu to Kahuku, stopping at the various sugar plantations along the way. The Waimea Railroad Station, known as Maunawai Station, was located at the junction of the government road and the Pūpūkea Road.

In the early 1900s, farming in upland Pūpūkea became profitable now that there was a train to transport crops to the city. Large tracts of land were sold by the government and Frederick Haley, Sr. planted 400 acres in avocado trees, eventually growing 11,000 trees of many different varieties (Clark 1977: 123). Three Tables Cove, previously known for the Kalua o Maua stone, was called Avocado Beach, as mule-powered wagons full of ripe avocados, slowly descended the steep, dirt road along the cliffs to the Maunawai train stop at the bottom (*ibid*:124). After Haley sold most of his farm to Libby, McNeil, and Libby, pineapple was cultivated in the Pūpūkea highlands. These were also taken by mule-wagons down the cliffs, known by then as “Jackass Hill,” to the Maunawai train station (*ibid*).

A search of Executive Orders on the Internet produced Executive Order 5175, which was signed by President Hoover on August 21, 1929. Executive Order 5175 amended Executive Order 4679. Apparently, the earlier Executive Order 4679, signed by President Calvin Coolidge on June 29, 1927, had set aside lands in the Republic of Hawaii, including lands in Pūpūkea, as U.S. Military Reservations. As these were private lands which had been ceded to the U.S., land surveys were conducted to set the metes and bounds of these properties. Subsequently, the Pūpūkea land survey was found to be erroneous and President Hoover signed into effect

Executive Order 5175 in order to re-describe the boundaries of the Pupukea Military Reservation. On December 14, 1929, President Hoover signed into effect Executive Order 5240 which corrected the previous land surveyed boundaries (http://en.wikisource.org/wiki/Executive_Order_5240).

On October 14, 1953, President Dwight D. Eisenhower signed into effect Executive Order 10496 which pertained to public lands which had been ceded to and transferred to the U.S. by the Republic of Hawaii and restored the possession, use, and control of these lands to the Territory of Hawaii. This included a small portion of land in the Pupukea Military Reservation (<http://www.presidency.ucsb.edu/ws/?pid=60574>). A copy of each of Executive Orders 5175, 5240, and 10496 is presented in Appendix F.

By 1919, land along the beach, named the Pūpūkea-Paumalū Beach Tract, was sold for residential property. These houses were mostly vacation homes for those who lived in Honolulu. Pūpūkea Road was paved by 1943, but the highlands remained in pineapple cultivation until the 1950s and 60s when plantation agriculture began to decline in the area. Lots were sold for residential purposes and the community expanded throughout and into the 1970s. The exceptional waves along the North Shore, attracted surfers from all over the world, and its popularity gave rise to vacation rentals for, not only the surfers, but the tourists who came to see them and the monstrous waves. Pūpūkea remains residential, with a few small commercial businesses, and some agriculture in the highlands.

ARCHAEOLOGY

In the 1930s, J. Gilbert McAllister (1933) investigated and recorded archaeological sites on the island of O`ahu. Pu`u o Mahuka Heiau, State Site 50-80-01-249, was described, mapped, and photographed. It was included in the National Register of Historic Places in 1962 and as a National Historic Landmark in 1966. Much later, Smith and Yent (1991) conducted additional mapping, as well as subsurface testing at Pu`u o Mahuka Heiau. Intact cultural deposits were noted and two paving episodes for the Pu`u o Mahuka Heiau were documented. Based on radiocarbon analysis, the latter construction episode was interpreted as occurring in the late 1700s to early 1800s (Stroat *et al.* 2010).

McAllister identified Site 251, rock shelters located in the cliff between Pu`u o Mahuka Heiau and Hiipei's LCA 08165 (McAllister 1933: 150. McAllister recorded:

Rock shelters on the face of the cliff upon which stands Puu o Mahuka heiau (Site 249) have been used as burial caves. Only one of those visited now contains skeletal material. It appears to have been disturbed. The shelter is about 10 feet deep and 3 feet high and wide. It looks as though it had once been walled up. It contained a portion of a wooden platter, badly damaged, which was slightly more than 1 foot wide and probably 3 feet or more long. At one end is a suggestion of ornamentation. Here were also three pointed saplings. The longest is 6.1 feet in length, 1 inch in diameter, and has one end artificially pointed. Though it is a rough sapling, it may represent a spear. Another is 4.3 feet long with one end pointed. The smallest is 2.2 feet long and appears to be artificially shaped. It is badly decayed. All appear to be of great age, and as the site is dry the material may have been preserved for a long time [*ibid*].

Denison (1979) conducted an Archaeological Reconnaissance of property across from Pupukea Beach Park. During the survey, an historic stone-walled enclosure (State Site 50-80-01-3364) was identified in the area *mauka* (east) of the Pūpūkea Beach Park, below the Pūpūkea cliffs. This study was located in an area was comprised of the same environmental characteristics as other studies which have identified rockshelter burials along the gulches and cliffs from Pūpūkea to Sunset Beach Neighborhood Park, including Carson (2000), Mayberry and Haun (1988), Haun and Henry (2001).

During the Kamehameha Highway/Waimea Bay Emergency Rockfall Mitigation Project, six rock shelters along the mountain face, below the Pu`u o Mahuka Heiau were identified (McIntosh and Cleghorn 2000). All six of the caves contained cultural material, four of the caves contained human skeletal remains, and were believed to have been used in both the pre-Contact and the Historical Periods (State Site 50-80-01-5847, Features 1-6).

Cultural Surveys Hawai`i conducted an Archaeological Inventory Survey for the Pūpūkea Road Rockfall Mitigation Project (Tulchin and Hammatt 2009). A 100% pedestrian inspection identified five historic properties, consisting of 12 features. State Site 50-80-01-7034 is the present Pūpūkea Road; State Site 50-80-01-7035 is the old Pūpūkea Road that extended north from the present hairpin turn, along the edge of the cliff; State Site 50-80-01-7036 is a trail segment extending *mauka/makai*; State Site 50-80-01-7037 consists of two modified rock overhangs; State Site 50-80-01-7038 is a cluster of six rock overhangs and one lava tube. State Site -50-80-01-7038, Feature A, consisted of a human burial; Features B through G, include five burial caves and one temporary habitation shelter.

Scientific Consultant Services, Inc. conducted Archaeological Monitoring for the Pūpūkea Road Rockfall Mitigation Project, Phase I, Pūpūkea Ahupua`a, Ko`olauloa District,

Island of O`ahu [TMK: (1) 5-9-005 and 011] (McGerty and Spear 2011). However, no new archaeological sites were identified during the Archaeological Monitoring program.

Scientific Consultant Services, Inc. recently conducted an Archaeological Inventory Survey of Camp Pupukea (Dagher *et al.* 2013, in preparation). During the survey fifteen archaeological sites (State Site 5-80-01-7460 through State Site 50-80-01-7474), comprised of thirty features, were newly identified. Twenty-four artifacts were recovered from the ground surface during the Archaeological Inventory. Based on construction methods and materials and artifact types, it can be surmised that the sites identified during the Archaeological Inventory Survey are associated with the U.S. Army Fleet Defense System, which was in operation from 1907 through 1950 (Williford and McGovern 2003). Based on construction methods and materials and the Walter E. Wright (1904) map of the Pupukea-Paumalu Homesteads (Registered Map Number 2252), State Site 50-80-01-7474 was interpreted as a historic road also associated with the development of the homesteads. However, a Army Corps of Engineers Record of Completed Works (August 1927) Map suggests the possibility that Homestead Road may have subsequently been utilized by the military, as well.

CONSULTATION

Consultation was conducted via telephone, e-mail, and the U.S. Postal Service. Consultation was sought from the Waialua Civic Club; Phyllis "Coochie" Cayan, State Historic Preservation Division; Dr. Kamana`opono M. Crabbe, Chief Executive Officer, Office of Hawaiian Affairs; William Ho`ohuli, community member; Kawika Farm, State Historic Preservation Division, Burial Sites Program; and Dawn Wasson, community member; Martha Yent, Department of Land and Natural Resources, Division of State Parks; Alan Carpenter, Department of Land and Natural Resources, Division of State Parks; and Toni Yardley, Cultural Monitor and Cultural Practitioner.

A Cultural Impact Assessment Notice was published on March 17, 20, and 21, 2013, in *The Honolulu Star-Advertiser* and in the May 2013 issue of the OHA newspaper, *Ka Wai Ola* (Lisa Asato, Office of Hawaiian Affairs, personal communication) (see Appendix C). These notices requested information of cultural resources or activities in the area of the proposed project, stated the Tax Map Key (TMK) number, and where to respond with pertinent information.

Based on the responses of the individuals consulted, an assessment of the potential effects on cultural resources in the project area and recommendations for mitigation of these effects can be proposed.

CULTURAL IMPACT ASSESSMENT INQUIRY RESPONSES

Analysis of the potential effect of the project on cultural resources, practices or beliefs, the potential to isolate cultural resources, maintain practices or beliefs in their original setting, and the potential of the project to introduce elements that may alter the setting in which cultural practices take place is a requirement of the OEQC (No. 10, 1997). This includes the cultural resources of the different groups comprising the multi-ethnic community of Hawai`i.

Consultation was sought from local community organizations; State of Hawai`i agencies, and knowledgeable community members and local residents. In addition, legal notices were placed in *The Honolulu Star-Advertiser* and the OHA newspaper, *Ka Wai Ola*. Follow-up letters of inquiry were mailed to be the above-mentioned individuals, as necessary (see Appendix C). However, no written responses, to letters of inquiry, were received. None of the individuals interviewed indicated in their responses that any traditional cultural practices would be affected by the proposed well improvements. None of the individuals interviewed indicated in their responses that any traditional cultural practices would be affected by the proposed well improvements.

Martha Yent, Department of Land and Natural Resources, Division of State Parks, responded via e-mail on April 8, 2013. Ms. Yent indicated she was aware that correspondence requesting information had also been sent to Alan Carpenter, of Land and Natural Resources, Division of State Parks. Ms. Yent stated that she will provide contact information for additional people and that a formal response would follow.

An informal telephone conversation was conducted with Mrs. Dawn Wasson, of Lā`ie, on March 21, 2013. During the telephone conversation, Mrs. Wasson said she thought that the *ahupua`a* of Pūpūkea was awarded to William Charles Lunalilo during the Māhele. In addition, Mrs. Wasson stated that a large portion of Pūpūkea Ahupua`a had been owned by H.A. Widemann, an adviser to the chiefs.

SUMMARY

The “level of effort undertaken” to identify potential effect by a project to cultural resources, places or beliefs (OEQC 1997) has not been officially defined and is left up to the investigator. A good faith effort can mean contacting agencies by letter, interviewing people who may be affected by the project or who know its history, researching and identifying

sensitive areas and previous land use, holding meetings in which the public is invited to testify, notifying the community through the media, and other appropriate strategies based on the type of project being proposed and its impact potential. Sending inquiring letters to organizations concerning development of a piece of property that has already been totally impacted by previous activity and is located in an area previously impacted by military operations may be a “good faith effort”. However, when many factors need to be considered, such as in coastal or mountain development, a good faith effort might mean an entirely different level of research activity.

Historical and cultural source materials were extensively used and can be found listed in the References Cited portion of the report. Such scholars as Samuel Kamakau, Martha Beckwith, Jon J. Chinen, Lilikalā Kame`eleihiwa, R. S. Kuykendall, Marion Kelly, E. S. C. Handy and E.G. Handy, Elspeth P. Sterling, and Mary Kawena Puku`i and Samuel H. Elbert and continue to contribute to our knowledge and understanding of Hawai`i, past and present. The works of these and other authors were consulted and incorporated in the report where appropriate. Land use document research was supplied by the Waihona `Aina 2013 Database, the REDI Realty Tax Map Key, and the State of Hawai`i Bureau of Conveyances.

In the case of the current undertaking, letters of inquiry were sent to individuals and organizations that may have knowledge or information pertaining to the collection of cultural resources and/or practices currently, or previously conducted in the *ahupua`a*, Pūpūkea and the District of Ko`olaupia. Consultation was sought from the Waialua Civic Club; Phyllis "Coochie" Cayan, State Historic Preservation Division; Dr. Kamana`opono M. Crabbe, Chief Executive Officer, Office of Hawaiian Affairs; William Ho`ohuli, community member; Kawika Farm, State Historic Preservation Division, Burial Sites Program; and Dawn Wasson, community member; Martha Yent, Department of Land and Natural Resources, Division of State Parks; Alan Carpenter, Department of Land and Natural Resources, Division of State Parks; and Toni Yardley, Cultural Monitor and Cultural Practitioner. In addition, a Cultural Impact Assessment Legal Notices were published in *The Honolulu Star-Advertiser* and the OHA newspaper, *Ka Wai Ola* (see Appendix C).

None of the persons consulted indicated the proposed improvements to Camp Pupukea would impact traditional cultural practices.

CULTURAL ASSESSMENT AND RECOMMENDATIONS

Analysis of the potential effect of the project on cultural resources, practices or beliefs, its potential to isolate cultural resources, practices or beliefs from their setting, and the potential of the project to introduce elements which may alter the setting in which cultural practices take place is also a suggested guideline of the OEQC (No. 10, 1997). To our knowledge, the project area has not been used for traditional cultural purposes within recent times.

Based on the above research, it is reasonable to conclude that, pursuant to Act 50, the exercise of Native Hawaiian rights, or any ethnic group, related to gathering, access or other customary activities will not be affected by the proposed improvements to the existing Boy Scouts' Camp Pupukea, Pūpūkea Ahupua`a, Ko`olauloa District, O`ahu Island, Hawai`i [TMK: (1) 5-9-005:002 and 077].

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APPENDIX A: LETTERS OF INQUIRY

Waialua Hawaiian Civic Club
P.O. Box 706
Hale`iwa, HI 96712

March 12, 2013

Dear Madam or Sir:

In compliance with the State of Hawai`i Revised Statutes (HRS) Chapter 343 Environmental Impact Statement Law and in accordance with the State of Hawai`i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai`i on November 19, 1997, Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to the Boy Scouts of America Pupukea Camp located on approximately 68 acres of land in Waimea Ahupua`a, Waialua District, Island of O`ahu, [TMK: (1) 5-9-005:002 and 077] (Figures 1 through 3).

According to the *Guidelines for Assessing Cultural Impacts* (Office of Environmental Quality Control, Nov. 1997):

The types of cultural practices and beliefs subject to assessment may include subsistence, commercial, residential, agricultural, access-related, recreational, and religious and spiritual customs... The types of cultural resources subject to assessment may include traditional cultural properties or other types of historic sites, both man made and natural which support such cultural beliefs...

We are asking you for any information that you or other individuals have which might contribute to the knowledge of traditional cultural activities that were, or are currently, conducted in the vicinity of the proposed undertaking. We are also asking for any information pertaining to traditional cultural activities or traditional rights which may be impacted by the proposed undertaking. The results of the cultural impact assessment are dependent on the response and contributions made by organizations, such as the Waialua Hawaiian Civic Club.

Enclosed are maps showing the proposed project area. Please contact me at the Scientific Consultant Services, Honolulu, office at (808) 597-1182 or via e-mail (cathy@scshawaii.com) with any information or recommendations concerning this Cultural Impact Assessment.

Sincerely yours,

Cathleen Dagher
Senior Archaeologist
Enclosures (3)

Cc: Dawn Wasson, community member; Phyllis "Coochie" Cayan, State Historic Preservation Division; Dr. Kamana`opono M. Crabbe, Chief Executive Officer, Office of Hawaiian Affairs; William Ho`ohuli, community member

Alan Carpenter
Department of Land and Natural Resources
State Parks Division
1151 Punchbowl Street
Honolulu, Hawai`i 96813

March 14, 2013

Dear Mr. Carpenter:

In compliance with the State of Hawai`i Revised Statutes (HRS) Chapter 343 Environmental Impact Statement Law and in accordance with the State of Hawai`i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai`i on November 19, 1997, Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to the Boy Scouts of America Pupukea Camp located on approximately 68 acres of land in Waimea Ahupua`a, Waialua District, Island of O`ahu, [TMK: (1) 5-9-005:002 and 077] (Figures 1 through 3).

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Sincerely yours,

Cathleen Dagher
Senior Archaeologist
Enclosures (3)

Cc: William Ho`ohuli, community member; Waialua Hawaiian Civic Club; Dawn Wasson, community member; Dr. Kamana`opono M. Crabbe, Chief Executive Officer Office of Hawaiian Affairs; Phyllis "Coochie" Cayan, State Historic Preservation Division; Martha Yent, Department of Land and Natural Resources, State Parks Division

Dawn Wasson
P.O. Box 512
Lā`ie, Hawaii 96762

March 12, 2013

Dear Mrs. Wasson:

In compliance with the State of Hawai`i Revised Statutes (HRS) Chapter 343 Environmental Impact Statement Law and in accordance with the State of Hawai`i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai`i on November 19, 1997, Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to the Boy Scouts of America Pupukeya Camp located on approximately 68 acres of land in Waimea Ahupua`a, Waialua District, Island of O`ahu, [TMK: (1) 5-9-005:002 and 077] (Figures 1 through 3).

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Sincerely yours,

Cathleen Dagher
Senior Archaeologist
Enclosures (3)

Cc: Waialua Civic Club; Phyllis "Coochie" Cayan, State Historic Preservation Division; Dr. Kamana`opono M. Crabbe, Chief Executive Officer, Office of Hawaiian Affairs; William Ho`ohuli, community member

Martha Yent
Department of Land and Natural Resources
State Parks Division
1151 Punchbowl Street
Honolulu, Hawai`i 96813

March 14, 2013

Dear Ms. Yent:

In compliance with the State of Hawai`i Revised Statutes (HRS) Chapter 343 Environmental Impact Statement Law and in accordance with the State of Hawai`i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai`i on November 19, 1997, Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to the Boy Scouts of America Pupukea Camp located on approximately 68 acres of land in Waimea Ahupua`a, Waialua District, Island of O`ahu, [TMK: (1) 5-9-005:002 and 077] (Figures 1 through 3).

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Sincerely yours,

Cathleen Dagher
Senior Archaeologist
Enclosures (3)

Cc: William Ho`ohuli, community member; Waialua Hawaiian Civic Club; Dawn Wasson, community member; Dr. Kamana`opono M. Crabbe, Chief Executive Officer Office of Hawaiian Affairs; Phyllis "Coochie" Cayan, State Historic Preservation Division; Alan Carpenter, Department of Land and Natural Resources, State Parks Division

Mr. William Ho`ohuli
94-1067 Leomana Place
Waipahu, Hawai`i 96797

March 12, 2013

Dear Mr. Ho`ohuli:

In compliance with the State of Hawai`i Revised Statutes (HRS) Chapter 343 Environmental Impact Statement Law and in accordance with the State of Hawai`i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai`i on November 19, 1997, Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to the Boy Scouts of America Pupukeya Camp located on approximately 68 acres of land in Waimea Ahupua`a, Waialua District, Island of O`ahu, [TMK: (1) 5-9-005:002 and 077] (Figures 1 through 3).

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Sincerely yours,

Cathleen Dagher
Senior Archaeologist
Enclosures (3)

Cc: Waialua Hawaiian Civic Club; Dawn Wasson, community member; Phyllis "Coochie" Cayan, State Historic Preservation Division; Dr. Kamana`opono M. Crabbe, Chief Executive Officer, Office of Hawaiian Affairs

Kamana`opono M. Crabbe, Chief Executive Officer
Office of Hawaiian Affairs
711 Kapi`olani Blvd, Suite 500
Honolulu, Hawai`i 96813

March 12, 2013

Dear Dr. Kamana`opono M. Crabbe:

In compliance with the State of Hawai`i Revised Statutes (HRS) Chapter 343 Environmental Impact Statement Law and in accordance with the State of Hawai`i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai`i on November 19, 1997, Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to the Boy Scouts of America Pupukea Camp located on approximately 68 acres of land in Waimea Ahupua`a, Waialua District, Island of O`ahu, [TMK: (1) 5-9-005:002 and 077] (Figures 1 through 3).

