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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

DIVISION OF STATE PARKS
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April 11, 2016

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OFC. OF ENVIRONMENTAL
QUALITY CONTROL

Mr. Scott Glenn, Interim Director
Office of Environmental Quality Control
Department of Health
235 S. Beretania Street, Room 702
Honolulu, Hawai'i 96813

Dear Mr. Glenn:

The Division of State Parks, Department of Land and Natural Resources hereby transmits the draft environmental assessment and anticipated finding of no significant impact (DEA-AFONSI) for the Mālaekahana State Recreation Area, Kahuku Section Park Improvements for publication in the next available edition of *The Environmental Notice*. The Kahuku Section of Mālaekahana State Recreation Area is identified by TMK: (1) 5-6-001: 024, 025, 045-047, 049, 051, 053-065, Lā'ie, O'ahu.

Enclosed is a completed OEQC Publication Form, one copy of the DEA-AFONSI, a searchable PDF of the document, and a CD containing the DEA, Publication Form and Summary.

Should you have questions or need additional information, please contact Lauren Tanaka at (808) 587-0293 or by email to: Lauren.A.Tanaka@hawaii.gov.

Sincerely,

Curt A. Cottrell
State Parks Administrator

Enclosures: One (1) Hard Copy of the DEA-AFONSI
OEQC Publication Form
CD containing the DEA, Publication Form and Summary

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AGENCY PUBLICATION FORM

APR 23 2016

Project Name:	Draft Environmental Assessment for the Mālaekahana State Recreation Area - Kahuku Section Park Improvements, Lā'ie, O'ahu, Hawai'i
Project Short Name:	DEA for Mālaekahana SRA Park Improvements
HRS §343-5 Trigger(s):	Use of government lands and funds
Island(s):	O'ahu
Judicial District(s):	Ko'olauloa
TMK(s):	(1) 5-6-001: 024, 025, 045 to 047, 049, 051, and 053 to 065
Permit(s)/Approval(s):	State of Hawai'i National Pollutant Discharge Elimination System Permit, Community Noise Permit and Variance, Non-Covered and/or Covered Source Permit (Air Quality), Lane Use Permit for Construction Work, Oversized and Overweight Vehicles on State Highways Permit; City and County of Honolulu Building Permits, Grubbing/Grading/Stockpiling Permits, Special Management Area Use Permit (Major)
Proposing/Determining Agency:	Department of Land and Natural Resources, Division of State Parks
Contact Name, Email, Telephone, Address	Lauren Tanaka, Email: Lauren.A.Tanaka@hawaii.gov, Telephone: 587-0293, Address: 1151 Punchbowl Street, Room 310, Honolulu, HI 96813
Accepting Authority:	(for EIS submittals only)
Contact Name, Email, Telephone, Address	
Consultant:	The Limtiaco Consulting Group
Contact Name, Email, Telephone, Address	Joe Kwan, Project Manager, Email: joe@tlcghawaii.com, Telephone: 596-7790, Address: 1622 Kanakanui Street, Honolulu, HI 96817

Status (select one)	**Submittal Requirements**
___✓___ DEA-AFNSI	Submit 1) the proposing agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEA, and 4) a searchable PDF of the DEA; a 30-day comment period follows from the date of publication in the Notice.
____ FEA-FONSI	Submit 1) the proposing agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; no comment period follows from publication in the Notice.
____ FEA-EISPN	Submit 1) the proposing agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; a 30-day comment period follows from the date of publication in the Notice.
____ Act 172-12 EISPN ("Direct to EIS")	Submit 1) the proposing agency notice of determination letter on agency letterhead and 2) this completed OEQC publication form as a Word file; no EA is required and a 30-day comment period follows from the date of publication in the Notice.
____ DEIS	Submit 1) a transmittal letter to the OEQC and to the accepting authority, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEIS, 4) a searchable PDF of the DEIS, and 5) a searchable PDF of the distribution list; a 45-day comment period follows from the date of publication in the Notice.
____ FEIS	Submit 1) a transmittal letter to the OEQC and to the accepting authority, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEIS, 4) a searchable PDF of the FEIS, and 5) a searchable PDF of the distribution list; no comment period follows from publication in the Notice.
____ FEIS Acceptance Determination	The accepting authority simultaneously transmits to both the OEQC and the proposing agency a letter of its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS; no comment period ensues upon publication in the Notice.
FEIS Statutory Acceptance	Timely statutory acceptance of the FEIS under Section 343-5(c), HRS, is not applicable to agency actions.

____ Supplemental EIS Determination	The accepting authority simultaneously transmits its notice to both the proposing agency 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 or is not required; no EA is required and no comment period ensues upon publication in the Notice.
____ Withdrawal	Identify the specific document(s) to withdraw and explain in the project summary section.
____ Other	Contact the OEQC if your action is not one of the above items.

Project Summary
Provide a description of the proposed action and purpose and need in 200 words or less.

The Department of Land and Natural Resources (DLNR) proposes to improve the Mālaekahana State Recreation Area - Kahuku Section for continued recreational use including camping, lodging and day use activities. On-site infrastructure that was installed prior to the acquisition of the property in 1980 warrants replacement due to wear, obsolescence and more stringent standards for regulatory compliance. The current lessee was awarded a short-term lease to manage the project site and has sited temporary lodging structures and restrooms pursuant to the terms and conditions of its lease.

There is no municipal sewer system in the immediate project area. DLNR's project includes the replacement of the administration office, a security office and seven (7) cabins along with related improvements intended to help maintain user capacity at levels no greater than what had previously existed. Improvements will include the installation of new infrastructure and construction of a comfort station and satellite restroom facilities. The structures and associated infrastructure would be sited to optimize the functionality and spatial aesthetics within the project site. State Parks may be authorized to proceed in phases based on the availability of funds such that a long-term lessee may complete the park improvements described in the EA.

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Draft Environmental Assessment for the Mālaekahana State Recreation Area - Kahuku Section Park Improvements, Lā‘ie, O‘ahu, Hawai‘i

Prepared For:

State of Hawaii
Department of Land and Natural Resources
Division of State Parks

Prepared By:

THE LIMTIACO CONSULTING GROUP
CIVIL ENGINEERING AND ENVIRONMENTAL CONSULTANTS

April 2016

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Draft Environmental Assessment

for the

MĀLAEKAHANA STATE RECREATION AREA

KAHUKU SECTION PARK IMPROVEMENTS

Lāʻie, Oʻahu, Hawaiʻi

This environmental document has been prepared pursuant to
Chapter 343, Hawaiʻi Revised Statutes

Prepared For:

State of Hawaiʻi
Department of Land and Natural Resources
Division of State Parks

Prepared By:

The Limtiaco Consulting Group
Civil Engineering and Environmental Consultants
1622 Kanakanui Street
Honolulu, Hawaiʻi 96817

April 2016

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Appendix B Archaeological Inventory Survey Report
Appendix C Cultural Impact Assessment
Appendix D Pre-Assessment Consultation

LIST OF ABBREVIATIONS

Abbreviation	Definition
ACM	Asbestos containing materials
AFONSI	Anticipated Finding of No Significant Impact
AIS	Archaeological inventory survey
ASA	Aquifer Sector Area
ASYA	Aquifer System Area
ATU	Aerobic treatment unit(s)
BLNR	State of Hawai‘i Board of Land and Natural Resources
BMPs	Best Management Practices
BS	Beach sand
BWS	City and County of Honolulu Board of Water Supply
CZM	Coastal Zone Management
DLNR	State of Hawai‘i, Department of Land and Natural Resources
DOCARE	State of Hawai‘i, Department of Land and Natural Resources, Division of Conservation and Resources Enforcement
DOFAW	State of Hawai‘i, Department of Land and Natural Resources, Division of Forestry and Wildlife
DOH	State of Hawai‘i, Department of Health
DOT	State of Hawai‘i, Department of Transportation
DPP	City and County of Honolulu, Department of Planning and Permitting
DPR	City and County of Honolulu, Department of Parks and Recreation
DTS	City and County of Honolulu, Department of Transportation Services
EA	Environmental Assessment
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FOM	Friends of Mālaekahana
FONSI	Finding of No Significant Impact
HAR	Hawai‘i Administrative Rules
HECO	Hawaiian Electric Company, Inc.

LIST OF ABBREVIATIONS (Continued)

Abbreviation	Definition
HFD	City and County of Honolulu Fire Department
HPD	City and County of Honolulu Police Department
HRS	Hawai‘i Revised Statutes
IBC	International Building Code
IWS	Individual wastewater system(s)
JaC	Jaucus sand
LCC	Large capacity cesspool(s)
LUO	City and County of Honolulu Land Use Ordinance
MBC	Mālaekahana Beach Campground, LLC
MGD	Million gallons per day
MG	Million gallon(s)
NAAQS	National Ambient Air Quality Standards
NFPA	National Fire Protection Association
NPDES	National Pollutant Discharge Elimination System
OEQC	State of Hawai‘i, Office of Environmental Quality Control
OHA	State of Hawai‘i, Office of Hawaiian Affairs
ROH	Revised Ordinances of Honolulu 1990
SAAQS	State of Hawai‘i Ambient Air Quality Standards
SCS	Scientific Consultant Services, Inc.
SHPD	State of Hawai‘i Department of Land and Natural Resources, Historic Preservation Division
SMA	Special Management Area
TLCG	The Limtiaco Consulting Group
TMDL	Total Maximum Daily Load
TMK	Tax Map Key
UIC	Underground Injection Control
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Department of the Interior, Fish and Wildlife Service
WWTP	Wastewater treatment plant(s)

PROJECT SUMMARY

Proposing/Determination Agency:	Department of Land and Natural Resources (DLNR), Division of State Parks
Contact:	Curt Cottrell, State Parks Administrator
Location:	Lāʻie, Island of Oʻahu, Hawaiʻi
Tax Map Keys:	(1) 5-6-001: 024, 025, 045 to 047, 049, 051, and 053 to 065
Land Area:	Approximately 36.288 acres
Recorded Fee Owner:	State of Hawaiʻi
Existing Use:	State recreation area utilized for camping, lodging and day use activities
Proposed Use:	State recreation area utilized for camping, lodging and day use activities
Community Plan Region:	Koʻolauloa
Land Use Designations:	
State Land Use	Urban
Development Plan	Residential
County Zoning	R-5 Residential District
Action Requested:	DLNR proposes to improve the Mālaekahana State Recreation Area - Kahuku Section for continued recreational use including camping, lodging and day use activities. Improvements will include new infrastructure (e.g., the installation of water, wastewater and electrical/communication systems) and construction of a comfort station and satellite restroom facilities. The project also includes the replacement of the administration office, a security office and seven (7) cabins along with related improvements. The structures and associated infrastructure would be sited to optimize the functionality and spatial aesthetics of the park.
Agency Determination:	Anticipated Finding of No Significant Impact (AFONSI)

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1. SETTING AND PROJECT DESCRIPTION

1.1. Introduction and Background

The State of Hawai‘i, Department of Land and Natural Resources (DLNR) is responsible for nearly 1.3 million acres of State lands, beaches, and coastal waters as well as 750 miles of coastline (the fourth longest in the country). The agency’s jurisdiction includes state parks; historical sites; forests and forest reserves; aquatic life and its sanctuaries; public fishing areas; boating, ocean recreation, and coastal programs; wildlife and its sanctuaries; game management areas; public hunting areas; and natural area reserves. DLNR’s Division of State Parks manages and administers the public lands and interest areas on Kauai, O‘ahu, Maui, Moloka‘i and Hawai‘i that are part of the Hawai‘i State Park System. State parks provide varied outdoor recreation and heritage opportunities in environments that range from landscaped grounds with developed facilities to wilderness areas with trails and primitive facilities.

In 1976, the State purchased roughly 74 acres of land along the southern end of Mālaekahana Bay to Lā‘ie wai Stream from the James Campbell Trust Estate for the expressed purpose of establishing a public park. This area of State-owned park land is identified as the Kalanai Section (see Figure 1). Conceptual park plans in the *Mālaekahana State Park Master Plan Report* (Land Architects, Inc., 1977) portray a beach-oriented public recreational area of approximately 155 acres along the entire length of the crescent-shaped bay on the windward coast of the island of O‘ahu between the towns of Kahuku and Lā‘ie. Park development was to occur in phases due to the challenges of securing public funds for land acquisition and the construction of underground utilities, roadways and support facilities (e.g., comfort stations, picnic/camping shelters and pavilions, maintenance building, information and check-in facility), in addition to perpetual park operations and maintenance.

In October 1980, the State acquired 19 separate but contiguous parcels of land at the northern end of Mālaekahana Bay to Mālaekahana Stream through condemnation (see Figure 2). This additional area of State-owned park land is identified as the Kahuku Section, which comprises roughly 36.288 acres. Camping and lodging accommodations at the Kahuku Section of the park have been operated by a nonprofit organization through a series of revocable permits issued subsequent to one, three-year, direct lease in 1994 to the Ko‘olauloa Hawaiian Civic Club. The State did not acquire the remaining beach lots between the Kahuku and Kalanai Sections that would have completed the vision of public open space connecting the rural communities of Kahuku and Lā‘ie. On June 3, 2002, the Kahuku and Kalanai Sections were set aside to the Division of State Parks (hereafter State Parks) for park and recreational purposes by Governor’s Executive Order No. 3928.

The Lanihuli Community Development Corporation, which operated under the business name of Friends of Mālaekahana (FOM), held revocable permits from the

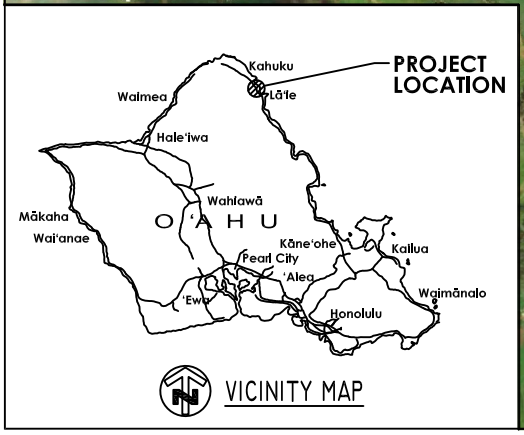
Board of Land and Natural Resources (BLNR) that allowed it to manage the Kahuku Section of the park (hereafter the project site). DLNR closed the project site on November 20, 2014 due to public safety concerns from falling tree limbs in the camping area. Four cesspools within the project site were closed in preparation for planned actions to address health and safety concerns from dilapidated recreational cabins and support structures that coincided with the end of the FOM's tenure at the project site in December 2014. The Castle Beach area, which spans the southernmost parcels that were utilized as a day use area and formerly under State Parks management, reopened for public day use on December 5, 2014; this area has been included in the awarded five-year lease, whereby the entire Kahuku Section of the park is currently under private management. Demolition activities occurred from December 2014 through February 2015 while the remainder of the project site remained closed.

The project site re-opened under a new lease effective April 1, 2015 and an open house event was held on July 11, 2015. Mālaekahana Beach Campground, LLC (MBC) was selected pursuant to a competitive, Request for Qualifications/Request for Proposals (RFQ/RFP) process. Through the RFQ/RFP process, MBC partnered with Kamaaina Kids to manage the project site and was selected for a five-year lease.

Pursuant to the terms and conditions of its lease, campground usage levels are held to no greater than what previously existed. Campsites and temporary lodging facilities may be sited in locations similar to what was previously used. MBC may place temporary, portable structures using wastewater holding tanks and ground based wastewater systems previously approved by the Department of Health (DOH). The temporary structures and improvements built during the lease remain the property of the lessee subject to certain restrictions. Guests are expected to utilize common area sinks, showers and portable bathroom facilities if their choice of accommodations is the plantation hut (also called a hale) or the tent or vehicle campsites. Plantation suites have electricity and an indoor bathroom. Tutu's Hale, which consists of five huts and a pavilion, has exclusive bathrooms and showers. Temporary structures may not be placed seaward of the shoreline setback. MBC is allowed to utilize portable toilets and other approved temporary systems to augment the existing comfort station because the existing wastewater infrastructure is limited. MBC may utilize existing cesspools as seepage pits with State Parks, DOH, and other governmental approvals as applicable.

Upon the expiration of the MBC lease, State Parks will seek BLNR approval for a long term lease through a similar competitive format once HRS Chapter 343 requirements are met and permanent infrastructure is designed and/or implemented. The new lessee will be responsible for constructing additional cabins and other elements not completed by State Parks but covered under this Environmental Assessment (EA).





LEGEND

Approximate Project Site Boundary

THE LIMTIACO CONSULTING GROUP
CIVIL ENGINEERING AND ENVIRONMENTAL ENGINEERING

MĀLAEKAHANA STATE RECREATION AREA - KAHUKU SECTION PARK IMPROVEMENTS

Figure 1 Location Map

SCALE: 1" = 950'

DATE: April 2016

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LEGEND

Approximate Project Site Boundary



Mālaekahana Stream delineates the northern site boundary.



View of authorized rental units.



A locked gate deters unauthorized entry.



Rental units are temporary, portable structures.



View of existing comfort station.



Single-family residential uses are south of the day use area.

Site Photos Taken on 7/8/2015

THE LIMTIACO CONSULTING GROUP
CIVIL ENGINEERING AND ENVIRONMENTAL ENGINEERING

MĀLAEKAHANA STATE RECREATION AREA - KAHUKU SECTION
PARK IMPROVEMENTS

Figure 2 Parcel Map and Site Photographs

SCALE: 1" = 300'

DATE: April 2016

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The lessee will be authorized to operate a commercial campground including the following activities: cabin and portable structure rentals, pavilion rentals for various events, camping and beach equipment rentals and sales, food and beverage sales, educational and instructional programs including watersports activities and other recreational uses consistent with a coastal park campground.

DLNR proposes to improve the 36-acre project site for continued recreational use including camping, lodging and day use activities. The project site encompasses parcels that are *makai* or seaward of Kamehameha Highway identified as Tax Map Keys (TMKs): 5-6-001: 024, 025, 045 to 047, 049, 051, and 053 to 065. The project includes the replacement of the administration office, a security office and seven (7) cabins along with related infrastructure improvements including the installation of new infrastructure and construction of a comfort station, satellite restroom facilities, and permanent individual wastewater systems. The transition from cesspools to the new wastewater system is required and will be coordinated with DOH.

DLNR's proposed improvements would affect State of Hawai'i lands, whereby the preparation of an EA pursuant to Chapter 343, Hawai'i Revised Statutes (HRS) and associated Title 11, Chapter 200, Hawai'i Administrative Rules (HAR) is required. This EA was prepared to examine potential project impacts and to provide for public participation as required and defined in the statutes.

Government funds are expected to be utilized for park improvements that are completed within the timeframe of the five-year lease awarded to MBC. Funding challenges may result in a phased approach and/or the execution of a subsequent lease that allows a qualifying organization to complete the park improvements described in this EA.

1.2. Project Need and Objectives

DLNR's proposed improvements are expected to ensure that the 36-acre project site continues to be utilized for recreational use including camping, lodging and day use activities. Grant monies from the Land and Water Conservation Fund program were utilized to acquire and establish the project site as a public park; the use of said federal funds requires, with limited exceptions, that the property be used for outdoor recreation and open space at all times in perpetuity. On-site infrastructure that was installed prior to DLNR's acquisition of the property in October 1980 warrants replacement due to wear, obsolescence and more stringent standards for regulatory compliance. The existing wastewater infrastructure at the project site is limited. Cesspools that remain in use allow untreated sanitary waste to be discharged into the ground; discharged effluent may contain pollutants such as phosphates, chlorides, grease, viruses and other chemicals that can contaminate the surrounding ocean, streams and groundwater.

The proposed project provides the opportunity to install park facilities that conform to the International Building Code (IBC), the applicable sections of the National Fire Protection Association (NFPA), the 2010 Americans with Disabilities Standards for Accessible Design, and related standards pertaining to health and safety. New restroom and shower facilities are expected to contribute to a cleaner park. Improved park facilities would allow State Parks to better accommodate and meet the recreational needs of residents and visitors.

DLNR proposes to site replacement structures and associated infrastructure in a manner that will optimize the functionality and spatial aesthetics of the park. Public access to beach areas is expected to be improved and all structures will be sited outside of the shoreline area. Internal roadways and parking areas near the camping and day use areas will also be improved to include access for day use as well as camping and lodging. The proposed project is not intended to increase the density of the area nor increase the number of rental units within the park that were present prior to the necessary demolition of dilapidated recreational cabins and support structures in November 2014. DLNR's objective with regards to the project is to balance the development of adequate recreational facilities and venues with concerns about public beach access, increased traffic and environmental resources.

As part of the project, DLNR proposes to offer a long term lease to an organization seeking to operate a camping and lodging facility with the improvements described herein. The lessee would construct improvements necessary to operate the campground including cabins and other infrastructure contained in this EA to the extent they are not completed by State Parks due to timing and funding constraints.

1.3. Project Location

The 36-acre project site is located between Kamehameha Highway (State Route 93) and Mālaekahana Bay on the windward side of Oʻahu. Figure 3 depicts the surrounding project vicinity. A concrete bridge crossing near the northwestern corner of the project site allows Kamehameha Highway to cross Mālaekahana Stream, which traverses the abutting privately-owned property (TMK 5-6-002: 045) to the north of the site. Contiguous residential parcels along Mālaekahana Bay are immediately south of the project site. Kahuku District Park, which is near the center of the rural community of Kahuku is roughly 0.5 miles to the northwest; the Mālaekahana State Recreation Area - Kalanai Section is 0.7 miles to the southeast; and the town of Lāʻie is approximately 1.5 miles southeast of the project site.

The areas immediately surrounding the project site are designated for urban and agricultural uses. Lands across from the project site on the *mauka* (or landward) side of Kamehameha Highway are actively utilized for agriculture. Privately-owned property along the northern boundary of the project site was previously used as a grazing field. Areas to the immediate south of the project site are in residential use.



LEGEND

Approximate Project Site Boundary



View of Mālaekahana Stream Bridge from highway.



Access and egress is from the two lane highway.



View of parking area and access road.



Thickets of vegetation are along the roadway.



The southernmost parking area is along the highway.



View of the entrance from parking area.

Site Photos Taken on 7/8/2015 and 7/11/2015

THE LIMTIACO CONSULTING GROUP
CIVIL ENGINEERING AND ENVIRONMENTAL ENGINEERING

MĀLAEKAHANA STATE RECREATION AREA - KAHUKU SECTION PARK IMPROVEMENTS

Figure 3 Surrounding Properties and Site Photographs

SCALE: 1" = 350'

DATE: April 2016

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1.4. Site Description

The project site is on the *makai* or seaward side of the two-lane Kamehameha Highway and immediately south of Mālaekahana Stream, which delineates the northern site boundary. The eastern boundary of the project site is defined by the shoreline. A public shoreline access route defines the southern boundary of the project site; the western perimeter is delineated by Kamehameha Highway. Vehicular access and egress is via three driveways along Kamehameha Highway. The northernmost access road has a padlocked gate to prevent unauthorized entry.

The park configuration depicted in Figure 4 identifies the cabins and built structures that existed prior to demolition activities in December 2014. The project site contains dense thickets of shrubs and other vegetation, campgrounds, parking areas, open air structures for day use activities (e.g., picnicking), rinsing showers, beach areas, and unimproved roads. A baseyard for the campground operator's vehicles and equipment is located on the northwestern corner of the project site and away from other park functions. In March 2015, MBC sited portable toilets and temporary, portable structures within the project site that replace demolished cabins per the terms and conditions of its lease. Flatter areas within the project site host newly authorized rental units. A website (www.malaekahana.net) for online reservations provides information about the site configuration, campground facilities and park amenities; Figure 5 depicts the location of MBC's structures as reported to DLNR.

The State land use designation for the entire project site is Urban (see Figure 6). The project site is a public use that is permitted in the R-5 Residential District (see Figure 7). Pursuant to §21-2.130 of the City's Land Use Ordinance (LUO), the Director of the Department of Planning and Permitting (DPP), City and County of Honolulu, may waive development or design standards for public uses and structures. In addition, §18-3.1 of the Revised Ordinances of Honolulu 1990 (ROH) provides that work performed for any state government agency is exempt from building permit requirements except where permits are sought by the agency.

The project site is located within the Special Management Area (SMA), and is therefore subject to the regulations of Chapter 25 of the ROH. The proposed project is expected to require an SMA Use Permit (Major), which applies to development with a valuation equal to or exceeding $500,000. The first phase of the SMA Use Permit (Major) application process is the preparation and acceptance of an EA.

1.5. Technical Considerations

The proposed project includes the replacement of the administration office, a security office and seven (7) cabins along with related improvements (see Figure 8). New infrastructure (e.g., water, wastewater and electrical/communication systems) will be installed as well as the construction of a comfort station and satellite restroom facilities. The structures and associated infrastructure will be sited to optimize the

functionality and spatial aesthetics of the park. The proposed project is not intended to increase the density of the area nor increase the number of rental lodging facilities within the park beyond what had existed prior to demolition.

DLNR's proposed project will include the considerations and design elements described below that pertain to the unbuilt environment. The background setting and existing natural resources are important site characteristics that contribute to the visitor experience.

- Landscaping. Dense thickets of non-native shrubs and other vegetative growth within the project site will be altered, as necessary, to create interesting and useful recreational spaces. Thick, unkempt shrubbery that can conceal vermin, rodents and other unwanted pests will be removed. Buffer zones and privacy screens between and around the various user areas can be achieved with a planned landscaping approach that incorporates more native plant species. Strategic landscaping may also shield campsites, pavilions and shower areas from the prevailing winds and provide erosion control along shoreline areas. Landscaping with drought-resistant, slow growing plants that create less debris can help to reduce maintenance tasks.
- Park Entrances, Access Roads, Gates and Parking Areas. Three entrances from Kamehameha Highway will continue to be utilized for public access to the project site. The main entrance located on the northern portion of the project site will be utilized as a primary access point for campsites, cabins, the group use area and North Beach. A parking area will be located near the office and will connect with day use and camping areas. The secondary entrance located on the southern portion of the project site will provide access to South Beach and serve as an emergency exit and the third entrance serves an existing parking area. Five lockable gates that will help to control vehicular access and traffic are included as part of proposed park improvements.
- Campgrounds. Areas designated for overnight camping will continue to be a dominant characteristic of the project site. The main campground zones on the northern portion of the project site utilize the flatter, open areas of the landscape. Tent and vehicle camping is expected to be available within these zones. The inland portion of the northern campground zone can accommodate several individual campsites for tent camping that may be combined to accommodate larger groups. Campsites immediately adjacent to beach areas allow for direct shoreline access. The southern campground zone comprises the narrow area bounded by North Beach, the vegetated shoreline, South Beach and camping areas immediately surrounding the new rental units.



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MĀLAEKAHANA STATE RECREATION AREA - KAHUKU SECTION
PARK IMPROVEMENTS

Figure 4 Pre-Demolition Site Features

SCALE: 1" = 300'

DATE: April 2016

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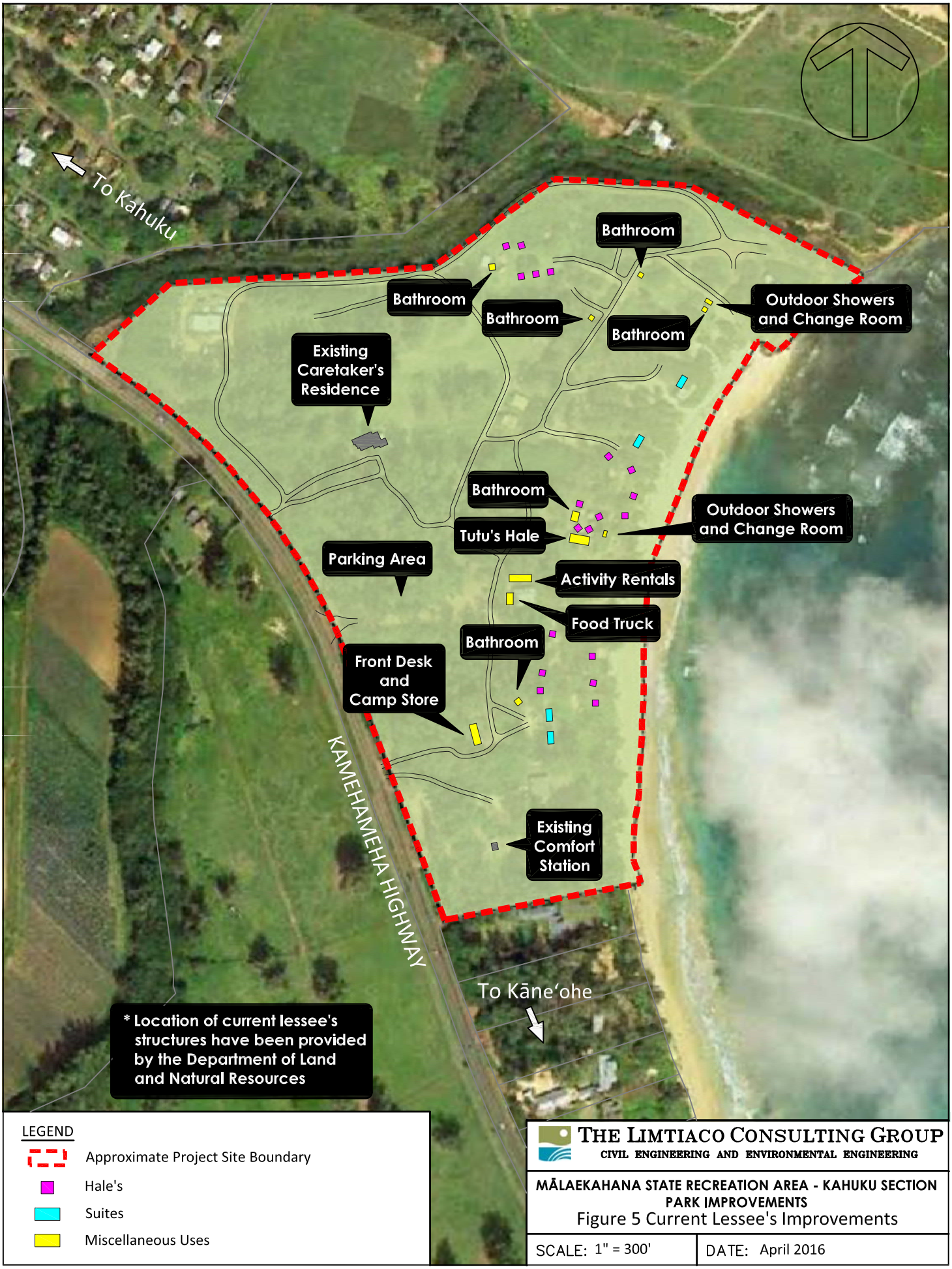
To Kahuku
Bathroom
Bathroom
Bathroom
Bathroom
Outdoor Showers and Change Room
Existing Caretaker's Residence
Bathroom
Outdoor Showers and Change Room
Tutu's Hale
Parking Area
Activity Rentals
Food Truck
Bathroom
Front Desk and Camp Store
KAMEHAMEHA HIGHWAY
Existing Comfort Station
To Kāneʻohe
* Location of current lessee's structures have been provided by the Department of Land and Natural Resources
LEGEND
Approximate Project Site Boundary
Hale's
Suites
Miscellaneous Uses
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MĀLAEKAHANA STATE RECREATION AREA - KAHUKU SECTION
PARK IMPROVEMENTS
Figure 5 Current Lessee's Improvements
SCALE: 1" = 300'
DATE: April 2016

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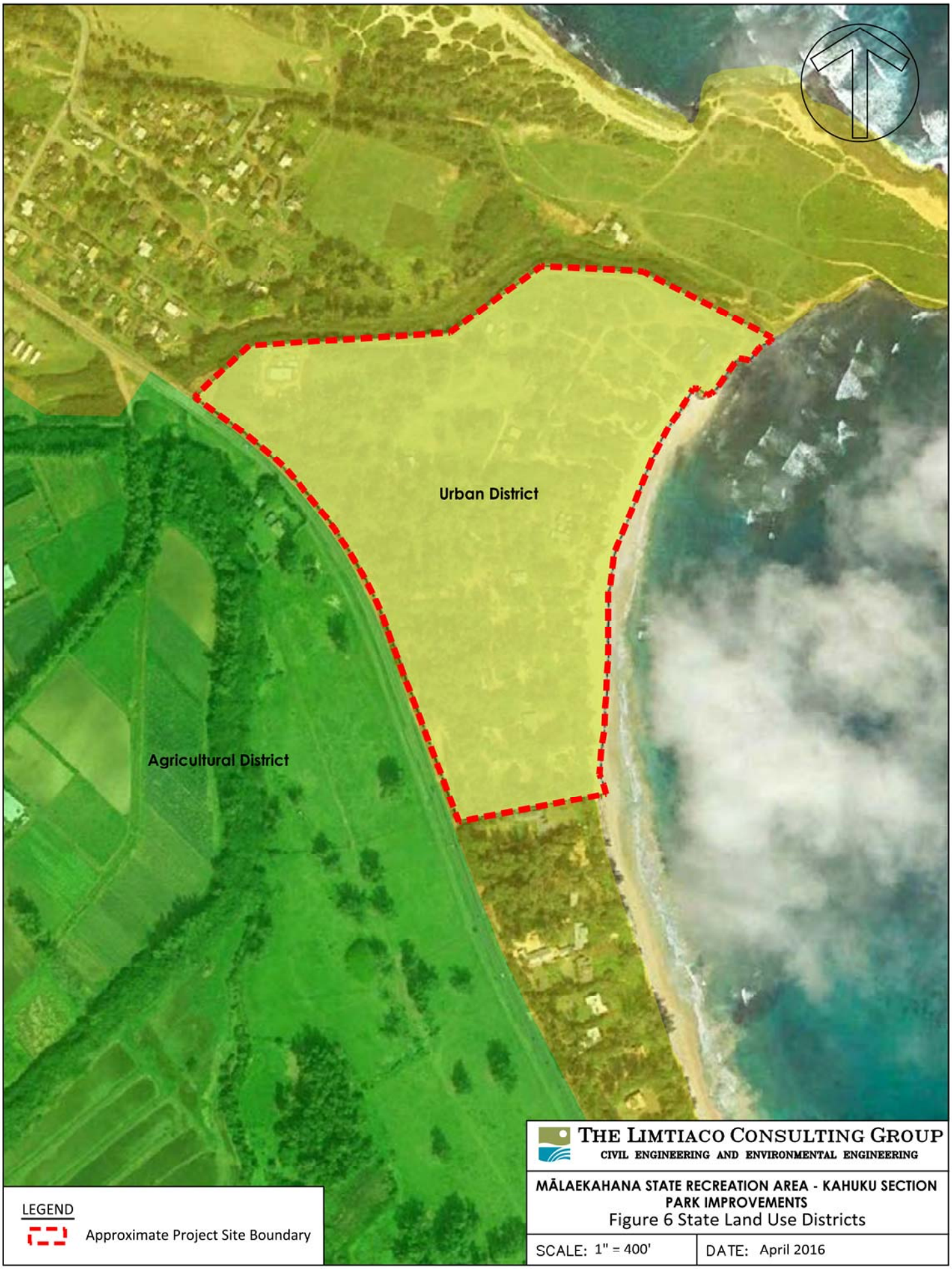

LEGEND

Approximate Project Site Boundary

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MĀLAEKAHANA STATE RECREATION AREA - KAHUKU SECTION
PARK IMPROVEMENTS

Figure 6 State Land Use Districts

SCALE: 1" = 400'

DATE: April 2016

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MĀLAEKAHANA STATE RECREATION AREA - KAHUKU SECTION
PARK IMPROVEMENTS
Figure 7 County Zoning

SCALE: 1" = 350'

DATE: April 2016

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MĀLAEKAHANA STATE RECREATION AREA - KAHUKU SECTION
PARK IMPROVEMENTS
Figure 8 Proposed Improvements

SCALE: 1" = 300'

DATE: April 2016

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- Campgrounds (continued). The proposed project includes four main parking areas with unimproved parking stalls; however, accessible parking stalls and access aisles would be paved. Vehicular campsites are expected to have their own parking stalls. Campground areas are expected to have centrally located hose bibs but no electrical outlets. Trash and charcoal ash receptacles are expected to be located throughout the camping and day use areas of the project site.
- Picnic Pavilions. Two of three picnic pavilions are intended for primary use by day users and will be sited within the beach areas of the project site. The third picnic pavilion located within the group use area is intended for use during group events and adjacent camping. The pavilions are envisioned as covered, open air structures constructed on a concrete slab on grade. There would be at least one picnic table and a fixed pedestal grill at each pavilion.
- Rinsing Showers. These showers with no hot water are intended for use by day users and will not be connected to the new wastewater system. Vegetation that is strategically planted around the shower area would serve to block some of the prevailing wind.
- Baseyard. An existing baseyard, which is currently sited away from the core functions of the park, would be secured with perimeter fencing to deter the theft of items from locked storage containers and facilities. A burglar alarm system would provide additional security for locked tool and equipment storage areas. There is no public access to the baseyard area, which would be separated from the adjacent group user area by a landscaped buffer zone.
- Accessibility. There will be accessible campsites along with other accessible elements, spaces and facilities within the project site. The accessible resources are expected to be connected via at least one accessible route that conforms to regulatory standards. Exceptions to full compliance with accessibility provisions are allowed when practicable or feasible solutions are limited or precluded by specific conditions such as terrain, prevailing construction practices, resulting effects that would fundamentally alter the function or purpose of the facility or setting, and other laws (including decisions, issued opinions or executed agreements).

DLNR's proposed project will include the following considerations and design elements that pertain to the built environment. The recreational lodging facilities and other park structures are expected to be sited in a manner that allows for cohesive functional uses.

- New lodging facilities. Seven (7) rental units would be arranged on the southern portion of the project site in a linear alignment that parallels the shoreline. The immediately surrounding campsites provide flexibility for

groups since several individuals may be accommodated in a rental unit while a larger contingent utilizes tents around the built structure. Two types of rental facilities are planned: standalone and duplex units. Standalone units may be approximately 1,500 square feet; duplex units may be 3,000 square feet. The duplex design allows for two units to be joined in the event that a large group rents both units. All of the new units are expected to contain a living room with dining area, kitchen, bedroom, bathroom, utility closet and lanai. The scale and character of the former beach residences that were utilized as rental units will be reflected in the design of new lodging facilities as a result of the mitigation commitments stated in the letter dated October 31, 2013 to State Parks from the State Historic Preservation Division (SHPD). Common features of the historic structures circa 1939 to 1956 that were demolished in December 2014 include their modest size, single story design, rectangular floor plans, simple low-angled gable or hip roof design, post-and pier foundations, and board-and-batten exterior walls.

- Comfort Station. A comfort station with no hot water is proposed for the location between the day user and camping area on the northern portion of the project site. Restrooms for men, women and families are proposed for this station. Since this facility is expected to be utilized primarily by day users and beachgoers, it is anticipated that the lessee would have the option of securing this comfort station at night.
- Satellite Restrooms. These restrooms are proposed to be located throughout the camping and group user areas of the project site. Keycard access is proposed for these restrooms to allow for better control by the lessee. The restrooms that serve the camping areas will have hot water provisions for overnight guests, bathing showers and dressing areas; these amenities will not be included for the restroom in the group user area.
- Pot/Dish Wash Stations. These covered, open air areas of about 90 square feet are proposed to be located adjacent to satellite restrooms. The stations will contain sinks, counters and shelves for temporarily placing cleaning supplies while washing dishes, pots and utensils. Trash receptacles will be located at these stations.

The replacement park structures (e.g., rental units, office, comfort stations, and satellite restrooms) will conform to the IBC, the applicable sections of the NFPA, the 2010 Americans with Disabilities Standards for Accessible Design, and related standards pertaining to health and safety. The associated infrastructure (e.g., water, wastewater and electrical/communication systems) will be in compliance with applicable safety codes and State Department of Health guidelines. Figure 8 presents a conceptual representation of DLNR’s proposed improvements.

1.6. Environmental Considerations

In December 2014, deteriorated rental units and several other park structures utilized by the FOM were demolished to alleviate public safety concerns. By February 2015, the project site was generally devoid of obstructions and structures except for the park caretaker's residence and one comfort station (refer to Figure 5). Four cesspools servicing demolished structures were closed in compliance with current rules and regulations administered by the State DOH. The Castle Beach portion of the project site reopened for public day use in December 2014, the availability of campgrounds was publicized in April and May 2015, and MBC held its open house event on July 11, 2015. Bathrooms installed by MBC have been approved by the DOH for interim use.

Construction activities associated with the proposed project are expected to generate short-term effects such as fugitive dust, noise, intermittent traffic, solid waste and potential disruptions to utility services that would cease upon project completion. Anticipated short-term impacts will be mitigated to the extent practical with the use of appropriate construction techniques and Best Management Practices (BMPs). In the long term, proposed park improvements will ensure that recreational uses including camping, lodging and day use activities continue at the project site.

1.7. Project Schedule and Cost

The environmental review process including public review of the EA may be concluded in 2016. Construction may be authorized to proceed in phases based on the availability of funds.

The estimated costs for DLNR's project may range from $10 to $18 million; the timing and phasing of improvements is expected to influence total costs. Design fees and the costs for anticipated permits and approvals are included in the estimate.

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2. DESCRIPTION OF EXISTING ENVIRONMENT, PROJECT IMPACTS, AND MITIGATION

2.1. Climate and Air Quality

The climate throughout the State of Hawai‘i is generally characterized by mild temperatures with low daily and monthly variability, moderate humidity, persistent trade winds, and abundant sunshine. The Hawaiian climate is further characterized by a two-season year: the summer season from May through September is generally warmer and less wet than the cooler, winter season from October through April (Western Regional Climate Center, 2014). Rainfall distribution across the State of Hawai‘i varies greatly according to geographic conditions, elevation and long-term climatic cycles. The climate of windward lowland areas in Hawai‘i is further described as “moderately rainy, with frequent trade wind showers” (Ibid.).

The project site in Kahuku on the windward side of the island of O‘ahu has a mild semi-tropical climate similar to rest of the State of Hawai‘i. Average air temperatures at the project site range from 71 degrees Fahrenheit in January to 78 degrees Fahrenheit in August (Giambelluca, 2014). Average annual rainfall at the project site is estimated to be 47 inches and the wetter months of the year are from October through March (Ibid.). The prevailing northeasterly trade winds are generally strong and consistent in the project vicinity. Strong winds are also known to occur in connection with storm systems that disrupt climatic patterns.

Ambient air quality in the State of Hawai‘i consistently meets National Ambient Air Quality Standards (NAAQS) established by the U.S. Environmental Protection Agency per requirements of the Clean Air Act and State Ambient Air Quality Standards (SAAQS) established by the DOH. The State standards for select parameters are more stringent than their Federal counterparts. Vehicles traveling along existing roadways are a persistent source of exhaust emissions in Hawai‘i; however, the prevailing northeast trade winds help to disperse and prevent the accumulation of airborne pollutants. The NAAQS and SAAQS are periodically exceeded due to volcanic activity and exceptional events such as New Year’s fireworks celebrations.

Ambient air quality at the project site is influenced by natural air pollutants such as ocean sea spray, allergens, volcanic emissions and dust from bare earth areas. The project site may also be impacted by airborne particulates from earth-disturbing agricultural activities and vehicular emissions from automobile traffic along Kamehameha Highway.

Impacts and Mitigation Measures

Proposed park improvements including the installation of new infrastructure and the construction of new and replacement park facilities will have no effect on climatic conditions such that no mitigation measures are necessary.

Ambient air quality at the project site will be temporarily affected by construction-related vehicles, equipment and activities that would generate fugitive dust and emissions. Proposed construction-related activities must comply with the provisions of HAR, 11-60.1-33 on Fugitive Dust. The contractor will be responsible for the implementation of a dust control plan, which does not require approval by the DOH, for compliance with the above-mentioned rules. The dust control plan may incorporate but is not limited to the following measures:

- Planning the different phases of construction, focusing on minimizing the amount of dust-generating materials and activities, centralizing on-site vehicular traffic routes, and locating potential dust-generating equipment in areas of the least impact;
- Providing an adequate water source at the site prior to start-up of construction activities;
- Landscaping and providing rapid covering of bare areas, including slopes, starting from the initial grading phase;
- Minimizing dust from shoulders and access roads;
- Providing adequate dust control measures during weekends, after hours, and prior to daily start-up of construction activities; and
- Controlling dust from debris being hauled away from the project site. Also, controlling dust from daily operations of material being processed, stockpiled, and hauled to and from the facility.

Construction equipment and vehicles shall be properly maintained in order to control vehicular emissions. Said exhaust emissions are anticipated to have negligible impacts on air quality in the project vicinity since the carbon monoxide and nitrogen oxide emissions would be intermittent and readily dissipated. No significant air quality impacts are anticipated from the new rental units, comfort stations and infrastructure, which represents a restoration and improvement of the park facilities that existed at the project site.

2.2. Geology and Soils

The Island of Oʻahu is comprised of the remnants of two basaltic volcanoes that eroded to form the Waiʻanae and Koʻolau Ranges, which are connected by a central plateau. The mountain range formed by the older Waiʻanae volcano spans a distance approximately 20 miles across the western third of Oʻahu. The younger Koʻolau volcano contributed to the main mountain range on Oʻahu that extends for 37 miles in a northwest to southeast alignment across the eastern two thirds of the island. The Koʻolau Range consists of thin, narrow layers of basaltic lava flows. Dissected valleys were etched into the basalt range formations through weathering and natural erosion processes. Numerous dikes and small amounts of volcanic ash are present. The valley floors contain alluvium (e.g., clay, silt, sand, gravel, or similar material) and unconsolidated non-calcareous sediments transported from valley slopes by stream flows. Coral reefs and alluvial sediments contributed to the coastal plains adjacent to the ocean.

Soils in the project area belong to the Kaena-Waialua association that consists of deep, mainly nearly level and gently sloping, poorly drained to excessively drained soils with fine-textured to coarse-textured subsoil or underlying material (U.S. Department of Agriculture, Soil Conservation Service, 1972). According to the *Web Soil Survey* (U.S. Department of Agriculture, Natural Resources Conservation Service, n.d.), the predominant soil type in the vicinity of the project site is classified as Jaucus sand (JaC), 0 to 15 percent slopes. The JaC soil type is characterized by rapid permeability and very slow to slow runoff. The water erosion hazard is slight; however, the wind erosion hazard is severe in the absence of vegetation. The project site also contains light-colored beach sand (BS) derived from coral and seashells. The JaC soil type is suitable for pasture, sugar cane, truck crops and urban development, whereas beach sand that is free of stones is highly suited for recreational uses. The soil classifications are shown in Figure 9.

Impacts and Mitigation Measures

New and replacement park structures that are intended for camping, lodging and day use activities will be properly designed with respect to subsurface conditions and geotechnical concerns within the footprint of construction. Project actions are expected to have no adverse impacts on the underlying geology and soils at the project site such that no mitigation measures are necessary.

The construction of replacement recreational facilities along with associated infrastructure improvements will result in permanent structures that disturb the natural setting and existing vegetation within select areas of the project site. Seven (7) replacement rental units will be sited on the southern portion of the site, which utilizes the areas that were previously disturbed for the Division of

Conservation and Resources Enforcement (DOCARE) residence, an office, cabin 2, cabin 3 and yurt camping facilities.

Earth disturbing activities may temporarily create exposed areas at the project site that are susceptible to erosion from wind and rain. The construction contractor is expected to implement dust barriers/fences and other dust control measures that effectively minimize or prevent nuisance concerns from fugitive dust and the effects of wind erosion. Mitigation that addresses sediment-laden runoff is discussed in Section 2.4, Water Resources. Areas affected by project actions will be stabilized and may be landscaped, which reduces the long-term potential for erosion by water and wind. No graded areas will remain uncovered.

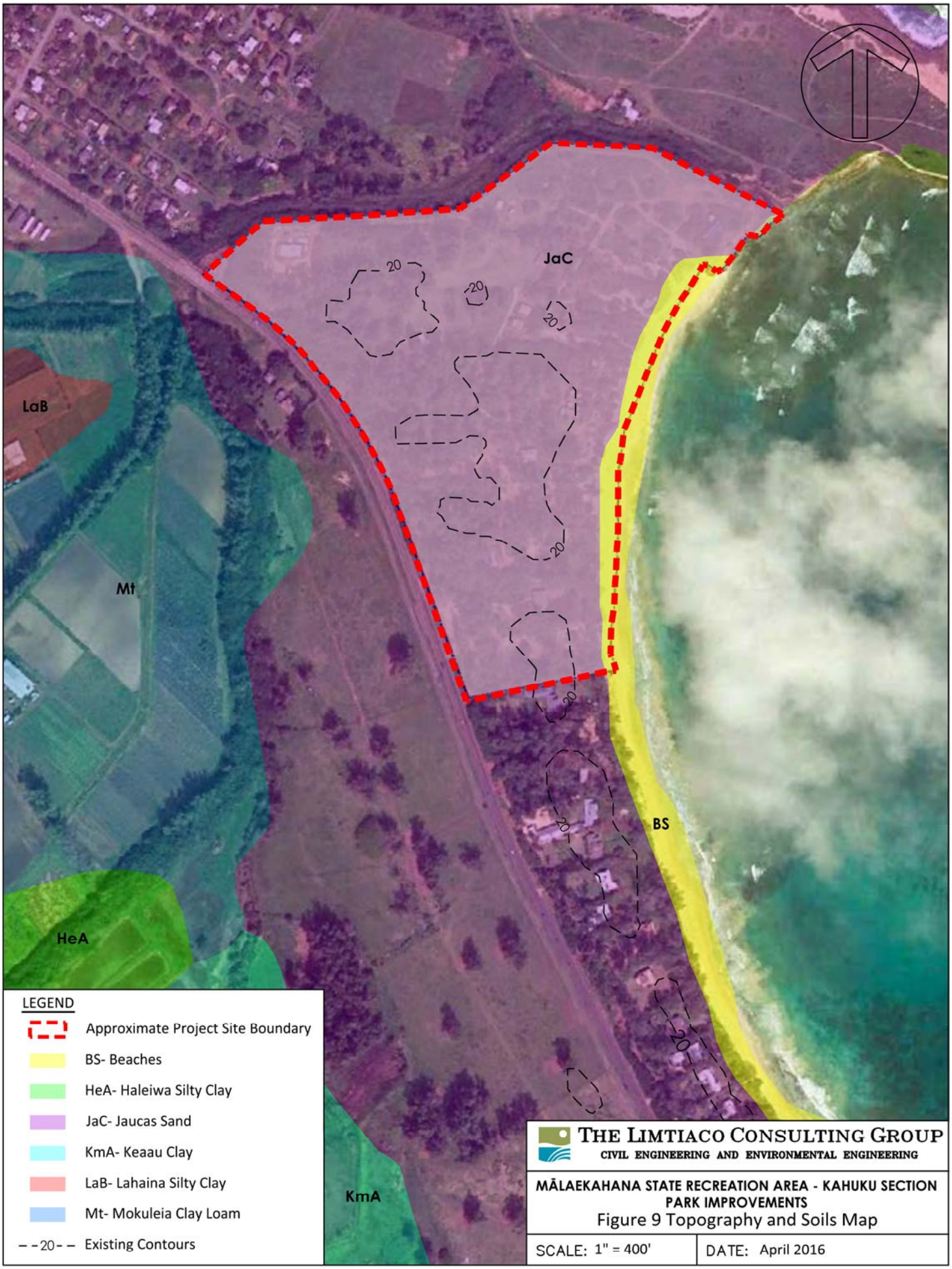
2.3. Topography

Most of the project site between Kamehameha Highway and the sloping shoreline area is between 5 to 20 feet above mean sea level (refer to Figure 9). The project site contains gently sloping areas, small mounds and some knolls. Strong, consistent trade winds have contributed to a windswept landscape of flat open spaces, canopied forest-like areas and sand dune formations near the observable shoreline. The sparsely vegetated areas may shift over time as a result of high surf and wind conditions. The shoreline and sandy beach area also fluctuates from seasonal variations: high surf during the winter months results in a steeper, smaller beach whereas smaller surf during the summer months helps to create a less steep and more expansive beach.

The current lessee has a five-year lease to manage campgrounds at the Mālaekahana State Recreation Area - Kahuku Section. MBC has sited temporary lodging facilities and portable toilets within designated areas of the project site. These facilities should be removed upon expiration of the lease.

Impacts and Mitigation Measures

Project actions would generally retain the characteristic landscape elements and overall topographic profile for most of the site. In general, proposed structures would be situated within the flatter, open areas of the project site thereby minimizing site work and preparation activities. Minor grubbing and grading will be accomplished to the extent necessary within the limits of the affected construction area. Mitigation that addresses drainage and surface runoff is discussed in Section 3.4, Water Resources.



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MĀLAEKAHANA STATE RECREATION AREA - KAHUKU SECTION PARK IMPROVEMENTS

Figure 9 Topography and Soils Map

SCALE: 1" = 400' | DATE: April 2016

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2.4. Water Resources

The project area is within the Koʻolau Loa Aquifer System Area (ASYA) that is part of the Windward Aquifer Sector Area. The Honolulu Board of Water Supply (BWS) has issued Water Use Permits for groundwater withdrawals totaling 22 million gallons per day (MGD) from the Koʻolau Loa ASYA, which is well below the 36 MGD *sustainable yield* for this aquifer system (Group 70 International, 2009). *Sustainable yield* refers to "the quantity of water that can be extracted from an aquifer indefinitely without diminishing the quantity or quality of the water withdrawn" (State of Hawaiʻi, Department of Land and Natural Resources, Commission on Water Resource Management, 2008). The Koʻolau Loa region is expected to experience little change in water demand throughout the planning period based on population forecasts to year 2030 and government land use policies for the region.

The Underground Injection Control (UIC) line as determined by the DOH Safe Drinking Water Branch demarcates the boundary and associated restrictions that apply to areas with non-drinking water aquifers or underground sources of drinking water. Injection well activity is more restricted in areas above the UIC line to protect underground sources of drinking water from injected fluids that may contain chemical, physical, radioactive, and biological contamination. The project site is seaward or *makai* of the UIC line, which indicates that the underlying groundwater is not considered a potential source of drinking water.

The shoreline portion of the project site is along Mālaekahana Bay, which has a marine water quality classification of Class A. The protection of Class A waters is primarily to ensure their continued use for recreational purposes and aesthetic enjoyment. Nonpoint source pollution from urban activities including sediment-laden runoff and seepage from the many cesspools within the Koʻolau Loa region are known threats to marine water quality and coastal ecosystems.

Mālaekahana Stream is a Class 2 inland water resource in the project area that flows in a northeasterly direction from an elevation of approximately 1,500 feet in the Koʻolau Mountains to the coast. Class 2 waters are utilized for recreational purposes, aquatic life propagation and support, agricultural and industrial water supplies, shipping, and navigation. Drainage discharges from the intermittent Keana Stream, several gulches (Hina, Lamaloa, and Keaʻaulu) and two irrigation ditches are conveyed via Mālaekahana Stream to the shoreline area. Silt-laden sediments, nutrients, pesticides, herbicides and debris presumably enter the stream course as it flows from conservation lands at the base of the Koʻolau Mountains through agricultural lands to urban areas before discharging to the ocean near Makahoa Point. The channelized portion of Mālaekahana Stream is upstream from Kamehameha Highway and a concrete bridge crossing near the northwestern corner of the project site. Mālaekahana Stream was reportedly dredged "to reduce silt build-up and flooding in the area" (Earth Tech, Inc., 1997). The lower reach of

Mālaekahana Stream flows along the northern boundary of the project site and traverses the abutting privately-owned parcel (TMK: 5-6-002: 045).

The following excerpts pertaining to water resource concerns are from the *Koʻolau Loa Watershed Management Plan* (Group 70 International, 2009).

> *Mālaekahana Stream is intermittent in its upper reaches, but perennial in the lower reaches.*
>
> *Streams in Koʻolau Loa are not used for the drinking water supply; however, streams are an important water source for agricultural uses, traditional/cultural practices, and habitat for freshwater fish, invertebrates and other aquatic organisms. Stream quality affects the coastal environment as stream and stormwater runoff flows to the ocean.*
>
> *Runoff from the conservation area of the watershed can have a heavy sediment load especially where forest cover is not adequate to protect the soil from runoff effects. Feral pigs create large areas that are susceptible to higher rates of soil erosion and contribute to increased stream sedimentation. Feral pigs are associated with all of the Koʻolau Loa watersheds, however, the number of feral pigs is not known.*
>
> *Other threats to the water quality of runoff are caused by human settlement.*
>
> *Cesspools, where the sewage flows directly into the ground, pollute streams estuaries and nearshore waters.*

Mālaekahana Stream is on the Clean Water Act §303(d) list of impaired waters. The stream corridor along the northern boundary of the project site is classified on the U.S. Fish and Wildlife Service National Wetland Inventory maps as estuarine and subtidal (e.g., the substrate is permanently flooded with tidal water). A linear strip along the unconsolidated shoreline is classified as marine and regularly flooded (e.g., tidal water alternately floods and exposes land surface at least once daily). The project site contains no ponds or other open water bodies and there are no other wetland areas (or marshes, swamps, bogs, etc.) within the project site.

Impacts and Mitigation Measures

Project actions would not significantly impact the underlying aquifer and groundwater resources in the Koʻolau Loa ASYA, especially since DLNR's project does not involve the development of any new potable water sources. There are no anticipated long-term impacts on groundwater recharge from the continued use of the project site as a regional park.

Mālaekahana Stream will not be diverted or altered as a result of placing park facilities and related infrastructure in previously disturbed or developed areas of the project site. The marine habitat along the unconsolidated shoreline

would also be unaffected since no structures or associated infrastructure will be sited or installed within the shoreline setback. DLNR's Division of Aquatic Resources indicated in its letter dated August 26, 2014 that the project "is not expected to have any significant impact on the aquatic resource values in these areas." The closure of on-site cesspools is consistent with current DOH policies that strive to protect the ocean, streams and groundwater from contamination. The construction of a new comfort station and satellite restrooms along with the installation of new, on-site wastewater systems is expected to reduce nonpoint source pollution concerns.

A short-term and temporary impact of the project may occur from the generation of sediment-laden surface runoff during earth-disturbing activities, especially if heavy rains coincide with the activity. A National Pollutant Discharge Elimination System (NPDES) Permit for discharges of pollutants, including stormwater runoff (e.g., construction dewatering effluent) is required for the disturbance of one acre or more of total land area pursuant to HAR Title 11, Chapter 55, "Water Pollution Control." Sediment runoff can be reduced by maintaining vegetated areas and diverting stormwater to vegetated bioswales. The construction contractor will be responsible for implementing a stormwater management plan that incorporates runoff and erosion control measures intended to prevent a concentration of runoff from flowing from the project site into adjacent areas. No adverse impact from the project is anticipated after the completion of construction.

2.5. Hazardous Materials and Solid Waste

Structures that pre-dated the establishment of the recreation area contained hazardous materials such as asbestos containing materials (ACM), lead-based paint, arsenic containing materials, and mercury containing lamps. Hazardous materials abatement was accomplished prior to the start of demolition activities while the project site was closed. The exposure risks to the identified hazardous materials were greatest when the materials were intentionally disturbed and handled. The solid waste from demolition activities and all hazardous materials were transported off-site for proper disposal.

The City's Department of Environmental Services, Refuse Division is responsible for solid waste collection, transport and disposal operations on O'ahu along with private haulers. Normal operations at the project site generate solid waste that is hauled off-site for disposal.

Impacts and Mitigation Measures

New and replacement park structures will be free of ACM, lead-based paints, arsenic containing materials, mercury containing lamps, electrical equipment

containing polychlorinated biphenyls, and radioactive smoke detectors since the environmental and public health and safety concerns associated with these products are now known. The proposed project will not involve the use of prohibited construction materials or products.

Construction activities at the project site would temporarily increase the volume of solid waste including construction debris that must be transported off-site for disposal. DLNR is expected to ensure that appropriate waste management and disposal practices are implemented by the construction contractor. Solid waste from normal operations at the recreational area will continue to be hauled off-site for proper disposal.

2.6. Natural Hazards

Natural hazards that may threaten life and property on Oʻahu include tsunami inundation, tropical cyclones, earthquakes, flash floods, drought, wildfires, sea level rise, high winds and landslides. In general, the exposure to natural hazards from unpredictable events is no greater at the project site than at other coastal locations on Oʻahu. Earthquakes, hurricanes and storms have resulted in power outages for extended periods in localized areas. On October 15, 2006, an island-wide electrical blackout on Oʻahu was triggered by earthquakes off the Kona coast of the island of Hawaiʻi. Roadways and homes on Oʻahu have been flooded as a result of severe, concentrated rainfall events that overwhelmed local drainage systems. Severe flooding and resulting mudslides have caused the closure of roadways along the windward coast of Oʻahu. Shoreline areas are also susceptible to coastal erosion from seasonal fluctuations in wave action and tidal currents.

Tsunami evacuation zone maps for the State of Hawaiʻi identify low lying areas where excavation is recommended since extensive damage to life and property may occur from seismic sea waves. The entire project site is within the tsunami evacuation zone (Hawaiʻi State Civil Defense, n.d.).

The Hawaiʻi - National Flood Insurance Program GIS Web Map depicts flood risk information from the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM). The area from Mālaekahana to Lāʻie falls within FEMA FIRM Panel No. 15003C 0045H. Most of the project site is within the non-special flood hazard area, which is characterized by low-to-moderate flood risk. The Zone X designation refers to areas outside the 0.2 percent annual chance floodplain. The northern and eastern boundaries of the project site are within Zones AE, AEF and VE, which are special flood hazard areas subject to inundation by the 1 percent annual chance (or 100-year) floods. The special flood hazard areas within the project site generally follow the Mālaekahana Stream corridor and the coastline. The entire shoreline area is designated as Zone VE, which is subject to velocity hazards

from wave action and has base flood elevations of 10 to 12 feet. The Flood Hazard Assessment Report for affected parcels is provided in Appendix A.

The project site is not near or on steep slopes which reduces the potential for rockslides and landslides. The wildfire hazard is unlikely but possible since there is ample vegetation within the project site and the surrounding area. Drought conditions and high winds could exacerbate the fire hazard. Many wildfires are caused by human actions of an intentional nature or as a result of negligence. Exposed areas caused by a sudden loss of vegetation and groundcover are vulnerable to erosion.