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Enclosed are maps showing the proposed project area. Please contact me at the Scientific Consultant Services, Honolulu, office at (808) 597-1182 or via e-mail (cathy@scshawaii.com) with any information or recommendations concerning this Cultural Impact Assessment.

Sincerely yours,

Cathleen Dagher
Senior Archaeologist
Enclosures (3)

Cc: William Ho`ohuli, community member; Waialua Hawaiian Civic Club; Dawn Wasson, community member; Phyllis "Coochie" Cayan, State Historic Preservation Division

Phyllis "Coochie" Cayan
State Historic Preservation Division
601 Kamokila Blvd., Room 555
Kapolei, Hawai'i 96707

March 12, 2013

Dear Ms. Cayan:

In compliance with the State of Hawai'i Revised Statutes (HRS) Chapter 343 Environmental Impact Statement Law and in accordance with the State of Hawai'i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai'i on November 19, 1997, Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to the Boy Scouts of America Pupukea Camp located on approximately 68 acres of land in Waimea Ahupua'a, Waialua District, Island of O'ahu, [TMK: (1) 5-9-005:002 and 077] (Figures 1 through 3).

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Cathleen Dagher
Senior Archaeologist
Enclosures (3)

Cc: William Ho`ohuli, community member; Waialua Hawaiian Civic Club; Dawn Wasson, community member; Dr. Kamana`opono M. Crabbe, Chief Executive Officer Office of Hawaiian Affairs

Kawika Farm
State Historic Preservation Division
601 Kamokila Blvd., Room 555
Kapolei, Hawai'i 96707

March 12, 2013

Dear Mr. Farm:

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Sincerely yours,

Cathleen Dagher
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Cc: William Ho`ohuli, community member; Waialua Hawaiian Civic Club; Dawn Wasson, community member; Dr. Kamana`opono M. Crabbe, Chief Executive Officer Office of Hawaiian Affairs; Phyllis "Coochie" Cayan, State Historic Preservation Division

APPENDIX B: LEGAL NOTICES

Information requested by Scientific Consultant Services, Inc. (SCS) on cultural resources and traditional, or on-going, cultural activities in or near the Boy Scouts of America Pupukea Camp located on approximately 68 acres of land Waimea Ahupua`a, Waialua District, Island of O`ahu, [TMK: (1) 5-9-005:2 and 077]. Please respond within 30 days to Cathleen Dagher at (808) 597-1182.

1368

AFFIDAVIT OF PUBLICATION

IN THE MATTER OF
LEGAL NOTICE

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}
}

STATE OF HAWAII }
} SS.
City and County of Honolulu }

Doc. Date: MAR 21 2013	# Pages: 1
Notary Name: Patricia K. Reese	First Judicial Circuit
Doc. Description: Affidavit of Publication	
 Notary Signature	MAR 21 2013 Date



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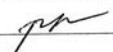
Rose Rosales being duly sworn, deposes and says that she is a clerk, duly authorized to execute this affidavit of Oahu Publications, Inc. publisher of The Honolulu Star-Advertiser and MidWeek, that said newspapers are newspapers of general circulation in the State of Hawaii, and that the attached notice is true notice as was published in the aforementioned newspapers as follows:

Honolulu Star-Advertiser 3 times on:
03/17, 03/20, 03/21/2013

Midweek Wed. 0 times on:

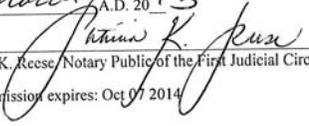
 times on:

And that affiant is not a party to or in any way interested in the above entitled matter.


Rose Rosales

Subscribed to and sworn before me this 21st day

of March, A.D. 20 13


Patricia K. Reese, Notary Public of the First Judicial Circuit, State of Hawaii

My commission expires: Oct 07 2014

Ad # 0000502282

LN: _____



APPENDIX C: FOLLOW-UP LETTERS

Waiialua Hawaiian Civic Club
P.O. Box 706
Hale`iwa, HI 96712

April 4, 2013

Dear Madam or Sir:

This is our follow-up letter to our March 12, 2013 letter which was in compliance with the statutory requirements of the State of Hawai`i Revised Statute (HRS) Chapter 343 Environmental Impact Statements Law, and in accordance with the State of Hawai`i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai`i, on November 19, 1997.

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Scientific Consultant Services, Inc. has completed an Archaeological Inventory Survey of the 64.798 acre Boy Scouts of America, Pupukea Camp. During the survey fifteen new archaeological sites (TS-1 through TS-15), comprised of a total of thirty surface features, were newly identified. Twenty-four artifacts were recovered from the ground surface. Based on feature type, construction methods, and construction materials, all fifteen archaeological sites were interpreted as associated with the United States Military and World War II. Laboratory analysis indicated that all twenty-four artifacts were associated with the United States Military and World War II (Dagher and Spear 2013, in preparation).

We are asking you for any information that you or other individuals have which might contribute to the knowledge of traditional cultural activities that were, or are currently, conducted in the vicinity of the proposed undertaking. We are also asking for any information pertaining to traditional cultural activities or traditional rights which may be impacted by the proposed undertaking. The results of the cultural impact assessment are dependent on the response and contributions made by organizations, such as the Waiialua Hawaiian Civic Club.

Please contact me at the Scientific Consultant Services, Honolulu, office at (808) 597-1182 or via e-mail (cathy@scshawaii.com) with any information or recommendations concerning this Cultural Impact Assessment.

Sincerely,

Cathleen Dagher
Senior Archaeologist

Cc: Dawn Wasson, community member; Phyllis "Coochie" Cayan, State Historic Preservation Division; Dr. Kamana`opono M. Crabbe, Chief Executive Officer, Office of Hawaiian Affairs; William Ho`ohuli, community member; Kawika Farm, State Historic Preservation Division, Burial Sites Program

Alan Carpenter
Department of Land and Natural Resources
State Parks Division
1151 Punchbowl Street
Honolulu, Hawai`i 96813

April 4, 2013

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Senior Archaeologist

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Dawn Wasson
P.O. Box 512
Lā`ie, Hawaii 96762

April 4, 2013

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This is our follow-up letter to our March 12, 2013 letter which was in compliance with the statutory requirements of the State of Hawai`i Revised Statute (HRS) Chapter 343 Environmental Impact Statements Law, and in accordance with the State of Hawai`i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai`i, on November 19, 1997.

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Scientific Consultant Services, Inc. has completed an Archaeological Inventory Survey of the 64.798 acre Boy Scouts of America, Pupukea Camp. During the survey fifteen new archaeological sites (TS-1 through TS-15), comprised of a total of thirty surface features, were newly identified. Twenty-four artifacts were recovered from the ground surface. Based on feature type, construction methods, and construction materials, all fifteen archaeological sites were interpreted as associated with the United States Military and World War II. Laboratory analysis indicated that all twenty-four artifacts were associated with the United States Military and World War II (Dagher and Spear 2013, in preparation).

We are asking you for any information that you or other individuals have which might contribute to the knowledge of traditional cultural activities that were, or are currently, conducted in the vicinity of the proposed undertaking. We are also asking for any information pertaining to traditional cultural activities or traditional rights which may be impacted by the proposed undertaking. The results of the cultural impact assessment are dependent on the response and contributions made by individuals, such as yourself.

Please contact me at the Scientific Consultant Services, Honolulu, office at (808) 597-1182 or via e-mail (cathy@scshawaii.com) with any information or recommendations concerning this Cultural Impact Assessment.

Sincerely,

Cathleen Dagher
Senior Archaeologist

Cc: Waialua Civic Club; Phyllis "Coochie" Cayan, State Historic Preservation Division; Dr. Kamana`opono M. Crabbe, Chief Executive Officer, Office of Hawaiian Affairs; William Ho`ohuli, community member; Kawika Farm, State Historic Preservation Division, Burial Sites Program

Martha Yent
Department of Land and Natural Resources
State Parks Division
1151 Punchbowl Street
Honolulu, Hawai`i 96813

April 4, 2013

Dear Ms. Yent:

This is our follow-up letter to our March 14, 2013 letter which was in compliance with the statutory requirements of the State of Hawai`i Revised Statute (HRS) Chapter 343 Environmental Impact Statements Law, and in accordance with the State of Hawai`i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai`i, on November 19, 1997.

Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to the Boy Scouts of America, Pupukea Camp located on approximately 68 acres of land in Waimea Ahupua`a, Waialua District, Island of O`ahu, [TMK: (1) 5-9-005:002 and 077].

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analysis indicated that all twenty-four artifacts were associated with the United States Military and World War II (Dagher and Spear 2013, in preparation).

We are asking you for any information that you or other individuals have which might contribute to the knowledge of traditional cultural activities that were, or are currently, conducted in the vicinity of the proposed undertaking. We are also asking for any information pertaining to traditional cultural activities or traditional rights which may be impacted by the proposed undertaking. The results of the cultural impact assessment are dependent on the response and contributions made by organizations, such as the State Parks Division.

Please contact me at the Scientific Consultant Services, Honolulu, office at (808) 597-1182 or via e-mail (cathy@scshawaii.com) with any information or recommendations concerning this Cultural Impact Assessment.

Sincerely,

Cathleen Dagher
Senior Archaeologist

Cc: William Ho`ohuli, community member; Waialua Hawaiian Civic Club; Dawn Wasson, community member; Dr. Kamana`opono M. Crabbe, Chief Executive Officer Office of Hawaiian Affairs; Phyllis "Coochie" Cayan, State Historic Preservation Division; Alan Carpenter, Department of Land and Natural Resources, State Parks Division; Kawika Farm, State Historic Preservation Division, Burial Sites Program

Mr. William Ho`ohuli
94-1067 Leomana Place
Waipahu, Hawai`i 96797

April 4, 2013

Dear Mr. Ho`ohuli:

This is our follow-up letter to our March 12, 2013 letter which was in compliance with the statutory requirements of the State of Hawai`i Revised Statute (HRS) Chapter 343 Environmental Impact Statements Law, and in accordance with the State of Hawai`i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai`i, on November 19, 1997.

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Scientific Consultant Services, Inc. has completed an Archaeological Inventory Survey of the 64.798 acre Boy Scouts of America, Pupukea Camp. During the survey fifteen new archaeological sites (TS-1 through TS-15), comprised of a total of thirty surface features, were newly identified. Twenty-four artifacts were recovered from the ground surface. Based on feature type, construction methods, and construction materials, all fifteen archaeological sites were interpreted as associated with the United States Military and World War II. Laboratory analysis indicated that all twenty-four artifacts were associated with the United States Military and World War II (Dagher and Spear 2013, in preparation).

We are asking you for any information that you or other individuals have which might contribute to the knowledge of traditional cultural activities that were, or are currently, conducted in the vicinity of the proposed undertaking. We are also asking for any information pertaining to traditional cultural activities or traditional rights which may be impacted by the proposed undertaking. The results of the cultural impact assessment are dependent on the response and contributions made by individuals, such as yourself.

Please contact me at the Scientific Consultant Services, Honolulu, office at (808) 597-1182 or via e-mail (cathy@scshawaii.com) with any information or recommendations concerning this Cultural Impact Assessment.

Sincerely,

Cathleen Dagher
Senior Archaeologist

Cc: Waialua Hawaiian Civic Club; Dawn Wasson, community member; Phyllis "Coochie" Cayan, State Historic Preservation Division; Dr. Kamana`opono M. Crabbe, Chief Executive

Officer, Office of Hawaiian Affairs; Kawika Farm, State Historic Preservation Division, Burial Sites Program

Dr. Kamana`opono M. Crabbe, Chief Executive Officer
Office of Hawaiian Affairs
711 Kapi`olani Blvd, Suite 500
Honolulu, Hawai`i 96813

April 4, 2013

Dear Dr. Kamana`opono M. Crabbe:

This is our follow-up letter to our March 12, 2013 letter which was in compliance with the statutory requirements of the State of Hawai`i Revised Statute (HRS) Chapter 343 Environmental Impact Statements Law, and in accordance with the State of Hawai`i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai`i, on November 19, 1997.

Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to the Boy Scouts of America, Pupukea Camp located on approximately 68 acres of land in Waimea Ahupua`a, Waialua District, Island of O`ahu, [TMK: (1) 5-9-005:002 and 077].

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Please contact me at the Scientific Consultant Services, Honolulu, office at (808) 597-1182 or via e-mail (cathy@scshawaii.com) with any information or recommendations concerning this Cultural Impact Assessment.

Sincerely,

Cathleen Dagher
Senior Archaeologist

Cc: William Ho`ohuli, community member; Waialua Hawaiian Civic Club; Dawn Wasson, community member; Phyllis "Coochie" Cayan, State Historic Preservation Division; Kawika Farm, State Historic Preservation Division, Burial Sites Program

Phyllis "Coochie" Cayan
State Historic Preservation Division
601 Kamokila Blvd., Room 555
Kapolei, Hawai`i 96707

April 4, 2013

Dear Ms. Cayan:

This is our follow-up letter to our March 12, 2013 letter which was in compliance with the statutory requirements of the State of Hawai`i Revised Statute (HRS) Chapter 343 Environmental Impact Statements Law, and in accordance with the State of Hawai`i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai`i, on November 19, 1997.

Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to the Boy Scouts of America, Pupukea Camp located on approximately 68 acres of land in Waimea Ahupua`a, Waialua District, Island of O`ahu, [TMK: (1) 5-9-005:002 and 077].

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Please contact me at the Scientific Consultant Services, Honolulu, office at (808) 597-1182 or via e-mail (cathy@scshawaii.com) with any information or recommendations concerning this Cultural Impact Assessment.

Sincerely,

Cathleen Dagher
Senior Archaeologist

Cc: William Ho`ohuli, community member; Waialua Hawaiian Civic Club; Dawn Wasson, community member; Dr. Kamana`opono M. Crabbe, Chief Executive Officer Office of Hawaiian Affairs; Kawika Farm, State Historic Preservation Division, Burial Sites Program

Kawika Farm
State Historic Preservation Division
601 Kamokila Blvd., Room 555
Kapolei, Hawai'i 96707

April 4, 2013

Dear Mr. Farm:

This is our follow-up letter to our March 12, 2013 letter which was in compliance with the statutory requirements of the State of Hawai'i Revised Statute (HRS) Chapter 343 Environmental Impact Statements Law, and in accordance with the State of Hawai'i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai'i, on November 19, 1997.

Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to the Boy Scouts of America, Pupukea Camp located on approximately 68 acres of land in Waimea Ahupua'a, Waialua District, Island of O'ahu, [TMK: (1) 5-9-005:002 and 077].

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Please contact me at the Scientific Consultant Services, Honolulu, office at (808) 597-1182 or via e-mail (cathy@scshawaii.com) with any information or recommendations concerning this Cultural Impact Assessment.

Sincerely,

Cathleen Dagher
Senior Archaeologist

Cc: William Ho'ohuli, community member; Waialua Hawaiian Civic Club; Dawn Wasson, community member; Dr. Kamana'opono M. Crabbe, Chief Executive Officer Office of Hawaiian Affairs; Phyllis "Coochie" Cayan, State Historic Preservation Division

APPENDIX D: RESPONSES

DOCUMENT DELIVERY
Boundary Commission Documents

BCId: 14985

Certification #:	006	Plants/Trees:	No
Lele:		Wall/Fence:	No
Ili/Area:		Fishing Rights:	No
Ahupua`a	Paumalu & Pupukea	Road Trail:	No
District:	Koolauloa	Cultivating Grounds/Taro	No
Island	Oahu	Structure(s):	No
Ownership:	Crown	Kama`aina Testimony:	No
Bird Catcher/Canoe Maker	No	Misc:	
Burial Grave:	No	Year:	1874
Cave:	No		

Paumalu and Pupukea Ahupuaa, District of Koolauloa, Island of Oahu, Boundary Commission, Oahu, Volume 2, No. 1, pps 137-138

Sundry Crown Lands

Application for the Settlement of Boundaries of sundry Crown Lands

Filed July 14

Honolulu, July 14th 1873

L. McCully, Esquire, Komisina o na Palena Aina, Apana Hookolokolo Ekahi
 Me ka Mahalo

Kakauia malalo, kekahi o na Komisina o na Aina Moi (Aina Lei Ulii), ke waiho ahu nei imua ou
 I keia palapala me ke noi aku. E hooopnopo Koke ia na Palena o na aina Moi ma ka Mokupuni
 Oahu nei e like me ia I koike ia malalo nei. Oia na Inoa:

[margin note: See page 524]

1. Papaa, Ili Aina ma Waikele, Ewa, Oahu
2. ½ Pouhala, Proceedings on page 241
3. Weloka, Ili aina ma Waimano, Ewa, Oahu
4. Hanokawailani, Ili aina ma Waiau, Ewa, Oahu
5. Kauhihau, Ili aina ma Waiau, Ewa, Oahu
6. Kaukahoku, Ili aina ma Kapalama, Kona Oahu

7. Kamookahi, Ili aina ma Kapalama, Kona, Oahu
 8. Kumupali, Ili aina ma Kapalama, Kona, Oahu
 9. ½ Paepaealii, Ili aina ma Kapalama, Kona, Oahu
 10. Kawaiki, Ili aina ma Honolulu, Kona, Oahu [margin note see page 316]
 11. Hauhaukoi, Ili aina ma Honolulu, Kona, Oahu [margin note see page 317]
 12. ½ Kahaumakaawe, Ili aina ma Manoa, Kona, Oahu
 13. Kahalauluahine, Ili aina ma Manoa, Kona, Oahu
 14. Kalokoeli, Ili aina ma Manoa, Kona, Oahu
[page 138]
 15. Kamookahi, Ili aina ma Waikiki, Kona, Oahu
 16. Piliamoo, Ili Aina ma Waikiki, Kona, Oahu
 17. ½ Poloke, Ili aina ma Waikiki, Kona, Oahu; settlement on page 266
 18. Waimanalo ahupuaa, Koolaupoko
 19. Kawaihoa, Ili Aina ma Kailua, Koolaupoko
 20. Halekou, Ili aina ma Kaneohe, Koolaupoko [margin note: No. 72]
 21. Kahalekauila, Ili Aina me Kaneohe, Koolaupoko
 22. Kuou, Ili aina ma Kaneohe, Koolaupoko
 23. Kanohouluwi, Ili aina ma Kaneohe, Koolaupoko [margin note: No. 72]
 24. Kaluapuhi, Ili aina ma Kaneohe, Koolaupoko [margin note: No. 72]
 25. Waikalua, Ili aina ma Kaneohe, Koolaupoko [margin note: No. 72]
 26. Maluaka, Ili aina ma Waihee, Koolaupoko
 27. Makawai, Ili aina ma Waiohole, Koolaupoko
 28. Hopekea, Ili aina ma Waiohole, Koolaupoko
 29. Hauula, Ahupuaa, Koolauloa
 30. Kawela, ahupuaa, Koolauloa, settled by Deed of Kamehameha III to Mr. Gordon Hopkins;
H.A.W.'s land
 31. Waialee, Ahupuaa, Koolauloa, settlement on page 235 [margin note: No. 19]
 32. Paumalu, Settlement on page 237 [margin note: No. 6]
 33. Pupukea, settlement on page 237 [margin note: No. 6]
- Me ka mahalo,
John O. Dominis, Crown Commissioner & Land Agent

Paumalu and Pupukea Ahupuaa, District of Koolauloa, Island of Oahu, Boundary Commission, Oahu, Volume 2, No. 2, pp. 237-238

In the matter of the Boundaries of Paumalu and Pupukea Ahupuaas of Koolauloa

Court House, Honolulu, October 9th 1873

These are Crown lands applied for in the general petition as recorded in pages 137-138, lying adjacent to each other, and which may be awarded in solid[?] – Paumalu is bordered on one side, the east, by Kaulana; the property of H.A. Widemann; the line of which is settled by award of Boundary Commission to which both H.A. Widemann and J.O. Dominis, agent for the Crown Lands, refer. The mauka end of Paumalu is cut off by Waimea, to where it joins Pupukea. The West side of Paumalu being the East side of Pupukea, runs thence to the sea, and needs no

description, the lands being taken together. From the aforesaid junction of Pupukea and Paumalu with Waimea, Pupukea follows the line of Waimea to the sea; a part of the way Waimea is defined in Royal Patent No. 880 to Kaelewai, From the junction of Waimea and Pupukea at the sea, the line follows the coast along Pupukea & Paumalu to point of commencement.