Tall trees within the project site have the potential to be hazardous as they age, succumb to disease, and/or are weakened by human induced damage (e.g., carving, burns from improper charcoal disposal and fires). Diseased or dying trees can lose their limbs in an unpredictable manner.

Impacts and Mitigation Measures

The threats to humans and property from unpredictable natural events will always be present. Proposed activities at the project site would not affect the occurrence of naturally occurring hazards. The project site is a regional recreation area that may be closed to the public due to safety concerns prior to the onset of approaching hazard events (e.g., high winds, flooding and strong surf from tsunamis and severe storms). DLNR may also close the park to ensure the safety of park users during maintenance and/or mitigation activities (e.g., tree trimming activities and the selective clearing of dangerous trees).

2.7. Floral and Faunal Resources

There are no reports of rare or endangered species or their habitat within the Mālaekahana State Recreation Area - Kahuku Section. The project site contains land that was previously disturbed for single-family residential development prior to its use as a regional park. The actively used areas within the park contain non-native shrubs, grasses and other ground cover that can survive the coastal conditions of high winds, sandy soils and salt spray. There are existing stands of mature trees and areas of dense vegetation within the project site.

The U.S. Department of the Interior, Fish and Wildlife Service (USFWS) reviewed pertinent information in its files and indicated in its letter dated September 18, 2014 that several species are documented within the project vicinity: the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*, *ʻope‘ape‘a*), the endangered Hawksbill sea turtle (*Eretmochelys imbricata*, ‘ea), the threatened green sea turtle (*Chelonia mydas*, honu) and the wedge-tailed shearwater (*Puffinus pacificus*, ‘ua‘u)

that is protected under the Migratory Bird Treaty Act. The letter from USFWS also states that there are at least two anchialine pools at the southern Lā‘ie end of Mālaekahana State Recreation Area that support species of anchialine shrimp. The park area referenced in the USFWS letter is the separate Mālaekahana State Recreation Area - Kalanai Section. DLNR is aware that one of the two anchialine pools have both the endemic snapping shrimp (*Metabetaeus lohena*, ‘ōpae) and Hawaiian red shrimp (*Halocaridina rubra*, ‘ōpae‘ula). Only *M. lohena* is a candidate for listing under the Endangered Species Act. DLNR’s project will not disturb anchialine pools, which are over one mile southeast from the project site.

Alien and introduced species dominate the faunal and avian communities that are commonly found in lowland areas throughout O‘ahu and Hawai‘i. Feral cats, mongoose and rodents (e.g., rats) are presumed to be present within the project site since unsecured trash or debris provides additional foraging opportunities for these predator species. Feral pigs, which inhabit forested areas, may also traverse the project site on an infrequent basis since they are known to utilize stream courses to access areas with desired food and water supplies. Aggressive pigs may attack perceived human or animal threats and cause injury or harm with their tusks. Domesticated animals (e.g., dogs) that roam unleashed through the park in violation of park rules may also be present within the project site on an infrequent basis.

Impacts and Mitigation Measures

Project actions may involve the necessary removal of on-site vegetation consisting of introduced, non-native floral species in select areas. Existing stands of mature trees and areas of dense vegetation within the project site are expected to remain as vegetated buffers. The project may also include landscaping in areas around new and replacement structures. The USFWS recommends landscaping with native plants to the extent practical or with “species that are thought to have a low risk of becoming invasive.” The federal definition of invasive species is an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health (Executive Order No. 13112, 1999). Ironwood trees (*Casuarina equisetifolia*), for example, are characterized as a weed species that may pose a high risk of becoming an invasive pest in Hawai‘i and other Pacific Islands.

Proposed replacement structures and new infrastructure will be sited within the project site in areas that are unlikely to contain species listed by the USFWS or in the Endangered Species Act since these areas were previously disturbed and are utilized for human activities. The project is not expected to result in the creation of nesting sites or habitat for listed species and protected seabirds. The BMPs provided by USFWS for species avoidance and the minimization of impacts are from its letter dated September 18, 2014.

USFWS also recommended "adding signage or a kiosk to educate park-goers regarding the seabird fallout issue and to let people know that downed birds can be taken to Sea Life Park for rehabilitation."

Hawaiian Hoary Bat

Woody plants greater than 15 feet tall should not be disturbed, removed or trimmed during the bat birthing and pup rearing season (June 1 through September 15). Site clearing should be timed to avoid disturbance to Hawaiian hoary bats in the project area.

Seabirds and Sea Turtles

Impacts to seabirds can be minimized by shielding outdoor lights associated with the project to the maximum extent possible, eliminating night-time construction, and providing all project staff and residents with information about seabird fallout. All lights, including street lights, should be shielded so the bulb can only be seen from below and use the lowest wattage bulbs possible.

To minimize and avoid artificial lighting impacts to sea turtles and seabirds, a lighting plan should be developed and incorporated into the project description, including educating all project staff and residents with information about seabird fallout. If lights cannot be eliminated due to safety or security concerns then they should be positioned low to the ground, be motion-triggered and be shielded and/or full cut-off. Effective light shields should be completely opaque, sufficiently large, and positioned so that the bulb is only visible from below and so that light from the shielded source cannot be seen from the beach. Construction activities should occur during daylight hours only.

Proposed project activities will affect areas that are away from the shoreline and there are no plans to develop or alter the coastline area. DLNR's Office of Conservation and Coastal Lands provided no specific comments but indicated in its letter dated September 3, 2014 that it encourages the use of BMPs because the project is located adjacent to the shoreline.

Potential food sources and refuse associated with construction activities and normal park operations should be contained in a manner that prevents access by predator species since they represent a major threat to indigenous wildlife, especially seabirds that nest on or near the ground. The enforcement of State park rules pertaining to uncontrolled pets is within the purview of State enforcement personnel.

2.8. Archaeological Resources

Lands in Mālaekahana Valley may have been utilized to support a large Hawaiian settlement that is known to have existed in the Kahuku to Lā'ie area; however, limited information exists about the land use and settlement patterns of the established Hawaiian population prior to the first encounters with European voyagers in 1778. The land division process that began with the Organic Acts of 1845 and 1846 ultimately resulted in Land Commission Awards to residents and individuals who could substantiate use of the lands they were claiming. Commercial ranching activities that resulted in large scale landform alterations began in the mid-19th century and persisted for several decades. By the 1880s, the lands in Kahuku were primarily utilized to support the sugar industry. The project site was ultimately developed in modern times for low-density, single-family residential uses. It is not known whether site preparation for the homes and associated subsurface utility systems resulted in substantial ground altering activities since these actions occurred before archaeological surveys were conducted.

The project site is not listed on the State or National Register of Historic Places and is within a geographic area that has experienced a long history of land disturbance and changes in land usage. No properties on the State and National Register of Historic Places are immediately adjacent to the project site. The nearest listed property is approximately 0.9 miles northwest of the project site in Kahuku Town.

State Site Number	Site Name
80-02-9816	Kahuku Plantation Supervisor's House

In December 2014, unsalvageable beach residences built between 1939 and 1956 were demolished due to health and safety concerns. The cabins had little to no structural or historic integrity but collectively were deemed to be eligible for the State Register of Historic Places under Criterion D (have yielded, or likely to yield, information important for research on history). Photographic recordings, drawings, and histories and descriptions for all of the structures were provided to SHPD in reference to its Section 6E-8 Historic Preservation Review dated December 2, 2013 (LOG: 2013.6192; DOC: 1312AB03).

The project site contains a reinterment site for disinterred remains (or *iwi*) and has undergone archaeological investigations that included subsurface testing and monitoring. No surface archaeological features were identified within the project site in previous studies. DLNR is aware that the potential for subsurface artifacts remains high in the area *mauka* of sand dunes based on previous archaeological investigations. In 2015, Scientific Consultant Services (SCS) conducted an archaeological inventory survey (AIS) for the project site utilizing modern standards and survey methods. The AIS report (see Appendix B) incorporates the findings of

previous surveys including the archaeological investigation conducted in 1980 by State Parks, which involved subsurface testing.

Twenty-four stratigraphic trenches "were excavated within the proposed development areas and revealed no cultural remains whatsoever" (Dagher and Spear, 2016a). SCS also investigated a subsurface cultural deposit that was once visible in the eroding shoreline and initially noted in the 1982 survey report by Yent and Ota. The subsurface cultural deposit was assigned State Site 50-50-02-7774 and is outside of the proposed areas of development. The investigation of Site 7774 was initiated because "State Parks wanted to better understand the nature and extent of the site for management, education, and preservation purposes" (Dagher and Spear, 2016a).

Site 7774 yielded the following results: Subsurface Features 1 through 3 and 5 through 7 consist of post molds, Subsurface Features 8 through 10 consist of pit features, and Subsurface Feature 4 consists of in situ human burial representing a single individual. Based on context, methods of construction, feature type, and associated artifacts all features were interpreted as pre-Contact in age; radiocarbon sample analysis suggests a range from 1480AD to 1660AD. Thus, Site 7774 was interpreted as a pre-Contact habitation complex with a human burial component. The AIS report (Dagher and Spear, 2016a) states that Site 7774 is considered to be significant based on Hawai‘i Register Criterion D (has yielded, or likely to yield, information important for research on history) and E (has cultural significance to an ethnic group, such as Hawaiian people). A burial treatment plan will be prepared for State Site 7774, Subsurface Feature 4 under separate cover and in consultation with SHPD. State Parks has indicated its commitment to preserving all site features in their present state whereby no development other than stabilization, if necessary, will occur within a protective zone that encompasses Site 7774.

Pre-assessment consultation was sought from several agencies and organizations: SHPD, O‘ahu Burial Council, Office of Hawaiian Affairs (OHA), Department of Hawaiian Home Lands, FOM, Ko‘olauloa Hawaiian Civic Club, Hui Malama I Na Kupuna O Hawai‘i Nei, Ko‘olauloa Neighborhood Board, Lanihuli Community Development Corporation, Kahuku Community Association, Lā‘ie Community Association, Hau‘ula Community Association, Punalu‘u Community Association, Ka‘a‘awa Community Association, and Sunset Beach Community Association. OHA recommended two beneficiaries as additional contacts who are members of the FOM and the Ko‘olauloa Neighborhood Board. The letter from OHA dated September 3, 2014 includes a statement of support for the project. The agency also states that "all work should be done with caution, given the potential for uncovering subsurface cultural materials in this sensitive shoreline area."

Impacts and Mitigation Measures

The scale and character of the former, unsalvageable beach residences that were utilized as rental cabins will be reflected in the design of new rental units as a result of the mitigation commitments stated in the letter to State Parks from SHPD dated October 31, 2013. Common features of the historic structures built between 1939 and 1956 that were demolished in December 2014 include their modest size, single story design, rectangular floor plans, simple low-angled gable or hip roof design, post-and pier foundations, and board-and-batten exterior walls.

Proposed park improvements are intentionally sited to avoid known resources (e.g., the reinterment site, the protected zone that encompasses Site 7774 and areas near sand dunes). Subsurface testing by SCS revealed no archaeological resources where park improvements are planned that would be endangered by project actions. State Parks will ensure that the construction contractor complies with an approved archaeological monitoring plan (AMP) that identifies specific activities to be monitored during the construction phase due to the potential for encountering undocumented features, including burials.

No adverse impacts to subsurface historic or archaeological resources are anticipated because proposed park improvements including the installation of permanent lodging facilities and associated infrastructure will be sited in areas that have been previously disturbed and altered. Nonetheless, in the event that any historic remains or other potentially significant subsurface resources are encountered during the various phases of construction (e.g., excavation and trenching), the contractor will be required to halt construction activities and to immediately notify SHPD of the discovery.

2.9. Cultural Practices and Resources

A cultural impact assessment (CIA) conducted by SCS to help identify the traditional and customary activities and resources within the project area or its vicinity is included in Appendix C. Archival and documentary research suggests that the early Polynesian inhabitants settled areas within the project vicinity that had favorable fishing and agricultural opportunities. Productive areas may have been intensely cultivated to sustain the subsistence economy of a permanent settlement during the pre-Contact period. Evidence of traditional Hawaiian life has been obscured by large scale landform changes in the project area from several decades of commercial ranching activities that began in the mid-19th century and later 19th century commercial sugarcane operations that continued through the early 1970s.

Consultation was sought from sixteen (16) individuals as noted in the report by SCS who may have pertinent knowledge or information about the past and present cultural resources and history of the project area. The consultation effort for the CIA also included notices published in *The Honolulu Star Advertiser* and *Ka Wai Ola* (OHA newspaper). SCS received one written response via letter that contained no mention or identification of specific past or ongoing traditional or cultural practices within the vicinity of the proposed project.

Impacts and Mitigation Measures

As previously mentioned in Section 2.8 Archaeological Resources, proposed park improvements will avoid the established reinterment site for disinterred remains (or *iwi*), the preservation zone that encompasses Site 7774, and areas *mauka* of sand dunes where the potential for subsurface artifacts remains high based on the findings from archaeological investigations. The following excerpt is from the CIA report (Dagher and Spear, 2016b):

The project area is not currently being used for traditional cultural purposes. However, based on historical research and limited responses from the individual and organizations contacted, it is reasonable to conclude that Hawaiian rights related to gathering, access or other customary activities within the project area will not be affected and there will be no adverse effect upon cultural practices or beliefs.

The proposed project will improve the spaces utilized for large group functions including family gatherings and does not restrict access to coastal areas. Proposed park improvements have the potential to foster appreciation, understanding and educational opportunities pertaining to the natural and cultural environment at Mālaekahana.

2.10. Visual Resources

The visual character of the Mālaekahana area is dominated by agricultural uses, low-density residential areas, churches, parks and public use facilities. There is little to no visual access to the shoreline from Kamehameha Highway due to existing vegetation and closely-spaced stands of tall trees within the project site. The areas of dense on-site vegetation contribute to the green space along Kamehameha Highway that mostly obscures the visual impact of human activities within the recreation area.

Impacts and Mitigation Measures

The proposed project is expected to have no impact on scenic vistas or view planes. A reconfiguration of the parking lot that allows for improved access and circulation would not significantly alter the visual character along Kamehameha Highway. The visual impact of new rental units and support structures is expected to be obscured by existing trees and dense vegetation within the project site. The natural character of the project site may be further emphasized by additional measures such as painting building elements to complement the natural setting and landscaping the areas around the structures.

2.11. Noise

In general, there is low background noise in the vicinity of the project site. The project site is located in a rural community where the primary noise source is related to vehicular traffic along Kamehameha Highway, which is a two-lane primary roadway for the windward and North Shore regions of Oʻahu. Existing sounds from the surrounding community include local vehicle movement, agricultural equipment, lawn maintenance equipment (e.g., mowers, leaf blowers and weed cutters), radios, human activity and animals. Other natural sounds in the project vicinity are from the waves crashing on shore and the wind rustling through vegetation. Existing trees within the project site may help to buffer the sounds from human activities.

Impacts and Mitigation Measures

Audible noise from demolition and construction activity is expected to be intermittent and unavoidable since construction vehicles, heavy equipment and impact tools generate noise as part of normal operations. The mitigation of noisy activities to inaudible levels will not be practical in all cases due to the intensity and exterior nature of the work. Ambient noise levels in the vicinity of the project site will therefore increase during construction periods. Quieter construction activities, such as building erection and equipment installation, may not be audible. Construction noise is temporary in nature and will cease upon completion of the project.

Project activities shall comply with the provisions of HAR Title 11, Chapter 46, “Community Noise Control.” The noise regulations require a noise permit if the noise level from construction activity is expected to exceed allowable levels stated in the Chapter 11-46 rules. It shall be the contractor’s responsibility to minimize noise by properly maintaining noise mufflers and other noise-attenuating equipment and to maintain noise levels within regulatory limits. If construction activities occur outside of the allowable time frames designated for the noise permit (i.e., nighttime, Sunday, holiday) and exceed allowable noise levels, a noise variance must be obtained prior to

commencement of construction activities, as required. The construction contractor will obtain the appropriate permit or approvals (e.g., Notice of Intent to Construct, Community Noise Permit, or Noise Variance). DLNR will ensure that the contractor complies with all permit conditions.

Potential noise impacts will also be mitigated by performing the majority of construction work during daytime hours (as opposed to night work), thereby avoiding the creation of construction noise impacts during nighttime hours. Daytime work will ensure minimal impacts to existing users adjacent to and in the vicinity of the project site.

The replacement rental units, support structures and associated infrastructure will facilitate the continuation of recreational activities. Camping, lodging and day use activities will continue within the project site such that no mitigation is warranted. The sounds from human activities may be buffered by the existing trees and areas of dense vegetation within the project site that are expected to remain.

2.12. Site Access, Circulation and Traffic

Vehicular access to and egress from the project site is via three separate driveways along Kamehameha Highway (State Route 83). The northernmost entrance is gated and may be secured to prevent unauthorized access. Two ungated driveways are towards the outer ends of an unpaved parking lot for the Mālaekahana State Recreation Area - Kahuku Section. The posted speed limit for Kamehameha Highway in the vicinity of the project site is 35 miles per hour (mph). The highway is approximately 24 feet wide (excluding shoulders) at both entrances to the project site. There appears to be sufficient stopping sight distance (more than 275 feet) at both entrances.

Kamehameha Highway is a two-lane primary arterial route that connects the North Shore communities of Haleʻiwa and Pupukea with rural windward communities such as Kahuku, Lāʻie and Hauʻula. The two-lane, coastal portion of State Route 83 transitions to Kahekili Highway from Kahaluʻu to its intersection with the Likelike Highway (State Route 63) in Kāneʻohe. Traffic disruptions in the vicinity of the project area can occur from unpredictable weather events such as storms that bring high surf and heavy rain, specials events (e.g., sports competitions and school graduations), or from accidents that impede travel along the two-lane highway. The letter dated September 8, 2014 from the Department of Education, Windward Oʻahu District indicates that travel from Lāʻie to Kahuku High and Intermediate is congested between 7:30 a.m. to 8:15 a.m. and 2:15 p.m. to 3:15 p.m. on school days.

The parking lot within the project site is unsecured and open to public access. MBC can monitor site access from improved areas that contain the Activity Rentals, Food

Truck, and Front Desk and Camp Store (refer to Figure 5). Connecting dirt and gravel roads within the project site "appear to follow the path of the old subdivision road" (Wesley R. Segawa and Associates, Inc., 2003). A secured driveway along Kamehameha Highway allows DLNR and State Parks personnel to access the project site for routine operations via an unpaved service road. A padlocked entry gate deters unauthorized entry and use of the dirt road, which leads to the area that contains the caretaker's residence, now utilized as the on-site security person's residence.

Municipal bus and paratransit services on Oʻahu are under the purview of the City's Department of Transportation Services (DTS) and Oʻahu Transit Services, Inc. Routes 55 and 88A provide service from Haleʻiwa to Ala Moana Center and from the North Shore to Turtle Bay, respectively. There are several bus stops along Kamehameha Highway near the project site. There is bus service to the rural windward and North Shore communities via Kamehameha Highway.

Impacts and Mitigation Measures

No off-site road improvements are required as part of the proposed project and the existing driveways for the project site are expected to remain unchanged. The transportation of equipment and material to the site along with the removal of debris and construction waste from the site may cause intermittent and temporary inconveniences to residents who live in the immediate vicinity. Appropriate traffic control devices including warning signs, lights, barricades, cones, and other safety equipment will be installed and maintained by the contractor during the construction period. Traffic control will be directed by construction personnel or by law enforcement personnel, when necessary.

The majority of construction work and the moving of heavy equipment or construction-related supplies will be scheduled during daytime hours (as opposed to night work). At night and when work is not occurring, all associated construction equipment will be secured and appropriately sited within the project site to prevent obstructions to traffic.

It will be determined during the design phase whether the operation or transportation of any oversized and/or overweight vehicles and loads will be required during construction. The transport of oversized and/or overweight materials and equipment on State highway facilities requires a permit from the State of Hawaiʻi Department of Transportation (DOT).

Bus routes, bus stops and paratransit operations are not expected to be impacted by project actions. The temporary increase in traffic due to vehicles and equipment accessing the project site will cease upon the completion of

construction activities. DLNR personnel will continue to access the project site as part of normal operations.

2.13. Utilities (Water, Wastewater, Drainage)

The project site receives water service from the municipal water system. Potable water is conveyed to the project site via a 12-inch water main on Kamehameha Highway.

There are no public sewer systems in the vicinity of the project site. The DOH Wastewater Branch indicates in its letter dated August 27, 2014 that the proposed project "is located in the critical wastewater disposal area as determined by the Oʻahu Wastewater Advisory Committee." Furthermore, wastewater generated at the project site was previously discharged to individual wastewater systems (IWSs) including cesspools and an aerobic treatment unit (ATU) that were considered recorded and approved for use. Cesspools allow untreated sanitary waste to be discharged into the ground; discharged effluent may contain pollutants such as phosphates, chlorides, grease, viruses and other chemicals that can contaminate the surrounding ocean, streams and groundwater. The ban on large capacity cesspools (LCCs) by the U.S. Environmental Protection Agency (USEPA) went into effect in 2005. DOH policies encourage the elimination of cesspools. In November 2014, four cesspools within the project site were closed in accordance with DOH procedures that involved the removal of sediment and sludge in the LCC for proper disposal at the Kahuku Wastewater Treatment Plant. Groundwater was located at only one of the four cesspool locations. All four of the LCCs were backfilled and covered with native material to match surrounding conditions. The on-site ATU was reportedly closed during the FOM's tenure; the closure deadline indicated in the second revised Affirmative Action Plan was July 26, 2012. The portable lodging facilities provided by the current lessee do not have plumbing; the current lessee has sited portable bathroom facilities throughout the project site in accordance with the terms and conditions of its lease.

The project site does not contain drainage system infrastructure. Stormwater runoff is allowed to sheet flow to impervious surfaces.

Impacts and Mitigation Measures

The proposed site will continue to receive water service from the municipal system. The BWS indicates in its letter dated September 5, 2014 that the "existing municipal water system is adequate to accommodate proposed improvements." The final decision by BWS with regards to the availability of water will be confirmed when the building permit application is submitted for approval. DLNR's proposed project includes the abandonment of the existing on-site water system and the installation of a new water distribution system.

Multiple septic tanks (for waste treatment) and leach fields (for effluent disposal) are recommended to accommodate the proposed improvements including replacement rental units and the installation of comfort stations and satellite restrooms. The septic tank and leach fields will be designed for compliance with HAR 11-62, Wastewater Systems. The DOH Wastewater Branch indicates in its letter dated August 27, 2014 that, "the design plans should address any effects associated with the construction of and/or discharges to Native Hawaiian resources or the exercise of traditional cultural practices." New restroom and shower facilities are expected to contribute to a cleaner park.

Utility services to the project site may be disrupted during periods of work; however, this impact is considered short term and temporary. Other short-term and temporary impacts may occur from sediment-laden surface runoff generated during the installation of new infrastructure systems that will disturb or be buried underground. BMPs will be incorporated into a stormwater management plan. Appropriate erosion control BMPs will be used to minimize the amount of soil transported in stormwater runoff during construction activities. All construction activities will comply with applicable Federal, State and County regulations and rules for erosion control as previously discussed in Section 3.4, Water Resources. The paved parking areas will increase impervious areas; however, the anticipated impact will be offset by incorporating design methods that reduce runoff from the site and promote groundwater recharge. Positive impacts are anticipated from the installation of improved utility infrastructure at the project site including a new water distribution system, wastewater disposal and treatment system, comfort stations, satellite restrooms and drainage features.

No significant drainage improvements are planned. Impervious areas are expected to be sloped to allow runoff to drain to existing vegetated areas.

2.14. Power and Communications

Electrical power in the project area is provided by Hawaiian Electric Company, Inc. (HECO) via overhead lines along Kamehameha Highway. Telecommunications service in the project area is also provided via overhead lines along Kamehameha Highway by Hawaiian Telcom and Oceanic Time-Warner Cablevision. The project site receives power and communications service via two connection points along Kamehameha Highway; overhead utility distribution lines are routed on wood poles within the project site. The overhead utility lines, poles, pole-top transformers, and associated appurtenances are owned, operated, and maintained by the respective service providers. The adjacent residential property (TMK 5-6-002: 045), which is to the northeast, receives utility service via lines from the project site. The majority of

the portable lodging facilities provided by the current lessee are not connected to an electrical system.

Impacts and Mitigation Measures

Utility lines within the project site may be routed underground. Proposed construction activity has the potential to disrupt power and communication systems to the site but these effects are expected to be short-term and temporary. The proposed project will be coordinated with HECO and other service providers. The permanent lodging facilities do not represent a substantial increase in energy consumption as compared to previous park operations. There are no long-term impacts associated with establishing new service connections for power and communications service. An easement or entry agreement in favor of the utility companies will need to be obtained in the foreseeable future for the utility lines that run through the project site to the adjacent residential parcel.

A basic level of illumination should be provided for vehicular and pedestrian movement and safety within the project site. Permanent lighting installed on new facilities should be fully shielded to minimize the potential impacts of artificial lighting on wildlife, primarily seabirds. Site lighting should comply with the requirements of HRS 201-8.5, “Night sky protection strategy.”

2.15. Socio-Economic Characteristics

The project site is located within the City’s Koʻolau Loa planning region, which includes the communities of Kaʻaʻawa, Kahana, Punaluʻu, Hauʻula, Lāʻie, Kahuku, and Kawela. This planning region contains two percent of Oʻahu’s population, according to the U.S. census. The resident population on Oʻahu was 953,207 in 2010 and increased 8.8 percent between 2000 and 2010; the population of Koʻolau Loa was 21,406 in 2010 and increased approximately 13.3 percent during this same period (State of Hawaiʻi, Department of Business, Economic Development and Tourism, 2015). The 2015 estimate suggests the resident population on Oʻahu was 998,714, which represents an increase of 4.8 percent from 2010 that “was mainly due to natural increase (birth less death) and international migration” (State of Hawaiʻi, Department of Business, Economic Development and Tourism, 2016).

Kahuku High and Intermediate School, which is located along Kamehameha Highway and near the central part of the Kahuku community, is roughly 0.4 miles northwest from the project site. Kahuku Elementary is located near Kahuku District Park and is approximately 1.5 road miles from the project site. Lāʻie Elementary School is located approximately 1.7 miles southeast from the project site near the center of the Lāʻie community.

The project site is roughly 30 road miles north of many commercial, industrial, transportation and government functions that are located in Honolulu; it is also not a major source of jobs or economic activity in the region. The Brigham Young University - Hawai‘i Campus is located approximately 2.5 miles southeast from the project site in the town of Lā‘ie, which contains the majority of the region’s jobs. The Turtle Bay Resort is an employment center located approximately 4.4 miles northwest from the project site.

Impacts and Mitigation Measures

The proposed project, which consists of park improvements, will not affect population levels or the demand for housing and schools. The various phases of construction will create short-term jobs for people in design and construction. The management of the project site is expected to involve a small number of employment opportunities through the current lessee. No mitigation is proposed or warranted.

The letter dated September 8, 2014 from the Department of Education, Windward O‘ahu District includes the following response:

It is my hope that the plans for Malae Kahana will also include the use of the land, beaches and water as a learning laboratory for the students of Ko’olauloa. We are expanding our career tech education to our elementary schools and our K-12 students are already heavily vested in natural resources and conservation. Malae Kahana is a wonderful place to study ecology, preservation, marine biology, conservation, mathematics and native flora and fauna. Hopefully, those who operate Malae Kahana will open the park to K-12 students so that they learn and aspire to be stewards of the land and sea, well vested in service learning.

2.16. Emergency Service Facilities and Shelters

Law enforcement is provided by the Honolulu Police Department (HPD). The project site is located within HPD’s District 4 (Kāne‘ohe, Kailua, Kahuku) service area. The Kahuku Substation, which is located along Kamehameha Highway, is approximately 0.3 miles northwest of the project site.

Fire protection services are provided by the Honolulu Fire Department (HFD). The Kahuku Fire Station is located along Kamehameha Highway and immediately adjacent to the police substation.

Emergency service providers include critical care providers such as hospitals and clinics. Kahuku Medical Center is located approximately 0.9 miles northwest from the project site. Ko‘olauloa Health Center has two main locations (in Kahuku near

the Kahuku Medical Center and in Hauʻula near the northern end of town) and it also operates a school-based center at Kahuku High and Intermediate School.

Impacts and Mitigation Measures

No significant adverse impacts to police, fire, medical or emergency shelter services will occur from the proposed project. HPD states in its letter dated September 5, 2014 that the project should have no significant impact on its services or operations. The letter from the HFD dated August 27, 2014 identifies applicable requirements pertaining to access roads, adequate fire flow for fire protection, and unobstructed clearances. The review of civil drawings will occur when the building permit application is submitted to ensure that fire department access, water supply for on-site fire protection, and public safety requirements are met. No mitigation is proposed or warranted.

2.17. Recreational Resources

DLNR has jurisdiction over state parks; historical sites; forests and forest reserves; aquatic sanctuaries; public fishing areas; boating, ocean recreation, and coastal programs; wildlife sanctuaries; game management areas; public hunting areas; and natural area reserves. The City's Department of Enterprise Services operates and maintains Kahuku Golf Course, which spans the coastal area approximately 0.2 to 1.0 miles north from the project site. Other shoreline recreational resources in the project area include numerous white sand beaches, the Mālaekahana State Recreation Area - Kalanai Section, and Hukilau Beach Park, which is privately owned and managed.

Wildlife sanctuaries provide passive recreational opportunities including the observation and study of native seabirds, plants, and insects. The James Campbell National Wildlife Refuge is more than 1.0 mile northwest from the project site. Mokuauia (Goat Island) is an offshore islet approximately 1.0 mile southeast from the project site that is part of the Hawai'i State Seabird Sanctuary system.

Impacts and Mitigation Measures

DLNR's proposed project consists of site improvements within a recreational area that would support the continuation of existing uses such as camping, lodging and day use activities. The Lanihuli Community Development Corporation, which operated under the business name of Friends of Mālaekahana (FOM), provided its perspective with regards to site configuration, operations and security via email on August 18, 2014. The FOM's tenure ended in December 2014 and the project site is currently

leased to Mālaekahana Beach Campground, LLC for a period of five (5) years pursuant to a competitive bidding process under HRS Chapter 171-59.

State Parks, OHA and Hawai‘i Reserves, Inc. provided statements of support for DLNR’s project (refer to the letters in Appendix D). The City’s Department of Enterprise Services states in its letter dated August 19, 2014 that “the project appears to have minimal or no impact to the Kahuku Golf Course.” The City’s Department of Parks and Recreation indicates in its letter dated August 22, 2014 that “the proposed project will have no impact on any program or facility of the department.” No mitigation is proposed or warranted.

3. RELATIONSHIP TO PLANS, POLICIES, AND CONTROLS

3.1. State Land Use District

The State Land Use Law (Chapter 205, HRS) is intended to preserve, protect, and encourage the development of lands in the State for uses which are best suited to the public health and welfare for Hawai‘i’s people. All lands in the State are classified into four land use districts by the State of Hawai‘i, Land Use Commission: Urban, Agricultural, Conservation, and Rural. Urban areas are characterized by residential neighborhoods, commercial enterprises, industrial development, and community facilities including public buildings. The project site is entirely located within the Urban District. Park use is permitted within the Urban District designation.

3.2. State Parks

DLNR has jurisdiction over state parks; historical sites; forests and forest reserves; aquatic sanctuaries; public fishing areas; boating, ocean recreation, and coastal programs; wildlife sanctuaries; game management areas; public hunting areas; and natural area reserves. The policies that apply to State parks and recreation areas are codified in (Chapter 184, HRS). The excerpts below are pertinent to DLNR’s management duties.

> *§184-6 Duties of department. The department of land and natural resources shall preserve the parks and parkways in the state park system in their natural condition so far as may be consistent with their use and safety, and improve them in such manner as to retain to a maximum extent their natural scenic, historic, and wildlife values for the use and enjoyment of the public.*

The administrative rules (Title 13, Subtitle 6, Chapter 146, HAR) that govern the use and protection of all lands, and historical and natural resources within the state park system are available from DLNR’s Division Offices or online from the State Parks website (http://dlnr.hawaii.gov/dsp/administrative-rules/). Proposed improvements at the Mālaekahana State Recreation Area - Kahuku Section help to ensure that the site and its resources continue to be available to residents and visitors of the State of Hawai‘i. DLNR’s project does not conflict with existing policies and administrative rules pertaining to State parks and recreation areas.

3.3. Hawai‘i State Plan

The Hawai‘i State Plan (Chapter 226, HRS) outlines broad goals, policies and objectives to serve as guidelines for the future growth and development of the State. The excerpts below are pertinent Hawai‘i State Plan objectives, policies, and priority guidelines. In 2002, the State-owned parcels that were acquired in 1980 through condemnation were set aside to State Parks for park and recreational purposes. Proposed park improvements will enhance the recreation area for camping, lodging

and day use activities to ensure its continued use by residents and visitors. DLNR seeks to balance the development of adequate recreational facilities and venues with concerns about project impacts on the nearby community and the physical environment.

§226-11 Objectives and policies for the physical environment--land-based, shoreline, and marine resources.

(a) Planning for the State's physical environment with regard to land-based, shoreline, and marine resources shall be directed towards achievement of the following objectives:

(1) Prudent use of Hawai'i's land-based, shoreline, and marine resources.

(2) Effective protection of Hawai'i's unique and fragile environmental resources.

(b) To achieve the land-based, shoreline, and marine resources objectives, it shall be the policy of this State to:

(3) Take into account the physical attributes of areas when planning and designing activities and facilities.

(8) Pursue compatible relationships among activities, facilities, and natural resources.

(9) Promote increased accessibility and prudent use of inland and shoreline areas for public recreational, educational, and scientific purposes.

§226-13 Objectives and policies for the physical environment--land, air, and water quality.

(a) Planning for the State's physical environment with regard to land, air, and water quality shall be directed towards achievement of the following objectives:

(1) Maintenance and pursuit of improved quality in Hawai'i's land, air, and water resources.

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

(2) Promote the proper management of Hawai'i's land and water resources.

(3) Promote effective measures to achieve desired quality in Hawai'i's surface, ground, and coastal waters.

(4) Encourage actions to maintain or improve aural and air quality levels to enhance the health and well-being of Hawai'i's people.

(5) Reduce the threat to life and property from erosion, flooding, tsunamis, hurricanes, earthquakes, volcanic eruptions, and other natural or man-induced hazards and disasters.

§226-14 Objectives and policies for facility systems--in general.

(a) Planning for the State's facility systems in general shall be directed towards achievement of the objective of water, transportation, waste

disposal, and energy and telecommunication systems that support statewide social, economic, and physical objectives.

(b) To achieve the general facility systems objective, it shall be the policy of this State to:

(3) Encourage flexibility in the design and development of facility systems to promote prudent use of resources and accommodate changing public demands and priorities.

(4) Pursue alternative methods of financing programs and projects and cost-saving techniques in the planning, construction, and maintenance of facility systems.

§226-15 Objectives and policies for facility systems--solid and liquid wastes.

(a) 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.

(b) To achieve solid and liquid waste objectives, it shall be the policy of this State to:

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

§226-23 Objectives and policies for socio-cultural advancement--leisure.

(a) 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.

(b) To achieve the leisure objective, it shall be the policy of this State to:

(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.

(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 Hawai'i's recreational resources.

(6) Assure the availability of sufficient resources to provide for future cultural, artistic, and recreational needs.

(10) Assure adequate access to significant natural and cultural resources in public ownership.

§226-25 Objectives and policies for socio cultural advancement--culture.

(a) *Planning for the State's socio-cultural advancement with regard to culture shall be directed toward the achievement of the objective of enhancement of cultural identities, traditions, values, customs, and arts of Hawai'i's people.*

(b) *To achieve the culture objective, it shall be the policy of this State to:*

(1) Foster increased knowledge and understanding of Hawai'i's ethnic and cultural heritages and the history of Hawai'i.

(2) Support activities and conditions that promote cultural values, customs, and arts that enrich the lifestyles of Hawai'i's people and which are sensitive and responsive to family and community needs.

(3) Encourage increased awareness of the effects of proposed public and private actions on the integrity and quality of cultural and community lifestyles in Hawai'i.

§226-26 Objectives and policies for socio cultural advancement – public safety.

(a) *Planning for the State's socio-cultural advancement with regard to public safety shall be directed towards the achievement of the following objectives:*

(1) Assurance of public safety and adequate protection of life and property for all people.

§226-27 Objectives and policies for socio cultural advancement – government.

(a) Planning the State's socio-cultural advancement with regard to government shall be directed towards the achievement of the following objectives:

(1) Efficient, effective, and responsive government services at all levels in the State.

(b) To achieve the government objectives, it shall be the policy of this State to:

(1) Provide for necessary public goods and services not assumed by the private sector.

(5) Assure that government attitudes, actions, and services are sensitive to community needs and concerns.

3.4. City and County of Honolulu General Plan

The City's *General Plan: Objectives and Policies* (1992 edition, amended in 2002) sets forth broad statements of social, economic, environmental, and design objectives and policies which are desired over the long-term. The 2035 O'ahu General Plan Focused Update is reportedly underway. Thus, the following General Plan policies and objectives that pertain to the proposed park improvements project are from the amended 2002 version of the General Plan. DLNR strives to balance

the development of adequate recreational facilities and venues with environmental and community concerns.

III. Physical Development and Urban Design

Objective A: To protect and preserve the natural environment.

Policy 1: Protect O'ahu's natural environment, especially the shoreline, valleys, and ridges, from incompatible development.

Policy 7: Protect the natural environment from damaging levels of air, water, and noise pollution.

Policy 10: Increase public awareness and appreciation of O'ahu's land, air, and water resources.

Objective B: To preserve and enhance the natural monuments and scenic views of O'ahu for the benefit of both residents and visitors.

Policy 4: Provide opportunities for recreational and educational use and physical contact with O'ahu's natural environment.

V. Transportation and Utilities

Objective B: To meet the needs of the people of O'ahu for an adequate supply of water and for environmentally sound systems of waste disposal.

Policy 5: Provide safe, efficient, and environmentally sensitive waste-collection and waste- disposal services.

Objective D: To maintain transportation and utility systems which will help O'ahu continue to be a desirable place to live and visit.

Policy 5: Require the installation of underground utility lines wherever feasible.

VII. Physical Development and Urban Design

Objective D: To maintain those development characteristics in the urban-fringe and rural areas which make them desirable places to live.

Policy 4: Maintain rural areas as areas which are intended to provide environments supportive of lifestyle choices which are dependent on the availability of land suitable for small to moderate size agricultural pursuits, a relatively open and scenic setting, and/or a small town, country atmosphere consisting of communities which are small in size, very low density and low rise in character, and may contain a mixture of uses.

Objective E: To create and maintain attractive, meaningful, and stimulating environments throughout O'ahu.

Policy 8: Preserve and maintain beneficial open space in urbanized areas.

VIII. Public Safety

Objective B: To protect the people of Oʻahu and their property against natural disasters and other emergencies, traffic and fire hazards, and unsafe conditions.

Policy 9: Design safe and secure public buildings.

X. Culture and Recreation

Objective D: To provide a wide range of recreational facilities and services that are readily available to all residents of Oʻahu.

Policy 5: Encourage the State to develop and maintain a system of natural resource-based parks, such as beach, shoreline, and mountain parks.

Policy 12: Provide for safe and secure use of public parks, beaches, and recreation facilities.

3.5. Koʻolau Loa Sustainable Communities Plan

Eight community-oriented plans for the City are intended to help guide government action and decision-making. The plans for six regions of Oʻahu have been designated as "Sustainable Communities Plans" to highlight the intent that these areas are not to be heavily developed, and that the existing communities and special qualities of each region should be sustained and improved. Each Development Plan and Sustainable Communities Plan implements the objectives and policies of the General Plan and serves as a guide for public policy, investment, and decision making within each respective region. Together with the General Plan, these documents guide population and land use growth over a 20- to 25-year time span.

The *Koʻolau Loa Sustainable Communities Plan* that was adopted in October 1999 emphasizes the preservation of the region's rural character and its natural, cultural, scenic and agricultural resources. The Plan calls for adaptation of the traditional *ahupuaʻa* concept as a basis for land use and natural resources management. The designation for the project site is Park on the maps included in the Plan. The December 2012 revision of the *Koʻolau Loa Sustainable Communities Plan* was recommended for approval by the Planning Commission on April 3, 2013 and is awaiting further action by the City Council. Thus, the following excerpts that pertain to proposed park improvements are from the October 1999 Plan.

The Vision for Koʻolau Loa's Future - Key Elements

Preserve and enhance the natural, recreational and cultural resources which contribute to Koʻolau Loa's sense of "Old Hawaii."

Enhance the existing recreational areas and resources which offer a variety of outdoor recreational activities and cultural experiences.

Land Use Policies, Principles, and Guidelines

3.1 OPEN SPACE PRESERVATION

3.1.1 General Policies

Open space will be used to:

Maintain the region's rural character, protect scenic views and provide recreational resources.

3.1.2 Planning Principles

Provide Passive and Active Open Spaces. The open space system consists of areas in both active and passive uses. Active areas include community-based and State parks, golf courses and agricultural fields. Passive areas include the State Conservation District, fallow land in the State Agricultural District, drainage and utility corridors, nature preserves, and other fallow lands left undeveloped due to physical or hazard constraints.

Promote Accessibility of Recreational Open Space. Public parks and most golf courses will be accessible for recreational use, but the open space system should also promote the accessibility of shoreline and mountain areas (as required by City Ordinance and State law).

3.1.3 Guidelines

3.1.3.2 Shoreline Areas.

Maintain and, where possible, enhance the physical integrity and habitat value of shoreline areas.

Maintain the untamed landscape quality of the Kahuku shoreline.

Protect nearshore coral reefs from damaging activities such as soil erosion, non-point source pollution, dredging, and alterations to near-shore water circulation.

3.3 PARKS AND RECREATION AREAS

3.3.1 Overview

The largest and most specialized parks are classified as "Island-Based Parks" since they serve the needs of all O'ahu residents, while "Community-Based Parks" serve more localized populations.

Island-Based Parks and Other Recreation Areas. This group includes regional parks, beach/shoreline parks, beach/shoreline rights-of-way, nature parks/reserves, botanical gardens, golf courses and zoological parks.

3.3.2 General Policies

Island-Based Parks and Other Recreation Areas. Maintain and enhance, to

the extent possible, existing island-based parks by utilizing land area that has not been fully developed for recreational use and improving the condition of existing facilities. These island-based parks are a critical component of the region's abundance of natural and scenic resources and contribute to the attractiveness and accessibility of Koʻolau Loa's coastline and mauka areas for both residents and visitors.

3.3.3 Planning Principles

Appropriate Siting and Screening. Carefully site active playfields and supporting facilities for intensive use, and use generous landscaping and screening to reduce the potential impacts on surrounding areas.

Environmental Compatibility. Construct park facilities in a manner that avoids adverse impacts on natural resources or processes in the coastal zone or any other environmentally sensitive area. In the design of recreation areas, incorporate natural features of the site and use landscape materials that are indigenous to the area where feasible to retain a sense of place.

3.3.4 Guidelines

Beach or Passive Parks. Preserve and enhance coastal-oriented beach and passive park resources by maintaining existing facilities and making site improvements as required.

Active Recreation Areas. Minimize the visibility of perimeter fencing and maintenance facilities through landscape plantings or other appropriate visual screens adjacent to residential areas and major roadways.

3.4 HISTORIC AND CULTURAL RESOURCES

3.4.2 General Policies

Preserve and restore historic and cultural resources associated with native Hawaiian and pre-contact periods.

Preserve significant historic features from earlier periods such as the plantation era.

3.4.3 Planning Principles

Accessibility and Interpretation. Establish the degree of public access and interpretation that would best promote the preservation of the historic, cultural and educational value of a site. Public access to and interpretation of an historic site may take many forms. In some cases, it may be advisable to restrict access to protect the physical integrity or sacred value of the site, while in other cases it may be necessary to recognize that some form of low-impact economic use is an appropriate and feasible way to preserve it.

4.3 WASTEWATER TREATMENT

4.3.1 General Policies

Provide collection systems, where practical, to eliminate individual cesspools, and to protect aquifers, streams, estuaries and nearshore waters from contamination.

Replace outdated individual cesspools with septic tanks and leaching fields.

4.4 ELECTRICAL POWER DEVELOPMENT

4.4.1 General Policies

Locate and design system elements such as renewable electrical power facilities, sub-stations, communication sites, and transmission lines, including consideration of underground transmission lines, to mitigate any potential adverse impacts on scenic and natural resources, as well as public safety considerations.

4.6 DRAINAGE SYSTEMS

4.6.1 General Policies

Emphasize control and minimization of non-point source pollution and the retention of storm water on-site and in wetlands in the design of drainage systems in accordance with existing City, State and Federal regulations while maintaining the existing habitat capability and water quality of streams and nearshore waters.

4.6.2 Planning Principles and Guidelines

Retention and Detention. Emphasize retaining or detaining storm water for gradual release into the ground as an alternative strategy for management of storm water.

The proposed project is consistent with the vision of enhancing recreational areas and resources in the Koʻolau Loa region of Oʻahu for the enjoyment of residents and visitors. Proposed park improvements are intended to support continued recreational use including camping, lodging and day use activities. The project includes construction of a comfort station and satellite restroom facilities. New connecting infrastructure (e.g., water, wastewater and electrical/communication systems) will be installed. Cesspools within the project site will be closed, which is consistent with DOH policies for eliminating cesspools and protecting the ocean, streams and groundwater from contamination.

3.6. City and County of Honolulu Land Use Ordinance

The City's LUO (Chapter 21 of the ROH) regulates land use in accordance with adopted land use policies, including the City's General Plan and the Development/Sustainable Community Plans. The recreation area is a public use on state-owned property, in accordance with the following description from the LUO:

> *Uses conducted by or structures owned or managed by the federal government, the State of Hawai'i or the city to fulfill a governmental function, activity or service for public benefit and in accordance with public policy.*

The zoning for the project site is R-5 Residential District and the extent of the Mālaekahana State Recreation Area - Kahuku Section includes contiguous parcels that were formerly in residential use. "Public Uses and Structures" are allowed in all zoning districts.

As indicated previously in Section 1.4 Site Description, the DPP Director may waive development or design standards including setbacks and height restrictions for public uses and structures.

> *§21-2.130 Waiver of requirements.*
> *(a) A waiver of the strict application of the development or design standards of this chapter may be granted by the director for the following:*
> *(1) Public or public/private uses and structures, and utility installations.*
> *(4) To permit the retrofitting of improvements when the retrofitting is required to comply with federal mandates such as, but not limited to, the Americans with Disabilities Act (ADA) or the National Environmental Protection Act (NEPA); provided such improvements cannot otherwise be made without conflicting with the provisions of this chapter.*

3.7. City and County of Honolulu Building Permits

Chapter 18 of the ROH consolidates the City's building, electrical and plumbing permits (including permits for the construction of sidewalks, curbs and driveways) into a single permit. Fees associated with building permit applications are assessed based on the value of the work to be performed. As indicated previously in Section 1.4 Site Description, State of Hawai'i agencies may construct improvements without building permits.

> *§18-3.1 Required.*
> *(b) Exceptions. A permit shall not be required for the types of work listed below. Exemption from the permit requirements of this code shall not*

be deemed to grant authorization for any work to be done in violation of the provisions of the technical codes or any other laws or ordinances of this jurisdiction.

(13) Work performed for any state government agency, except where permits are specifically requested by the agency.

3.8. State Coastal Zone Management Program

Hawai‘i’s Coastal Zone Management (CZM) program, established pursuant to Chapter 205A, HRS, as amended, is administered by the State of Hawai‘i, Office of Planning and provides for the beneficial use, protection, and development of the State’s coastal zone. The CZM area consists of the entire state of Hawai‘i. The objective of the act is to protect, preserve, and restore recreational, historic, and scenic resources as well as implementing the state’s ocean resources management plan and protecting coastal ecosystems. The act involves a system of permits to manage development within the coastal areas and encourages public participation.

Through the CZM program and pursuant to the Hawai‘i Coastal Zone Management Act (Chapter 205A, HRS, as amended), all counties have enacted ordinances establishing Special Management Areas (SMAs). Any significant development within the SMA requires a SMA permit from the appropriate County. On O‘ahu, the SMA permit is administered by the DPP and acted upon by the City Council pursuant to Chapter 25 of the ROH. As indicated previously in Section 1.4 Site Description, the project site is located within the SMA and will be subject to the SMA permit process. An SMA Use Permit (Major), which applies to development with a valuation equal to or exceeding $500,000, is expected to be required.

The proposed project involves park improvements at an established public recreation area that is utilized for camping, lodging and day use activities. New and replacement structures will be sited outside of the shoreline area. DLNR’s park improvement project is expected to enhance established public recreational opportunities at the Mālaekahana State Recreation Area - Kahuku Section and will not affect the use of or access to coastal or other public recreational opportunities. Park improvements include the construction of a comfort station and satellite restroom facilities along with the installation of improved wastewater infrastructure. Cesspools within the project site will be closed in accordance with prescribed abandonment procedures that are meant to protect water sources from contamination. Hence, the proposed project is consistent with the CZM objectives and policies pursuant to Section 205A-2, HRS.

(1) Recreational Resources;

(A) Provide coastal recreational opportunities accessible to the public.

(2) Historic resources;
(A) 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.

(3) Scenic and open space resources;
(A) Protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources.

(5) Economic uses;
(A) Provide public or private facilities and improvements important to the State's economy in suitable locations.

(6) Coastal hazards;
(A) Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.

(9) Beach protection;
(A) Protect beaches for public use and recreation.

4. POSSIBLE ALTERNATIVES

Project alternatives are hereby discussed in a tiered analysis format. It is hereby noted that grant monies from the Land and Water Conservation Fund program were utilized to acquire the project site and implement improvements related to its usage as a public park. The use of said federal funds requires, with limited exceptions, that the property be used for outdoor recreation and open space at all times in perpetuity. DLNR's proposed project therefore involves no substantive changes to the open space and outdoor recreational opportunities currently available at the project site.

4.1. Tier One Analysis: User Capacity

User capacity in this analysis is defined as the types and levels of public use that can be accommodated while sustaining the desired resource and social conditions that complement the purpose of the park. It is a concept that cannot be simply measured as the number of people and/or a limit on the number of people in a given area. State Parks is aware that human uses on public lands come with some level of impact and it is the responsibility of the public land management agency to decide what level of impact is acceptable and what actions are needed to keep impacts within acceptable limits to maintain resource conditions and visitor experiences. The three user capacity scenarios discussed below are evaluated according to several considerations: number of park visitors, types of activities that people engage in, where they go, what kind of footprints they leave behind, what type of resources are in the area, and the level of management presence. No action is also discussed.

Decrease User Capacity

The methods available for decreasing user capacity include restricting the number of fee-based overnight camping facilities and providing fewer hours for day use public access. State Parks could also reduce the sizes of camping and day use areas in order to decrease user capacity. There would be less noise and vehicular traffic from fewer park users; fewer restrooms and park amenities may be needed if the demand for utility infrastructure is reduced. The resulting effect of decreasing user capacity would be an environment that is still disturbed by human activities; however, the existing natural resources would experience a reduced human presence.

Imposed limitations on user capacity may curb opportunities for camping, day use activities (e.g., surfing, swimming, sunbathing, beachcombing and fishing) and large group functions (e.g., birthday celebrations, graduation parties, luaus, and family gatherings). Long-term restrictions may be highly disruptive for park patrons who regularly utilize the project site and its resources. Expenditures and funding for maintenance, management and park security may decrease in response to a reduced footprint from fewer visitors.

Increase User Capacity

The actions that State Parks could implement to increase user capacity include adding more fee-based overnight camping facilities and perhaps extending the hours for day use public access. State Parks could also expand the areas allotted to camping and day use activities in order to increase user capacity. The resulting effect of these actions would be an environment that is more heavily disturbed by the footprint of human activities. The expansion of activity areas along with associated infrastructure effectively reduces the resource areas that contribute to the natural, open setting and ambience that define the visitor experience at the project site.

Additional opportunities for camping, day use activities and large group functions may ultimately encourage more park usage by greater numbers of residents and visitors such that there is more noise and traffic at the project site. A sustained increase in park usage has the potential to disrupt the nearby rural communities and overwhelm the transportation infrastructure in the vicinity of the project site. More or larger restrooms, parking areas and park amenities may be needed in response to increased numbers of park users that represent a greater demand for utility services and higher-rated infrastructure systems. It is also possible that an increase in user capacity would impose a greater long-term funding commitment for park safety personnel, security, maintenance and management.

Maintain User Capacity

A long-term user capacity scenario that maintains reported levels of human use would involve no expansion or reduction in park hours and no substantial expansion or reduction of activity areas and related infrastructure within the project site. The established outdoor recreation activities at the project site include camping and day use activities. The current lessee is allowed to operate the campground at levels no greater (in terms of overnight capacity) than what had previously existed. Campsites and temporary lodging facilities are allowed to be sited in locations similar to what was previously used. Community residents reportedly use the project site for large group functions. The natural, open setting and ambience help to define the visitor experience at the project site.

Potable water is provided to the project site via an existing water line and the site receives electrical service. The temporary lodging facilities have no plumbing and the vast majority of park structures have no electricity. The current lessee is providing portable bathroom facilities since there is only one existing comfort station within the project site. Park visitors use common area sinks and showers with no hot water. The former caretaker's residence serves as the on-site security person's residence such that there is security service on the premises twenty-four (24) hours a day, seven days per week.

DLNR's proposed park improvements as represented in Figure 8 include the installation of permanent infrastructure that is sized to address the utility and parking demands associated with maintaining the user capacity described above through the full build-out option. Permanent site infrastructure that replaces the lessee's temporary improvements is necessary for compliance with applicable health and safety standards.

No Action

The no action scenario essentially consists of maintaining the current user capacity for a short-term period. No further action by DLNR implies that proposed park improvements including the installation of individual wastewater systems would not occur. This would violate the intent of the action plan that was coordinated with DOH to address wastewater system concerns. Temporary lodging facilities and portable toilets, which are not expected to be allowed into perpetuity, will be removed in the foreseeable future. The absence of lodging facilities and site infrastructure would likely curtail the opportunities for camping and large group functions.

The no action alternative is inconsistent with the stated objective of ensuring that the property continues to be utilized for outdoor recreation purposes including camping, lodging and day use activities. As a result of no action, the project site would become increasingly vulnerable to service disruptions as remaining public use structures (e.g., one bathroom facility within the project site) and site infrastructure continue to age. The quality of the outdoor experience may be further diminished if there are inadequate restroom facilities and individuals choose to relieve themselves on the grounds of the project site.

Disruptions and changes in human activity from decreasing or increasing user capacity are expected to be perceived by the surrounding rural communities and may ultimately affect recreational experiences at the project site. No action represents a short-term continuation of the current user capacity; however, the long-term effect is similar to the scenario that decreases user capacity at the project site. For all of these reasons, the changes in user capacity and no action are viewed as unacceptable alternatives that are hereby eliminated from further consideration. The most appropriate alternative involves site improvements that help to maintain user capacity and ensure the availability of recreational opportunities at the project site. The full build-out option depicted in Figure 8 is anticipated to result in new lodging facilities and related infrastructure that would allow for a total maximum of 400 overnight guests including both tent campers and those housed in an on-site structure; according to DLNR, this number reflects the reported user capacity for high volume weekends at present and in the recent past. DLNR has indicated that

the existing ratio of areas designated for tent camping (in terms of total person capacity) to lodging in an on-site structure (also in terms of total person capacity) shall be at least 50 percent. DLNR's project strives to minimize the impacts of human activities on the shoreline, coastal and estuarine areas through needed site improvements within the public recreation area.

4.2. Tier Two Analysis: On-Site Wastewater Systems

DLNR has stated its commitment to close existing cesspools, which allow untreated sanitary waste to be discharged into the ground, and to install new wastewater systems within the project site that comply with applicable DOH guidelines. In light of these objectives, no off-site treatment options that involve the on-site collection and storage of raw wastewater in holding tanks for off-site transport to a wastewater facility for final treatment and disposal were considered as part of this EA. There is no municipal sewer system in the immediate project area; therefore, DLNR's project includes the installation of on-site individual wastewater systems (IWSs). Infrastructure improvements are based on the scenario that maintains user capacity at levels no greater (in terms of overnight capacity) than what had previously existed. The total wastewater flows for the entire project site based on this user capacity scenario are projected to be less than 15,000 gallons per day. One challenge of operating a camp facility is handling slow and busy seasons. In particular, slow seasons could create wastewater treatment challenges (and possibly require total treatment restart) if continuous wastewater flow is not maintained. Four IWS strategies are evaluated according to considerations about effectiveness, technical complexity, resource commitments and nuisances. The exact timing and phasing of wastewater system improvements is unknown due to the challenges of securing state monies for DLNR's proposed project.

Septic Systems with Leach Fields

Decentralized wastewater systems provide on-site treatment close to the source and are appropriate for small volumes of domestic wastewater. The EPA's *Response to Congress on Use of Decentralized Wastewater Treatment Systems* (1997) determined that decentralized systems "can protect public health and the environment, typically have lower capital and maintenance costs for rural communities, are appropriate for varying site conditions, and are suitable for ecologically sensitive areas when adequately managed." Septic systems, which are commonly used, require no electricity since raw wastewater is gravity fed into the concrete or plastic underground tank. Heavy solids settle to the bottom of the tank while lighter solid waste material floats to the top. Anaerobic bacteria in the septic tank break down biodegradable waste. The effluent is conveyed from the tank to a leach field, which is a large area where treated wastewater is dispersed into the subsurface soils below the root zone.

Each septic system installation involves construction activities such as ground disturbance. The visual impacts and odors from septic tanks are expected be similar to the impacts from cesspools since both systems are underground; leach fields may be landscaped to minimize the appearance of installed components. Gravity-fed septic systems do not generate noise, which is an important consideration for maintaining the serene park environment at the project site. Eight septic systems are proposed to support DLNR's concept for the low density park uses distributed across the 36-acre project site. Grease interceptors are not required by DOH because the wastewater generated at the project site does not flow to a municipal sewer system and there are no on-site commercial kitchens. The project site provides ample space to accommodate the leach field sizing requirements from DOH. Visual inspection of the soils at the project site indicates desirable conditions for leach field percolation. The actual siting of septic systems will be determined from the results of geotechnical borings and percolations tests during the design phase of the project.

The initial resource commitments for septic systems pertain to the procurement of underground tanks and any required accessories. The manpower requirements for septic tanks beyond the initial design, siting, and installation services are associated with periodic maintenance (e.g., pumping) to ensure proper functionality and to remove accumulated sludge or biosolids for off-site disposal; leach fields require visual inspections to verify proper effluent discharge. Gravity-fed septic systems with leach fields can provide "green" wastewater treatment from a simple design that conserves resources such as energy and land, preserves green space, and utilizes the natural properties of the soil to treat and reduce pollutants.

Wastewater Treatment Plant (WWTP) with Leach Field

The WWTP is a centralized facility within the site that incorporates physical and biological treatment processes to produce better effluent quality as compared to decentralized septic systems. Raw wastewater from various areas of the park is conveyed via pipes over long distances to the WWTP. Solids and debris are removed from the raw wastewater that enters a WWTP similar to the method for septic systems. After this initial treatment, oxygen is introduced via mechanical blowers to stimulate biological activity and break down the wastewater. Treated effluent then flows to a leach field.

The installation of a WWTP would involve construction activities such as ground disturbance for the footprint of the central facility and for all the connecting underground piping throughout the project site. The visual impact of a WWTP, which represents a new above-ground industrial feature within the natural setting of the project site, may be minimized by buffer landscaping. Alternatively, many components of the WWTP can be installed

underground to minimize visual impact to park users, however, this makes the WWTP more difficult to inspect and maintain. Mechanical and electrical components will still remain aboveground, housed in protective enclosures. Some of the mechanical and electrical equipment for the WWTP must be continuously run, which introduces persistent background noise. Individuals who are sensitive to odors and noise may perceive the impacts of the WWTP to the extent that it negatively affects their camping experience.

The design and construction of a WWTP is a multi-year endeavor that would be subject to uncertainties such as inflation, economic climate, or changes in supplies of labor and materials. Unlike septic systems, WWTPs have perpetual energy costs associated with powering the mechanical and electrical equipment (e.g., pumps, blowers, generators, and control panels) that facilitate treatment functions. Multiple pumping stations may be needed to transport untreated sewage over long distances to the centralized facility for treatment, which further increases resource commitments for utility infrastructure. The WWTP requires substantial long-term resource commitments beyond the design and construction of the facility due to its inherent technical complexities. The manpower commitments for a WWTP must include a licensed wastewater plant operator and specialized labor may be needed to ensure the proper maintenance of the mechanical and electrical equipment.

WWTPs can be designed to accommodate higher treatment capabilities if the intent is to produce wastewater effluent that is suitable for reuse applications such as the subsurface irrigation of non-edible plants. Advanced treatment (e.g., with chlorine or ultraviolet disinfection) is among the technological capabilities that may be incorporated in the design of WWTPs to achieve water conservation objectives through recycling and reuse. The quality of the reclaimed or recycled water would need to be monitored and must meet applicable DOH standards. Additional treatment via membrane filtration, reverse osmosis or ozonation may be needed to comply with more stringent regulatory requirements for surface irrigation applications involving recycled water. Effluent reuse also involves the development of a recycled water program and related planning, design and construction considerations that are ultimately beyond the scope of DLNR’s proposed project.

Multiple Aerobic Treatment Units (ATUs) with Leach Fields

An ATU is a smaller version of the centralized WWTP described in the previous section. The ATU utilizes physical and biological treatment processes similar to a WWTP. The ATU will feature solids and debris removal, then inject oxygen to stimulate aerobic bacteria to break down biodegradable waste. Aeration is accomplished via mechanical blowers; therefore, each ATU requires electrical power and introduces background

noise. Aerobic systems can provide a higher level of treatment as compared to conventional septic systems and may allow for a reduction in the size of the leach field. Multiple ATUs may be installed at various locations within the site to minimize underground piping and pumping facilities necessary to transport raw wastewater to a central location.