The only part then requiring further definition is the Waimea line above where it is now defined by survey and patent. This portion is surveyed in the two leases of Kamehameha III to R. Moffitt, of Pupukea & Paumalu for 50 years from 1852, now held by H.A. Widemann, which give the areas of these two lands, viz. Pupukea 2353 acres, Paumalu 2010 acres.

I. The line of Paumalu joining Kaulana, as determined on page 98 of this volume is as follows (and incorporated in Royal Patent 5389.

Commencing at a stone on the sea shore, the East boundary of this land runs thence
South 51° 28' East 2190 feet along Kaunala to top of pali
South 43° 45' East 1215 feet along Kaunala;
South 46° East 2750 feet along Kaunala;
South 62° 15' East 2215 feet along Kaunala;
South 54° 50' East 1342 feet;
South 43° 40' East 1185 feet;
North 88° 50' East 288 feet;
North 82° East 584 feet; thence up ridge on the boundary of Paumalu in a Southeasterly direction to the boundary of Waimea.

II. Returning to initial point the boundary of these lands [page 238] follows up the sea coast to the corner of Waimea.

III. Following the survey in Royal Patent No. 880 to Kaelewai, of Waimea.

From point on bank of shore North 70° West 1.56 chains distant from a rock on beach at low water mark, and from which the mauka side of the outermost rocky Island on the opposite side of the bay bears South 53° 30' West, and running

South 67° 15' East 12.50 chains along up stream joining ~~Pupukea~~ Waimea

South 25° 15' East 4.05 chains along the stream joining Waimea

South 53° 30' East 12.50 chains to large rock in wall near foot of pali;

North 77° 20 East 42 chains up pali to point of junction of road up pali with road coming from sea;

North 87° 15' East 9.75 chains along Road;

South 85° 00' East 9.17 chains along ridge;

South 86° 00' East 23.20 chains along ridge;

North 77° 30' East 33.70 chains along ridge;

North 80° 15' East 70 chains along ridge to top of hill "Kalaekoa"

The above following & joining line of Waimea. The remainder of Course III, from "Kalaekoa" to the end of Course I where it meets the Waimea line is not yet determined or agreed on.

October 15th 1874

Upon further consideration of this case, it appears that the line from “Kalaekoa” up to the end of Paumalu, along Waimea is along Government land; that this line is fixed by a Royal Lease for 50 years; that it has been so held for 22 years, that in the lease it is sufficiently well described as by ridges and has both ends well fixed. I find for this remainder according to the survey in the lease of these lands, from the hill Kalaekoa to the upper intersection of Paumalu with Waimea and award accordingly.

Certificate No. 6

Office of the Commissioner of Boundaries, Oahu

In the matter of the boundaries of Paumalu & Pupukea, Ahupuaa of Koolauloa

Proper application having been made and all parties in interest notified, in the proofs taken I find and certify the boundaries of the aforesaid lands, jointly as follows, to wit.

I. the line of Paumalu joining “Kaunala” commencing at a stone on the sea shore the East boundary runs:
To Folio 315

Paumalu and Pupukea Ahupuaa, District of Koolauloa, Island of Oahu, Boundary Commission, Oahu, Volume 2, pp. 315

Paumalu & Pupukea

From folio 238

South 51° 28' East 2190 feet along Kuuhalā to top of Pali

South 43° 45' East 1215 feet along Kaunala;

South 46° 00' East 2750 feet along Kaunala;

South 62° 15' East 2215 feet along Kaunala;

South 54° 50' East 1342 feet along Kaunala;

South 45° 40' East 1185 feet along Kaunala;

North 88° 50' East 288 feet along Kaunala;

North 82° 00' East 584 feet; thence up ridge on the boundary of Paumalu in a South Easterly direction to the boundary of Waimea;

II. Returning to initial point of the boundary of these lands follows the sea coast to the corner of Waimea.

III. Thence following the line of Waimea as defined in Royal Patent No. 880 to Kaelewai, from point on banks of sea shore, which is North 70° West 1.56 chains distant from a rock on beach at low water mark, and from which the mauka side of the outermost rocky on the opposite side of the Bay, bears

South 67° 15' East 12.50 chains along the stream joining Waimea;

South 25° 15' East 4.05 chains along the stream joining Waimea;

South 53° 30' East 12.50 chains to a large rock in wall near foot of Pali;

North 77° 30' East 42.00 chains up Pali to point of junction of Road up Pali with road coming

from sea;
North 87° 15' East 9.75 chains along road;
South 85° - East 9.17 chains along ridge;
South 86° - East 23.20 chains along ridge;
North 77° 30' East 33.70 chains along ridge;
North 80° 15' East 70 chains along to top of Hill "Kalaekoa" from thence along Waimea following ridge to the junction of Paumalu with Waimea at the end of Course 1 as aforesaid and the three courses bound these lands, being triangular.

Area of Paumalu 2010 acres, more or less

Area of Pupukea 2353 acres, more or less

Total area 4363 acres, more or less

In witness whereof I have hereunto set my hand this 15th day of October A.D. 1874

L. McCully, Commissioner of Boundaries, Oahu

[No. 6, Paumalu and Pupukea Ahupuaa, District of Koolauloa, Island of Oahu, Boundary Commission, Paumalu 2010 acres, Pupukea 2353 acres; Total 4363 acres; 1874]

APPENDIX E: EXECUTIVE ORDERS

Executive Order 10496 - RESTORING CERTAIN LANDS RESERVED FOR MILITARY PURPOSES TO THE JURISDICTION OF THE TERRITORY OF HAWAII
October 14, 1953

EXECUTIVE ORDER 10496

RESTORING CERTAIN LANDS RESERVED FOR MILITARY PURPOSES TO THE JURISDICTION OF THE TERRITORY OF HAWAII

WHEREAS certain lands on the Island of Oahu, Territory of Hawaii, which form a part of the public lands ceded and transferred to the United States by the Republic of Hawaii under the joint resolution of annexation of July 7, 1898, 30 Stat. 750, were reserved for military purposes by Executive orders of the President; and

WHEREAS, pursuant to authority of the act of January 31, 1922, 42 Stat. 360, as amended by the act of March 3, 1925, 43 Stat. 1115, such lands were exchanged by the United States for privately-owned lands, and the lands so acquired were thereafter set apart by the President for military purposes of the United States; and

WHEREAS the lands so acquired by exchange are no longer needed for military purposes, and it is deemed desirable and in the public interest that the possession, use, and control thereof be restored to the Territory of Hawaii:

NOW, THEREFORE, by virtue of the authority vested in me by section 91 of the act of April 30, 1900, 31 Stat. 159, as amended by section 7 of the act of May 27, 1910, 36 Stat. 447, it is ordered as follows:

The following-described parcels of land on the Island of Oahu, Territory of Hawaii, are hereby restored to the possession, use, and control of the Territory of Hawaii:

Parcel No. 1

That part of the Pupukea Military Reservation described as Tract No. 1 in Executive Order No. 5240 of December 14, 1929, containing an area of 2.022 acres.

Parcel No. 2

All of the Kaaawa Military Reservation described in Executive Order No. 4679 of June 29, 1927, being two tracts, containing an area of 3.67 acres and .0918 of an acre, respectively, together with appurtenant rights of way.

Parcel No. 3

That part of the Fort Ruger Military Reservation described in paragraph I of subparagraph 2 of Executive Order No. 4679 of June 29, 1927, containing an area of .126 of an acre.

Parcel No. 4

That part of the Fort Ruger Military Reservation described as Tract No. 6 in Executive Order No. 6408 of November 7, 1933, containing an area of 1.055 acres, more or less.

DWIGHT D. EISENHOWER
THE WHITE HOUSE,
October 14, 1953.

Exec. Order No. 10496, 18 FR 6586, 1953 WL 6022 (Pres.)

**Amending Executive Order No. 4679 of June 29, 1927, Describing
the Boundaries of Pupukea Military Reservation, Territory of
Hawaii** [Executive Order 5175](#)→

Signed by President [Herbert Hoover](#) August 21, 1929

[External Information about this EO](#)

 [more info.](#)

See the [Notes](#) section for a list of Executive Orders affected by or related to the issuance of this Executive Order.

WHEREAS, by [Executive Order No. 4679](#), dated June 29, 1927, certain lands at Pupukea, District of Koolualoa, Island of Oahu, Territory of Hawaii, were withdrawn and set aside for military purposes; and

WHEREAS, the description of the Pupukea Military Reservation, as given in said [Executive Order No. 4679](#), dated June 29, 1927, has been found to be inaccurate and a resurvey has been made of the reservation; and

WHEREAS, it is desired that said [Executive Order No. 4679](#), dated June 29, 1927, be amended so as to accurately describe said Pupukea Military Reservation;

NOW THEREFORE, it is hereby ordered that the said [Executive Order No. 4679](#), dated June 29, 1927, be and the same is hereby amended with respect to the description of the Pupukea Military Reservation, so as to read as follows:

TRACT No. 1

Beginning at concrete monument No. 1, said point is by true azimuth and distance to concrete monument "D" $08^{\circ} 12' 00''$ —270.45 ft. The azimuths and distances referred to the following U. S. C. & G. S. Triangulation Stations:

Puena- $61^{\circ} 28' 01''$ —27,448 ft.

Mali- $25^{\circ} 01' 23''$ —47,153 ft.

and thence running by true azimuths and distances, as follows:

$273^{\circ} 43' 00''$ —196.8 ft. to a concrete monument No. 2, thence

$183^{\circ} 43' 00''$ —447.6 ft. to a concrete monument No. 3, thence

$93^{\circ} 43' 00''$ —196.8 ft. to a concrete monument No. 4, thence

$03^{\circ} 43' 00''$ —447.6 ft. to the point of beginning, containing an area of 2.022 acres, more or less.

TRACT No. 2

Beginning at concrete monument No. 1, said point is by true azimuth and distance to concrete monument "O" $309^{\circ} 08'$ —38.4 ft. The azimuth and distance referred to U. S. C. & G. S. Triangulation Station Pupukea being $275^{\circ} 28' 02''$ —2740.46 ft., and thence running by true azimuths and distances, as follows:

$16^{\circ} 44'$ —129.1 ft. to a concrete monument No. 2, thence

$286^{\circ} 37'$ —81.1 ft. to a concrete monument No. 3, thence

$232^{\circ} 32'$ —101.4 ft. to a concrete monument No. 4, thence

$192^{\circ} 21'$ —86.0 ft. to a concrete monument No. 5, thence

$90^{\circ} 29' 30''$ —139.4 ft. to the point of beginning, containing an area of 418 acres, more or less.



HERBERT HOOVER

THE WHITE HOUSE,
August 21, 1929.

Executive Order 5240

by [*President of the United States*](#)

[Executive Order 5241](#)→

Correcting the Description of Pupukea Military Reservation, Territory of Hawaii

Signed by President [Herbert Hoover](#) December 14, 1929

[External Information about this EO](#)

 [more info.](#)

See the [Notes](#) section for a list of Executive Orders affected by or related to the issuance of this Executive Order.

WHEREAS, by [Executive Order No. 4679](#), dated June 29, 1927, certain lands at Pupukea, District of Koolauloa, Island of Oahu, Territory of Hawaii, were withdrawn and set aside for military purposes; and

WHEREAS, the description of the Pupukea Military Reservation, as given in said [Executive Order No. 4679](#), dated June 29, 1927, has been found to be inaccurate and a resurvey has been made of the reservation; and

WHEREAS, it is desired that said [Executive Order No. 4679](#), dated June 29, 1927, be amended so as to accurately describe said Pupukea Military Reservation; and

WHEREAS, it is desired to amend [Executive Order No. 5174](#), dated August 21, 1929, amending said [Executive Order No. 4679](#), dated June 29, 1927;

NOW THEREFORE, it is hereby ordered that said [Executive Order No. 5174](#), dated August 21, 1929, be and the same is hereby revoked and that said [Executive Order No. 4679](#), dated June 29, 1927, be and the same is hereby amended, with respect to the description of Pupukea Military Reservation, to read as follows:

TRACT No. 1

Beginning at concrete monument No. 1,

said monument bearing by true azimuth and distance (azimuths refer to south point) from concrete monument "D," 8° 12' 00''–270.45 ft.;

from said concrete monument "D" the azimuths and distances to U. S. C. & G. S. Triangulation Stations are:

To Puena 61° 28' 01''–27,448 ft.,

To Maili 25° 01' 23''–47,153 ft.;

thence 273° 43' 00''–196.8 ft. to concrete monument No. 2;

thence 183° 43' 00''–447.6 ft. to concrete monument No. 3;

thence 93° 43' 00''–196.8 ft. to concrete monument No. 4;

thence 3° 43' 00''–447.6 ft. to the point of beginning;

containing an area of 2.022 acres, more or less.

TRACT No. 2

Beginning at concrete monument No. 1,

said concrete monument bearing by true azimuth and distance (azimuths refer to south point) from concrete monument "O," $129^{\circ} 08' 00''$ —38.4 ft.;
from said concrete monument "O" the azimuth and distance to U. S. C. & G. S. Triangulation Station Pupukea is $275^{\circ} 28' 02''$ —2,740.46 ft.;

thence $16^{\circ} 44' 00''$ —129.1 ft. to concrete monument No. 2;
thence $286^{\circ} 37' 00''$ —81.1 ft. to concrete monument No. 3;
thence $232^{\circ} 32' 00''$ —101.4 ft. to concrete monument No. 4;
thence $192^{\circ} 21' 00''$ —86.0 ft. to concrete monument No. 5;
thence $90^{\circ} 29' 30''$ —139.4 ft. to the point of beginning;
containing an area of 0.414 acres, more or less.



HERBERT HOOVER

THE WHITE HOUSE,
December 14, 1929.

TRAFFIC IMPACT ANALYSIS REPORT

FINAL

Camp Pupukea

Traffic Impact Assessment

Pupukea, Hawaii

April 25, 2013

Prepared for
Aloha Council Boy Scouts of America

Prepared by



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I. PROJECT DESCRIPTION

The Aloha Council Boy Scouts of America (ACBSA) is completing a long range master plan for Camp Pupukea. Camp Pupukea resides on 65-acres, located at the top of Pupukea Road on the north shore of the Island of Oahu (see Figure 1). This traffic impact assessment will assess impacts of the proposed redevelopment of the camp in support of an Environmental Assessment (EA) being completed for the project.

Camp Pupukea currently offers central dining, a pool, shooting sports range, and 11 troop campsites with water, latrines and showers (alohacouncilbsa.org). The camp can currently hold a maximum of 385 people, including campers and staff, and is operated year-round with troops using the facilities every weekend of the year. Week-long programs are also operated during summer months (June-July), Christmas break between December 25-31, and during Spring Department of Education (DOE) Intercession (Spring Break).

Long range plans call for upgrades to the existing camp, retaining existing days of operation, with an increase in capacity of 100 users to a total of 485 campers and staff.

The proposed master plan can be seen in Figure 2.

Island of Oahu



Legend

- Study Intersections



Not To Scale



Figure 1: Location Map

Camp Pupukea Traffic Impact Assessment - Pupukea, Hawaii

II. EXISTING CONDITIONS

Camp Pupukea is operated year-round with individual troops or packs (10-20 campers) using the facilities every weekend of the year. Arrival and departure times to and from the camp for weekend uses vary per troop or pack. For week-long programs, larger organized programs generate a larger number of campers and staff, up to the 385 user capacity. A ratio of one staff member for every five campers was noted as being typical. The camp's parking lot can accommodate up to 50 vehicles although Camp Pupukea directors note that that capacity is rarely reached. Large Boy Scout troops and packs using the facilities typically arrive by rideshare which includes carpooling. The camp is often utilized by off-island users who are transported from the airport through rideshare. A 15-person passenger van is the largest vehicle typically generated by the camp. In addition, campers are not permitted to drive themselves to and from the camp and participants are prohibited from parking along Pupukea Road. For the summer week-long programs, campers are typically dropped off on Sunday (between 10:00 AM and noon) and picked up the following Saturday (between 10:00 AM and noon).

At the top of Pupukea Road, across from Camp Pupukea, is Sunset Ranch which is a 30-acre private estate that hosts events including weddings, fundraisers, luaus, retreats, television and movie productions, and photo shoots (sunsetranchhawaii.com). Event clients are provided exclusive access to the ranch for the entire day, can use the available venues, and are provided guest suites for the duration. Parking is available on site. Included in Sunset Ranch's use agreement is the recommendation that the lessee consider professional transportation services and a professional security company or police officer for any event with a guest count of 100 or more. These transportation services are mandatory for a guest count of 200 with added security requirements for a guest count of 300 or more.

Through review of North Shore Neighborhood Board No. 27 meeting minutes from 2002 through 2012, concerns and items of note in the area associated with vehicular, bicycle, and pedestrian traffic include the following:

- March 2002 – Requests continued police enforcement due to speeding along Pupukea Road.
- March 2004 – State noted issues with Ke Ala Pupukea Bike Path.
- September 2004 – Noted problems with Ke Ala Pupukea Bike Path expansion but moving to keep it progressing.
- October 2004 – There was an exponential increase in traffic in the area. Residents could not access their driveways.
- August 2005 – Noted issues with Foodland deliveries off of Pupukea Road and traffic hazards created from illegal businesses on corner of Pupukea Road and Kamehameha Highway.
- May 2009 – United States Army Guard Hawaii stated that the Army is planning to pour concrete and asphalt on Pupukea Road/Drum Road affecting residents, hikers, and casual users. It was requested that Army trucks not speed downhill on Pupukea Road.
- July 2009 – Vehicles parking illegally at “No Parking” locations in Pupukea area.
- February 2011 – It was suggested to repave Kamehameha Highway between Pupukea and Haleiwa. It was noted that resurfacing is scheduled for 2015. Drum Road construction was scheduled to be completed by Tuesday, February 2, 2011.

- February 2012 - Army vehicles have been noted using Drum Road to traverse to the Kahuku Training Area.

A. Geometric Configuration

Kamehameha Highway (State Highway Route 83) is a two-lane rural primary arterial that runs north-south in the project area with a posted speed limit of 35 mph. The roadway cross-section includes ten-foot wide lane widths and five foot shoulders with parking prohibited along both sides of the road.

Pupukea Road is a 2.6-mile, two-lane, County collector that runs mauka-makai (inland-oceanside) with a posted speed limit of 25 mph. The road intersects with residential driveways and local roads providing access to single-family residential homes. Also included along Pupukea Road is access to Puu o Mahuka Heiau, a historic site and Hawaii State Park. Pupukea Road attracts a variety of users as a result of the available access to these destinations. Parking is permitted along the majority of Pupukea Road, including at the mauka end where the driveway to Camp Pupukea exists.

At the mauka end of Pupukea Road, a stretch goes unpaved before transitioning to the paved Army owned and operated, Paalaa Uka Pupukea Road (also known as Drum Road). Drum Road is a 23-mile road that provides access to the Kahuku Military Reservation.

At the makai end, Pupukea Road intersects at the signalized intersection with Kamehameha Highway. The intersection operates as a four-way intersection with access to beach parking on the makai leg approach. On the northwest corner of the intersection, the Sunset Beach Fire Station exists. A designated left-turn lane exists for the southbound, northbound, and mauka-bound approaches to the intersection. A couple hundred feet mauka of the signalized intersection, a dedicated left-turn lane provides access to the Foodland driveway and parking lot.

B. Volumes

1. 24-Hour Volumes

24-hour traffic counts were taken along Pupukea Road, mauka of the intersection with Foodland driveway, Monday through Sunday, February 18-24, 2013. The traffic count data included vehicle speeds. Daily traffic volumes and day-of-week factors for the 24-hour counts are shown in Table 1. This shows that weekday daily traffic volumes along Pupukea Road have a percent deviation of 4% with weekend daily traffic volume averaging 15% less than average weekday. Vehicle speeds along Pupukea Road at the traffic count location averaged 21 mph although 9% of all vehicle speeds exceeded the 25 mph posted speed limit. The location of the 24-hour traffic counts mauka of a significant roadway curve likely lessened the frequency of speeding vehicles. Appendix A includes the detailed traffic count data.

Table 1: Pupukea Road Daily Traffic Volume

Roadway	Day of Week	Traffic Volume	Factor
Pupukea Road	Monday	4,215	1.009
	Tuesday	4,181	1.000
	Wednesday	4,418	1.057
	Thursday	4,491	1.075
	Friday	4,527	1.083
	Saturday	3,791	0.907
	Sunday	3,620	0.866
	Average Daily Traffic	4,178	-

Average daily traffic (ADT) along Kamehameha Highway, taken from Hawaii Department of Transportation (HDOT) *Historical Traffic Station Maps*, is shown in Table 2.

Table 2: Kamehameha Highway Average Daily Traffic

Roadway	Station	Location	Year	ADT
Kamehameha Highway	B72 0083 00633	Between Sunset Elementary School and Paumalu Place	2011	14,870
	B72 0083 00544	Between Waimea Bridge and Waimea Valley Road	2011	14,250

Source: *Historical Traffic Station Maps* (HDOT)

Seasonal variation was established using 2011 counts taken along Joseph P. Leong Highway (State Highway Route 83), at a location approximately 4.5 miles south of the intersection of Kamehameha Highway and Pupukea Road. Joseph P. Leong Highway bypasses Haleiwa town on the mauka side, from Weed Junction to Kamehameha Highway, north of Haleiwa Beach Park. The average annual daily traffic (AADT) and resulting seasonal variation factor is shown in Table 3.

Table 3: Seasonal Variation Factor

Roadway	Month	AADT	Factor
Joseph P. Leong Highway	January	10,517	0.98555
	February	10,631	0.97507
	March	10,154	1.02079
	April	10,189	1.01732
	May	9,854	1.05185
	June	10,274	1.00887
	July	10,977	0.94432
	August	10,726	0.96639
	September	10,409	0.99578
	October	10,295	1.00685
	November	9,905	1.04645
	December	10,453	0.99160

Source: *Historical Traffic Station Maps* (HDOT)

Comparing historical seasonal traffic volumes taken along Joseph P. Leong Highway in February (10,631) to the average of volumes taken in June and July (10,626), the times at which Camp Pupukea would have the largest trip generation and resulting impact, they are relatively similar. Therefore, no seasonal variation adjustments will be applied to the February counts taken for this analysis.

2. Existing Project Volumes

Traffic volumes associated with Camp Pupukea includes campers and staff who are either dropped off or participate in rideshare and staff who drive themselves and leave their car at the camp overnight. As previously stated, year-round weekend camps are smaller and do not have set times of use. Week-long camps during the summer (June-July) typically have the largest number of users and generate trips: 1) at the start of camp on Sunday (between 10:00 AM and noon) when people are arriving at the camp; and 2) on the following Saturday (between 10:00 AM and noon) when people are departing from the camp. To assess a worst-case scenario for intersection operations, weekend impacts as a result of vehicles generated from a summer week-long program will be analyzed. Week-long programs utilized primarily by on-island troops are anticipated to have a larger impact to intersection operations due to a percentage of campers being dropped off, necessitating a vehicle to make an additional trip, instead of campers being transported to the camp from the airport in a car or van. Camp Pupukea directors noted that all camp users (i.e. campers and staff) typically arrive through rideshare.

No land use exists in the *Trip Generation, 8th Edition* (ITE, 2008) that duplicates similar facilities and uses as Camp Pupukea. Recreational land uses such as State Park, Campground, and Recreational Community Center have different time of day and length of use that alters the resulting trips generated. Due to the seasonal use and varied size of programs held at Camp Pupukea, a different method of calculating trip generation to the facility is recommended.

With an existing capacity of 385 campers/staff, it can be assumed that the majority of campers (who are under driving age) and staff come through rideshare with an equal distribution of vehicles staying overnight and vehicles that drop-off/pick-up users at the beginning/end of the program. Using an average of four campers/staff per vehicle, this equates to 96 vehicles, 48 staying overnight and 48 traveling to/from the site for drop-off/pick-up. The existing parking lot has a 50-vehicle capacity and therefore is able to accommodate the 48 vehicles estimated to stay overnight.

Although trips to the camp occur over a two-hour period, analysis will be for worst case conditions where all trips are completed in a single hour. Using existing vehicle origin-destination and intersection traffic movement distribution, it was assumed that 35% of vehicles access the camp from the north and 65% from the south.

3. Existing Peak Hour Volumes

Turning movement counts were taken at the intersections of Pupukea Road and Kamehameha Highway and at Pupukea Road and Foodland driveway on Saturday and Sunday, February 23 and 24, 2013 from 10:00 AM to noon (see Appendix A for detailed count data). Peak hours of traffic during these periods were found to be 10:45–11:45 AM Saturday and 11:00 AM–12:00 PM Sunday. To account for the traffic volumes of an existing week-long summer Boy Scout program, the vehicles generated by one of these programs was added to the existing turning movement peak hour counts to reflect existing volumes during summer operation (see Figure 3).

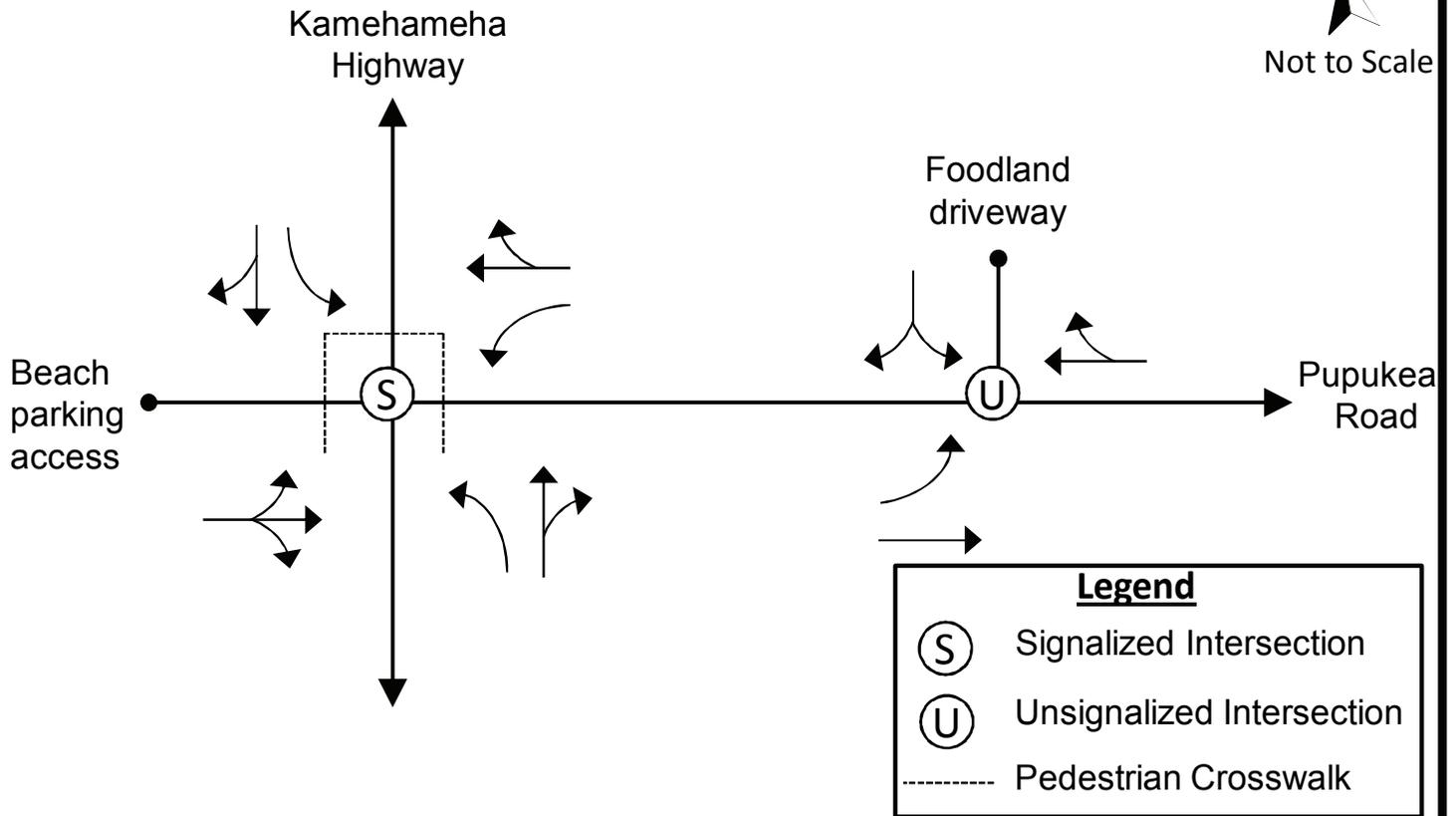
4. Existing Multi Modal Volumes

Heavy vehicle volumes were tracked separately during the intersection turning movement counts. Heavy vehicles include vehicles larger than passenger vehicles, such as delivery trucks, school and transit buses, and semi-tractor trailers. Heavy vehicle percent (i.e. percentage of heavy vehicles compared to total volume) along Kamehameha Highway during the Saturday and Sunday midday peak hours was 2.7% and 1.7% respectively. These were tabulated from the intersection manual traffic counts. Heavy vehicle percent along Pupukea Road during the Saturday and Sunday midday peak hours was 1.7% and 2.2% respectively.

The City and County of Honolulu bus transit service, TheBus, runs Route 55 and Route 88A along Kamehameha Highway in the project area. The closest bus stop is located north of the intersection with Pupukea Road across from Foodland. Route 55, Honolulu - Kaneohe – Haleiwa, makes stops here daily in the southbound direction every 30-60 minutes between 5:30 AM and 9:50 PM and in the northbound direction between 4:50 AM and 12:40 AM. This equates to one bus per hour per direction during the weekend midday time period. Route 88A, North Shore Express, makes stops here weekdays and holidays during the morning and afternoon peak hours.

Lane Configuration

N
Not to Scale



Peak Hour Volumes

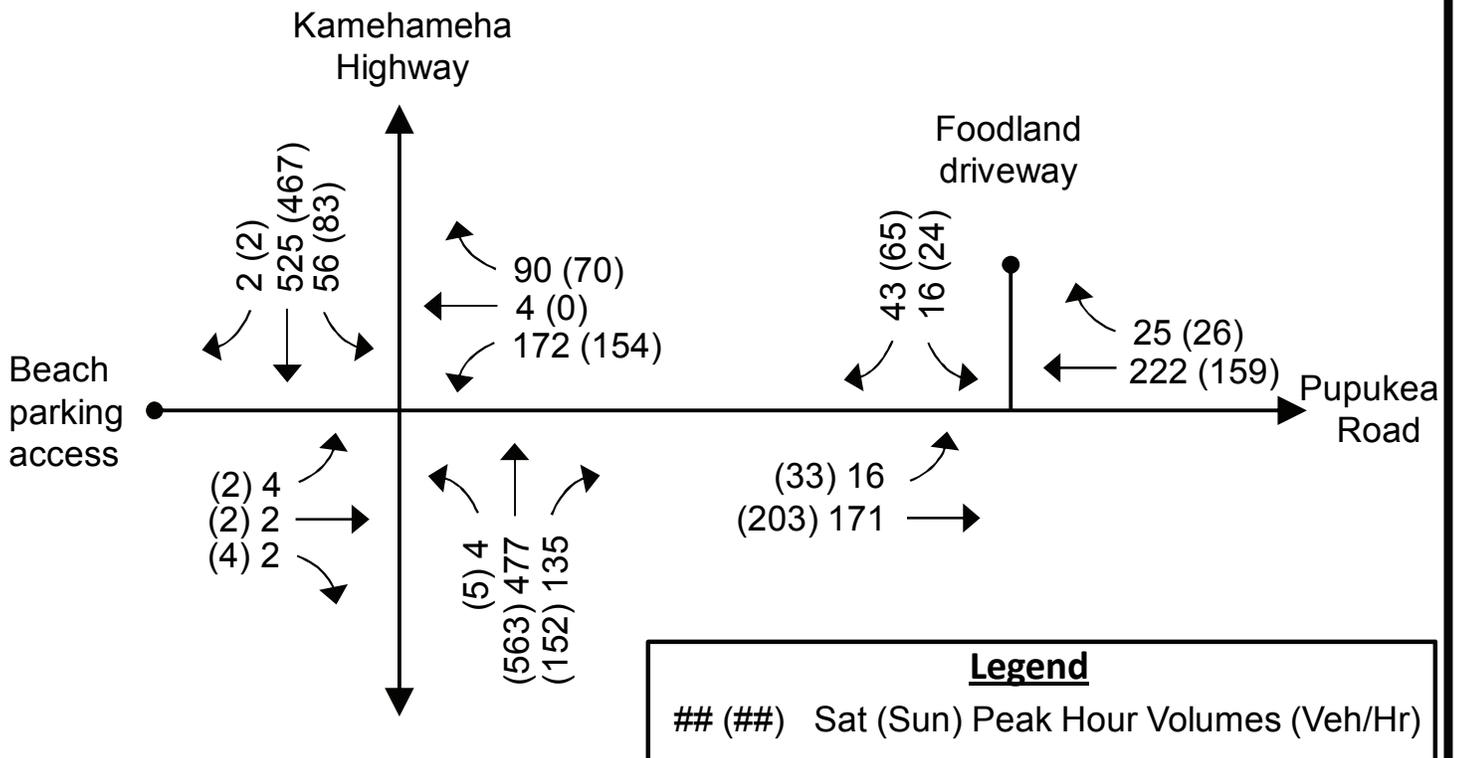


Figure 3: Existing (2013) Lane Configuration and Peak Hour Volumes

Significant pedestrian traffic exists along Kamehameha Highway in the area around the intersection with Pupukea Road due to the beach parks and Foodland. The Ke Ala Pupukea Bike Path starts just past Waimea Bay on the makai side of Kamehameha Highway and ends 3.5 miles to the north, on the other side of Sunset Beach. Mauka of Kamehameha Highway, Pupukea Road has a significant grade which results in limited pedestrian and bicycle use here although skilled recreational cyclists were observed riding up the road. At the mauka end of Pupukea Road, accessed through the unpaved start of Drum Road, is the Kaunala mountain bike trail. Saturday and Sunday midday peak period pedestrian and bicycle volumes at the two intersections are included in Table 4.

Table 4: Weekend Midday Peak Hour Pedestrian and Bicycle Volumes

Intersection	Saturday		Sunday	
	Pedestrian	Bicycles	Pedestrian	Bicycles
Kamehameha Highway at Pupukea Road	32	11	51	17
Pupukea Road at Foodland driveway	18	6	50	7

C. Level of Service

1. Methodology

Level of service (LOS) is an operational analysis rating system used in traffic engineering to measure the effectiveness of roadway operating conditions. There are six LOS ranging from A to F. LOS A is defined as being the least interrupted flow conditions with little or no delays, whereas LOS F is defined as conditions where extreme delays exist. Guidelines from the *Statewide Uniform Design Manual for Streets and Highways* (HDOT, 1980) and *A Policy on Geometric Design of Highways and Streets* (AASHTO, 2011) state that an appropriate LOS for a rural mountainous arterial, which is the classification of Kamehameha Highway in the project area, is LOS C or better. Appropriate LOS for a rural mountainous collector, which is the classification of Pupukea Road, is LOS D or better.

As stated in the *Highway Capacity Manual (HCM)* (TRB, 2010), LOS for a two-way stop controlled (TWSC) intersection is determined by the measured control delay (see Table 5) and is defined for each minor movement, not for the intersection as a whole. Vehicles traveling along the major, free-flow road, of a TWSC intersection, proceed through with minimal delay. Those vehicles approaching the intersection along the minor movement are controlled by a stop sign and thus experience delay attributable to the volume of vehicles passing along the free-flow road and the gaps available.

Table 5: LOS Criteria for Unsignalized Intersections

Average Control Delay (s/veh)	LOS by v/c Ratio	
	<=1.0	>1.0
≤ 10.0	A	F
>10 and ≤15	B	F
>15 and ≤25	C	F
>25 and ≤35	D	F
>35 and ≤50	E	F
>50	F	F

Source: *HCM* (TRB, 2010)

The LOS analysis for signalized intersections is based on average total vehicle delay based on the methodologies of the *HCM* (TRB, 2010), as shown in Table 6. High numbers of vehicles passing the intersection, long cycle lengths, inappropriate signal phasing, or a poor signal progression can result in long delays, and consequently poor LOS.

Table 6: LOS Criteria for Signalized Intersections

Average Control Delay (s/veh)	LOS by v/c Ratio	
	<=1.0	>1.0
≤ 10.0	A	F
>10 and ≤20	B	F
>20 and ≤35	C	F
>35 and ≤55	D	F
>55 and ≤80	E	F
>80	F	F

Source: *HCM* (TRB, 2010)

Another measure of intersection delay is the volume to capacity (v/c) ratio. This is the ratio of the volume of traffic utilizing the intersection compared to the maximum volume of vehicles that can be accommodated by the intersection during a specific period of time. A v/c ratio under 0.85 means the intersection is operating under capacity and excessive delays are not experienced. An intersection is operating near its capacity when v/c ratios range from 0.85 to 0.95. Unstable flows are expected when the v/c ratio is between 0.95 and 1.0. Any v/c ratio greater than or equal to 1.0 indicates that the intersection is operating at or above capacity which results in a LOS F, per the *HCM* (TRB, 2010). A traffic movement can have a poor LOS but low v/c which suggests that the traffic volumes along that movement are low but have to wait a long time to make the movement. This is common for low volume protected turn movements or side streets that have to wait through a long cycle length for their split to come up.

2. Existing (2013) Intersection Conditions

Existing (2013) intersection LOS and delay was calculated for the AM and PM peak hours using *Synchro Version 8.0* traffic analysis software. Existing (2013) LOS for all movements were appropriate (see Table 7). The westbound approach from Pupukea Road at Kamehameha Highway resulted in LOS D and LOS C for the left-turn and right-turn movements respectively during the Saturday and Sunday midday peak hours which are still considered appropriate. LOS at the intersection of Pupukea Road at Foodland driveway and along Kamehameha Highway were all LOS A and B. Appendix B provides the detailed analysis reports for the Existing (2013) conditions.