Small-scale, pre-engineered ATUs may consist of aboveground packaged treatment systems or underground systems. The installation of each aboveground system would most likely involve some excavation and ground disturbance to create a level area for its footprint. The visual impact of each aboveground ATU, which represents a new industrial feature within the natural setting of the project site, may be minimized by buffer landscaping. An aerobic tank that is installed underground will still have mechanical or electrical treatment components that are housed in water-tight or weather-proof aboveground enclosures. Each underground system would require excavation and ground disturbance for the tank system and for the footprint of any protective enclosures. Installing an underground ATU, however, will make inspection and maintenance more difficult. The visual impacts from underground aerobic systems are expected be similar to the impacts from septic systems and cesspools except for any aboveground components and related enclosures.

Both decentralized and centralized wastewater treatment systems will incorporate an aeration stage that involves long-term resource commitments beyond the initial installation for more frequent routine maintenance of the treatment components as compared to a conventional septic system that has no electrical and mechanical parts. Periodic removal (e.g., pumping) of the accumulated sludge or biosolids for off-site disposal is needed to ensure proper functionality. Specialized labor is needed for the proper operation of the moderately complex equipment components of ATUs.

The initial resource commitments for pre-engineered ATUs pertain to the procurement of materials, supplies and any required mechanical/electrical components. The manpower requirements for ATUs beyond the initial design, siting, and installation services are associated with periodic maintenance (e.g., pumping) to ensure proper functionality and to remove accumulated sludge or biosolids for off-site disposal; leach fields require visual inspections to verify proper effluent discharge.

Much like a centralized WWTP, ATUs can be designed to achieve water conservation objectives if the resulting effluent is suitable for reuse and recycling applications. A high level of treatment and/or disinfection allows treated effluent to be dispersed via subsurface drip lines into vegetative root zones. The disposal of treated wastewater from the ATU may be accomplished via natural processes such as nutrient absorption, evaporation from the soil surface and/or transpiration by non-edible plants. In addition to

higher initial costs, an ATU that is designed for advanced treatment capabilities is expected to require long-term resource commitments and specialized expertise for operations and maintenance. The quality of the recycled water would need to be monitored and must meet applicable DOH standards.

"Green" Wastewater Treatment

Both decentralized and centralized wastewater treatment systems can be designed to achieve desired objectives such as reducing pollution, conserving water, conserving land resources, conserving energy and utilizing natural treatment processes. The "green" objectives that may be accomplished via gravity septic systems, WWTPs and aerobic systems were previously discussed. Ecological wastewater treatment systems may utilize aquatic and wetland plants, insects, bacteria, algae, protozoa, plankton, snails and other organisms to produce the desired effluent quality and minimize the production of waste solids. A bioremediation system can be engineered as a stand-alone facility or for use in conjunction with decentralized or centralized systems. Aboveground bioremediation systems may require tanks, plumbing, screens, biofilters, reed beds, rocks, fans, pumps and other mechanical devices in order to mimic wetland functions whereas the treatment processes found in constructed wetlands may not require electrical or mechanical systems.

The installation of an aboveground, tank-based bioremediation system would most likely involve some excavation and ground disturbance to create a level area for its footprint. The visual impact of the aboveground tank feature and any protective enclosures may be minimized by buffer landscaping. There may be power requirements and noise if the bioremediation system includes an aeration process or mechanical/electrical components for filtration. Artificial wetlands can be constructed as surface flow systems with exposed water area, subsurface flow systems with gravel or artificial media, or hybrid systems that combine the features associated with the two main types. Constructed wetlands for wastewater treatment can create additional habitat for wildlife and would involve excavation and ground disturbance in proportion to its footprint and depth. Fill material such as gravel or sand may be needed if on-site material is considered unsuitable for the substrate. The wetland area may require the construction of a surrounding berm to keep wetland material in while preventing storm runoff inundation and overflow. The addition of a visually appealing living garden that retains water has the potential to introduce a safety hazard in a public use area; perimeter fencing would prevent unauthorized access to the constructed wetland but represents a new visual feature that may be minimized by buffer landscaping.

The initial resource commitments for bioremediation systems pertain to the procurement of materials, supplies and any required mechanical/electrical components such as pumps, filters or control systems. The operation and

maintenance of a bioremediation system may require specialized expertise related to the fields of ecological engineering, applied biology and ecology. Plants selected for the bioremediation system must be robust and acclimated to site conditions to ensure successful treatment. The creation of wetland habitat that may be attractive to Hawaiian waterbird species is expected to necessitate coordination with federal and state agencies to identify permit requirements, avoidance measures and recommendations for mitigation in the event of incidental takings of listed species. The design and construction phases may therefore span several years and be subject to uncertainties such as inflation, economic climate, or changes in supplies of labor and materials. The long-term resource commitments beyond the initial design, siting, and installation services include water quality monitoring and specialized labor for ensuring that the bioremediation system provides the desired treatment capability.

On-site wastewater systems that involve lengthy design, construction or installation periods are expected to prolong the use of temporary solutions at the project site such as portable toilets that are currently provided by the current lessee due to the limited nature of existing wastewater infrastructure; the portable toilets are expected to be removed upon expiration of the five-year lease. DLNR proposes to fulfill its stated commitment to improve wastewater infrastructure at the project site by utilizing septic systems with leach fields.

A centralized WWTP was eliminated from further consideration because there would be substantial land disturbance for the footprint of the WWTP and underground piping, and it introduces noise, odors and visual impacts in a natural setting. The initial resource commitments associated with a WWTP generally imply that other aspects of DLNR's project may be reduced or omitted in the event of unanticipated circumstances that cause delays in phasing and timing; the long-term financial expenditures for a licensed WWTP operator, electrical power and maintenance costs are expected to increase over time and may ultimately reduce the overall availability of funds for park purposes.

Multiple decentralized ATUs represent a possible but less desirable alternative because of concerns related to initial resource commitments, noise, electrical power and long-term maintenance costs. Aboveground ATUs introduce visual impacts whereas underground ATUs have less visual impact with only aboveground enclosures to house exposed electrical or mechanical components.

Bioremediation systems do not appear to be appropriate for the project site because these have the potential to create a safety hazard in a public use area. The introduction of wetland habitat can attract Hawaiian waterbird species to an area

with frequent day use human activity and overnight camping, which increases the potential for incidental takings of listed species. Tank-based bioremediation systems in contrast with constructed wetlands may require electrical power in addition to the long-term financial expenditures associated with water quality monitoring and specialized labor.

DLNR's preferred alternative is the utilization of gravity-fed septic systems with leach fields. This on-site wastewater system option achieves the objective of improving the wastewater system while balancing environmental considerations associated with the natural setting of the project site.

5. PERMITS AND APPROVALS

Although exact permitting and approval requirements will be determined during the design phase, the following list contains permits and approvals that may be required for the proposed project subsequent to the EA process:

State of Hawai‘i

- National Pollutant Discharge Elimination System Permit
- Community Noise Permit
- Community Noise Variance
- Non-Covered and/or Covered Source Permit (Air Quality)
- Lane Use Permit for Construction Work
- Oversized and Overweight Vehicles on State Highways Permit
- Shoreline Setback Determination

City and County of Honolulu

- Building Permit
- Grubbing, Grading, and Stockpiling Permit
- Erosion Control Plan/Best Management Practices
- SMA Use Permit (Major)

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6. DETERMINATION

A Finding of No Significant Impact (FONSI) determination is anticipated for the proposed project, which is not expected to have a significant impact on the physical or human environment. The supporting rationale for this finding as set forth in HAR Title 11, Chapter 200, Section 12, is discussed below.

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

Park improvements including the installation of new infrastructure (e.g., water, wastewater and electrical/communication systems) and construction of a comfort station and satellite restroom facilities will not endanger any natural or cultural resources. The construction contractor shall stop work and contact SHPD immediately in the event any unanticipated buried archaeological or cultural resources are encountered.

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

No beneficial uses of the environment will be curtailed as a result of the proposed project especially since the structures and associated infrastructure would be sited to optimize the functionality and spatial aesthetics of the park. DLNR's proposed project represents a continuation of the beneficial use of the project site for a public purpose.

(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;

The proposed project would be in conformance with State Environmental Policy, inclusive of its individual policies, goals, and guidelines for population growth; natural resources; biological resources; transportation; energy; and culture, as discussed in the individual resource categories throughout this EA.

(4) Substantially affects the economic welfare, social welfare, and cultural practices of the community or State;

The proposed project does not substantially or negatively affect the economic or social welfare and cultural practices of the community or State. The project creates short-term jobs for people in design and construction. DLNR's proposed project is not expected to negatively affect the cultural practices of the community or State.

(5) Substantially affects public health;

Public health will not be adversely affected during the construction phases of the proposed project due to the implementation of construction BMPs that will minimize temporary impacts. Short-term and temporary effects such as surface runoff, fugitive dust, noise, intermittent traffic, solid waste, and potential disruptions to utility services are expected to cease upon project completion. Completion of DLNR's proposed project would result in park structures and site infrastructure that conforms to applicable health and safety requirements including fire protection standards. The on-site wastewater system will comply with applicable DOH regulations.

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

No substantial secondary impacts such as population shifts are anticipated from the proposed project, which represents a continuation of existing park uses. The proposed site improvements help to ensure the continued use of the project site by the public for daytime outdoor recreational activities and beach access.

(7) Involves a substantial degradation of environmental quality;

The proposed project is not expected to degrade environmental quality. Environmental impacts that may occur during the various phases of construction will be mitigated through the implementation of construction BMPs, as appropriate. Appropriate mitigation measures have been identified throughout this EA.

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

The proposed project represents a long-term commitment by DLNR to provide outdoor recreational opportunities for the public that are mindful of the natural setting and site characteristics. Proposed improvements may be phased but are not part of or associated with a supplemental future action.

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

No species listed by the U.S. Fish and Wildlife Service or identified in the Endangered Species Act are expected to be affected by the proposed project. The project site does not contain habitat for proposed, candidate, or listed threatened or endangered species.

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

Short-term impacts to air quality, water quality or ambient noise levels may occur during construction phases; however, the temporary impacts are expected to be mitigated through proper construction techniques and compliance with applicable DOH rules and regulations. The BMPs implemented by the construction contractor are expected to ensure that no State or Federal air quality or water quality standards are violated. The installation of replacement park facilities and associated infrastructure are not expected to negatively impact ambient air quality and background noise levels since proposed improvements represent a continuation of current functions and activities at the project site.

(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, fresh water, or coastal waters;

The replacement park facilities and associated infrastructure will be sited to avoid environmentally sensitive areas (e.g., flood hazard zones) within project site. The project provides the opportunity to install replacement park facilities that comply with current building standards and site these structures farther away from the shoreline.

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

The replacement park facilities and associated infrastructure will not obstruct or affect scenic vistas and view planes. Landscaping may further reduce the visual impact of envisioned structures.

(13) Requires substantial energy consumption.

The replacement park facilities and associated infrastructure should not cause a substantial increase in energy consumption because the proposed project represents a continuation of current park operations with no substantive change in user levels from what had previously existed. The project site currently receives electrical service.

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7. PUBLIC AGENCY REVIEW AND CONSULTATION

7.1. Pre-Assessment Consultation

The consulted agencies, organizations, and individuals are listed below. There were twenty-four (24) formal responses to the pre-assessment consultation letter, as indicated by the ✓ below. Comments and responses are included in Appendix D.

Federal Agencies

✓ U.S. Fish and Wildlife Service

U.S. Department of Commerce, National Oceanic and Atmospheric Administration

National Marine Fisheries Service, Pacific Islands Regional Office

State of Hawai'i

✓ Department of Transportation

Department of Business, Economic Development and Tourism - Office of Planning

Department of Land and Natural Resources

Commission on Water Resource Management

✓ Division of Aquatic Resources

✓ Division of Forestry and Wildlife

✓ Division of State Parks

✓ Engineering Division

✓ Land Division

O'ahu Island Burial Council

✓ Office of Conservation and Coastal Lands

State Historic Preservation Division

Department of Education

✓ Windward District Office

Kahuku High and Intermediate School

Hawai'i State Public Library System

Hawai'i and Pacific Section, Documents Center

Kahuku Public and School Library

Department of Health

Office of Environmental Quality Control

✓ Clean Air Branch

✓ Clean Water Branch

Environmental Health Services Division

Environmental Management Division

✓ Environmental Planning Office

✓ Indoor and Radiological Health Branch

Safe Drinking Water Branch

State of Hawai'i (continued)

Department of Health (continued)
Solid and Hazardous Waste Branch
✓ Wastewater Branch
✓ Office of Hawaiian Affairs
Department of Hawaiian Home Lands
Senator for District 23
Representative for District 47

City and County of Honolulu

Department of Budget and Fiscal Services
✓ Department of Design and Construction
✓ Department of Enterprise Services
Department of Environmental Services
✓ Department of Parks and Recreation
Department of Planning and Permitting
✓ Department of Transportation Services
✓ Board of Water Supply
✓ Honolulu Fire Department
✓ Honolulu Police Department
Councilmember for District 2
Neighborhood Commission Office
Ko'olauloa Neighborhood Board No. 28

Utilities

Hawaiian Electric Company
Oceanic Time Warner Cable
Hawaiian Telcom
The Gas Company (dba Hawai'i Gas)

Organizations, Associations and Individuals

Cy Bridges
Hui Malama I Na Kupuna O Hawai'i Nei
✓ Lanihuli Community Development Corporation (Friends of Mālaekahana)
Hau'ula Community Association
Ka'a'awa Community Association
Kahuku Community Association
Ko'olauloa Hawaiian Civic Club
Lā'ie Community Association
Punalu'u Community Association
Sunset Beach Community Association

Neighboring or Nearby Property Owners and Recorded Lessees

5-6-001-011
5-6-001-012
5-6-001-013

5-6-001-026
5-6-001-027
5-6-001-028
5-6-001-029
5-6-001-030
5-6-001-031
5-6-001-032
5-6-001-033

5-6-001-066

5-6-001-068
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5-6-001-079
5-6-001-080
5-6-001-081
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5-6-001-083
5-6-001-084

5-6-001-086
5-6-001-087
5-6-001-088
5-6-001-089
5-6-001-090

Neighboring or Nearby Property Owners and Recorded Lessees (continued)

5-6-002-027
5-6-002-027 (0001 thru 0052)
5-6-002-036
5-6-002-045
5-6-002-048

✓ 5-6-006-006 (Hawai‘i Reserves, Inc.)
5-6-006-018
5-6-006-058

State Parks and The Limtiaco Consulting Group (TLCG) presented background information and briefly described the proposed project at the August 14, 2014 meeting of the Ko‘olauloa Neighborhood Board No. 28. TLCG responded to questions from the Board and attendees. The meeting agenda and minutes are included in Appendix D.

7.2. Draft EA Consultation

State Parks and TLCG will continue to coordinate and consult with governmental agencies that will review the Draft EA. Agency review comments and responses will be published in the Final EA. Public comments received from organizations and interested parties during the 30-day statutorily-mandated comment period will also be responded to and published in the Final EA.

8. REFERENCES

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APPENDIX A

Flood Hazard Assessment Report

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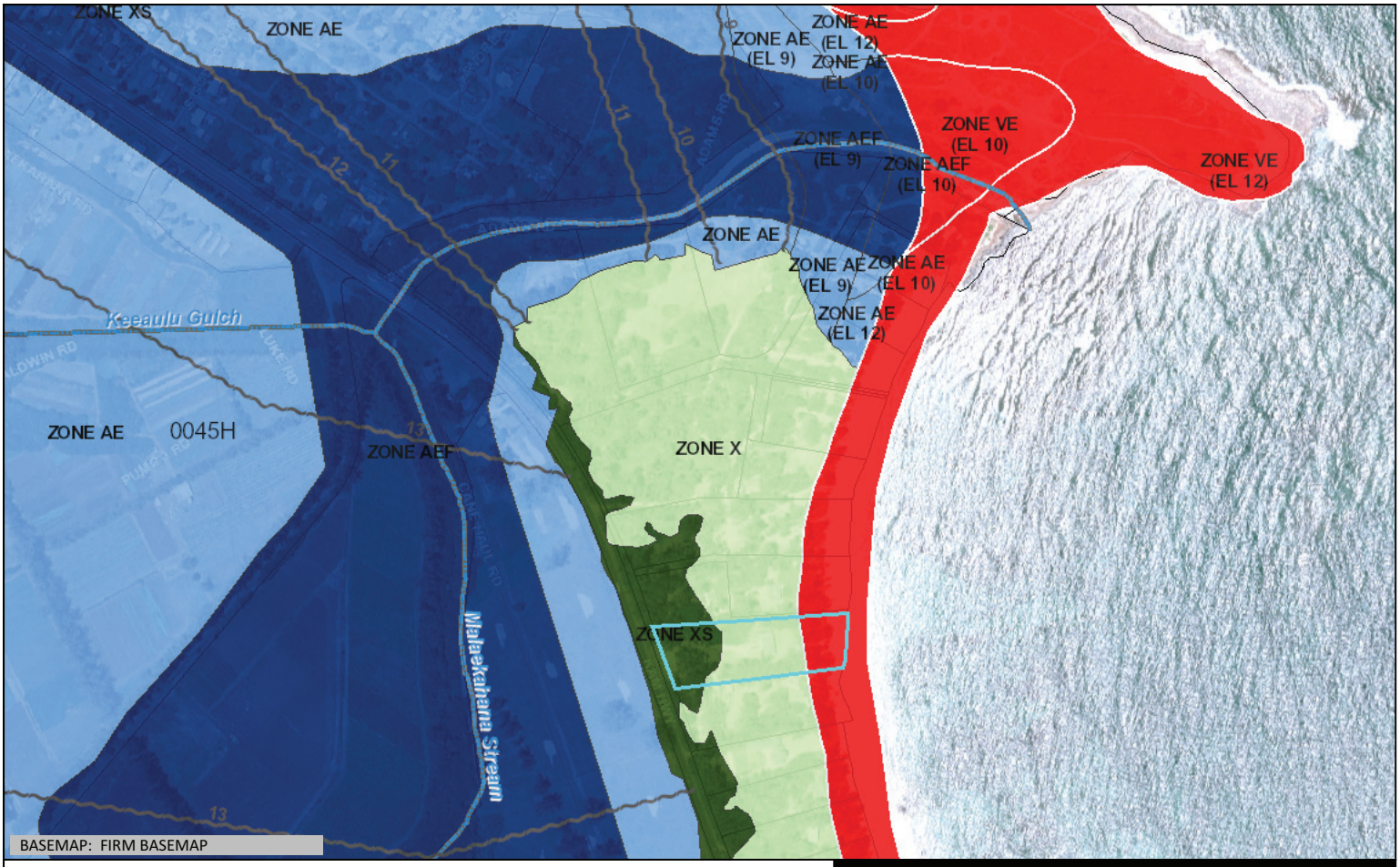


Flood Hazard Assessment Report

www.hawaiinfip.org

Malaekahana SRA - Kahuku

Property Information

COUNTY:	HONOLULU
TMK NO:	(1) 5-6-001:024
WATERSHED:	MALAEKAHANA
PARCEL ADDRESS:	UNKNOWN ADDRESS KAHUKU, HI 96731

Notes:

Flood Hazard Information

FIRM INDEX DATE:	NOVEMBER 05, 2014
LETTER OF MAP CHANGE(S):	NONE
FEMA FIRM PANEL:	15003C0045H
PANEL EFFECTIVE DATE:	NOVEMBER 05, 2014

THIS PROPERTY IS WITHIN A TSUNAMI EVACUTION ZONE: YES
FOR MORE INFO, VISIT: http://www.scd.hawaii.gov/

THIS PROPERTY IS WITHIN A DAM EVACUATION ZONE: NO
FOR MORE INFO, VISIT: http://dlnreng.hawaii.gov/dam/

0 400 800 ft

Disclaimer: The Hawaii Department of Land and Natural Resources (DLNR) assumes no responsibility arising from the use, accuracy, completeness, and timeliness of any information contained in this report. Viewers/Users are responsible for verifying the accuracy of the information and agree to indemnify the DLNR, its officers, and employees from any liability which may arise from its use of its data or information.

If this map has been identified as 'PRELIMINARY', please note that it is being provided for informational purposes and is not to be used for flood insurance rating. Contact your county floodplain manager for flood zone determinations to be used for compliance with local floodplain management regulations.

FLOOD HAZARD ASSESSMENT TOOL LAYER LEGEND
(*Note: legend does not correspond with NFHL)*

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD - The 1% annual chance flood (100-year), also know as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. SFHAs include Zone A, AE, AH, AO, V, and VE. The Base Flood Elevation (BFE) is the water surface elevation of the 1% annual chance flood. Mandatory flood insurance purchase applies in these zones:

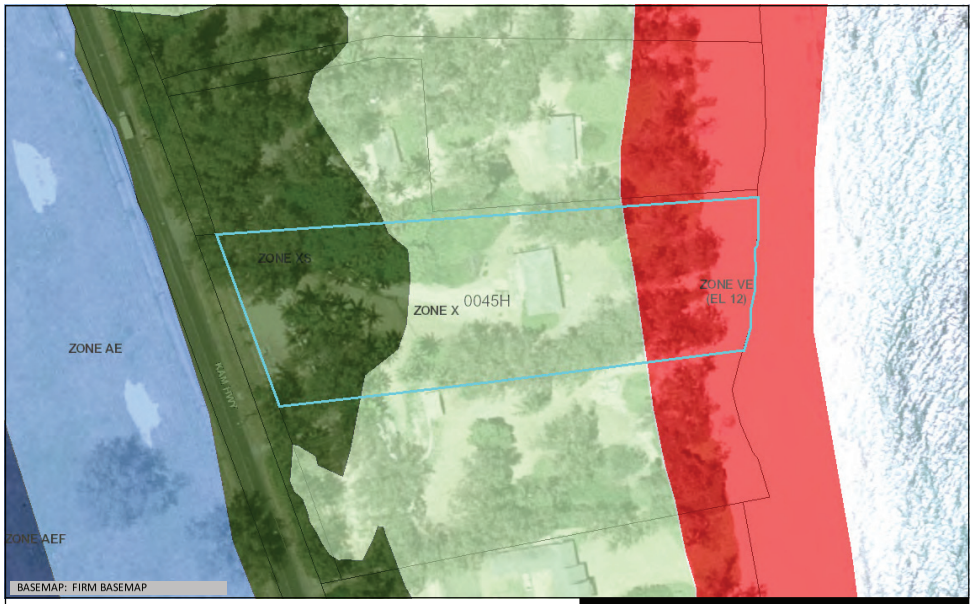
	Zone A: No BFE determined.
	Zone AE: BFE determined.
	Zone AH: Flood depths of 1 to 3 feet (usually areas of ponding); BFE determined.
	Zone AO: Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined.
	Zone V: Coastal flood zone with velocity hazard (wave action); no BFE determined.
	Zone VE: Coastal flood zone with velocity hazard (wave action); BFE determined.
	Zone AEF: Floodway areas in Zone AE. The floodway is the channel of stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without increasing the BFE.

NON-SPECIAL FLOOD HAZARD AREA - An area in a low-to-moderate risk flood zone. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

	Zone XS (X shaded): Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
	Zone X: Areas determined to be outside the 0.2% annual chance floodplain.

OTHER FLOOD AREAS

	Zone D: Unstudied areas where flood hazards are undetermined, but flooding is possible. No mandatory flood insurance purchase apply, but coverage is available in participating communities.



Flood Hazard Assessment Report

www.hawaiinfip.org

Malaekahana SRA - Kahuku

Property Information

COUNTY:	HONOLULU
TMK NO:	(1) 5-6-001:024
WATERSHED:	MALAEKAHANA
PARCEL ADDRESS:	UNKNOWN ADDRESS KAHUKU, HI 96731

Notes:

Flood Hazard Information

FIRM INDEX DATE:	NOVEMBER 05, 2014
LETTER OF MAP CHANGE(S):	NONE
FEMA FIRM PANEL:	15003C0045H
PANEL EFFECTIVE DATE:	NOVEMBER 05, 2014

THIS PROPERTY IS WITHIN A TSUNAMI EVACUTION ZONE: YES
FOR MORE INFO, VISIT: http://www.scd.hawaii.gov/

THIS PROPERTY IS WITHIN A DAM EVACUATION ZONE: NO
FOR MORE INFO, VISIT: http://dlnreng.hawaii.gov/dam/

N

0 100 200 ft

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FLOOD HAZARD ASSESSMENT TOOL LAYER LEGEND
(*Note: legend does not correspond with NFHL*)

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD - The 1% annual chance flood (100-year), also know as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. SFHAs include Zone A, AE, AH, AO, V, and VE. The Base Flood Elevation (BFE) is the water surface elevation of the 1% annual chance flood. Mandatory flood insurance purchase applies in these zones:

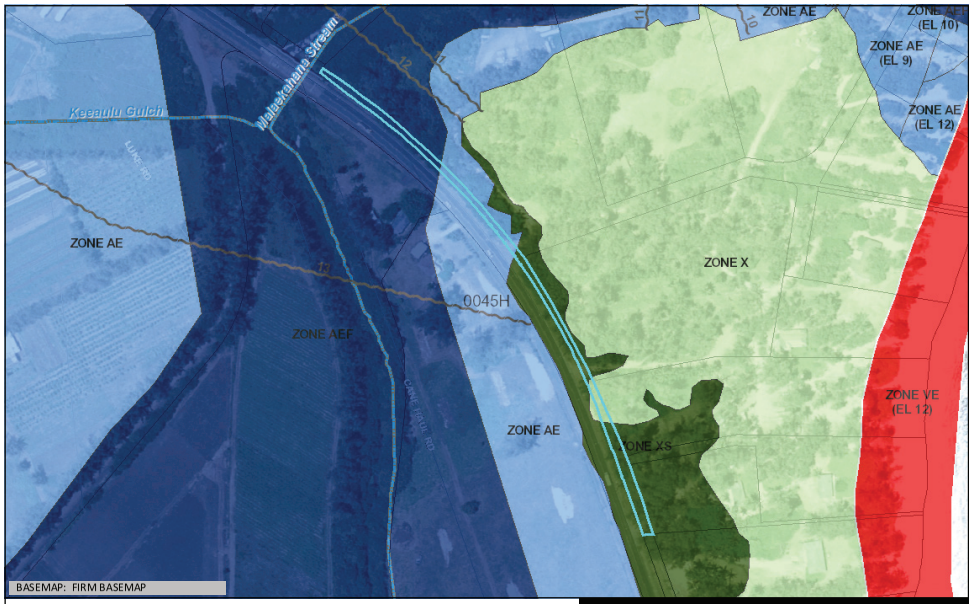
- **Zone A**: No BFE determined.
- **Zone AE**: BFE determined.
- **Zone AH**: Flood depths of 1 to 3 feet (usually areas of ponding); BFE determined.
- **Zone AO**: Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined.
- **Zone V**: Coastal flood zone with velocity hazard (wave action); no BFE determined.
- **Zone VE**: Coastal flood zone with velocity hazard (wave action); BFE determined.
- **Zone AEF**: Floodway areas in Zone AE. The floodway is the channel of stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without increasing the BFE.

NON-SPECIAL FLOOD HAZARD AREA - An area in a low-to-moderate risk flood zone. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

- **Zone XS (X shaded)**: Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- **Zone X**: Areas determined to be outside the 0.2% annual chance floodplain.

OTHER FLOOD AREAS

- **Zone D**: Unstudied areas where flood hazards are undetermined, but flooding is possible. No mandatory flood insurance purchase apply, but coverage is available in participating communities.



Flood Hazard Assessment Report

www.hawaiinfip.org

Malaekahana SRA - Kahuku

Property Information

COUNTY:	HONOLULU
TMK NO:	(1) 5-6-001:025
WATERSHED:	MALAEKAHANA
PARCEL ADDRESS:	UNKNOWN ADDRESS KAHUKU, HI 96731

Notes:

Flood Hazard Information

FIRM INDEX DATE:	NOVEMBER 05, 2014
LETTER OF MAP CHANGE(S):	NONE
FEMA FIRM PANEL:	15003C0045H
PANEL EFFECTIVE DATE:	NOVEMBER 05, 2014

THIS PROPERTY IS WITHIN A TSUNAMI EVACUTION ZONE: YES
FOR MORE INFO, VISIT: http://www.scd.hawaii.gov/

THIS PROPERTY IS WITHIN A DAM EVACUATION ZONE: NO
FOR MORE INFO, VISIT: http://dlnreng.hawaii.gov/dam/

N

0 200 400 ft

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FLOOD HAZARD ASSESSMENT TOOL LAYER LEGEND
(*Note: legend does not correspond with NFHL*)

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD - The 1% annual chance flood (100-year), also know as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. SFHAs include Zone A, AE, AH, AO, V, and VE. The Base Flood Elevation (BFE) is the water surface elevation of the 1% annual chance flood. Mandatory flood insurance purchase applies in these zones:

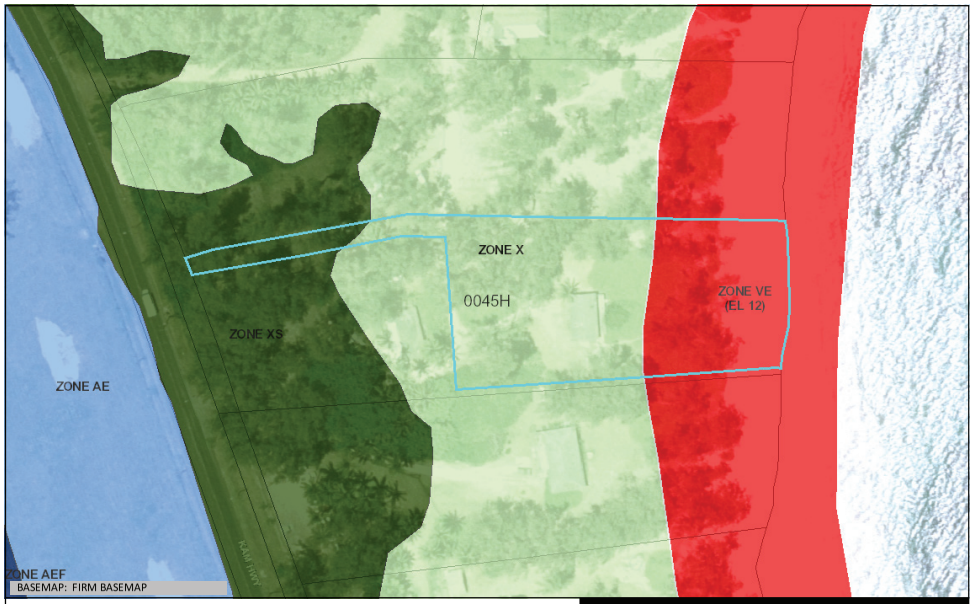
- **Zone A**: No BFE determined.
- **Zone AE**: BFE determined.
- **Zone AH**: Flood depths of 1 to 3 feet (usually areas of ponding); BFE determined.
- **Zone AO**: Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined.
- **Zone V**: Coastal flood zone with velocity hazard (wave action); no BFE determined.
- **Zone VE**: Coastal flood zone with velocity hazard (wave action); BFE determined.
- **Zone AEF**: Floodway areas in Zone AE. The floodway is the channel of stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without increasing the BFE.

NON-SPECIAL FLOOD HAZARD AREA - An area in a low-to-moderate risk flood zone. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

- **Zone XS (X shaded)**: Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- **Zone X**: Areas determined to be outside the 0.2% annual chance floodplain.

OTHER FLOOD AREAS

- **Zone D**: Unstudied areas where flood hazards are undetermined, but flooding is possible. No mandatory flood insurance purchase apply, but coverage is available in participating communities.