Table 7: Existing (2013) Intersection Level of Service

Intersection	Approach	Movement	Saturday			Sunday		
			Delay	v/c	LOS	Delay	v/c	LOS
Kamehameha Highway at Pupukea Road	Intersection		15.6	-	B	14.6	-	B
	Eastbound	LTR	26.1	0.02	C	28.3	0.02	C
	Westbound	L	37.0	0.44	D	34.8	0.39	C
		TR	28.7	0.22	C	30.5	0.19	C
	Northbound	L	12.9	0.01	B	10.1	0.01	B
		TR	11.9	0.55	B	12.0	0.63	B
	Southbound	L	17.3	0.13	B	20.1	0.23	C
		TR	10.4	0.45	B	8.3	0.39	A
Pupukea Road at Foodland driveway	Eastbound	L	7.8	0.01	A	7.8	0.03	A
	Southbound	LR	10.6	0.09	B	11.1	0.16	B

D. Mitigation

With all intersection movements resulting in appropriate LOS, no mitigation is recommended for Existing (2013) conditions.

III. FUTURE CONDITIONS

The Aloha Council Boy Scouts of America long-range master plan proposes to provide additional capacity for 100 campers over a 20-year period, thereby using 2033 as the future build date for analysis.

A. Surrounding Area Conditions

From research into the *State of Hawaii Office of Environmental Quality Control* library, the following developments are expected in the area that would potentially affect traffic volumes at the study intersections.

- Pupukea Beach Park Master Plan
- Turtle Bay Expansion
- Haleiwa Commercial Redevelopment
- Pupukea Village
- Envision Laie

Through research into the *Statewide Transportation Improvements Program (STIP)*, no significant projects included changes to the geometry of the study intersections and roadways.

B. Geometric Conditions

With no proposed projects that would affect roadway geometrics, lane configurations at the study intersections were kept as existing.

C. Volumes

1. Background Growth

The Oahu Metropolitan Planning Organization (OMPO) Long-Range Regional Transportation Plan (LRTP) TransCAD model shows 15,930 vehicles projected for the 2035 ADT along Kamehameha Highway. This reflects a 0.5% annual cumulative growth rate calculated from the latest 2011 HDOT *Historical Traffic Maps*. This volume increase represents projected future development in the study area and on the North Shore. The growth percentage extracted from the LRTP model was applied to through-traveling vehicles along Kamehameha Highway from Existing (2013) volumes to obtain Future (2033) Without Project Saturday and Sunday midday peak hour volumes (see Figure 4).

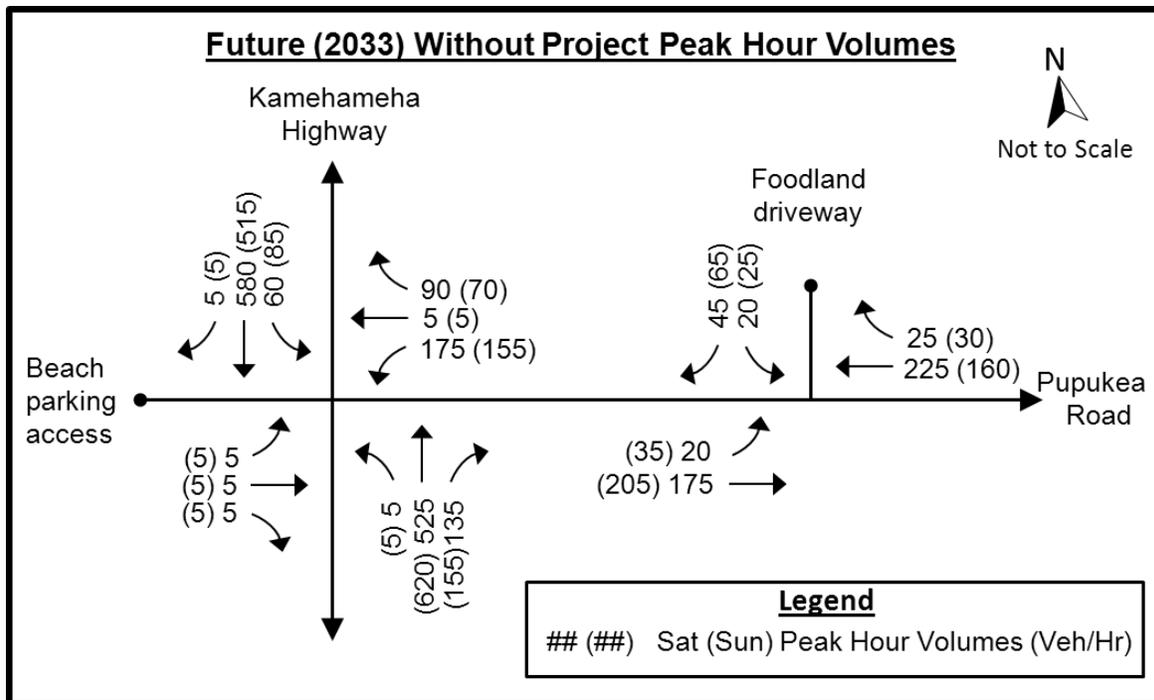


Figure 4: Future (2033) Without Project Peak Hour Volumes

2. Future Project Volumes

Plans are for Phase 1 of Camp Pupukea’s improvements to retain the existing maximum capacity of campers and staff at 385. Phase 2 improvements are expected to be built out over the next 20 years and increase camper/staff capacity by another 100 users to a total of 485. With an increase in 100 campers/staff for future conditions, averaging four people per vehicle, an additional 25 vehicles would be attracted to the camp, resulting in 121 total vehicle attractions when operating at capacity. These trips will be evaluated for movements occurring over the peak hour with all new trips being considered drop-off/pick-up. These trips originating off of Kamehameha Highway represents 2% of peak hour vehicle volumes in Future (2033) conditions, which is less than the 3-5% of total peak traffic volumes HDOT suggests for study extents, thereby confirming the study intersection of Kamehameha Highway and Pupukea Road. Project related peak hour volumes reflect users being dropped-off at the camp on a Sunday, at the start of a week-long session, and picked-up on a Saturday (see Figure 5).

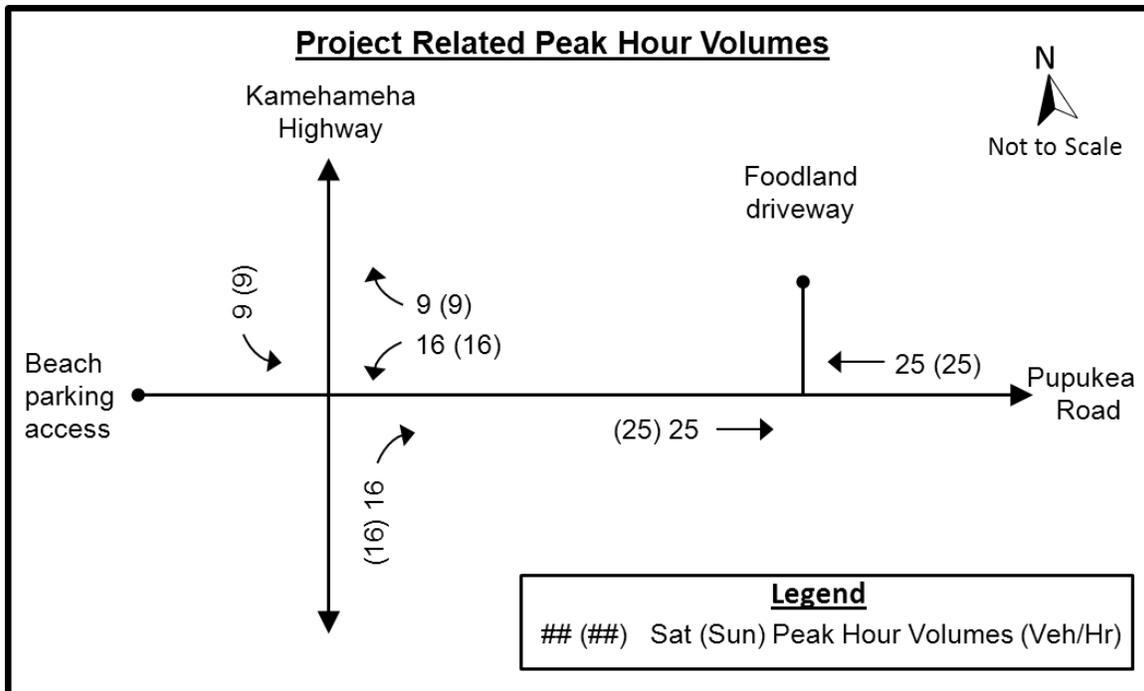


Figure 5: Project Related Peak Hour Volumes

3. Future Peak Hour Volumes

Project related volumes were added to the Future (2033) Without Project traffic volumes for the resulting Future (2033) With Project traffic volumes (see Figure 6). These volumes were used in the analysis of Future (2033) With Project conditions.

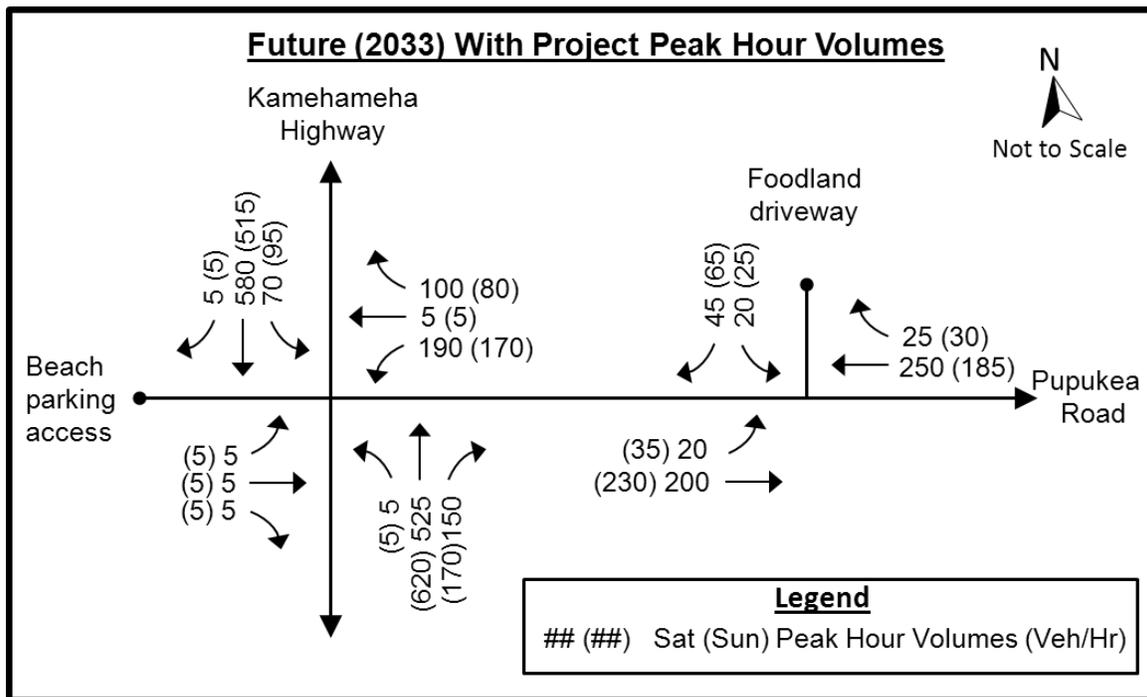


Figure 6: Future (2033) With Project Peak Hour Volumes

4. Future Multi Modal Volumes

Increase in traffic volumes in the area will likely result in an increased number of people using transit, walking or bicycles for travel. Due to the location of Camp Pupukea, the origin of the people using the facilities, and the camping gear necessary for participation, it is not expected that trips generated would come by transit, walking or bicycle and therefore this will have no effect on future multi-modal volumes.

5. Future 24-Hour Volumes

There will be a minimal increase to Future (2033) daily traffic along Kamehameha Highway and Pupukea Road as a result of the project related traffic, especially since trips are not generated daily. Future (2033) ADT are shown in Table 8.

Table 8: Future (2033) Roadway ADT

Roadway	ADT
Kamehameha Highway	15,820
Pupukea Road	4,400

D. Level of Service

1. Future (2033) Without Project

The Future (2033) Without Project conditions show a minimal change in LOS with all intersection movements remaining appropriate (see Table 9). Appendix C provides the detailed analysis reports for the Future (2033) Without Project conditions.

Table 9: Future (2033) Without Project Intersection Level of Service

Intersection	Approach	Movement	Saturday			Sunday		
			Delay	v/c	LOS	Delay	v/c	LOS
Kamehameha Highway at Pupukea Road	Intersection		15.8	-	B	14.9	-	B
	Eastbound	LTR	27.0	0.03	C	30.1	0.04	C
	Westbound	L	38.7	0.47	D	42.0	0.48	D
		TR	29.6	0.23	C	32.5	0.21	C
	Northbound	L	13.4	0.01	B	9.7	0.01	A
		TR	12.0	0.58	B	11.7	0.66	B
	Southbound	L	18.0	0.15	B	20.5	0.25	C
		TR	10.5	0.49	B	7.8	0.42	A
Pupukea Road at Foodland driveway	Eastbound	L	7.8	0.02	A	7.8	0.03	A
	Southbound	LR	10.9	0.10	B	11.2	0.16	B

2. Future (2033) With Project

The Future (2033) With Project conditions show minimal change in LOS from Future (2033) Without Project conditions. All intersection movements resulted in appropriate LOS. Appendix D provides the detailed analysis reports for the Future (2033) With Project conditions.

Table 10: Future (2033) With Project Intersection Level of Service

Intersection	Approach	Movement	Saturday			Sunday		
			Delay	v/c	LOS	Delay	v/c	LOS
Kamehameha Highway at Pupukea Road	Intersection		16.8	-	B	16.6	-	B
	Eastbound	LTR	26.3	0.03	C	28.5	0.03	C
	Westbound	L	39.0	0.50	D	41.0	0.50	D
		TR	29.1	0.24	C	31.1	0.22	C
	Northbound	L	14.2	0.01	B	10.9	0.01	B
		TR	13.0	0.61	B	13.7	0.70	B
	Southbound	L	20.2	0.19	C	25.1	0.31	C
TR		11.1	0.50	B	8.8	0.43	A	
Pupukea Road at Foodland driveway	Eastbound	L	7.9	0.02	A	7.9	0.03	A
	Southbound	LR	11.2	0.11	B	11.7	0.17	B

E. Mitigation

With all intersection movements resulting in appropriate LOS, no mitigation is recommended at the study intersections for Future (2033) Without Project or Future (2033) With Project conditions. With the increase in capacity and resulting increase in vehicles attracted to Camp Pupukea, the need for additional parking should be studied with the construction of Phase 2 to assure that all parking remains contained within the camp's property which is in line with current practice. Similar to the use agreement required by Sunset Ranch, Camp Pupukea directors should consider implementing standard suggested practice that encourages rideshare and assigns someone to manage parking for large week-long programs. Along with parking management, additional emphasis should also be put on vehicles traveling to and from the camp to follow the posted speed limits along Pupukea Road which is a noted community concern.

IV. SUMMARY AND RECOMMENDATION

The Aloha Council Boy Scouts of America is completing a long range master plan for Camp Pupukea, located at the top of Pupukea Road. The camp can currently hold a maximum of 385 people, including campers and staff, and is operated year-round with troops using the facilities every weekend of the year. Week-long programs are also operated during summer months and a couple other times during the year when schools are not in session. Long range plans include upgrades to the existing camp, retaining existing days of operation, with an increase in capacity of 100, to 485 users, which include campers and staff.

Existing (2013) conditions at the intersections of Pupukea Road and Kamehameha Highway and at Pupukea Road and Foodland driveway were analyzed for a peak Saturday/Sunday midday hour. This analysis used traffic counts taken at the study intersections including addition of traffic that would be generated from a week-long program at maximum capacity. Resulting LOS was appropriate for all intersection movements.

Future (2033) Without Project conditions were analyzed that considered an annual growth in traffic volume along Kamehameha Highway over the next 20 years. With this increase in traffic volume, LOS remained appropriate for all intersection movements. With the addition of Camp Pupukea-related traffic resulting from the proposed increase in capacity during Phase 2 of Camp Pupukea's long range master plan, intersection movement LOS remained appropriate. It is suggested that the need for additional parking be studied with the construction of Phase 2 to handle the increase in vehicles attracted to the camp. In addition, the camp should consider recommending ride share and adherence to speed limits for users and those traveling to and from the camp.