Flood Hazard Assessment Report

www.hawaiinfip.org

Malaekahana SRA - Kahuku

Property Information

COUNTY:	HONOLULU
TMK NO:	(1) 5-6-001:045
WATERSHED:	MALAEKAHANA
PARCEL ADDRESS:	UNKNOWN ADDRESS KAHUKU, HI 96731

Notes:

Flood Hazard Information

FIRM INDEX DATE:	NOVEMBER 05, 2014
LETTER OF MAP CHANGE(S):	NONE
FEMA FIRM PANEL:	15003C0045H
PANEL EFFECTIVE DATE:	NOVEMBER 05, 2014

THIS PROPERTY IS WITHIN A TSUNAMI EVACUTION ZONE: YES
FOR MORE INFO, VISIT: http://www.scd.hawaii.gov/

THIS PROPERTY IS WITHIN A DAM EVACUATION ZONE: NO
FOR MORE INFO, VISIT: http://dlnreng.hawaii.gov/dam/

0 100 200 ft

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FLOOD HAZARD ASSESSMENT TOOL LAYER LEGEND

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SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD - The 1% annual chance flood (100-year), also know as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. SFHAs include Zone A, AE, AH, AO, V, and VE. The Base Flood Elevation (BFE) is the water surface elevation of the 1% annual chance flood. Mandatory flood insurance purchase applies in these zones:

- **Zone A**: No BFE determined.
- **Zone AE**: BFE determined.
- **Zone AH**: Flood depths of 1 to 3 feet (usually areas of ponding); BFE determined.
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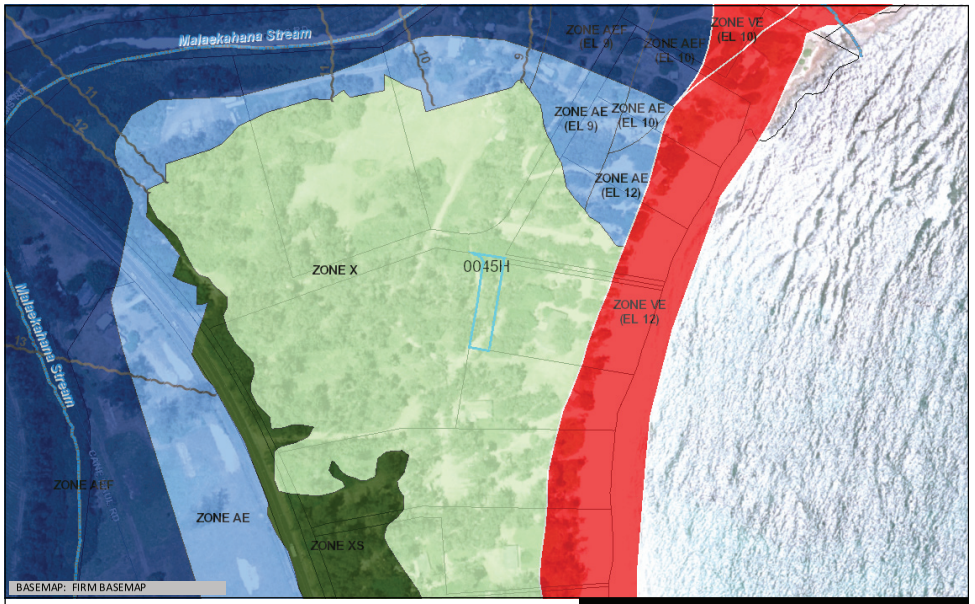
- **Zone V**: Coastal flood zone with velocity hazard (wave action); no BFE determined.
- **Zone VE**: Coastal flood zone with velocity hazard (wave action); BFE determined.
- **Zone AEF**: Floodway areas in Zone AE. The floodway is the channel of stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without increasing the BFE.

NON-SPECIAL FLOOD HAZARD AREA - An area in a low-to-moderate risk flood zone. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

- **Zone XS (X shaded)**: Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- **Zone X**: Areas determined to be outside the 0.2% annual chance floodplain.

OTHER FLOOD AREAS

- **Zone D**: Unstudied areas where flood hazards are undetermined, but flooding is possible. No mandatory flood insurance purchase apply, but coverage is available in participating communities.



Flood Hazard Assessment Report

www.hawaiinfip.org

Malaekahana SRA - Kahuku

Property Information

COUNTY:	HONOLULU
TMK NO:	(1) 5-6-001:046
WATERSHED:	MALAEKAHANA
PARCEL ADDRESS:	UNKNOWN ADDRESS KAHUKU, HI 96731

Notes:

Flood Hazard Information

FIRM INDEX DATE:	NOVEMBER 05, 2014
LETTER OF MAP CHANGE(S):	NONE
FEMA FIRM PANEL:	15003C0045H
PANEL EFFECTIVE DATE:	NOVEMBER 05, 2014

THIS PROPERTY IS WITHIN A TSUNAMI EVACUTION ZONE: YES
FOR MORE INFO, VISIT: http://www.scd.hawaii.gov/

THIS PROPERTY IS WITHIN A DAM EVACUATION ZONE: NO
FOR MORE INFO, VISIT: http://dlnreng.hawaii.gov/dam/

0 200 400 ft

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FLOOD HAZARD ASSESSMENT TOOL LAYER LEGEND

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SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD - The 1% annual chance flood (100-year), also know as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. SFHAs include Zone A, AE, AH, AO, V, and VE. The Base Flood Elevation (BFE) is the water surface elevation of the 1% annual chance flood. Mandatory flood insurance purchase applies in these zones:

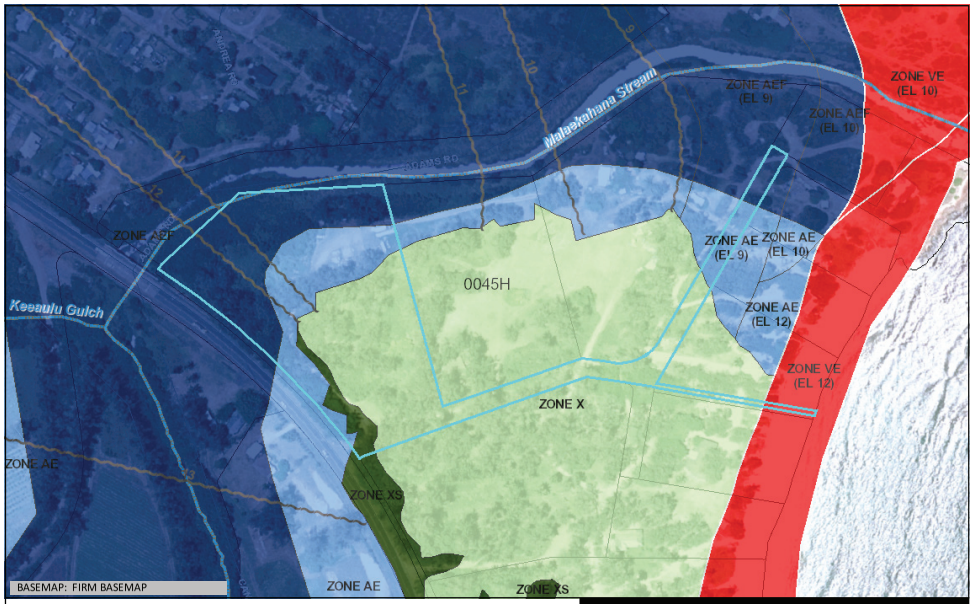
- **Zone A**: No BFE determined.
- **Zone AE**: BFE determined.
- **Zone AH**: Flood depths of 1 to 3 feet (usually areas of ponding); BFE determined.
- **Zone AO**: Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined.
- **Zone V**: Coastal flood zone with velocity hazard (wave action); no BFE determined.
- **Zone VE**: Coastal flood zone with velocity hazard (wave action); BFE determined.
- **Zone AEF**: Floodway areas in Zone AE. The floodway is the channel of stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without increasing the BFE.

NON-SPECIAL FLOOD HAZARD AREA - An area in a low-to-moderate risk flood zone. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

- **Zone XS (X shaded)**: Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- **Zone X**: Areas determined to be outside the 0.2% annual chance floodplain.

OTHER FLOOD AREAS

- **Zone D**: Unstudied areas where flood hazards are undetermined, but flooding is possible. No mandatory flood insurance purchase apply, but coverage is available in participating communities.



Flood Hazard Assessment Report

www.hawaiinfip.org

Malaekahana SRA - Kahuku

Property Information

COUNTY:	HONOLULU
TMK NO:	(1) 5-6-001:047
WATERSHED:	MALAEKAHANA
PARCEL ADDRESS:	UNKNOWN ADDRESS KAHUKU, HI 96731

Notes:

Flood Hazard Information

FIRM INDEX DATE:	NOVEMBER 05, 2014
LETTER OF MAP CHANGE(S):	NONE
FEMA FIRM PANEL:	15003C0045H
PANEL EFFECTIVE DATE:	NOVEMBER 05, 2014

THIS PROPERTY IS WITHIN A TSUNAMI EVACUTION ZONE: YES
FOR MORE INFO, VISIT: http://www.scd.hawaii.gov/

THIS PROPERTY IS WITHIN A DAM EVACUATION ZONE: NO
FOR MORE INFO, VISIT: http://dlnreng.hawaii.gov/dam/

0 200 400 ft

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FLOOD HAZARD ASSESSMENT TOOL LAYER LEGEND
(*Note: legend does not correspond with NFHL*)

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Zone A: No BFE determined.

Zone AE: BFE determined.

Zone AH: Flood depths of 1 to 3 feet (usually areas of ponding); BFE determined.

Zone AO: Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined.

Zone V: Coastal flood zone with velocity hazard (wave action); no BFE determined.

Zone VE: Coastal flood zone with velocity hazard (wave action); BFE determined.

Zone AEF: Floodway areas in Zone AE. The floodway is the channel of stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without increasing the BFE.

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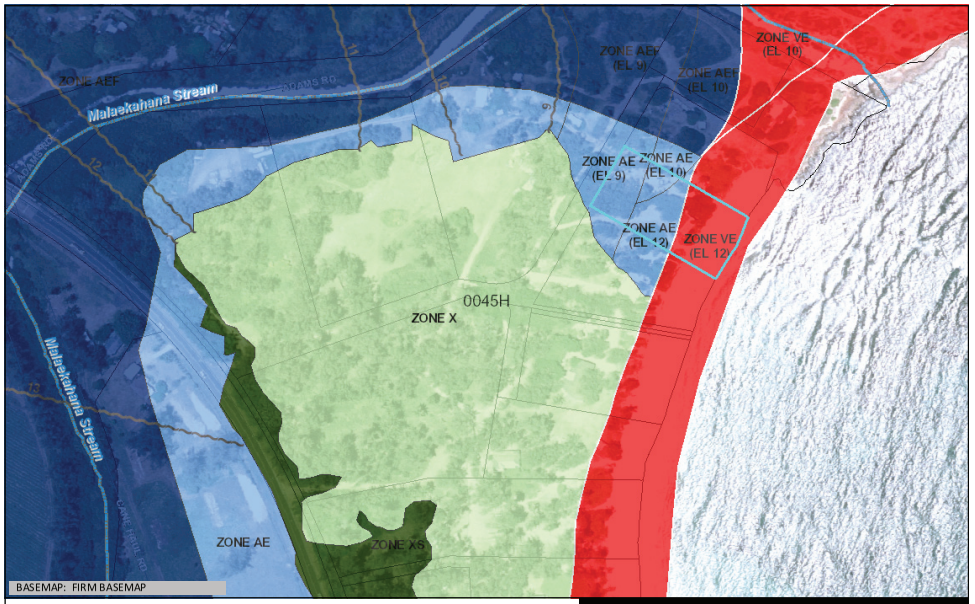
OTHER FLOOD AREAS

Zone D: Unstudied areas where flood hazards are undetermined, but flooding is possible. No mandatory flood insurance purchase apply, but coverage is available in participating communities.



Flood Hazard Assessment Report

www.hawaiinfip.org

Malaekahana SRA - Kahuku

Property Information

COUNTY:	HONOLULU
TMK NO:	(1) 5-6-001:049
WATERSHED:	MALAEKAHANA
PARCEL ADDRESS:	56-335E KAM HWY KAHUKU, HI 96731

Notes:

Flood Hazard Information

FIRM INDEX DATE:	NOVEMBER 05, 2014
LETTER OF MAP CHANGE(S):	NONE
FEMA FIRM PANEL:	15003C0045H
PANEL EFFECTIVE DATE:	NOVEMBER 05, 2014

THIS PROPERTY IS WITHIN A TSUNAMI EVACUTION ZONE: YES
FOR MORE INFO, VISIT: http://www.scd.hawaii.gov/

THIS PROPERTY IS WITHIN A DAM EVACUATION ZONE: NO
FOR MORE INFO, VISIT: http://dlnreng.hawaii.gov/dam/

0 200 400 ft

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FLOOD HAZARD ASSESSMENT TOOL LAYER LEGEND
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Zone AE: BFE determined.

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OTHER FLOOD AREAS

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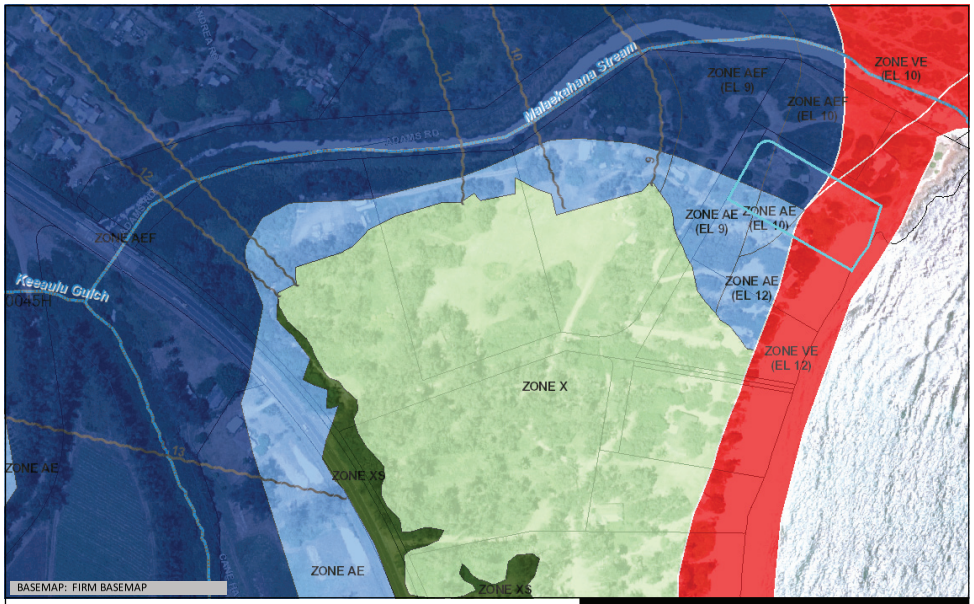

Flood Hazard Assessment Report

www.hawaiinfip.org

Malaekahana SRA - Kahuku

Property Information

COUNTY:	HONOLULU
TMK NO:	(1) 5-6-001:051
WATERSHED:	MALAEKAHANA
PARCEL ADDRESS:	56-335C KAM HWY KAHUKU, HI 96731

Notes:

Flood Hazard Information

FIRM INDEX DATE:	NOVEMBER 05, 2014
LETTER OF MAP CHANGE(S):	NONE
FEMA FIRM PANEL:	15003C0045H
PANEL EFFECTIVE DATE:	NOVEMBER 05, 2014

THIS PROPERTY IS WITHIN A TSUNAMI EVACUTION ZONE: YES
FOR MORE INFO, VISIT: http://www.scd.hawaii.gov/

THIS PROPERTY IS WITHIN A DAM EVACUATION ZONE: NO
FOR MORE INFO, VISIT: http://dlnreng.hawaii.gov/dam/

0 200 400 ft

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FLOOD HAZARD ASSESSMENT TOOL LAYER LEGEND
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OTHER FLOOD AREAS

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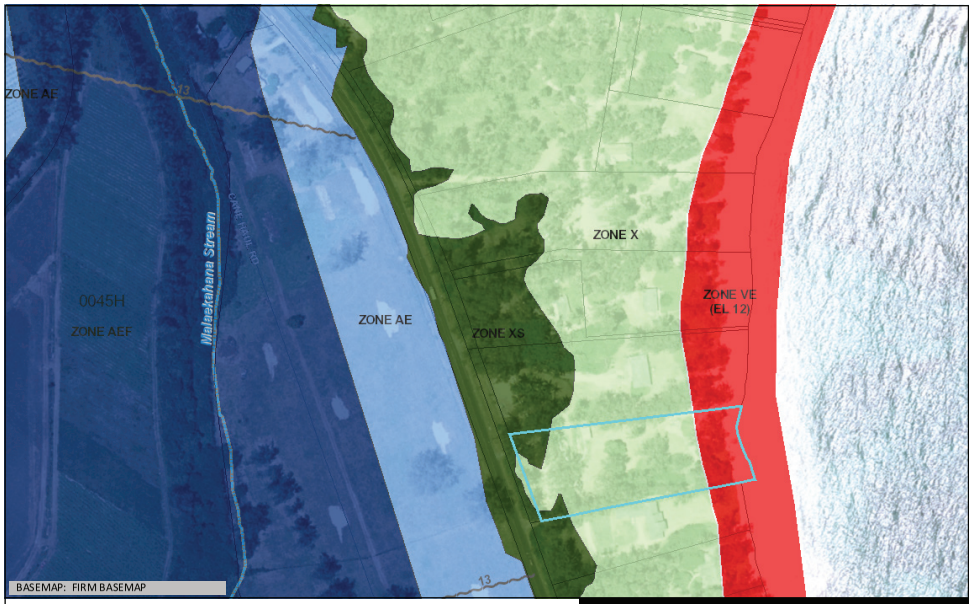

Flood Hazard Assessment Report

www.hawaiinfip.org

Malaekahana SRA - Kahuku

Property Information

COUNTY:	HONOLULU
TMK NO:	(1) 5-6-001:053
WATERSHED:	MALAEKAHANA
PARCEL ADDRESS:	UNKNOWN ADDRESS KAHUKU, HI 96731

Notes:

Flood Hazard Information

FIRM INDEX DATE:	NOVEMBER 05, 2014
LETTER OF MAP CHANGE(S):	NONE
FEMA FIRM PANEL:	15003C0045H
PANEL EFFECTIVE DATE:	NOVEMBER 05, 2014

THIS PROPERTY IS WITHIN A TSUNAMI EVACUTION ZONE: YES
FOR MORE INFO, VISIT: http://www.scd.hawaii.gov/

THIS PROPERTY IS WITHIN A DAM EVACUATION ZONE: NO
FOR MORE INFO, VISIT: http://dlnreng.hawaii.gov/dam/

0 200 400 ft

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FLOOD HAZARD ASSESSMENT TOOL LAYER LEGEND
(*Note: legend does not correspond with NFHL*)

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD - The 1% annual chance flood (100-year), also know as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. SFHAs include Zone A, AE, AH, AO, V, and VE. The Base Flood Elevation (BFE) is the water surface elevation of the 1% annual chance flood. Mandatory flood insurance purchase applies in these zones:

- **Zone A**: No BFE determined.
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- **Zone AEF**: Floodway areas in Zone AE. The floodway is the channel of stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without increasing the BFE.

NON-SPECIAL FLOOD HAZARD AREA - An area in a low-to-moderate risk flood zone. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

- **Zone XS (X shaded)**: Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- **Zone X**: Areas determined to be outside the 0.2% annual chance floodplain.

OTHER FLOOD AREAS

- **Zone D**: Unstudied areas where flood hazards are undetermined, but flooding is possible. No mandatory flood insurance purchase apply, but coverage is available in participating communities.



Flood Hazard Assessment Report

www.hawaiinfip.org

Property Information

COUNTY:	HONOLULU
TMK NO:	(1) 5-6-001:054
WATERSHED:	MALAEKAHANA
PARCEL ADDRESS:	UNKNOWN ADDRESS KAHUKU, HI 96731

Notes:

Flood Hazard Information

FIRM INDEX DATE:	NOVEMBER 05, 2014
LETTER OF MAP CHANGE(S):	NONE
FEMA FIRM PANEL:	15003C0045H
PANEL EFFECTIVE DATE:	NOVEMBER 05, 2014

THIS PROPERTY IS WITHIN A TSUNAMI EVACUTION ZONE: YES
FOR MORE INFO, VISIT: http://www.scd.hawaii.gov/

THIS PROPERTY IS WITHIN A DAM EVACUATION ZONE: NO
FOR MORE INFO, VISIT: http://dlnreng.hawaii.gov/dam/

0 100 200 ft

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FLOOD HAZARD ASSESSMENT TOOL LAYER LEGEND
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OTHER FLOOD AREAS

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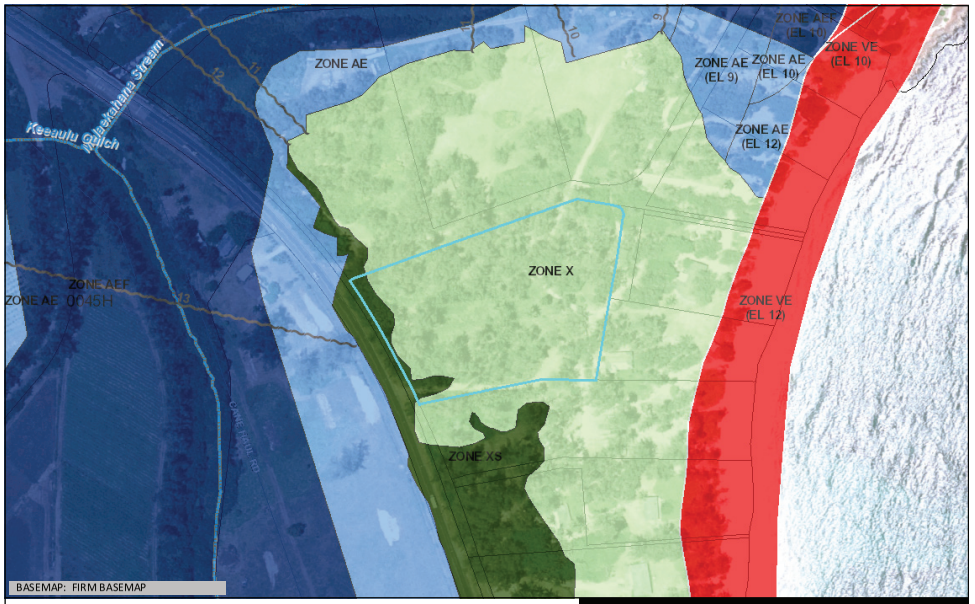

Flood Hazard Assessment Report

www.hawaiinfip.org

Malaekahana SRA - Kahuku

Property Information

COUNTY:	HONOLULU
TMK NO:	(1) 5-6-001:055
WATERSHED:	MALAEKAHANA
PARCEL ADDRESS:	UNKNOWN ADDRESS KAHUKU, HI 96731

Notes:

Flood Hazard Information

FIRM INDEX DATE:	NOVEMBER 05, 2014
LETTER OF MAP CHANGE(S):	NONE
FEMA FIRM PANEL:	15003C0045H
PANEL EFFECTIVE DATE:	NOVEMBER 05, 2014

THIS PROPERTY IS WITHIN A TSUNAMI EVACUTION ZONE: YES
FOR MORE INFO, VISIT: http://www.scd.hawaii.gov/

THIS PROPERTY IS WITHIN A DAM EVACUATION ZONE: NO
FOR MORE INFO, VISIT: http://dlnreng.hawaii.gov/dam/

0 200 400 ft

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FLOOD HAZARD ASSESSMENT TOOL LAYER LEGEND
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NON-SPECIAL FLOOD HAZARD AREA - An area in a low-to-moderate risk flood zone. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

- **Zone XS (X shaded)**: Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- **Zone X**: Areas determined to be outside the 0.2% annual chance floodplain.

OTHER FLOOD AREAS

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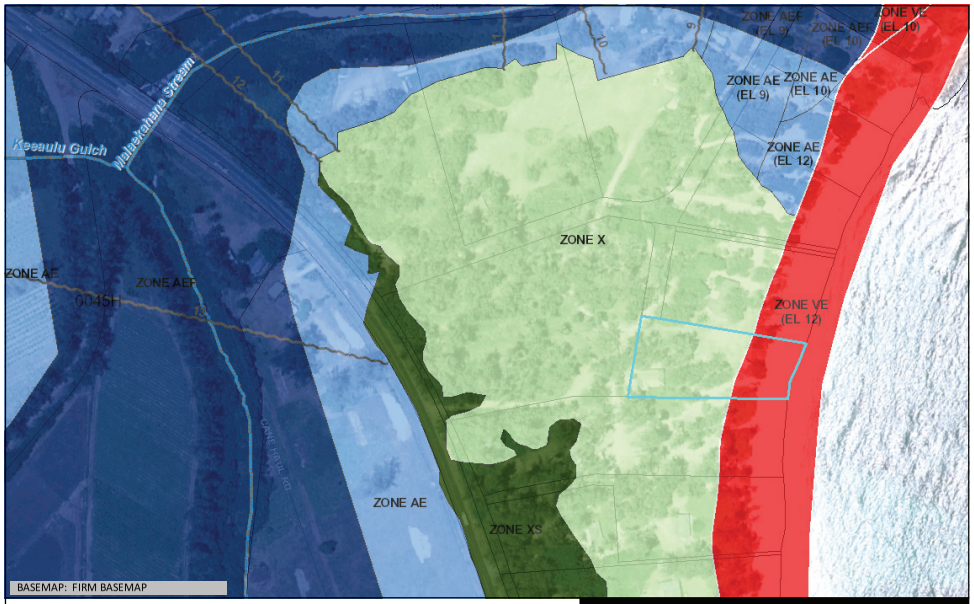

Flood Hazard Assessment Report

www.hawaiinfip.org

Malaekahana SRA - Kahuku

Property Information

COUNTY:	HONOLULU
TMK NO:	(1) 5-6-001:056
WATERSHED:	MALAEKAHANA
PARCEL ADDRESS:	UNKNOWN ADDRESS KAHUKU, HI 96731

Notes:

Flood Hazard Information

FIRM INDEX DATE:	NOVEMBER 05, 2014
LETTER OF MAP CHANGE(S):	NONE
FEMA FIRM PANEL:	15003C0045H
PANEL EFFECTIVE DATE:	NOVEMBER 05, 2014

THIS PROPERTY IS WITHIN A TSUNAMI EVACUTION ZONE: YES
FOR MORE INFO, VISIT: http://www.scd.hawaii.gov/

THIS PROPERTY IS WITHIN A DAM EVACUATION ZONE: NO
FOR MORE INFO, VISIT: http://dlnreng.hawaii.gov/dam/

0 200 400 ft

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FLOOD HAZARD ASSESSMENT TOOL LAYER LEGEND

(Note: legend does not correspond with NFHL)

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- **Zone XS (X shaded)**: Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- **Zone X**: Areas determined to be outside the 0.2% annual chance floodplain.