V. REFERENCES

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APPENDIX A

24-Hour and Intersection Peak Period Counts

LOCATION: Pupukea Rd east of Foodland Dwy
SPECIFIC LOCATION: 500 ft from Foodland
CITY/STATE: Pupukea, HI

QC JOB #: 10868907
DIRECTION: EB/WB
DATE: Feb 18 2013 - Feb 24 2013

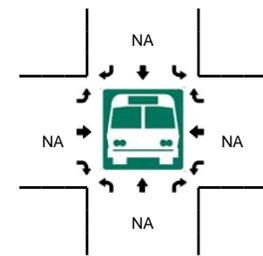
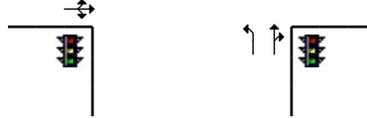
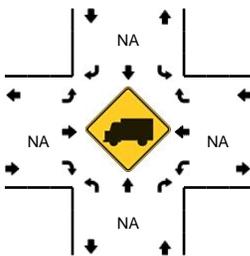
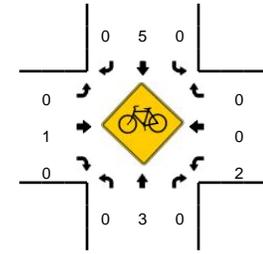
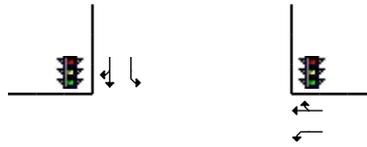
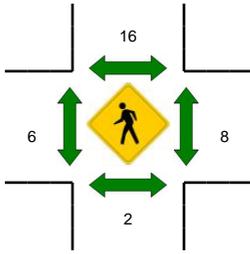
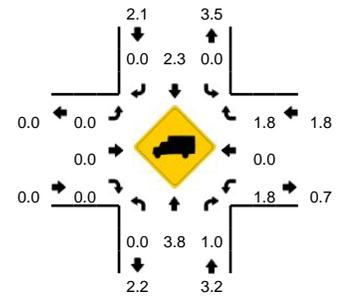
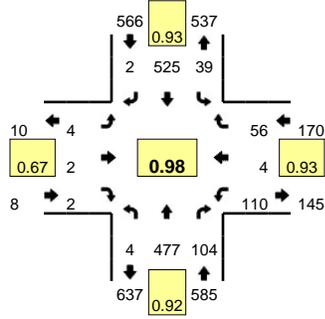
Start Time	Mon 18-Feb-13	Tue 19-Feb-13	Wed 20-Feb-13	Thu 21-Feb-13	Fri 22-Feb-13	Average Weekday Hourly Traffic	Sat 23-Feb-13	Sun 24-Feb-13	Average Week Hourly Traffic	Average Week Profile
12:00 AM	12	21	27	21	21	20	32	34	24	
1:00 AM	12	9	13	10	8	10	28	16	14	
2:00 AM	3	8	8	6	11	7	20	15	10	
3:00 AM	6	6	8	5	4	6	10	8	7	
4:00 AM	40	30	32	30	31	33	21	10	28	
5:00 AM	91	90	86	90	89	89	24	24	71	
6:00 AM	118	131	148	136	148	136	73	48	115	
7:00 AM	325	312	307	302	338	317	165	131	269	
8:00 AM	286	281	307	286	307	293	220	212	271	
9:00 AM	249	257	280	303	257	269	280	267	270	
10:00 AM	241	235	245	244	219	237	261	268	245	
11:00 AM	234	225	230	248	238	235	254	265	242	
12:00 PM	257	261	283	255	255	262	270	239	260	
1:00 PM	210	246	268	265	262	250	219	256	247	
2:00 PM	281	284	271	300	334	294	230	278	283	
3:00 PM	345	283	301	307	325	312	243	251	294	
4:00 PM	376	325	339	375	365	356	265	298	335	
5:00 PM	331	334	308	281	329	317	294	273	307	
6:00 PM	296	288	312	353	312	312	281	246	298	
7:00 PM	225	222	241	238	234	232	200	183	220	
8:00 PM	112	127	164	159	157	144	126	116	137	
9:00 PM	85	98	124	127	114	110	118	75	106	
10:00 PM	60	74	86	92	89	80	91	63	79	
11:00 PM	20	34	30	58	80	44	66	44	47	
Day Total	4215	4181	4418	4491	4527	4365	3791	3620	4179	
% Weekday Average	96.6%	95.8%	101.2%	102.9%	103.7%					
% Week Average	100.9%	100.0%	105.7%	107.5%	108.3%	104.5%	90.7%	86.6%		
AM Peak Volume	7:00 AM 325	7:00 AM 312	7:00 AM 307	9:00 AM 303	7:00 AM 338	7:00 AM 317	9:00 AM 280	10:00 AM 268	8:00 AM 271	
PM Peak Volume	4:00 PM 376	5:00 PM 334	4:00 PM 339	4:00 PM 375	4:00 PM 365	4:00 PM 356	5:00 PM 294	4:00 PM 298	4:00 PM 335	

Comments:

LOCATION: Kamehameha Hwy -- Pupukea Rd
CITY/STATE: Pupukea, HI

QC JOB #: 10868902
DATE: Sat, Feb 23 2013

Peak-Hour: 10:45 AM -- 11:45 AM
Peak 15-Min: 10:45 AM -- 11:00 AM



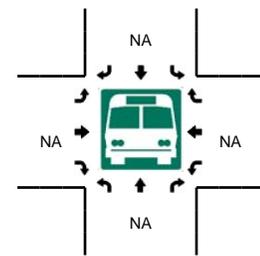
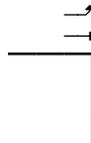
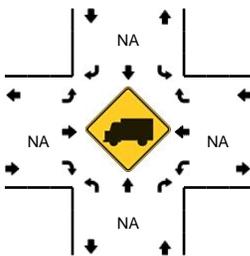
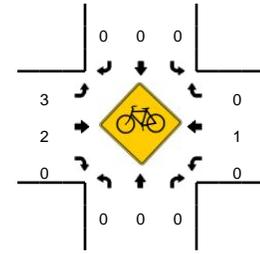
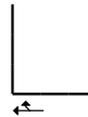
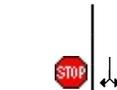
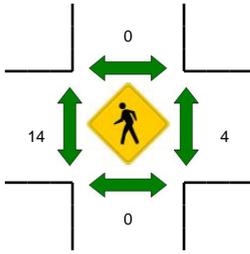
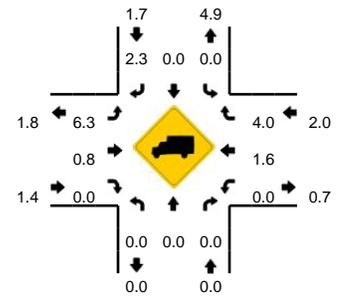
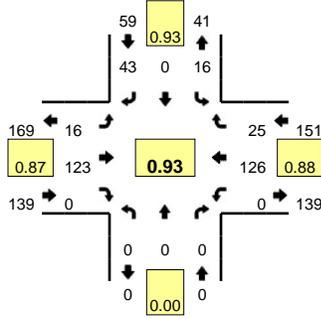
15-Min Count Period Beginning At	Kamehameha Hwy (Northbound)				Kamehameha Hwy (Southbound)				Pupukea Rd (Eastbound)				Pupukea Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
10:00 AM	1	81	22	0	7	116	2	0	1	0	1	0	30	0	16	0	277	
10:15 AM	0	87	18	0	13	125	0	0	0	0	0	0	29	0	17	0	289	
10:30 AM	1	101	21	0	7	125	1	0	2	0	1	0	28	0	15	0	302	
10:45 AM	3	124	32	0	8	133	1	0	1	1	1	0	24	2	10	0	340	1208
11:00 AM	1	104	24	0	11	143	0	0	1	1	0	0	30	0	15	0	330	1261
11:15 AM	0	131	21	0	8	117	1	0	0	0	0	0	26	0	18	0	322	1294
11:30 AM	0	118	27	0	12	132	0	0	2	0	1	0	30	2	13	0	337	1329
11:45 AM	2	123	22	0	14	132	1	0	1	0	0	0	26	0	11	0	332	1321
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	12	496	128	0	32	532	4	0	4	4	4	0	96	8	40	0	1360	
Heavy Trucks	0	24	0		0	20	0		0	0	0		0	0	0		44	
Pedestrians		4				12				8				4			28	
Bicycles	0	0	0		0	1	0		0	1	0		0	0	0		2	
Railroad																		
Stopped Buses																		

Comments:

LOCATION: Foodland Dwy -- Pupukea Rd
CITY/STATE: Pupukea, HI

QC JOB #: 10868904
DATE: Sat, Feb 23 2013

Peak-Hour: 10:45 AM -- 11:45 AM
Peak 15-Min: 11:30 AM -- 11:45 AM

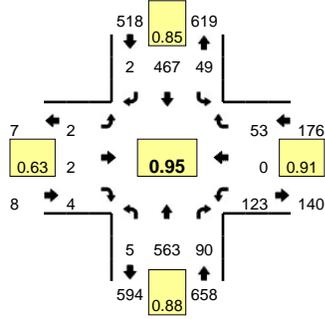


15-Min Count Period Beginning At	Foodland Dwy (Northbound)				Foodland Dwy (Southbound)				Pupukea Rd (Eastbound)				Pupukea Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
10:00 AM	0	0	0	0	6	0	10	0	3	26	0	0	0	36	9	0	90	
10:15 AM	0	0	0	0	4	0	13	0	10	20	0	0	0	32	8	0	87	
10:30 AM	0	0	0	0	6	0	10	0	4	23	0	0	0	31	8	0	82	
10:45 AM	0	0	0	0	4	0	14	0	8	32	0	0	0	24	5	0	87	346
11:00 AM	0	0	0	0	2	0	6	0	0	33	0	0	0	37	7	0	85	341
11:15 AM	0	0	0	0	6	0	6	0	1	28	0	0	0	36	6	0	83	337
11:30 AM	0	0	0	0	4	0	17	0	7	30	0	0	0	29	7	0	94	349
11:45 AM	0	0	0	0	5	0	11	0	10	27	0	0	0	27	4	0	84	346
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	16	0	68	0	28	120	0	0	0	116	28	0	376	
Heavy Trucks	0	0	0	0	0	0	4	0	4	4	0	0	0	4	0	0	16	
Pedestrians		0				0				16				0			16	
Bicycles	0	0	0		0	0	0		0	0	0		0	1	0		1	
Railroad																		
Stopped Buses																		

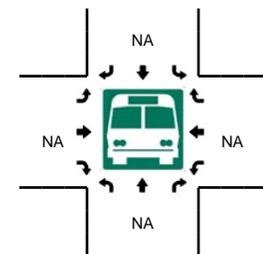
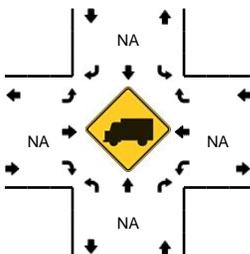
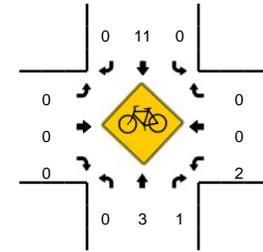
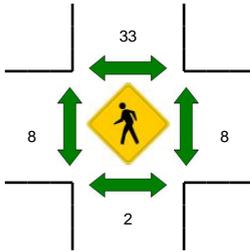
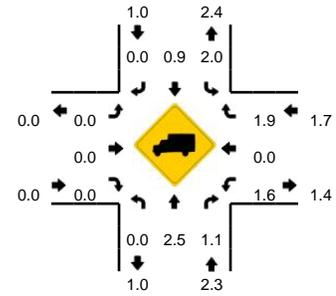
Comments:

LOCATION: Kamehameha Hwy -- Pupukea Rd
CITY/STATE: Pupukea, HI

QC JOB #: 10868901
DATE: Sun, Feb 24 2013



Peak-Hour: 11:00 AM -- 12:00 PM
Peak 15-Min: 11:30 AM -- 11:45 AM



15-Min Count Period Beginning At	Kamehameha Hwy (Northbound)				Kamehameha Hwy (Southbound)				Pupukea Rd (Eastbound)				Pupukea Rd (Westbound)				Total	Hourly Totals	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U			
10:00 AM	1	87	17	0	12	82	0	0	0	1	0	0	0	30	0	20	0	250	
10:15 AM	0	73	16	0	19	106	0	0	1	1	0	0	0	30	0	16	0	262	
10:30 AM	1	106	22	0	11	102	0	0	1	0	0	0	0	32	2	11	0	288	
10:45 AM	2	131	25	0	8	111	0	0	3	0	0	0	0	23	2	15	0	320	1120
11:00 AM	1	134	15	0	10	114	1	0	1	1	0	0	0	34	0	8	0	319	1189
11:15 AM	2	135	22	0	10	111	0	1	1	1	2	0	0	27	0	13	0	325	1252
11:30 AM	0	154	32	0	11	108	0	0	0	0	0	0	0	37	0	17	0	359	1323
11:45 AM	2	140	21	0	17	134	1	0	0	0	2	0	0	25	0	15	0	357	1360

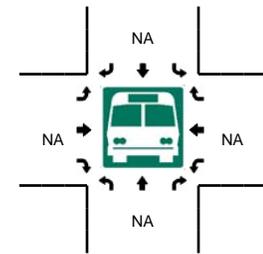
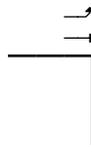
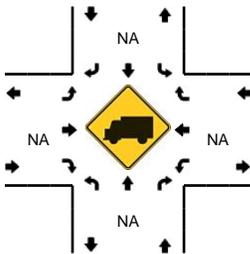
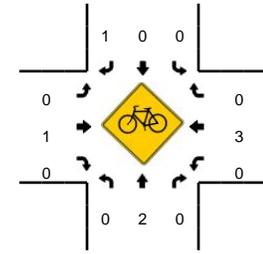
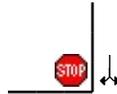
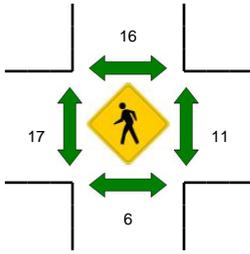
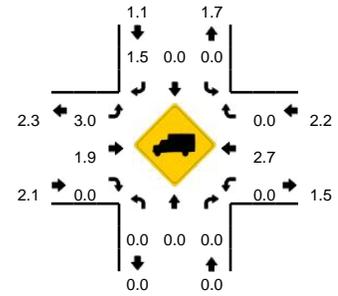
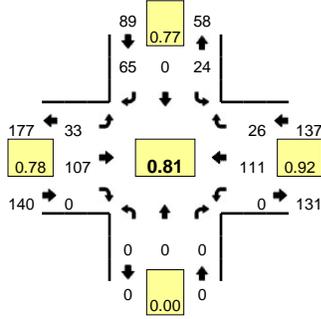
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	616	128	0	44	432	0	0	0	0	0	0	148	0	68	0	1436
Heavy Trucks	0	8	0		4	4	0		0	0	0		0	0	0		16
Pedestrians		0				52				12				8			72
Bicycles	0	0	1		0	1	0		0	0	0		0	0	0		2
Railroad																	
Stopped Buses																	

Comments:

LOCATION: Foodland Dwy -- Pupukea Rd
CITY/STATE: Pupukea, HI

QC JOB #: 10868903
DATE: Sun, Feb 24 2013

Peak-Hour: 11:00 AM -- 12:00 PM
Peak 15-Min: 11:30 AM -- 11:45 AM



15-Min Count Period Beginning At	Foodland Dwy (Northbound)				Foodland Dwy (Southbound)				Pupukea Rd (Eastbound)				Pupukea Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
10:00 AM	0	0	0	0	6	0	10	0	7	21	0	0	0	36	7	0	87	
10:15 AM	0	0	0	0	3	0	11	0	11	27	0	0	0	35	9	0	96	
10:30 AM	0	0	0	0	9	0	9	0	7	24	0	0	0	35	10	0	94	
10:45 AM	0	0	0	0	5	0	9	0	8	24	0	1	0	30	4	0	81	358
11:00 AM	0	0	0	0	6	0	23	0	5	24	0	0	0	19	9	0	86	357
11:15 AM	0	0	0	0	5	0	14	0	7	23	0	0	0	25	8	0	82	343
11:30 AM	0	0	0	0	8	0	17	0	11	33	0	1	0	39	4	0	113	362
11:45 AM	0	0	0	0	5	0	11	0	9	27	0	0	0	28	5	0	85	366
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	32	0	68	0	44	132	0	4	0	156	16	0	452	
Heavy Trucks	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	8	
Pedestrians		8				16				20				8			52	
Bicycles	0	1	0		0	0	0		0	1	0		0	1	0		3	
Railroad																		
Stopped Buses																		

Comments:

APPENDIX B

Analysis Reports Existing (2013) Conditions

HCM 2010 Signalized Intersection Summary
 3: Kamehameha Hwy & Beach access/Pupukea Road

Existing (2013)
 Timing Plan: Saturday Midday

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	2	2	172	4	90	4	477	135	56	525	2
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	190.0	190.0	190.0	186.3	186.3	186.3	184.5	184.5	184.5	186.3	186.3	186.3
Lanes	0	1	0	1	1	0	1	1	0	1	1	0
Cap, veh/h	230	115	97	401	19	428	494	885	251	426	1187	4
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.64	0.64	0.64	0.64	0.64	0.64
Sat Flow, veh/h	628	411	346	1407	66	1527	855	1383	392	797	1855	7
Grp Volume(v), veh/h	8	0	0	176	0	96	4	0	625	57	0	538
Grp Sat Flow(s),veh/h/ln	1386	0	0	1407	0	1593	855	0	1775	797	0	1862
Q Serve(g_s), s	0.0	0.0	0.0	11.0	0.0	4.6	0.2	0.0	19.6	4.3	0.0	14.6
Cycle Q Clear(g_c), s	4.6	0.0	0.0	15.6	0.0	4.6	14.9	0.0	19.6	23.8	0.0	14.6
Prop In Lane	0.50		0.25	1.00		0.96	1.00		0.22	1.00		0.00
Lane Grp Cap(c), veh/h	442	0	0	401	0	446	494	0	1136	426	0	1191
V/C Ratio(X)	0.02	0.00	0.00	0.44	0.00	0.22	0.01	0.00	0.55	0.13	0.00	0.45
Avail Cap(c_a), veh/h	442	0	0	401	0	446	494	0	1136	426	0	1191
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.1	0.0	0.0	33.6	0.0	27.6	12.9	0.0	10.0	16.6	0.0	9.1
Incr Delay (d2), s/veh	0.1	0.0	0.0	3.5	0.0	1.1	0.0	0.0	1.9	0.7	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.2	0.0	0.0	4.3	0.0	2.0	0.1	0.0	7.7	0.9	0.0	5.9
Lane Grp Delay (d), s/veh	26.1	0.0	0.0	37.0	0.0	28.7	12.9	0.0	11.9	17.3	0.0	10.4
Lane Grp LOS	C			D		C	B		B	B		B
Approach Vol, veh/h		8			272			629			595	
Approach Delay, s/veh		26.1			34.1			11.9			11.0	
Approach LOS		C			C			B			B	
Timer												
Assigned Phs		4			8			2			6	
Phs Duration (G+Y+Rc), s		32.0			32.0			68.0			68.0	
Change Period (Y+Rc), s		4.0			4.0			4.0			4.0	
Max Green Setting (Gmax), s		28.0			28.0			64.0			64.0	
Max Q Clear Time (g_c+I1), s		6.6			17.6			21.6			25.8	
Green Ext Time (p_c), s		1.1			0.8			10.1			9.9	
Intersection Summary												
HCM 2010 Ctrl Delay				15.6								
HCM 2010 LOS				B								
Notes												

Intersection

Intersection Delay, s/veh 1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	16	171	222	25	16	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	None	None	None	None	None	None
Storage Length	50			0	0	0
Median Width		12	0		12	
Grade, %		0%	0%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	1	1	2	2	2	2
Mvmt Flow	17	184	239	27	17	46
Number of Lanes	1	1	1	0	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow All	266	0	-	0	470	252
Stage 1	-	-	-	-	252	-
Stage 2	-	-	-	-	218	-
Follow-up Headway	2.209	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	1304	-	-	-	552	787
Stage 1	-	-	-	-	790	-
Stage 2	-	-	-	-	818	-
Time blocked-Platoon, %	0	-	-	-	0	0
Mov Capacity-1 Maneuver	1304	-	-	-	545	787
Mov Capacity-2 Maneuver	-	-	-	-	545	-
Stage 1	-	-	-	-	790	-
Stage 2	-	-	-	-	807	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	10.6
HCM LOS	-	-	B

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Cap, veh/h	1304	-	-	-	702
HCM Control Delay, s	7.798	-	-	-	10.6
HCM Lane V/C Ratio	0.01	-	-	-	0.09
HCM Lane LOS	A	-	-	-	B
HCM 95th-tile Q, veh	0.0	-	-	-	0.3

Notes

~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined

HCM 2010 Signalized Intersection Summary
 3: Kamehameha Hwy & Beach access/Pupukea Road

Existing (2013)
 Timing Plan: Sunday Midday

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	2	4	154	0	70	5	563	152	83	467	2
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	190.0	190.0	190.0	186.3	186.3	186.3	184.5	184.5	184.5	188.1	188.1	188.1
Lanes	0	1	0	1	1	0	1	1	0	1	1	0
Cap, veh/h	121	127	204	418	0	396	564	938	253	377	1254	5
Arrive On Green	0.25	0.25	0.25	0.25	0.00	0.25	0.67	0.67	0.67	0.67	0.67	0.67
Sat Flow, veh/h	306	510	815	1404	0	1583	891	1400	378	714	1872	8
Grp Volume(v), veh/h	8	0	0	162	0	74	5	0	753	87	0	494
Grp Sat Flow(s),veh/h/ln	1631	0	0	1404	0	1583	891	0	1778	714	0	1880
Q Serve(g_s), s	0.0	0.0	0.0	9.8	0.0	3.7	0.3	0.0	24.2	7.9	0.0	11.8
Cycle Q Clear(g_c), s	0.3	0.0	0.0	10.2	0.0	3.7	12.0	0.0	24.2	32.2	0.0	11.8
Prop In Lane	0.25		0.50	1.00		1.00	1.00		0.21	1.00		0.00
Lane Grp Cap(c), veh/h	453	0	0	418	0	396	564	0	1191	377	0	1259
V/C Ratio(X)	0.02	0.00	0.00	0.39	0.00	0.19	0.01	0.00	0.63	0.23	0.00	0.39
Avail Cap(c_a), veh/h	453	0	0	418	0	396	564	0	1191	377	0	1259
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.3	0.0	0.0	32.1	0.0	29.5	10.1	0.0	9.4	18.7	0.0	7.4
Incr Delay (d2), s/veh	0.1	0.0	0.0	2.7	0.0	1.0	0.0	0.0	2.6	1.4	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.2	0.0	0.0	3.8	0.0	1.6	0.1	0.0	9.4	1.5	0.0	4.7
Lane Grp Delay (d), s/veh	28.3	0.0	0.0	34.8	0.0	30.5	10.1	0.0	12.0	20.1	0.0	8.3
Lane Grp LOS	C			C		C	B		B	C		A
Approach Vol, veh/h		8			236			758			581	
Approach Delay, s/veh		28.3			33.5			12.0			10.1	
Approach LOS		C			C			B			B	
Timer												
Assigned Phs		4			8			2			6	
Phs Duration (G+Y+Rc), s		29.0			29.0			71.0			71.0	
Change Period (Y+Rc), s		4.0			4.0			4.0			4.0	
Max Green Setting (Gmax), s		25.0			25.0			67.0			67.0	
Max Q Clear Time (g_c+I1), s		2.3			12.2			26.2			34.2	
Green Ext Time (p_c), s		0.9			0.8			11.6			10.9	
Intersection Summary												
HCM 2010 Ctrl Delay				14.6								
HCM 2010 LOS				B								
Notes												

Intersection

Intersection Delay, s/veh 2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	33	203	159	26	24	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	None	None	None	None	None	None
Storage Length	50			0	0	0
Median Width		12	0		12	
Grade, %		0%	0%		0%	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	2	2	2	2	1	1
Mvmt Flow	41	251	196	32	30	80
Number of Lanes	1	1	1	0	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow All	228	0	-	0	544	212
Stage 1	-	-	-	-	212	-
Stage 2	-	-	-	-	332	-
Follow-up Headway	2.218	-	-	-	3.509	3.309
Pot Capacity-1 Maneuver	1340	-	-	-	502	831
Stage 1	-	-	-	-	826	-
Stage 2	-	-	-	-	729	-
Time blocked-Platoon, %	0	-	-	-	0	0
Mov Capacity-1 Maneuver	1340	-	-	-	487	831
Mov Capacity-2 Maneuver	-	-	-	-	487	-
Stage 1	-	-	-	-	826	-
Stage 2	-	-	-	-	707	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	11.1
HCM LOS	-	-	B

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Cap, veh/h	1340	-	-	-	698
HCM Control Delay, s	7.771	-	-	-	11.1
HCM Lane V/C Ratio	0.03	-	-	-	0.16
HCM Lane LOS	A	-	-	-	B
HCM 95th-tile Q, veh	0.1	-	-	-	0.6

Notes

~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined

APPENDIX C

Analysis Reports Future (2033) Without Project Conditions

HCM 2010 Signalized Intersection Summary
 3: Kamehameha Hwy & Beach access/Pupukea Road

Future (2033) Without Project
 Timing Plan: Saturday Midday

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	5	5	175	5	90	5	525	135	60	580	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	190.0	190.0	190.0	186.3	186.3	186.3	184.5	184.5	184.5	186.3	186.3	186.3
Lanes	0	1	0	1	1	0	1	1	0	1	1	0
Cap, veh/h	165	165	141	384	22	409	464	920	237	405	1199	10
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.65	0.65	0.65	0.65	0.65	0.65
Sat Flow, veh/h	433	610	522	1399	82	1513	810	1416	365	761	1844	16
Grp Volume(v), veh/h	15	0	0	179	0	97	5	0	674	61	0	597
Grp Sat Flow(s),veh/h/ln	1565	0	0	1399	0	1596	810	0	1780	761	0	1860
Q Serve(g_s), s	0.0	0.0	0.0	11.4	0.0	4.7	0.3	0.0	21.3	4.9	0.0	16.5
Cycle Q Clear(g_c), s	4.7	0.0	0.0	16.1	0.0	4.7	16.9	0.0	21.3	26.2	0.0	16.5
Prop In Lane	0.33		0.33	1.00		0.95	1.00		0.20	1.00		0.01
Lane Grp Cap(c), veh/h	471	0	0	384	0	431	464	0	1157	405	0	1209
V/C Ratio(X)	0.03	0.00	0.00	0.47	0.00	0.23	0.01	0.00	0.58	0.15	0.00	0.49
Avail Cap(c_a), veh/h	471	0	0	384	0	431	464	0	1157	405	0	1209
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.9	0.0	0.0	34.6	0.0	28.4	13.4	0.0	9.9	17.2	0.0	9.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	4.0	0.0	1.2	0.0	0.0	2.1	0.8	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.3	0.0	0.0	4.5	0.0	2.0	0.1	0.0	8.4	1.0	0.0	6.8
Lane Grp Delay (d), s/veh	27.0	0.0	0.0	38.7	0.0	29.6	13.4	0.0	12.0	18.0	0.0	10.5
Lane Grp LOS	C			D		C	B		B	B		B
Approach Vol, veh/h		15			276			679			658	
Approach Delay, s/veh		27.0			35.5			12.0			11.2	
Approach LOS		C			D			B			B	
Timer												
Assigned Phs		4			8			2			6	
Phs Duration (G+Y+Rc), s		31.0			31.0			69.0			69.0	
Change Period (Y+Rc), s		4.0			4.0			4.0			4.0	
Max Green Setting (Gmax), s		27.0			27.0			65.0			65.0	
Max Q Clear Time (g_c+I1), s		6.7			18.1			23.3			28.2	
Green Ext Time (p_c), s		1.2			0.8			11.6			11.3	
Intersection Summary												
HCM 2010 Ctrl Delay				15.8								
HCM 2010 LOS				B								
Notes												

Intersection

Intersection Delay, s/veh 1.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	20	175	225	25	20	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	None	None	None	None	None	None
Storage Length	50			0	0	0
Median Width		12	0		12	
Grade, %		0%	0%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	1	1	2	2	2	2
Mvmt Flow	22	188	242	27	22	48
Number of Lanes	1	1	1	0	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow All	269	0	-	0	486	255
Stage 1	-	-	-	-	255	-
Stage 2	-	-	-	-	231	-
Follow-up Headway	2.209	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	1300	-	-	-	540	784
Stage 1	-	-	-	-	788	-
Stage 2	-	-	-	-	807	-
Time blocked-Platoon, %	0	-	-	-	0	0
Mov Capacity-1 Maneuver	1300	-	-	-	531	784
Mov Capacity-2 Maneuver	-	-	-	-	531	-
Stage 1	-	-	-	-	788	-
Stage 2	-	-	-	-	793	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	10.9
HCM LOS	-	-	B

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Cap, veh/h	1300	-	-	-	684
HCM Control Delay, s	7.816	-	-	-	10.9
HCM Lane V/C Ratio	0.02	-	-	-	0.10
HCM Lane LOS	A	-	-	-	B
HCM 95th-tile Q, veh	0.1	-	-	-	0.3

Notes

~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined

HCM 2010 Signalized Intersection Summary
 3: Kamehameha Hwy & Beach access/Pupukea Road

Future (2033) Without Project
 Timing Plan: Sunday Midday

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	5	5	155	5	70	5	620	155	85	515	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	190.0	190.0	190.0	186.3	186.3	186.3	184.5	184.5	184.5	188.1	188.1	188.1
Lanes	0	1	0	1	1	0	1	1	0	1	1	0
Cap, veh/h	148	148	124	338	23	344	549	984	246	360	1284	12
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.69	0.69	0.69	0.69	0.69	0.69
Sat Flow, veh/h	437	643	540	1399	101	1497	848	1426	356	673	1861	17
Grp Volume(v), veh/h	15	0	0	163	0	79	5	0	816	89	0	547
Grp Sat Flow(s),veh/h/ln	1619	0	0	1399	0	1599	848	0	1782	673	0	1878
Q Serve(g_s), s	0.0	0.0	0.0	10.7	0.0	4.0	0.3	0.0	26.2	8.7	0.0	12.7
Cycle Q Clear(g_c), s	4.0	0.0	0.0	14.7	0.0	4.0	13.0	0.0	26.2	34.9	0.0	12.7
Prop In Lane	0.33		0.33	1.00		0.94	1.00		0.20	1.00		0.01
Lane Grp Cap(c), veh/h	420	0	0	338	0	368	549	0	1229	360	0	1296
V/C Ratio(X)	0.04	0.00	0.00	0.48	0.00	0.21	0.01	0.00	0.66	0.25	0.00	0.42
Avail Cap(c_a), veh/h	420	0	0	338	0	368	549	0	1229	360	0	1296
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.9	0.0	0.0	37.1	0.0	31.2	9.6	0.0	8.9	18.8	0.0	6.8
Incr Delay (d2), s/veh	0.2	0.0	0.0	4.9	0.0	1.3	0.0	0.0	2.8	1.6	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.3	0.0	0.0	4.3	0.0	1.7	0.1	0.0	10.0	1.5	0.0	5.1
Lane Grp Delay (d), s/veh	30.1	0.0	0.0	42.0	0.0	32.5	9.7	0.0	11.7	20.5	0.0	7.8
Lane Grp LOS	C			D		C	A		B	C		A
Approach Vol, veh/h		15			242			821			636	
Approach Delay, s/veh		30.1			38.9			11.7			9.6	
Approach LOS		C			D			B			A	
Timer												
Assigned Phs		4			8			2			6	
Phs Duration (G+Y+Rc), s		27.0			27.0			73.0			73.0	
Change Period (Y+Rc), s		4.0			4.0			4.0			4.0	
Max Green Setting (Gmax), s		23.0			23.0			69.0			69.0	
Max Q Clear Time (g_c+I1), s		6.0			16.7			28.2			36.9	
Green Ext Time (p_c), s		0.9			0.5			13.4			12.4	
Intersection Summary												
HCM 2010 Ctrl Delay				14.9								
HCM 2010 LOS				B								
Notes												

Intersection

Intersection Delay, s/veh 2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	35	205	160	30	25	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	None	None	None	None	None	None
Storage Length	50			0	0	0
Median Width		12	0		12	
Grade, %		0%	0%		0%	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	2	2	2	2	1	1
Mvmt Flow	43	253	198	37	31	80
Number of Lanes	1	1	1	0	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow All	235	0	-	0	556	216
Stage 1	-	-	-	-	216	-
Stage 2	-	-	-	-	340	-
Follow-up Headway	2.218	-	-	-	3.509	3.309
Pot Capacity-1 Maneuver	1332	-	-	-	494	826
Stage 1	-	-	-	-	822	-
Stage 2	-	-	-	-	723	-
Time blocked-Platoon, %	0	-	-	-	0	0
Mov Capacity-1 Maneuver	1332	-	-	-	478	826
Mov Capacity-2 Maneuver	-	-	-	-	478	-
Stage 1	-	-	-	-	822	-
Stage 2	-	-	-	-	700	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	11.2
HCM LOS	-	-	B

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Cap, veh/h	1332	-	-	-	687
HCM Control Delay, s	7.793	-	-	-	11.2
HCM Lane V/C Ratio	0.03	-	-	-	0.16
HCM Lane LOS	A	-	-	-	B
HCM 95th-tile Q, veh	0.1	-	-	-	0.6

Notes

~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined

APPENDIX D

Analysis Reports Future (2033) With Project Conditions

HCM 2010 Signalized Intersection Summary
 3: Kamehameha Hwy & Beach access/Pupukea Road

Future (2033) With Project
 Timing Plan: Saturday Midday

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	5	5	190	5	100	5	525	150	70	580	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	190.0	190.0	190.0	186.3	186.3	186.3	184.5	184.5	184.5	186.3	186.3	186.3
Lanes	0	1	0	1	1	0	1	1	0	1	1	0
Cap, veh/h	167	167	143	391	21	426	452	884	252	381	1180	10
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.64	0.64	0.64	0.64	0.64	0.64
Sat Flow, veh/h	427	597	512	1399	75	1520	810	1381	394	751	1844	16
Grp Volume(v), veh/h	15	0	0	194	0	107	5	0	689	71	0	597
Grp Sat Flow(s),veh/h/ln	1535	0	0	1399	0	1595	810	0	1775	751	0	1860
Q Serve(g_s), s	0.0	0.0	0.0	12.4	0.0	5.2	0.3	0.0	22.8	6.1	0.0	17.0
Cycle Q Clear(g_c), s	5.2	0.0	0.0	17.6	0.0	5.2	17.3	0.0	22.8	29.0	0.0	17.0
Prop In Lane	0.33		0.33	1.00		0.95	1.00		0.22	1.00		0.01
Lane Grp Cap(c), veh/h	478	0	0	391	0	446	452	0	1136	381	0	1190
V/C Ratio(X)	0.03	0.00	0.00	0.50	0.00	0.24	0.01	0.00	0.61	0.19	0.00	0.50
Avail Cap(c_a), veh/h	478	0	0	391	0	446	452	0	1136	381	0	1190
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.1	0.0	0.0	34.6	0.0	27.8	14.1	0.0	10.6	19.1	0.0	9.5
Incr Delay (d2), s/veh	0.1	0.0	0.0	4.4	0.0	1.3	0.0	0.0	2.4	1.1	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.3	0.0	0.0	4.9	0.0	2.2	0.1	0.0	9.2	1.2	0.0	7.0
Lane Grp Delay (d), s/veh	26.3	0.0	0.0	39.0	0.0	29.1	14.2	0.0	13.0	20.2	0.0	11.1
Lane Grp LOS	C			D		C	B		B	C		B
Approach Vol, veh/h		15			301			694			668	
Approach Delay, s/veh		26.3			35.5			13.0			12.0	
Approach LOS		C			D			B			B	
Timer												
Assigned Phs		4			8			2			6	
Phs Duration (G+Y+Rc), s		32.0			32.0			68.0			68.0	
Change Period (Y+Rc), s		4.0			4.0			4.0			4.0	
Max Green Setting (Gmax), s		28.0			28.0			64.0			64.0	
Max Q Clear Time (g_c+I1), s		7.2			19.6			24.8			31.0	
Green Ext Time (p_c), s		1.3			0.9			11.8			11.2	
Intersection Summary												
HCM 2010 Ctrl Delay				16.8								
HCM 2010 LOS				B								
Notes												

Intersection

Intersection Delay, s/veh 1.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	20	200	250	25	20	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	None	None	None	None	None	None
Storage Length	50			0	0	0
Median Width		12	0		12	
Grade, %		0%	0%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	1	1	2	2	2	2
Mvmt Flow	22	215	269	27	22	48
Number of Lanes	1	1	1	0	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow All	296	0	-	0	540	282
Stage 1	-	-	-	-	282	-
Stage 2	-	-	-	-	258	-
Follow-up Headway	2.209	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	1271	-	-	-	503	757
Stage 1	-	-	-	-	766	-
Stage 2	-	-	-	-	785	-
Time blocked-Platoon, %	0	-	-	-	0	0
Mov Capacity-1 Maneuver	1271	-	-	-	494	757
Mov Capacity-2 Maneuver	-	-	-	-	494	-
Stage 1	-	-	-	-	766	-
Stage 2	-	-	-	-	771	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	11.2
HCM LOS	-	-	B

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Cap, veh/h	1271	-	-	-	650
HCM Control Delay, s	7.881	-	-	-	11.2
HCM Lane V/C Ratio	0.02	-	-	-	0.11
HCM Lane LOS	A	-	-	-	B
HCM 95th-tile Q, veh	0.1	-	-	-	0.4

Notes

~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined

HCM 2010 Signalized Intersection Summary
 3: Kamehameha Hwy & Beach access/Pupukea Road

Future (2033) With Project
 Timing Plan: Sunday Midday

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	5	5	170	5	80	5	620	170	95	515	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	190.0	190.0	190.0	186.3	186.3	186.3	184.5	184.5	184.5	188.1	188.1	188.1
Lanes	0	1	0	1	1	0	1	1	0	1	1	0
Cap, veh/h	156	156	132	360	22	377	525	935	256	324	1247	12
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.67	0.67	0.67	0.67	0.67	0.67
Sat Flow, veh/h	434	624	529	1399	90	1507	848	1395	382	663	1861	17
Grp Volume(v), veh/h	15	0	0	179	0	89	5	0	832	100	0	547
Grp Sat Flow(s),veh/h/ln	1586	0	0	1399	0	1597	848	0	1777	663	0	1878
Q Serve(g_s), s	0.0	0.0	0.0	11.7	0.0	4.4	0.3	0.0	29.0	11.0	0.0	13.6
Cycle Q Clear(g_c), s	4.4	0.0	0.0	16.1	0.0	4.4	13.8	0.0	29.0	40.1	0.0	13.6
Prop In Lane	0.33		0.33	1.00		0.94	1.00		0.22	1.00		0.01
Lane Grp Cap(c), veh/h	444	0	0	360	0	399	525	0	1191	324	0	1258
V/C Ratio(X)	0.03	0.00	0.00	0.50	0.00	0.22	0.01	0.00	0.70	0.31	0.00	0.43
Avail Cap(c_a), veh/h	444	0	0	360	0	399	525	0	1191	324	0	1258
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.4	0.0	0.0	36.2	0.0	29.8	10.9	0.0	10.2	22.7	0.0	7.7
Incr Delay (d2), s/veh	0.1	0.0	0.0	4.9	0.0	1.3	0.0	0.0	3.4	2.5	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.3	0.0	0.0	4.6	0.0	1.9	0.1	0.0	11.5	2.0	0.0	5.4
Lane Grp Delay (d), s/veh	28.5	0.0	0.0	41.0	0.0	31.1	10.9	0.0	13.7	25.1	0.0	8.8
Lane Grp LOS	C			D		C	B		B	C		A
Approach Vol, veh/h		15			268			837			647	
Approach Delay, s/veh		28.5			37.7			13.6			11.3	
Approach LOS		C			D			B			B	
Timer												
Assigned Phs		4			8			2			6	
Phs Duration (G+Y+Rc), s		29.0			29.0			71.0			71.0	
Change Period (Y+Rc), s		4.0			4.0			4.0			4.0	
Max Green Setting (Gmax), s		25.0			25.0			67.0			67.0	
Max Q Clear Time (g_c+I1), s		6.4			18.1			31.0			42.1	
Green Ext Time (p_c), s		1.1			0.6			13.3			11.4	
Intersection Summary												
HCM 2010 Ctrl Delay				16.6								
HCM 2010 LOS				B								
Notes												

Intersection

Intersection Delay, s/veh 2.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	35	230	185	30	25	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	None	None	None	None	None	None
Storage Length	50			0	0	0
Median Width		12	0		12	
Grade, %		0%	0%		0%	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	2	2	2	2	1	1
Mvmt Flow	43	284	228	37	31	80
Number of Lanes	1	1	1	0	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow All	265	0	-	0	617	247
Stage 1	-	-	-	-	247	-
Stage 2	-	-	-	-	370	-
Follow-up Headway	2.218	-	-	-	3.509	3.309
Pot Capacity-1 Maneuver	1299	-	-	-	455	794
Stage 1	-	-	-	-	796	-
Stage 2	-	-	-	-	701	-
Time blocked-Platoon, %	0	-	-	-	0	0
Mov Capacity-1 Maneuver	1299	-	-	-	440	794
Mov Capacity-2 Maneuver	-	-	-	-	440	-
Stage 1	-	-	-	-	796	-
Stage 2	-	-	-	-	678	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	11.7
HCM LOS	-	-	B

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Cap, veh/h	1299	-	-	-	649
HCM Control Delay, s	7.867	-	-	-	11.7
HCM Lane V/C Ratio	0.03	-	-	-	0.17
HCM Lane LOS	A	-	-	-	B
HCM 95th-tile Q, veh	0.1	-	-	-	0.6

Notes

~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Appendix **F**

CIVIL BASIS OF DESIGN



KIM & SHIROMA ENGINEERS, INC.