OTHER FLOOD AREAS

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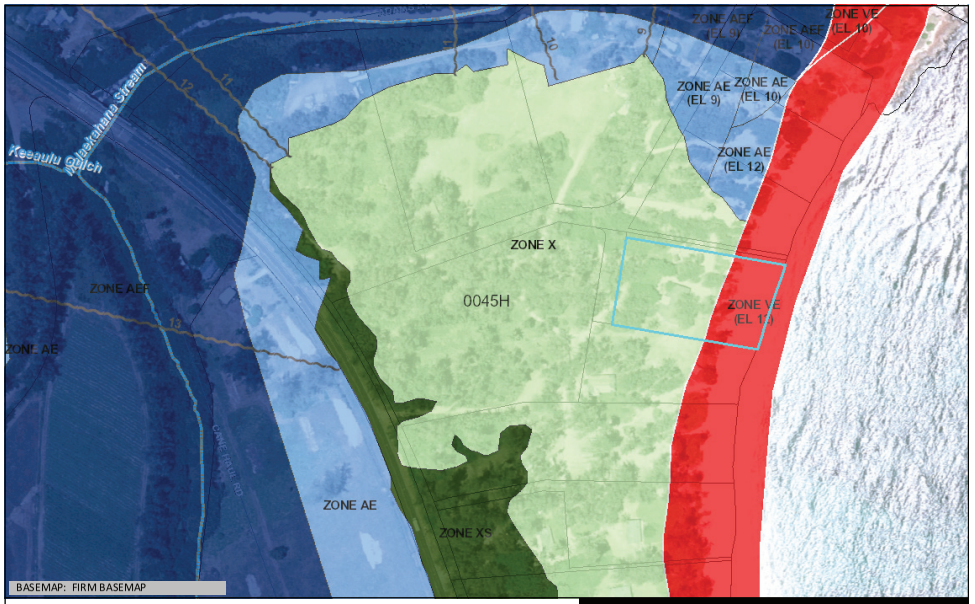

Flood Hazard Assessment Report

www.hawaiinfip.org

Malaekahana SRA - Kahuku

Property Information

COUNTY:	HONOLULU
TMK NO:	(1) 5-6-001:057
WATERSHED:	MALAEKAHANA
PARCEL ADDRESS:	56-335B KAM HWY KAHUKU, HI 96731

Notes:

Flood Hazard Information

FIRM INDEX DATE:	NOVEMBER 05, 2014
LETTER OF MAP CHANGE(S):	NONE
FEMA FIRM PANEL:	15003C0045H
PANEL EFFECTIVE DATE:	NOVEMBER 05, 2014

THIS PROPERTY IS WITHIN A TSUNAMI EVACUTION ZONE: YES
FOR MORE INFO, VISIT: http://www.scd.hawaii.gov/

THIS PROPERTY IS WITHIN A DAM EVACUATION ZONE: NO
FOR MORE INFO, VISIT: http://dlnreng.hawaii.gov/dam/

0 200 400 ft

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FLOOD HAZARD ASSESSMENT TOOL LAYER LEGEND

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OTHER FLOOD AREAS

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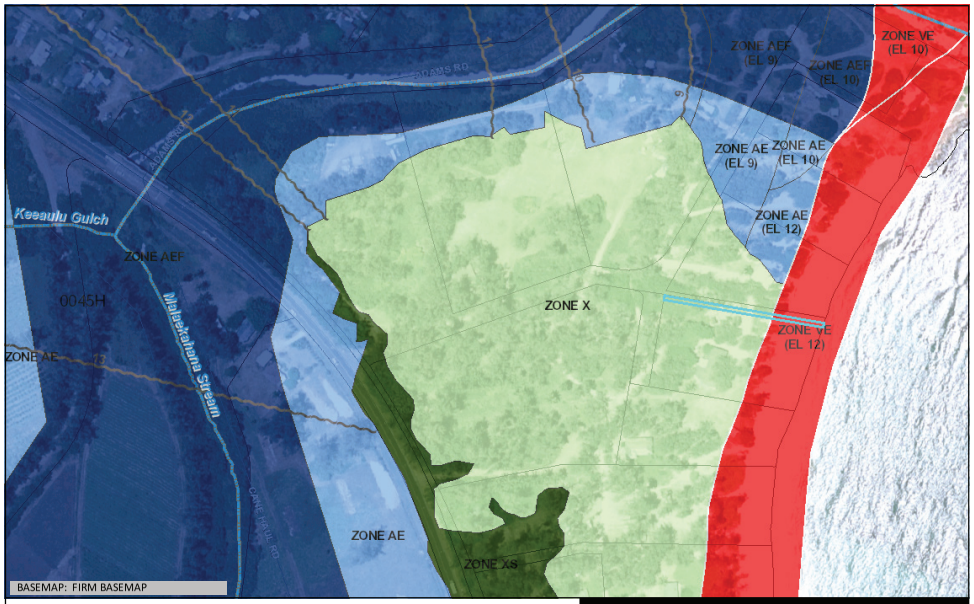

Flood Hazard Assessment Report

www.hawaiinfip.org

Malaekahana SRA - Kahuku

Property Information

COUNTY:	HONOLULU
TMK NO:	(1) 5-6-001:058
WATERSHED:	MALAEKAHANA
PARCEL ADDRESS:	UNKNOWN ADDRESS KAHUKU, HI 96731

Notes:

Flood Hazard Information

FIRM INDEX DATE:	NOVEMBER 05, 2014
LETTER OF MAP CHANGE(S):	NONE
FEMA FIRM PANEL:	15003C0045H
PANEL EFFECTIVE DATE:	NOVEMBER 05, 2014

THIS PROPERTY IS WITHIN A TSUNAMI EVACUTION ZONE: YES
FOR MORE INFO, VISIT: http://www.scd.hawaii.gov/

THIS PROPERTY IS WITHIN A DAM EVACUATION ZONE: NO
FOR MORE INFO, VISIT: http://dlnreng.hawaii.gov/dam/

N

0 200 400 ft

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FLOOD HAZARD ASSESSMENT TOOL LAYER LEGEND
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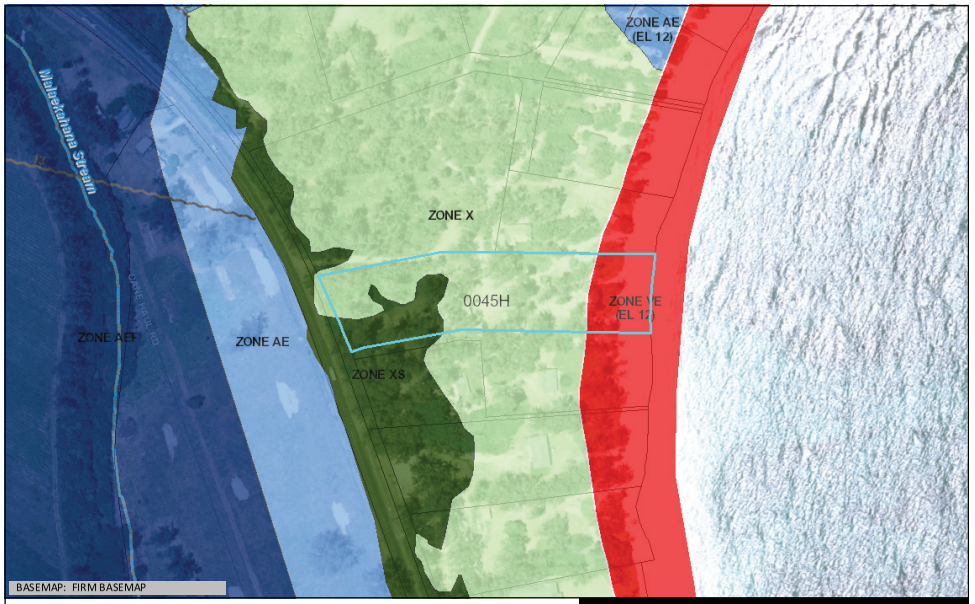

Flood Hazard Assessment Report

www.hawaiinfip.org

Malaekahana SRA - Kahuku

Property Information

COUNTY:	HONOLULU
TMK NO:	(1) 5-6-001:059
WATERSHED:	MALAEKAHANA
PARCEL ADDRESS:	UNKNOWN ADDRESS KAHUKU, HI 96731

Notes:

Flood Hazard Information

FIRM INDEX DATE:	NOVEMBER 05, 2014
LETTER OF MAP CHANGE(S):	NONE
FEMA FIRM PANEL:	15003C0045H
PANEL EFFECTIVE DATE:	NOVEMBER 05, 2014

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FOR MORE INFO, VISIT: http://www.scd.hawaii.gov/

THIS PROPERTY IS WITHIN A DAM EVACUATION ZONE: NO
FOR MORE INFO, VISIT: http://dlnreng.hawaii.gov/dam/

N

0 200 400 ft

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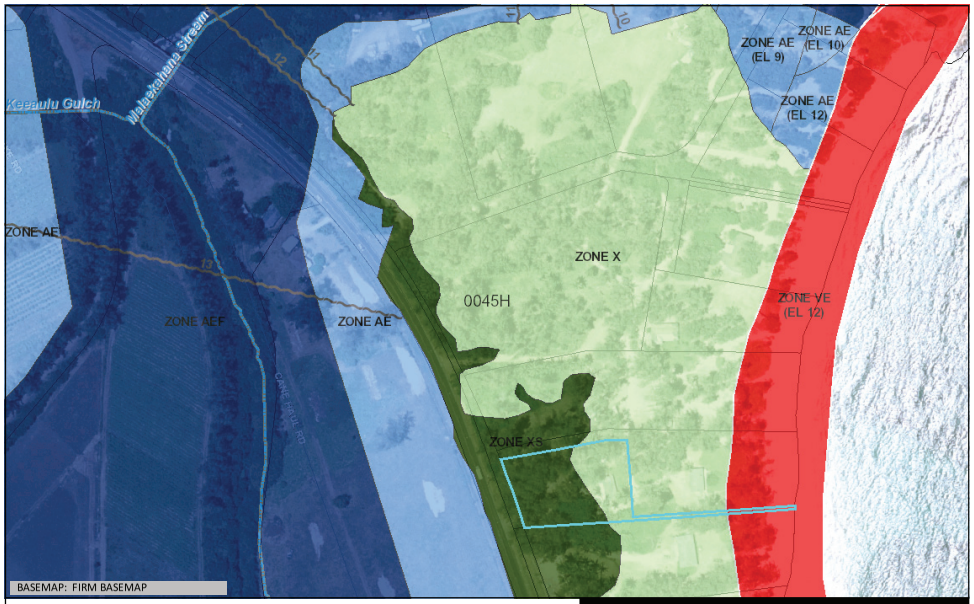

Flood Hazard Assessment Report

www.hawaiinfip.org

Malaekahana SRA - Kahuku

Property Information

COUNTY:	HONOLULU
TMK NO:	(1) 5-6-001:060
WATERSHED:	MALAEKAHANA
PARCEL ADDRESS:	UNKNOWN ADDRESS KAHUKU, HI 96731

Notes:

Flood Hazard Information

FIRM INDEX DATE:	NOVEMBER 05, 2014
LETTER OF MAP CHANGE(S):	NONE
FEMA FIRM PANEL:	15003C0045H
PANEL EFFECTIVE DATE:	NOVEMBER 05, 2014

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FOR MORE INFO, VISIT: http://www.scd.hawaii.gov/

THIS PROPERTY IS WITHIN A DAM EVACUATION ZONE: NO
FOR MORE INFO, VISIT: http://dlnreng.hawaii.gov/dam/

0 200 400 ft

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FLOOD HAZARD ASSESSMENT TOOL LAYER LEGEND
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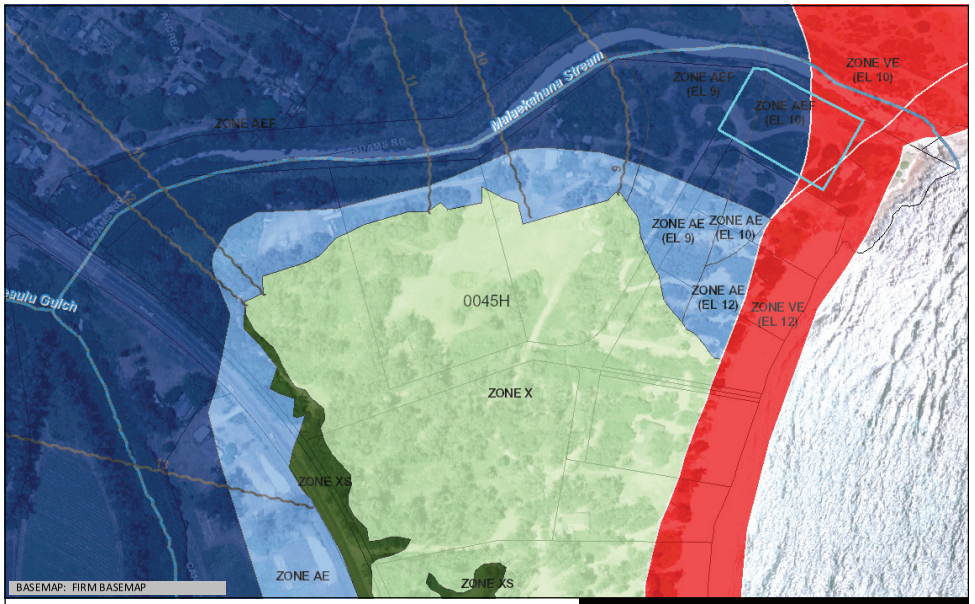

Flood Hazard Assessment Report

www.hawaiinfip.org

Malaekahana SRA - Kahuku

Property Information

COUNTY:	HONOLULU
TMK NO:	(1) 5-6-001:061
WATERSHED:	MALAEKAHANA
PARCEL ADDRESS:	56-335F KAM HWY KAHUKU, HI 96731

Notes:

Flood Hazard Information

FIRM INDEX DATE:	NOVEMBER 05, 2014
LETTER OF MAP CHANGE(S):	NONE
FEMA FIRM PANEL:	15003C0045H
PANEL EFFECTIVE DATE:	NOVEMBER 05, 2014

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FOR MORE INFO, VISIT: http://www.scd.hawaii.gov/

THIS PROPERTY IS WITHIN A DAM EVACUATION ZONE: NO
FOR MORE INFO, VISIT: http://dlnreng.hawaii.gov/dam/

0 200 400 ft

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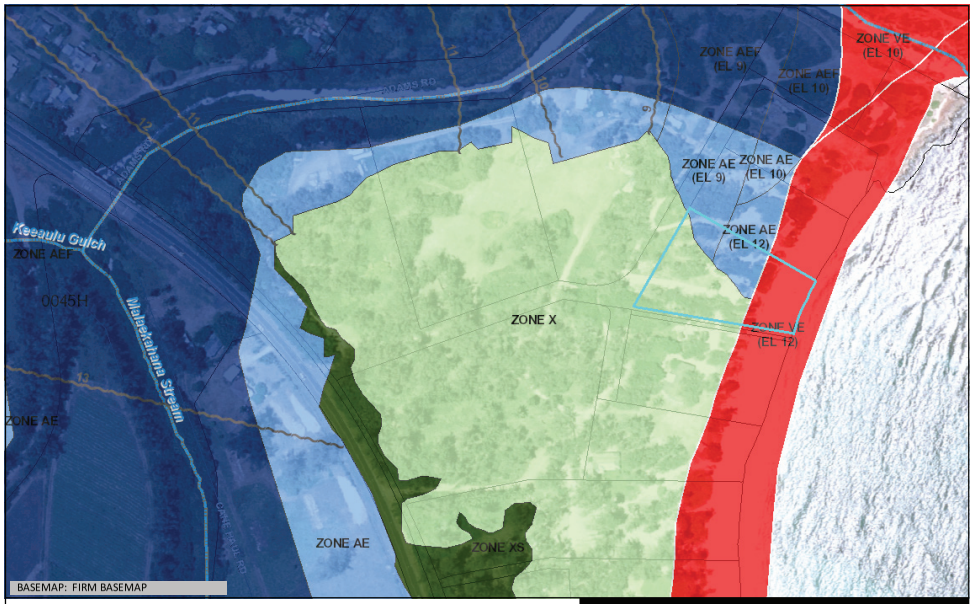

Flood Hazard Assessment Report

www.hawaiinfip.org

Malaekahana SRA - Kahuku

Property Information

COUNTY:	HONOLULU
TMK NO:	(1) 5-6-001:062
WATERSHED:	MALAEKAHANA
PARCEL ADDRESS:	56-335D KAM HWY KAHUKU, HI 96731

Notes:

Flood Hazard Information

FIRM INDEX DATE:	NOVEMBER 05, 2014
LETTER OF MAP CHANGE(S):	NONE
FEMA FIRM PANEL:	15003C0045H
PANEL EFFECTIVE DATE:	NOVEMBER 05, 2014

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FOR MORE INFO, VISIT: http://www.scd.hawaii.gov/

THIS PROPERTY IS WITHIN A DAM EVACUATION ZONE: NO
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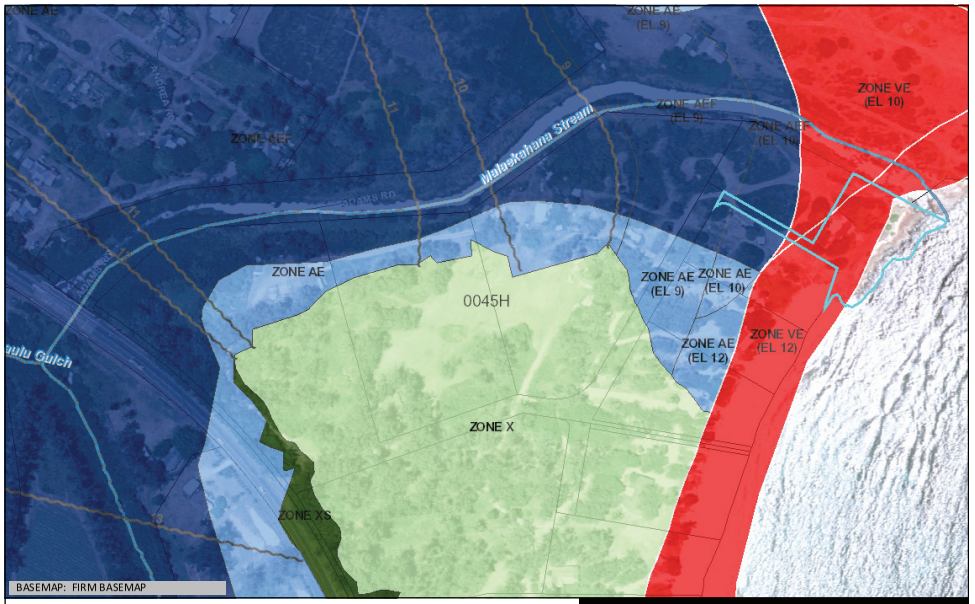

Flood Hazard Assessment Report

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Malaekahana SRA - Kahuku

Property Information

COUNTY:	HONOLULU
TMK NO:	(1) 5-6-001:063
WATERSHED:	MALAEKAHANA
PARCEL ADDRESS:	UNKNOWN ADDRESS KAHUKU, HI 96731

Notes:

Flood Hazard Information

FIRM INDEX DATE:	NOVEMBER 05, 2014
LETTER OF MAP CHANGE(S):	NONE
FEMA FIRM PANEL:	15003C0045H
PANEL EFFECTIVE DATE:	NOVEMBER 05, 2014

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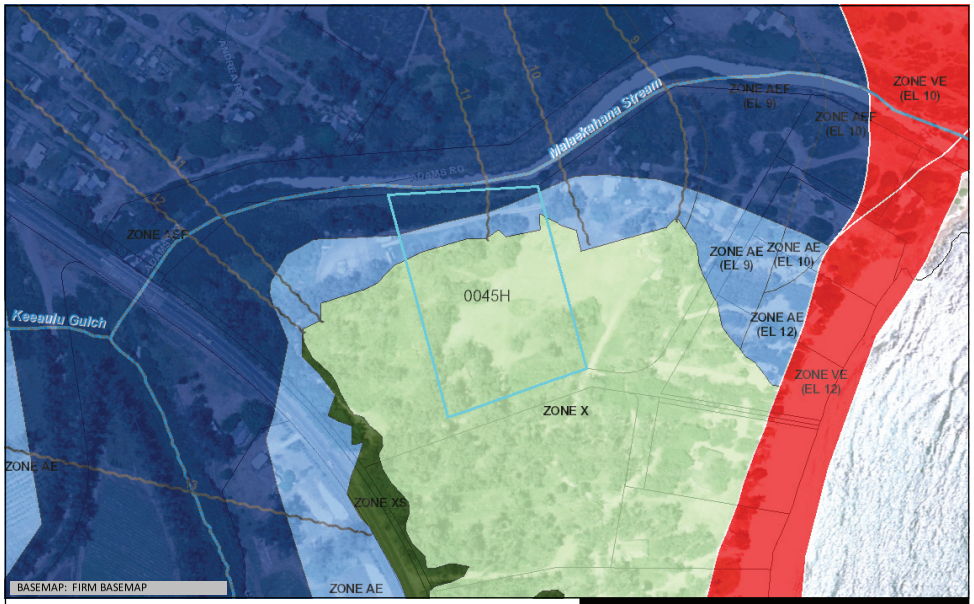

Flood Hazard Assessment Report

www.hawaiinfip.org

Malaekahana SRA - Kahuku

Property Information

COUNTY: HONOLULU
TMK NO: (1) 5-6-001:064
WATERSHED: MALAEKAHANA
PARCEL ADDRESS: UNKNOWN ADDRESS
KAHUKU, HI 96731

Notes:

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FEMA FIRM PANEL: 15003C0045H
PANEL EFFECTIVE DATE: NOVEMBER 05, 2014

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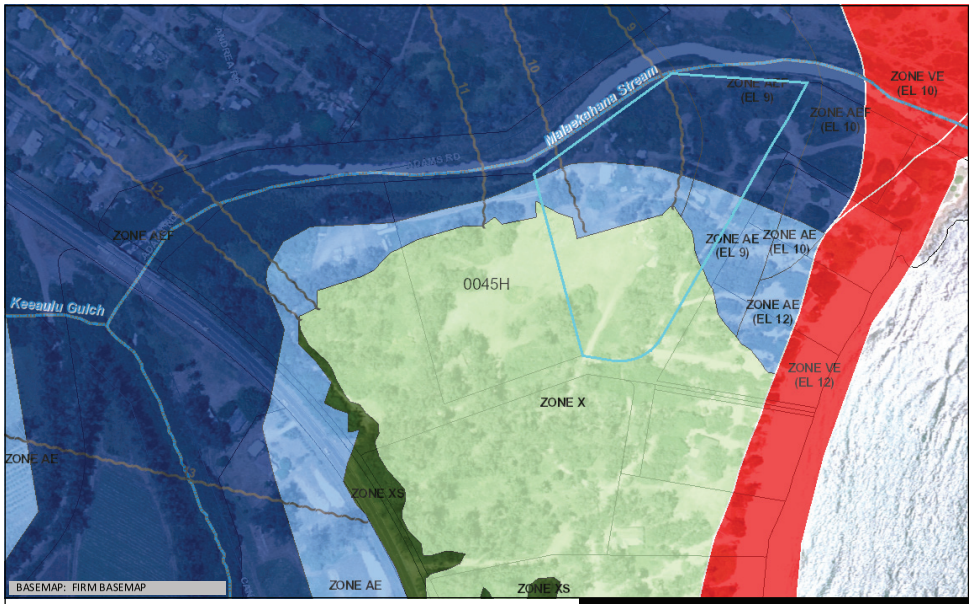

Flood Hazard Assessment Report

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Malaekahana SRA - Kahuku

Property Information

COUNTY: HONOLULU
TMK NO: (1) 5-6-001:065
WATERSHED: MALAEKAHANA
PARCEL ADDRESS: UNKNOWN ADDRESS
KAHUKU, HI 96731

Notes:

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APPENDIX B

Archaeological Inventory Survey Report

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SCS Project Number 1647-1 AIS

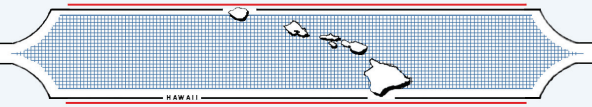
AN ARCHAEOLOGICAL INVENTORY SURVEY REPORT FOR THE MĀLAEKAHANA STATE RECREATION AREA KAHUKU SECTION MĀLAEKAHANA AHUPUA`A, KO`OLAULOA DISTRICT ISLAND OF O`AHU, HAWAI`I [TMK: (1) 5-6-001: VARIOUS]

Prepared by:
Cathleen A. Dagher, B.A.
and
Robert L. Spear, Ph.D.

February 2016
DRAFT

Prepared for:
The Division of State Parks
at the request of
The Limitiaco Consulting Group
1622 Kanakanui Street
Honolulu, HI 96817

SCIENTIFIC CONSULTANT SERVICES Inc.



1347 Kapiolani Blvd., Suite 408 Honolulu Hawai`i 96814

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ABSTRACT

At the request of the Limitiaco Consulting Group, for the Division of State Parks, Scientific Consultant Services, Inc. (SCS) conducted an archaeological inventory survey (AIS) of 36.0 acres of land in advance of improvements at the Mālakahana State Recreation Area (SRA), Kahuku Section. The project area is located in the town of Lā`ie, Mālaekahana Ahupua`a, Ko`olauloa District, Island of O`ahu, Hawai`i [TMK: (1) 5-6-001: 047, 049, 051, 053, 055 through 057, 059, 061 through 065].

The AIS was conducted in order to identify and document historic properties, within the proposed development area at Mālaekahana SRA, to gather sufficient information on these properties, to evaluate the significance of any newly identified historic properties, to determine the project effect on these properties, and to make mitigation recommendations to address possible adverse impacts to identified historic properties, pursuant to Hawaii Administrative Rules (HAR) § 13-284 and HAR § 13-276. A secondary goal of the current archaeological inventory survey was to further investigate a subsurface cultural deposit previously identified in 1981, by the Division of State Parks (Yent and Ota 1982) that was visible in the eroding shoreline adjacent to Malaekahana Stream. This site is outside of the area to be affected by the proposed development, but State Parks wanted to better understand the nature and extent of the site for management, education, and preservation purposes. Following further investigation by SCS, the exposed cultural deposit was subsequently designated State Site 50-80-02-7774.

During the current archaeological inventory survey, a total of 25 stratigraphic trenches were excavated. Twenty-four of the trenches (ST-1 through ST-24) were excavated within the proposed development areas and revealed no cultural remains whatsoever. Stratigraphic Trench 25 was excavated within State Site 50-80-02-7774, which was outside of the proposed areas of development, in addition to eleven shovel probes and one test unit. These excavations collectively revealed a contiguous cultural deposit (the previously identified State Site 50-80-02-7774) and ten additional features in subsurface contexts (SSFE-1 through SSFE-10). Subsurface Features 1, 2, 3, and 5, 6, and 7 consist of post molds; Subsurface Features 8, 9, and 10 consist of pit features. Possible midden materials consisting of marine and terrestrial vertebrate, marine shell, charcoal, burnt *kukui*, and Traditional-type artifacts were collected from the cultural layer and the subsurface features. One isolated human tooth was collected from SP-11. Subsurface Feature 4 consists of an *in situ* human burial representing a single individual. Based on context, construction methods and materials, feature type, and associated artifacts all features were interpreted as pre-Contact in age. Thus, State Site 50-50-02-7774 was interpreted as a pre-Contact habitation complex with a burial component.

A radiocarbon sample collected from State Site 50-80-02-7774, Subsurface Feature 7, yielded a conventional radiocarbon age of 300±30 BP. Calibrated at 1 Sigma, the radiocarbon sample yielded dates ranging from 1520AD to 1580AD (74 % probability) and from 1620AD to 1650AD (26% probability). Calibrated at 2 Sigma, the radiocarbon yielded a date ranging from 1480AD to 1660AD (100% probability). Thus, the age of State Site 50-80-02-7774 is interpreted as ranging from 1480AD to 1660AD, firmly within the pre-Contact Period, as this date has the highest percentage of probability.

State Site 50-80-02-7774 has been evaluated in accordance with criteria established for the Hawai`i State Register of Historic Places (HAR§13-284-6) and found to be significant under criterion "d" (for information content) and “e” (for cultural significance). Based on the current findings (including, feature density given the sample size), and in keeping with the mission of State Parks, State Site 50-80-02-7774 is recommended for preservation. Outside of Site 7774, no additional sites were encountered during the inventory survey project, but due to the well-established rate of occurrence of significant Traditional deposits and burials in the surrounding nearshore region, and the project area coralline sand context, an archaeological monitoring program is recommended for various development project aspects. State Sites 50-80-02-7774 is assessed as being significant under the following criteria: criteria “d”, as the site is likely to yield information important for research on the pre-Contact Period in Hawai`i, and under criterion “e”, as it has important cultural value to the native Hawaiian people.

Despite the negative findings in the project area where park improvements are planned, the potential for undocumented features, including burials, remains and we recommend an archaeological monitoring plan (AMP) be completed, outlining specific activities to be monitored during the construction phase as a precautionary measure.

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INTRODUCTION

At the request of Limitiaco Consulting Group, for the Division of State Parks, Scientific Consultant Services, Inc. (SCS) conducted an archaeological inventory survey (AIS) of 36.0 acres of land in advance of improvements at the Mālakahana State Recreation Area, Kahuku Section. The project area is located in located in the town of Lā`ie, Mālaekahana Ahupua`a Ko`olauloa District, Island of O`ahu, Hawai`i [TMK: (1) 5-6-001: 047, 049, 051, 053, 055 through 057, 059, 061 through 065] (Figures 1 through 3). The project area is owned by the State of Hawai`i.

The archaeological inventory survey fieldwork was conducted from January 26 through February 5, 2015, by SCS archaeologists Jeff Putzi, B.A. and Guerin Tome, B.A., under the direction of Robert L. Spear, Ph.D., Principal Investigator. The AIS was performed in order to identify and document historic properties, within the proposed development area at Mālaekahana SRA, to gather sufficient information on these properties, to evaluate the significance of any newly identified historic properties, to determine the project effect on these properties, and to make mitigation recommendations to address possible adverse impacts to identified historic properties, pursuant to Hawaii Administrative Rules (HAR) § 13-284 and HAR § 13-276. A secondary goal of the current archaeological inventory survey was to further investigate a subsurface cultural deposit previously identified in 1981 by the Department of State Parks (Yent and Ota 1982) that is visible in the eroding shoreline adjacent to Malaekahana Stream. This site is outside of the area to be affected by the proposed development, but State Parks wanted to better understand the nature and extent of the site for management, education, and preservation purposes. Following further investigation by SCS, the exposed cultural deposit was subsequently designated State Site 50-80-02-7774.

During the current archaeological inventory survey, a total of 25 stratigraphic trenches (ST) were excavated. Twenty-four of the trenches (ST-1 through ST-24) were excavated within the proposed development areas revealed no cultural remains whatsoever. Stratigraphic Trench 25 was excavated within State Site 50-80-02-7774, which was outside of the proposed areas of development, in addition to eleven shovel probes and one test unit. These excavations collectively revealed a contiguous cultural deposit (the previously identified State Site 50-80-02-7774) and ten additional features in subsurface contexts (SSFE-1 through SSFE-10). Subsurface Features 1, 2, 3, and 5, 6, and 7 consist of post molds; Subsurface Features 8, 9, and 10 consist of pit features. Possible midden materials consisting of marine and terrestrial vertebrate, marine shell, charcoal, burnt *kukui*, and Traditional-type artifacts were collected from the cultural layer

and the subsurface features. One isolated human tooth was collected from SP-11. Subsurface Feature 4 consists of an *in situ* human burial representing a single individual. Based on context, construction methods and materials, feature type, and associated artifacts all features were interpreted as pre-Contact in age. Thus, State Site 50-50-02-7774 was interpreted as a pre-Contact habitation site with a burial component. Outside of Site 7774, no additional sites were encountered during the inventory survey project.

GEOGRAPHIC SETTING

The island of O`ahu ranks third in size of the eight main islands in the Hawaiian Archipelago. The Ko`olau and Wai`anae Mountain ranges (forming the eastern and western portions of the island, respectively), 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). The region were the project area is located was created by delta drainage from the Ko`olau Mountains. As the modern reef formed offshore, a barrier was created leaving the drainage from the mountains to form a lagoon behind it. Numerous volcanic eruptions created a number of today's well-known landmarks, including the Mōkapu Peninsula, on the windward side of O`ahu, Ka`au Crater, Kaimukī Dome, and Diamond Head Crater (Stearns (1966:86-87). According to Stearns (Ibid: 89):

> The most spectacular and one of the youngest eruptions on Oahu occurred about 5, 000 years ago when a fissure opened through Round Top and Tantalus. High fire fountains played along the fissure, and glowing lava made huge firefalls down the step valley walls into Pauoa, Makiki, and Manoa valleys.

PROJECT DESCRIPTION

The improvements to Mālakahana State Recreation Area, Kahuku Section, will include the installation of new infrastructure (e.g., water, wastewater and electrical/communication systems) and construction of a comfort station and satellite restroom facilities. The project includes the replacement of the administration office, a security office and seven cabins along with related improvements. The structures and associated infrastructure would be sited to optimize the functionality and spatial aesthetics of the park. Proposed park improvements may be phased due to cost and available funding options (Appendix A).



Figure 1: USGS (Kahuku 1998) Quadrangle Map Showing Project Area Location.

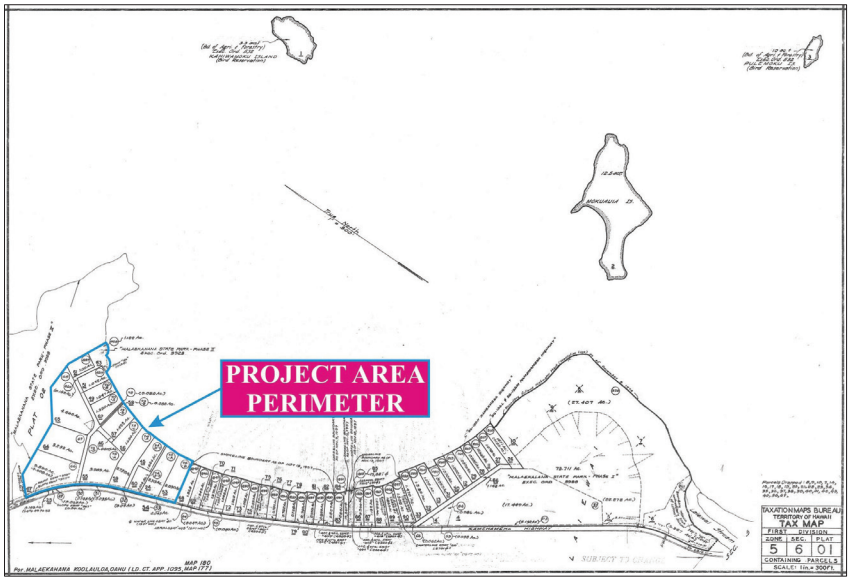

Figure 2: Tax Map Key [TMK: (1) 5-6-001] Showing Project Area Location.

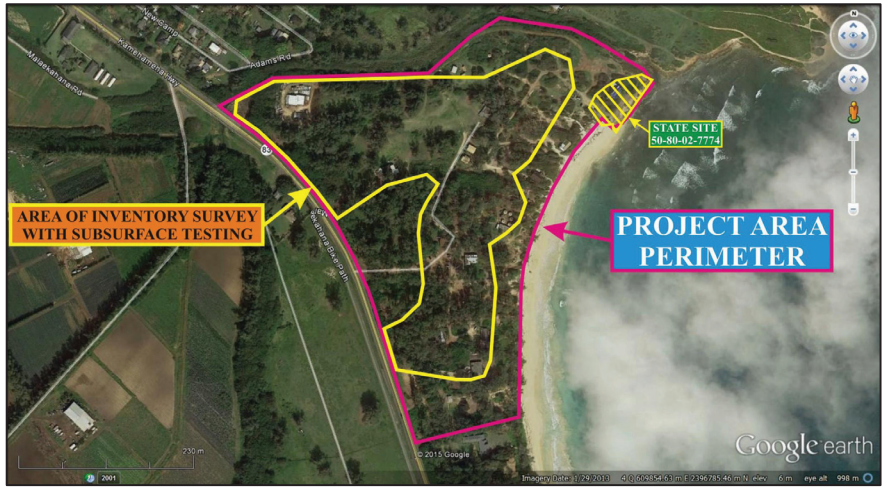

Figure 3: Google Earth Image (Aerial imagery from Google, Digital Globe dated) Showing the Project Area Perimeter and the Perimeter of the Proposed Area of Impact.

PROJECT AREA

The 36.0-acre project area is in the town of Lā`ie, Mālaekahana Ahupua`a Ko`olauloa District, Island of O`ahu, Hawai`i [TMK: (1) 5-6-001: 047, 049, 051, 053, 055 through 057, 059, 061 through 065] (see Figures 1 through 3). The project area is situated along the east (windward) coast of the island of O`ahu, on the northern portion of Mālakahana Bay, between sea level and approximately 10 feet above mean sea level (amsl). Kamehameha Highway forms the western project area boundary, Mālakahana Bay forms the northern boundary, the Pacific Ocean forms the eastern boundary, and private residences are located to the south.

Naturally occurring beds of *Isognomen californicum*, a euryhaline bivalve are located approximately 40 meters (m) northeast of Shovel Probe 10 (SP-10). The beds are situated within Malaekahana Stream. Colonies of *Nerita picea*, a marine gastropod, were also observed living on the exposed limestone karst landscape along the shoreline.

CLIMATE

Compared with other locations in Windward O`ahu, the project area is only moderately wet, with mean annual rainfall of approximately 1154 mm (45 in**)** (Giambelluca *et al.* 2013). In general, the climate here is more similar to the relatively drier North Shore of O`ahu, than it is to the rest of the Windward coast. Particularly in during the pre-Contact Period, i.e., before the advent of commercial farming, ranching, and other ventures in this area, a great amount of through-flowing, fresh water would have been locally available in the streams that drain the uplands to the west of the project area.

SOILS

According to Foote *et al.* (1972: Sheet Map 46; Figure 4), two types of soils - Beaches and Jaucus Sand - are present in the project area. The coastal portion, approximately 15 percent, of the project area is comprised Beaches (BS) Soil Series. According to Foote (*et al.* 1972:28), BS deposits are typically "…light-colored sands derived from ocean corals and seashells." This type of deposit is most often utilized for recreational purposes and as resorts.

The remaining 85 percent of the project area consist of soils of the Jaucas Series (Foote *et al.* 1972: 48-49), specifically Jaucas sand (JaC). Soils of the Jaucas Series typically are comprised of well-drained calcareous soils "…that occur as narrow strips on coastal plains, adjacent to the ocean." These soils can be found at elevations ranging from sea level to 100 feet amsl in areas with annual rainfall ranging from 10 to 40 inches (Ibid: 48). These deposits formed from aeolian and water-deposited sand which, in turn, derived from coral and marine shell. The

JaC soils exhibit 0 to 5 percent slopes, rapid permeability, and slow to very slow runoff. The water erosion hazard is minimal. However, then hazard of wind erosion can be acute, particularly in areas where there is no vegetation.

VEGETATION

Vegetation within the project area typifies lower valley leeward environments in Hawai'i, reflecting domination today by alien species, including False Kamani (*Terminalia catappa*), *koa haole* (*Leucaena glauca*), Chinese Violet (*Asystasia gangetica*), Castor Bean (*Ricinus communis*), Ironwood trees (*Casuarina Sp.*), Christmas Berry (*Casuarina sp.*), sourbush (*Pluchea symphytifolia*), Indian pluchea (*Pluchea indica*), *Heliotropium procumbens*, Boerhavia Sp., Bidens Sp., and pickleweed (*Batis maritima*). Indigenous and endemic vegetation observed within the project area perimeter included *hau* (*Hibiscus tiliaceus*), coconut (*Cocos nucifera*), and beach *naupaka* (*Scaevola sericea*).

CULTURAL AND HISTORICAL CONTEXT

This section relies heavily on information from several classic references on traditional Native Hawaiian lifeways, traditions, and archaeological sites (e.g., Handy 1940; Handy and Handy 1972; Kirch 1985; McAllister 1933; Sterling and Summers 1978). The discussion focuses on the four *ahupua`a* between the towns of Lā`ie and Kahuku (i.e., from south to north, Lā`ie, Mālaekahana, Keana, and Kahuku Ahupua`a.

PAST POLITICAL BOUNDARIES

Traditionally, the division of O`ahu's land into districts (*moku*) and sub-districts was said to be performed by Mā`ilikukahi who was chosen by the chiefs to be the *mō`ī ho`oponopono o ke aupuni* (administrator of the government (Kamakau 1991:53–55). Cordy (2002) places Mā`ilikukahi 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* (the *ali`i* who eats the island/district), 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* (commoners) all over the island of O`ahu (Ibid.).

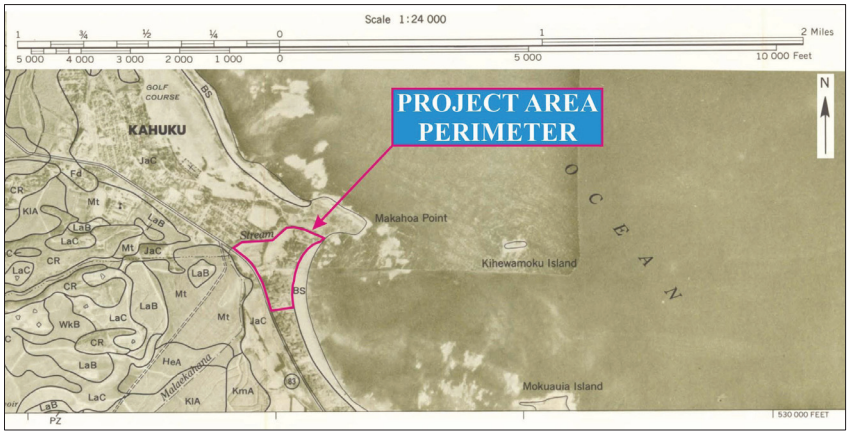

Figure 4: USDA Soil Survey Map (Foote et al. 1972; Sheet Map 46) Showing Soil Types within Project Area.

In general, several terms, such as *moku*, *ahupua`a*, *`ili* or *`ili`* ā*ina* 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 to 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).

TRADITIONAL SETTLEMENT PATTERNS

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 pre-Contact times, 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 produced. 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).

Early settlement and agricultural development was probably first established on the windward side of the Hawaiian Islands and may have begun as early as A.D. 900-1000 on O`ahu during what is known as the Colonization Period (Kirch 2011:22). Most likely arriving from east Polynesia, these early inhabitants brought with them tools, fishing gear, and other artifacts, as well as useful plants and animals. Settling in favorable localities provided fishing and agricultural opportunities and having nearby access to inland resources was a priority (Kirch 1985). Although receiving the majority of their protein from fish, Handy and Handy (1972: vi) have stated: "…for every fisherman's house along the coasts there were hundreds of homesteads of planters in the valley and on the slopes and plains between the shore and forest."

During the pre- and early post-Contact Periods, there were primarily two types of agriculture, wetland (*lo`i*) and dry land (*kula*), both of which were dependent upon geography and physiography. River valleys, especially those on the windward side of an island, provided ideal conditions for wetland *kalo* (C*olocasia esculenta*) that incorporated pond fields and irrigation canals. Other cultigens such as *kō* (sugar cane, *Saccharum officinaruma*) and *mai`a* (bananas, *Musa* sp) were also grown and, where appropriate on the tablelands and dryer slopes, the production of such crops as *`uala* (sweet potato, *Ipomoea batatas*) occurred. Coastal sections with fringing reefs eventually gave rise to the only true aquaculture developed in Polynesia: the fishpond (Kirch 1985:211). Unique to Hawai`i, fishpond technology allowed production and harvesting of marine life on a scale that was no longer dependent on the natural population, greatly expanding the food base. This was a typical pattern seen during traditional times on all the Hawaiian Islands (Kirch 1985; Kirch and Sahlins Vol. 1, 1992:5, 119).

According to Pukui *et al.* (1974:143): Mālaekahana is "…the name of the mother of Lā`ieikawai … and also the name of an image that enraptured (*ho`ohihi*) Kumu-kahi, the rascal child in the Halemano legend"; *Lā`iekawai* "is the traditional birthplace of the sacred princess Lā`ieikawai (Lā`ie in the water). The princess was taken to the mythical paradise Paliuli (green cliff) on Hawai`i." (Ibid:127–128); and, *Wai`āpuka* is a "[p]ond near the [Kamehameha] highway, Lā`ie, O`ahu, formerly containing a secret cave where Lā`ieikawai was hidden as an infant until maturity so that her father would not kill, as he had vowed to do." [Literally] "water coming out." (Ibid:221, brackets added)

Oral historical reports also suggest that Mālaekahana was home to a family of *`awa* (kava) growers with supernatural powers, and was the last place on O`ahu to be taken by Kamehameha I (Rice 1923; McAllister in Sterling and Summers 1978).

PRE-CONTACT PERIOD

The project area is located in the traditional cultural district, or *moku*, of Ko`olau Loa, a large land division comprising some 150 sq. km (58 sq. mi.), and extending from Pūpūkea, on the North Shore, to Ka`a`awa, on the Windward Coast. Ko`olau Loa Moku extends from the highest ridge tops of the Ko`olau Mountains down to the sea. Compared with the southern portion of the *moku* of Ko`olau Loa, where several large valleys provided ideal conditions for wet-taro cultivation, the Lā`ie-Mālaekahana-Keana-Kahuku area is relatively drier and would have been relatively less productive, other factors being equal. As stated above, the project area is probably more similar to the drier North Shore, than it is to the classic Windward valleys south of Lā`ie (e.g., Kahana, Kahalu`u, and Kāne`ohe). In any case, there is no doubt that the area, in

general, would have been permanently settled and, at least in part, intensely cultivated during the pre-Contact Period. Commercial sugarcane agriculture has taken a heavy toll on the preservation of archaeological sites and features throughout this area.

EARLY SETTLEMENT IN THE REGION

As Kirch (1985:69) states:

> There are excellent environmental reasons why windward O`ahu should have attracted early Polynesian settlers of the Hawaiian archipelago. Blessed with numerous permanently flowing streams, annual rainfall averaging about 1,250 mm, and large tracts of alluvial and colluvial soils, the amphitheater-like basins of Waimānalo, Maunawili, He`eia, Kahalu`u, Waiāhole, and Waikāne were ideally suited to the cultivation of Polynesian crops, especially taro, bananas, and breadfruit. Nor was the region lacking in marine resources…for early Polynesians with their mixed horticultural and fishing subsistence base, the windward O`ahu valleys were an ideal locus in which to establish permanent settlements.

Early archaeological deposits dating to perhaps as early as A.D. 300 have been reported from Waimānalo (Bellows Site O18) and Kailua (Kawainui Marsh). A remnant sand dune (Site 1546) along the eastern shore of Kahana Valley has been dated to the eighth century A.D. It is important to note that the earliest dates (A.D. 300) have been challenged not only on technical grounds specific to radiocarbon dating (the "old wood" problem), but also on the basis of palynological (pollen) data. Athens, for example, has argued for an initial settlement of Windward O`ahu of no earlier than *c.* A.D. 900 (Athens 1997). As discussed below (see PREVIOUS ARCHAEOLOGY), Jensen (1989) dated a buried sample of charcoal from a cave site (4089) near the southern boundary of the project area to A.D. 1010–1375. It is therefore quite possible that this area was initially settled approximately 1,000 years ago.

HEIAU

The earliest archaeological survey of this region was conducted by McAllister (1933), under the auspices of the Bernice Pauahi Bishop Museum. McAllister's (Ibid.) identified relatively few religious shrines (*heiau*) in Kahuku Ahupua`a and Lā`ie Ahupua`a, and none in Mālaekahana Ahupua`a. It is important to note that this work was conducted in the early 1930s, during and after the advent of commercial sugarcane agriculture in these areas. Thus, it is by no means a complete record of sites in the area. This work also tended to focus on the largest, most visible sites, and/or those that were firmly engrained in the local, collective memory (e.g., in the

case of sites that were destroyed by historic activities). This work also tended to be biased in favor of coastal and near-coastal sites, which were relatively easy to access. Notwithstanding these shortcomings, observations from McAllister's early survey are useful in providing general data for inter-*ahupua`a* comparisons. The nearby *heiau* include:

- Puuala Heiau (McAllister Site 260), Kahuku Ahupua`a, located "on the ridge overlooking the Kahuku Ranch" (Sterling and Summers 1978:152); totally destroyed by the time of McAllister's survey.
- Kalaewila Heiau (McAllister Site 266), Kahuku Ahupua`a, located "on a slight elevation at Kahuku Point" (Sterling and Summers 1978:154); possibly a *ko`a* (fishing shrine), based on its relatively small size.
- Nioi Heiau (McAllister Site 281), Lā`ie Ahupua`a, located "on a small ridge on the mountain side of the Mormon temple, Laie" (Sterling and Summers 1978:157); this *heiau* was purportedly one at which human sacrifices were performed.
- Moohekili Heiau (McAllister Site 283), Lā`ie Ahupua`a, located "in taro patches on the sea side of the Mormon temple" (Sterling and Summers 1978:158). This location is very close to the present-day shopping center in the center of town. "The slight elevation of ground, the occasional sound of the drums, and the name, are all the traces that remain, according to the oldest Hawaiians" (McAllister 1933:158).

Nioi Heiau (see also Cachola-Abad 1995; Collins 1995; Stagner and Beaver 1996), located near the Mormon Temple, in Lā`ie, was built on a north-facing limestone ridge, using locally-available limestone rocks. Priests (*kahuna*) reportedly lived in nearby rockshelters along this same north-facing limestone ridge.

Compared with other populated regions of O`ahu, and the Hawaiian Islands, in general, the number of *heiau* in the vicinity of the project area (i.e., three or four) is not particularly large. Keeping in mind the well-documented impact of commercial activities in this area, which undoubtedly would have destroyed any number of traditional sites, this low number of *heiau* is consistent with other indicators (e.g., climatic) of a relatively modest-sized, local population.

Other Traditional Sites and Landscape Features

McAllister (in Sterling and Summers 1978:155) describes "Waiapuka" (McAllister Site 275; Figure 5) as "a pool on the Kahuku side of Laie in Malaekahana, inland from the road in the midst of a cane field…made famous by the legend of Laieikawai." Handy and Handy (1972:461) state that the "long and complicated story of La`ie-i-ka-wai, *which is not an old native legend*, is connected with this district. Here also is the water cave named Wai-a-puka,

where Waka was said to have hidden her granddaughter La`ie-i-ka-wai, when the latter was in peril" (italics added).

Another pool, located in Lā`ie, was described by Handy and Handy (1972:461) as follows:

> *Makai* of the roadside [i.e., Kamehameha Highway], on entering the present town of La`ie, is a small but deep pool which, according to legend, was anciently the habitation of a giant *mo`o* ["dragon", "serpent", "water spirit"] who menaced all travelers pausing to refresh themselves beside his pool. The *mo`o* once challenged two warrior brothers (Niheu and Kana) from Maui, who slew the creature and threw its dismembered body out to sea. The long point known as Lani-loa and the small coral islets beyond are these remains" (brackets added).

There is also a fresh water spring, still in use, located near the residence of the rancher, Mr. Cagle. This spring currently produces fresh water at approximately 30 gallons per minute; during the pre-Contact and early Historic Periods, it is likely that this served as an important resource. Numerous additional water holes, basins, pools, and/or water-filled underground tunnels have been documented from Kahuku to Lā`ie Ahupua`a (i.e., McAllister Sites 261, 262, 271, and 279; see Figure 5).

The house site of Manuwahi (McAllister Site 273; see Figure 5) was located just *makai* of Kamehameha Highway, in Mālaekahana Ahupua`a. Manuwahi, according to legend, was the "keeper of the god of Mālaekahana" (Sterling and Summers 1978:155). The following extended quotation (Sterling and Summers 1978:155–156) is particularly relevant to the present study, in terms of site expectations and expected findings in the lower dune areas:

> Only a few large rocks remain by the site of the railroad track, but the site has great importance in the eyes of the natives because of the prominence of the kahuna Manuwahi. About this area is said to have been a rather large Hawaiian settlement, which formerly was level land, but which owing to the removal of flora has formed into dunes…Many skeletons were unearthed in plowing the cane fields of this region and in digging the foundations for the beach houses, indicative, some think, of many battles in this region…After cattle destroyed the vegetation along the shore, the sand formed dunes, greatly changing the topography. In removing sand recently a perpendicular face exposed a small oven (*imu*) on the former surface level…

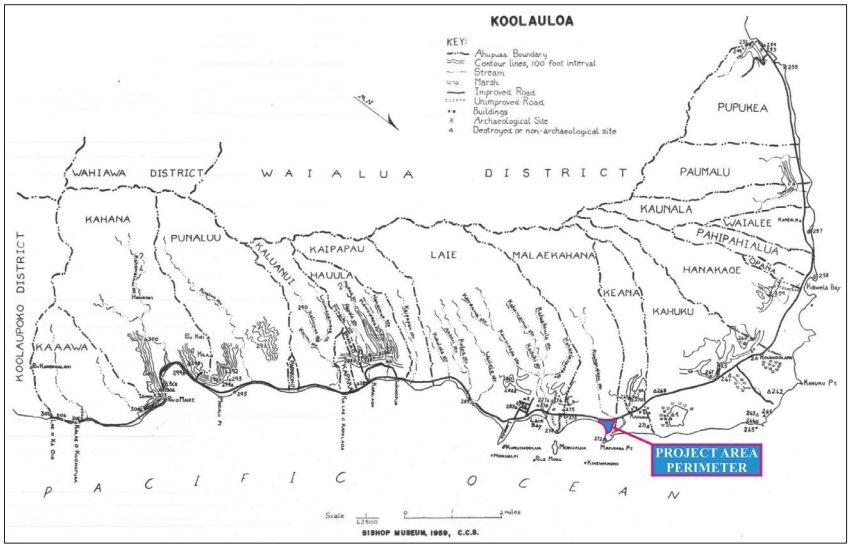

Figure 5: Ko`olauloa District Map (Sterling and Summers 1978) Showing the Location of McAllister Sites in the Vicinity of the Project Area Location.

Several *ko`a* (fishing shrines) have also been documented in the vicinity of the project area (see Figure 5), including: Keanakua *ko`a* (Site 263), at Kahuku Point (Kahuku Ahupua`a), Makahoa *ko`a* (Site 272), at Makahoa Point (present-day north end of Mālaekahana Bay (Mālaekahana Ahupua`a), near the mouth of Mālaekahana, also known as Kaukanalaau, Stream), Kalanai *ko`a* (Site 274), at the south end of Mālaekahana Bay (Lā`ie Ahupua`a), and Kaihukuuna *ko`a* (Site 285), on the south side of Laniloa Point (Lā`ie Ahupua`a).

Traditional sites in the vicinity of the project area (see Figure 5) include a raised platform of limestone slabs (McAllister Site 269) and a rockshelter in limestone (McAllister Site 270) (both in Keana Ahupua`a). Fishponds, also, have been documented in the vicinity of the project area (see Figure 5), including: Kaauhelemoa Fishpond (McAllister Site 268) (Kahuku Ahupua`a), Waikuukuu (McAllister Site 276) and Paeo (McAllister Site 277) Fishponds (Lā`ie Ahupua`a).

SUBSISTENCE ECONOMY

The importance of marine resources and fishing, in general, to the traditional inhabitants of this area cannot be overstated. Certainly the large number of *ko`a* in the vicinity of the current project area indicates the importance of these food resources. In their compendium of Native Hawaiian agriculture, Handy and Handy (1972:460) describe the *ahupua`a* from Lā`ie to Kahuku:

> Progressing northward along the Ko`olau coast we find conditions comparatively less and less suitable for wet-taro culture than in our Type Area which includes the great valleys of Kahana and Punalu`u. In Kaipapa`u (Shallow-sea) the *ahupua`a* adjacent to Hau`ula, the upper stream valley is steep and narrow, yet natives of the district say that, making the most of small opportunity, a few *lo`i* used to be worked there. The level land to seaward may once have supported a moderate amount of terracing, but as this was all under cane when the area was studied in 1953, the extent could not be determined.

Referring specifically to Lā`ie, in an area that is physiographically analogous with much of the current project area, Handy and Handy (1972:461) state:

> The comparatively flat land between the rough hills and the bay…was anciently divided into numerous named districts and was

> thoroughly cultivated…Up Koloa (Wild-duck) Stream, which is toward Hau`ula from La`ie Stream, there are many groups of stone-faced terraces, formerly taro *lo`i*, now overrun with the spreading roots of great mango and breadfruit trees which marked old homesites along this twisting, rocky, and very beautiful watercourse…We have the names of several large taro terraces that were famous anciently and have survived only in memory…

An extensive tract of taro land was known to be located near the Mormon temple (Lā`ie). McAllister Site 282 was described as follows:

> A flat lowland, now drained and planted in cane, formerly a famous taro land…In with the taro were extremely large fish…About this taro land the old Hawaiian settlement was located and on the mountain side of the site are the only foundations of a heiau (Site 281) in Laie. (Sterling and Summers 1978:158)

Finally, Handy (1940:89) makes a single, specific reference to Mālaekahana Ahupua`a: "There were terraces in this *ahupua`a*, irrigated by Kaukanalaau Stream." This refers to the area presently occupied by commercial agricultural and aquacultural operations (north-northwest portion of the current project area). Handy (1940:75) also notes that sweet potatoes were grown form "Kaena to Laie."

HISTORIC PERIOD (POST-1778)

As noted by Mitchell *et al.* (2005), both Cook and Vancouver described their impressions of the Kahuku area, which had apparently been transformed from "…a fine expanse of Low Land bounteously cloath'd with Verdure, on which were situate[d] many large Villages and extensive plantations…" in 1779 (Beaglehole 1967:572) to a "…country [that] did not appear in so flourishing a state, nor to be so numerously inhabited…" in 1794 [Vancouver 1798(3):71]. Vancouver suggested ongoing native hostilities as the cause of this de-population, but, as Mitchell *et al.* (2005) observe, the introduction of European-borne disease must also been a major factor. Census data from the 1830s show a continuing decline in the local population between 1831 and 1835 (*cf.* Schmitt 1973), and an 1838 account by E.O. Hall mentions extensive taro lands left wasted and untended (*cf.* McAllister 1933).

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 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), 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). According to Kelly (in Haun *et al.* 1991:319-320), Kauikeaouli later leased much of it to high chiefs and foreigners for use in ranching. In many cases commoners were denied access to the land, upland agriculture ended, and traditional life was greatly altered. In 1850 *kuleana* (small property) awards were granted for individual parcels; these awards were presented to tenants (not only to Native Hawaiians, but also to non-Hawaiians born in the islands, naturalized foreigners, and long-term foreign residents) who could prove their occupancy on the parcels before 1845.

Mitchell *et al.* (2005) compiled information from 19 LCAs for Mālaekahana Ahupua`a. These mid-19$^{th}$ century legal documents provide some of the earliest (admittedly self-reported) records of land utilization of Native Hawaiian lands. The LCAs for Mālaekahana Ahupua`a mention the following food plants: potatoes, bananas, and breadfruit; other useful plants mentioned in these LCAs are: *wauke* (paper mulberry, for making *tapa*, or bark cloth), *tī*, which was primarily used for wrapping food and other items (and had great spiritual significance), and *noni*, used as medicine and as a dye (for *tapa*); also mentioned were *hau* and *hala* (both of which were identified in the current project area during this Inventory Survey), *koa*, and "2 canoe trees." Several houses or house lots were also mentioned, as well as *kula* lands, which typically refers to dryland agricultural plots and/or pasture.

RANCHING

Mitchell *et al.* (2005), citing work by Yent and Estioko-Griffin (1980), summarize the long and complex history of land ownership changes in and around Mālaekahana, from royal (Hawaiian) descendants at the time of the Māhele (1848) through to James Campbell's purchase of the entire project area by 1876. The details of these changes are beyond the scope of this

Inventory Survey, and are not relevant to the basic questions of changes to the physical environment and land utilization through time. In short, as stated above, the sheep and cattle ranching that came to dominate this area from the middle-19th century onwards to the advent of commercial sugarcane agriculture devastated the landscape. For example, native accounts speak of *hala* forests destroyed by herds of animals left to roam freely. Several decades of ranching then gave way to sugarcane.

SUGARCANE AND RAILROADS

Commercial sugarcane agriculture began in this area during the later 19th century, and continued into the early 1970s. Before sugarcane, commercial ranching (sheep and cattle) was the major economic activity in this area. Ranching, in particular, had a devastating impact on the landscape, which was transformed in many areas from lush woodlands of native forests to a barren zone of introduced grass and weeds. As with many areas of the Hawaiian Islands, grazing animals contributed to the large-scale destruction of native vegetation and massive soil erosion.

Wilcox's (1996) *Sugar Water* is a "history of surface water development by sugar plantations primarily between 1876 and 1920", including a focus on ditch- and tunnel-digging, the people who did the work, and the politics of 'sugar water.' According to Wilcox (1996:3–5), by 1884, the Laie Plantation, located in Lā`ie, was operated by J.T. Waterhouse. By the 1930s, the Laie Plantation Co., then under the control of Alexander & Baldwin (A&B), had its lease transferred (i.e., merged operations) into the Kahuku Plantation Co., which operated until the 1970s, when all sugar operations in this region were terminated.

According to Wilcox (1996:110–111):

> Kahuku Plantation was started in 1890 by James Castle and Alexander Young on land leased from James Campbell…In 1902, Alexander & Baldwin became the agent for Kahuku. The plantation was handicapped by its small size (about 2500 acres in cane) and its difficult land, soil, and climate. Water was supplied entirely by groundwater sources…In 1906, Kahuku Plantation Company expanded to Punaluu lands with a lease from the Bishop Estate giving it access to more lands and to Punaluu stream…In 1931, Kahuku Plantation increased its fields by leasing Laie Plantation agricultural lands from Zions Securities for twenty-five years, although it had been milling Laie cane prior to this time. Kahuku Plantation became a wholly owned subsidiary of A&B in 1968. It closed in 1971.

In their history of commercial sugarcane in Hawai`i, Dorrance and Morgan (2000) state the following:

> In 1872 its [Mormon Church] leaders set aside 6,000 acres for sugarcane, rice, and pasturage. A quarter century later, in 1896, the railroad at neighboring Kahuku Plantation Company was extended two miles to Laie Plantation. This allowed Lā`ie's cane to be ground at the Kahuku mill. The arrangements lasted for decades but the operation was a small one. In 1930 Lā`ie's sugar production peaked at 4,788 tons. At this point the corporation was dissolved and the lands assigned to the Kahuku Plantation Company. (Dorrance and Morgan 2000:42)

And, also:

> In 1891 it [Kahuku Plantation Company] subleased 2,800 acres of Campbell's lands from Dillingham for farming sugarcane…Just a year after being organized, Kahuku Plantation's first crop was ground in 1892…Yet its managers had to struggle to compete in an area severely limited by the surrounding rugged terrain. The fields of the Koolau Agricultural Company [which was established in 1909, and extended from Lā`ie to Kahana Bay]…were bought in 1925. In 1931 an additional 2,700 acres of Laie Plantation were purchased…Shipping costs went up when the O.R. and L. railroad ceased operations in 1947. Denied the economies of scale, the owner … A&B, Inc., shut down the plantation in 1971. (Dorrance and Morgan 2000:46)

These accounts suggest that the project area was probably home to both the Laie and Kahuku Plantations, at different times, but never the Koolau Plantations, which apparently never extended north of Lā`ie. Condè and Best's (1973) *Sugar Trains: Narrow Gauge Rails of Hawaii* reports that the Koolau Railroad was a 36" gauge track.

Condè and Best (1973) reproduce an historic 1920s map from the Kahuku Plantation showing 'cane fields' throughout most of the area, with the exception of the limestone ridges and the Jaucas sand area.

PREVIOUS ARCHAEOLOGY

The following discussion of previously conducted archaeological studies illustrates the types of sites and features that may be encountered in the project area. The locations of these

studies are presented in Figure 6. While not an exhaustive survey of every previous archaeological project in and around the current project area, it does include all major (large-scale) studies. Relevant information from older, classic references (e.g., McAllister 1933; Handy and Handy 1972; Sterling and Summers 1978) can be found above (TRADITIONAL AND HISTORIC SETTING). Lā`ie and Kahuku Ahupua`a, in particular, seem to be somewhat richer in archaeological resources, compared with Mālaekahana and Keana Ahupua`a. All of these land divisions have yielded a variety of site types dating from the pre- to post- Contact Periods. Rockshelters and other exposed bedrock features (e.g., overhangs) with evidence of human occupation are common in the *mauka* (upland) areas. These locations are particularly resistant to destruction by historic activities (e.g., sugarcane agriculture) because of their relative inaccessibility and difficult terrain. Based on the findings of previous archaeological studies, both pre- and post-Contact human burials are known to have been encountered in rockshelter/outcrops and in sand-dune burials in the coastal areas, where Jaucas sand deposits are located.

Yent and Estioko-Griffin (1980) defined the entire beachfront area *makai* of the Kamehameha Highway at the southern end of Mālaekahana Bay (Kalanai Point) as State Site 50-80-02-2801. This area includes portions of both Mālaekahana and Lā`ie Ahupua`a. A multi-year program of mapping, subsurface testing, dating, and analysis of recovered materials yielded a substantial amount of archaeological and cultural information on pre-Contact Hawaiian lifeways in this area. The only surface structure in this area was a *ko`a* (fishing shrine), previously identified by McAllister (McAllister Site 274). In addition, subsurface testing (auger corings) identified several other buried areas of pre-Contact human occupation. These studies identified three major periods of pre-Contact site occupation, dating from *c.* A.D. 1600–1780, and numerous buried features were documented, including: multiple *imu* (firepits), postholes from (inferred) thatched structures, traditional artifacts, and food remains (midden). Subsequent phases of work within other portions of the Mālaekahana State Recreation Area (e.g., Yent and Ota 1983; Yent and Griffin 1986) documented a human burial, an *imu*, and other firepit features, as well as a probable buried ground surface. In short, this coastal area of Mālaekahana and Lā`ie Ahupua`a was clearly populated during the pre-Contact Period.

Ahlo and Hommon (1981) conducted an archaeological reconnaissance survey of a portion of the Kahawainui Stream floodplain. Ahlo and Hamilton (Ibid.) noted that the entire area had been extensively disturbed by commercial agricultural activities in historic times, and did not document any significant sites. Ahlo and Hamilton (Ibid.) did, however, document a