Civil Engineers
1314 South King Street, Suite 325
Honolulu, Hawaii 96814-2011

TEL: (808)593-8770
FAX: (808) 596-0879
e-mail: cka@cka.com

CIVIL BASIS OF DESIGN

GENERAL

Description of Civil Work for Camp Pupukea

The civil work required for the proposed upgrades at Camp Pupukea will include demolition and removal of trees for various site improvements, grading for five new shower/comfort stations, 15 cabins grouped in clusters of three, a 16 foot wide fire access roadway, and water system improvements for the distribution of water for domestic use and fire protection.

The existing and proposed sanitary sewer system is described in a separate report.

The existing and proposed site electrical work is described in a separate report.

REFERENCE DOCUMENTS

Topographic survey by Controlpoint Surveying, Inc.

Flood Insurance Rate Map, Community - Panel Number 1500C0020F, September 30, 2004.

Codes and Standards

Water System Standards, 2002, Board of Water Supply, City and County of Honolulu.

Standard Specification for Public Works Construction, September 1986, and Standard Details for Public Works Construction, September 1984, Department of Public Works, City and County of Honolulu.

Rules Relating to Soil Erosion Standards and Guidelines. Department of Planning and Permitting, City and County of Honolulu, April 1999.

Revised Ordinances of Honolulu, Chapter 19, Plumbing Code of the City and County of Honolulu

Revised Ordinances of Honolulu, Chapter 20, Fire Code of the City and County of Honolulu

EXISTING CONDITIONS

General

Camp Pupukea is located on two parcels of land separated by a roadway owned by the State Department of Land and Natural Resources (DLNR). Parcel 5-9-05:02 (Parcel 2) with an area of 56.96 acres is on the west side of the DLNR roadway and parcel 5-9-05:77 (Parcel 77) with an area of 7.84 acres is on the east side of the DLNR roadway. The camp is at the end of Pupukea Road with the Pupukea Paumalu State Park Reserve to the north and west of the camp, the Board of Water Supply "892" reservoir site and Pupukea Road on the south side of the camp and Kaleleiki Stream to the east of the site.

The two parcels of land are within the State Conservation District and within the City and County of Honolulu P-1 Preservation Zoning District. According to the Federal Emergency Management Agency's Flood Insurance Rate Map (FIRM), the two sites are in Zone D - Unstudied areas where flood hazards are undetermined, but possible.

According to the "Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii", August, 1972, the predominate onsite soil is classified as Pa'aloa silty clay, 3 to 12 percent slopes (PaC). This soil occurs as narrow areas bounded by steep gulches. The substratum is soft, weathered rock. The slopes are smooth. On this soil, permeability is moderately rapid, runoff is slow to medium and the erosion hazard is slight to moderate. Other soils onsite include: Helemano silty clay, Kapa'a silty clay, and Paumalu-Badland complex.

For the larger Parcel 2, ground elevations range from about 850 feet (MSL) to 968 feet. A gully that turns into Kalunawaikaala Stream begins at the end of Pupukea Road where the entrance to the camp is located. A gully that turns into Pakulena Stream also starts within this parcel where the Campfire Bowl is located.

Boy Scout facilities within Parcel 2 include Moku La'au, Po'o Huku, Paki'il, Paki'i Luna and Aloha 'Aina campsites, Campfire Bowl, a rifle range, archery, a scoutcraft area, nature trails and an assembly area. The activity areas are grassed surfaces.

Existing buildings on Parcel 2 to support the activities include: the Trading Post, the Quarter Master Lodge, Nature Hut, 5 latrine buildings, a shower building, a rifle range area which includes a pavilion, a storage building and a latrine building.

The smaller Parcel 77 ranges in elevation from 850 feet to 970 feet with the DLNR roadway to the west and a steep drop off to the east into Kaleleiki Stream.

Boy Scout facilities within Parcel 77 include Laenalo, Imaka, Paina and Kilohana campsites. The activity areas are grassed surfaces.

Existing buildings on Parcel 77 that support the activities include the Weinberg Lodge, the Health Lodge, the Aloha Pavilion, a swimming pool with shower/restrooms, the camp director building, the camp master building and ranger home, 8 staff cabins, an equipment building, 4 latrine buildings, a shower building, and an open area for church services.

The existing water storage tanks for the camp and an open parking area are located within the DLNR roadway parcel.

The roadways within the camp and the open parking area are unimproved with surface material composed of a mixture of dirt and gravel. There are no concrete walkways or any asphalt pavement within the camp. Access to the buildings and activity areas is through the roadway and open areas.

Drainage

Storm runoff for both parcels of land is by overland flow to the gullies around the camp. No drainage culverts were observed.

Water System

Domestic water to the site is provided by the Board of Water Supply (BWS) from their Pupukea 892' reservoir. A BWS water meter and BSA pump station is located adjacent to the reservoir site. The BSA pump station pumps the water up Pupukea Road through a 2" galvanized water line to two 3,000 gallon water storage tanks located at the southeast corner of the cleared parking area. BSA has indicated that the existing 2" galvanized line is old and should be replaced soon. The recent improvements to the BSA water system indicate that a study was conducted and that now there is adequate storage for the camp. The base of the tanks is at elevation 890 with a tank height of 9'-0".

Based upon the BWS meter readings for the period October 15, 2008 through October 19, 2009, the average use was about 4,500 gallons per day (gpd). During the summer months usage increases to about 8,800 gpd due to camping demands. During the winter months usage decreases to about 2,700 gpd.

From the water tanks, a 2" line exits the tanks and splits into two lines. A 1-1/2" line goes to the storage shed building and is pressurized by a pump system located behind the building and feeds the ranger house, the camp director building, the camp master building, the swimming pool and the Weinberg Lodge. The second line is a 2" gravity line that services the health center, the quarter

master building, shower buildings and the many hosebibs and drinking fountains located throughout the camp sites. The various latrines do not use water.

Fire Protection

There are no fire hydrants on site for fire protection. The Weinberg Lodge is protected with a fire sprinkler system that is pressurized by a separate pump system located in the swimming pool pump room. In addition to the lodges' fire sprinkler system, two 2-1/2" standpipes are located on the exterior wall of the swimming pool pump room and are connected to the recirculating water system for the swimming pool. Two 5 HP pumps are used to provide three complete changeovers of the water per day in the 160,000 gallon swimming pool or about 20,000 gallons per hour. This quantity meets the Honolulu Fire Department's requirement of at least 100,000 gallons of stored water available for firefighting purposes.

A 1-1/2" standpipe is located at the exterior corner of the swimming pool. The standpipe is connected to the 2" gravity water line serving the rest of the BSA camp and more pressure could be produced by turning on a valve that connects the two systems. This valve is larger than normal and can be used by a one-inch fire hose. A 1" gate valve was noted next to some ti plants about midway between the septic tanks and the dirt road. This valve is larger than normal and can be used by a one-inch fire hose.

MASTER PLAN PROPOSED IMPROVEMENTS

Site Improvements

The Boy Scouts are proposing to conduct various improvements to Camp Pupukea. Proposed upgrades include infrastructure improvements (particularly wastewater system improvements), renovating or relocating some existing structures, and new facilities. Improvements are expected to be completed in three phases.

Phase I will consist of general infrastructure improvements. Five new shower and bathroom facilities will be constructed with each facility having their own approved individual wastewater system. Staff housing will be replaced with new junior staff lodging and family cabins. A new roadway that will meet the approval of the Honolulu Fire Department and 40-space parking area will also be completed in this first phase. The camp water system and electrical system will be upgraded in this phase.

Phase II involves upgrades to the Camp Director's quarters and Ranger's House. Renovation and relocation are proposed for the Scout Leader meeting lounge, the Chapel, and the health lodge. New buildings considered in this phase include

a nature facility, a multi-use pavilion, Indigenous Studies facilities, a Welcome Center and a classroom. New locations are proposed for the archery range and rifle range, craft pavilion, climbing, and zip line center.

Phase III proposes camping expansions and new programs throughout the camp. Expansions include Scout activities and programs, campgrounds, and parking areas. New facilities will be built to house programs in Natural Science and Environmental Education. A mountain bike path is included in Phase III.

The new buildings will be located such that tree removal will be kept to a minimum. Buildings with slab on grade construction such as shower/comfort stations will have the area around each building graded so that storm runoff will be directed away from the buildings. Most buildings will be open sided pavilion type roofed structures where classes can be conducted. The health building will be an enclosed building with doors to keep the interior clean and sanitary.

The camp access road will begin at Pupukea Road, run through the parking area and follow the slope down the ridge to the lowest camp site where it will end with a turnaround that meets HFD approval. The final roadway surface of the fire access road will be of material acceptable to the HFD. In the future the roadway may connect to the Pupukea Paumalu Forest State Park Reserve, north of Camp Pupukea, to provide maintenance and emergency vehicle access

An existing unpaved roadway begins in the vicinity between the health lodge and the trading post. This roadway follows the DLNR roadway lot down the north side and around the campfire bowl area. Should other buildings be constructed further along this roadway, the dirt road will also have to be widened to 16 ft wide and improved to meet the HFD fire code requirements.

Drainage

No drainage improvements beyond the grading around new structures are proposed.

Water System

The pressure system serving the Weinberg Lodge and the upper buildings will remain. It will have to be expanded to include the family cabin area and its shower/comfort station. Ground surface at the family cabins, shower/comfort station site varies in elevation from about 962 down to elevations around 956 that would indicate a maximum static pressure of 13 psi. By the requirements of the Plumbing Code the water system to this site should connect to the pressurized system.

New water lines will be designed to replace the old 2" galvanized water line in Pupukea Road and the existing gravity water line system that connects to the two 3,000 storage tanks. The existing lines are constructed of galvanized pipe. Where water line breaks have occurred, repairs were completed using pvc pipe and fittings.

A 2" polyethylene tubing conforming to the BWS Standards will replace the existing 2" galvanized pipe in Pupukea Road between the pump station and the 3,000 gallon storage tanks.

A 4 inch PVC C900 water pipe connection at the water tanks will be able to carry a water demand of 72 gpm to the remainder of the camp site. Estimated water pressure will vary from about 19 psi at the intersection of the existing health lodge to 54 psi at the lowest camp site.

For waterline connections to the new gravity water line, they will have to be at elevation 953 or below to meet the 15 psi minimum residual pressure required by the Plumbing Code. Elevations on the topographic survey indicate that hosebibbs, drinking fountains and shower/comfort station can connect to the gravity water line if they are located below the existing health lodge as the connection will meet the water pressure requirements of the Plumbing Code.

Fire Protection

Fire protection is required by the 2006 Fire Code. The minimum requirements include:

1. A fire access road that is 20 ft wide, extends to within 50 ft of one exterior door that provides access to the interior of the building and shall be within 150 ft of any portion of an exterior wall of the first story of the building. If the fire access roadway is in excess of 150 ft in length an approved turnaround area shall be provided.
2. An adequate water supply capable of supplying fire flow for fire protection. Where no adequate or reliable water distribution system exists, approved systems capable of providing the required fire flow shall be permitted.

As the camp site does not meet the fire code for fire protection, on February 13, 2013, a meeting was held at the Honolulu Fire Department, with BSA and the design team. The following understanding was reached.

1. A fire access road 16 ft wide with a turnaround at the end located within 150 ft from the last shower/comfort station will be provided. The finish surface of the fire lane would have to be certified by an engineer stating

that the fire lane can support the weight of an 83,000 pound fire truck. Surface roadway material may include concrete pavement, asphalt pavement, or grasscrete. At a subsequent meeting on August 30, 2013, the Fire Department indicated they may accept 16-foot wide dirt road, if the BSA submits a formal request.

2. All family/residential buildings will require protection with a fire sprinkler system or a fire hydrant system. The fire department would prefer the fire sprinkler system, however, fire hydrants meeting the BWS fire flow requirements will be acceptable. If a fire sprinkler system is installed, the distance requirements for fire protection coverage can be extended by a factor of 3.
3. The Phase 1 shower/comfort station buildings will be granted variances from the fire sprinkler/fire hydrant requirements but must be readily accessible from the 16' wide fire lane.
4. Open sided pavilions and structures 400 sf or less will not require fire sprinkler/fire hydrant protection.

For the family/residential buildings area planned for the area above the existing health center, it is recommended that the water source requirements for fire protection be a fire sprinkler system and that it be connected to the swimming pool pump system. The fire sprinkler system will have to be designed for any new family/residential buildings or any habitable building.

PHASE 1 IMPROVEMENTS

Site Improvements

Site improvements will consist of four Type "A" shower/comfort station buildings, a Type "B" shower/comfort station building and a 15 unit (five clusters of 3 cabins each) family camp area adjacent to the Type "B" shower/comfort station as shown in the architectural drawings. Other improvements include the 16 ft wide fire lane, upgrading of the water system along the roadway for the future master plan improvements, fire sprinkler system improvements for the family camp area, an individual wastewater system for each shower/restroom facility (total of 5), electrical site improvements and improvements to the current parking area.

Grading

The areas selected for the Phase 1 improvements will be cleared of trees and vegetation as necessary to construct the family camp area and the 5 shower/comfort station buildings and individual wastewater systems. Cuts and fills required for the shower/comfort station buildings and the family camp area

will be kept to a minimum to keep the adjacent lands undisturbed. All new shower/comfort station buildings will be graded such that storm runoff will flow around the new buildings. The parking area will include improvements, such as improved surfacing near the camp entrance that will meet the HFD approval.

The buildings for family camp area will be elevated and be post and pier construction that will not require grading beneath the floor area.

Grading for the fire access roadway in general, will follow the slope of the existing ground to keep earthwork at a minimum. The roadway will not be straight but will meander side to side as it progresses downhill to reduce the amount of trees that have to be removed.

Water Service

A new 2" PE pipe will replace the existing 2" galvanized pipe in Pupukea Road. The PE pipe will connect to the galvanized pipe at the BSA pump station, run parallel to the existing galvanized pipe within the shoulder area of Pupukea Road and connect to piping at the storage tank area. A new 4 inch PVC C900 Class 150 gravity water line is proposed for the camp to replace the existing gravity galvanized pipe system. The camp's water demand may increase slightly due to the new comfort station/shower facilities. A new 4 inch PVC water pipe will be connected at the water tanks and will be able to carry the estimated water demand of 72 gpm to the remainder of the camp site. Estimated water pressure will vary from about 19 psi at the intersection of the existing health lodge to 54 psi at the lowest camp site.

For waterline connections to the new gravity water line, the four Type "A" shower/comfort stations will be able to connect to the gravity water line as their floor elevations will be below elevation 953 and therefore, shall meet the 15 psi minimum residual pressure required by the Plumbing Code. At each camp site, hosebibs and drinking fountains will be connected to the new water system as required.

The family cabin area and the Type "B" shower/comfort station will have to be connected to the pressurized water system currently feeding the Weinberg Lodge. As the use of water will be infrequent, the existing pump system should be adequate.

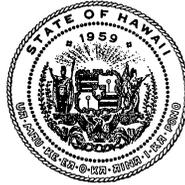
Fire Protection

A new 16 ft wide fire access road with an approved turnaround area will be designed from Pupukea Road down to within 150 ft of the lowest shower/comfort station building. This road may also connect to the Pupukea Paumalu Forest

State Park Reserve to the north to provide maintenance and emergency vehicle access. The roadway surface will meet the approval of the HFD.

A fire sprinkler system for the residential units in family camp area will be designed by others to meet the required fire code.

NEIL ABERCROMBIE
GOVERNOR OF HAWAII



LORETTA J. FUDDY, A.C.S.W., M.P.H.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. Box 3378
HONOLULU, HAWAII 96801-3378

In reply, please refer to:
File:

November 7, 2012

Mr. T Robert Popov
Enviniti
P.O. Box 256659
Honolulu, HI. 96825

Dear Mr. Popov

Subject: Individual Wastewater System (IWS) Plans for
Boy Scouts of America
Project Site: 59-780 Pupukea Road, Pupukea, Oahu
TMK: (1) 5-9-005: 077 & 5-9-005: 002
IWS File #: 48845 to 48864 (Septic, 20 files)

Twenty IWS plans for the above site have been reviewed by the Wastewater Branch for conformance to applicable provisions of Hawaii Administrative Rules, Title 11, Chapter 62, entitled "Wastewater Systems." The IWS plan conforms to applicable provisions of Chapter 11-62.

The US Environmental Protection Agency (EPA) requires that you submit the attached Large Capacity Cesspool (LCC) Backfilling Form (Less than 1000 gpd) as part of your closure requirements.

Some of existing cesspools appears to be injection-well cesspool. You must obtain authorization and instructions from the Health Department's Underground Injection Control (UIC) program to properly abandon the cesspool. Contact the UIC program at 586-4258 (Honolulu) for the appropriate abandonment requirements under HAR, Title 11, Chapter 23.

EPA's Large Capacity Cesspool (LCC) Closure regulation requires closure of all LCC as of April 5, 2005. Any LCC operating beyond that date is in violation and must be closed as soon as possible, unless otherwise stipulated by an official enforcement order.

As the professional engineer responsible for the design of the above wastewater plan, it is your responsibility to inform the owner/lessee of the property that a) the IWS plans must be attached to each set of permit construction plans, b) **the IWS must be installed by a licensed contractor holding A, C-9, C-37, C-37a or C-43 license**, c) inspected by the engineer, and d) authorized in writing by the Department before use.

Should you have any questions, please feel free to contact Johnny Ong of the Wastewater Branch at 586-4294 or write directly to 919 Ala Moana Blvd. Suite 309, Honolulu Hawaii 96814.

Sincerely,

Sina Pruder, P.E.
Acting Chief, Wastewater Branch

**LARGE CAPACITY CESSPOOL (LESS THAN 1000 GPD)
BACKFILLING FINAL COMPLETION REPORT**
Wastewater Branch, Dept. of Health, State of Hawai'i

Property owner: _____

Project address: _____

TMK:
_() _____

Number of cesspools, and numbering if any: _____

Diameter(s): _____ Depth(s): _____

Was sludge/sediment or liquid removal necessary? Yes No

Where was sludge/sediment or liquid taken or disposed of? _____

Was groundwater encountered? Yes No

Date of backfilling: _____ Type of backfill material: _____

Amount of backfill used (cubic yds.): _____

Was the cesspool completely backfilled? Yes No

How was it compacted? _____

Backfilling contractor: _____

Please provide:

- Pictures: Attach photos of the large capacity cesspool from step-back distances of approximately 8 feet and 20 feet.

- **SEND** ~~Copy~~ this report to: LCC Project Coordinator
EPA Ground Water Office (WTR-9)
75 Hawthorne Street
San Francisco, CA 94105

LARGE CAPACITY CESSPOOL BACKFILLING FINAL COMPLETION REPORT (Continuation)

The backfilling work and the final completion report have been performed and completed under my supervision and the work was properly completed:

Professional Engineer Include P.E. stamp:

Printed Name: _____

Signed: _____

Date: _____

Company: _____

Address: _____

Phone: _____ Fax: _____

FOR OFFICIAL USE ONLY – DO NOT WRITE BELOW THIS LINE

IWS file no:

Date sent:

Date received: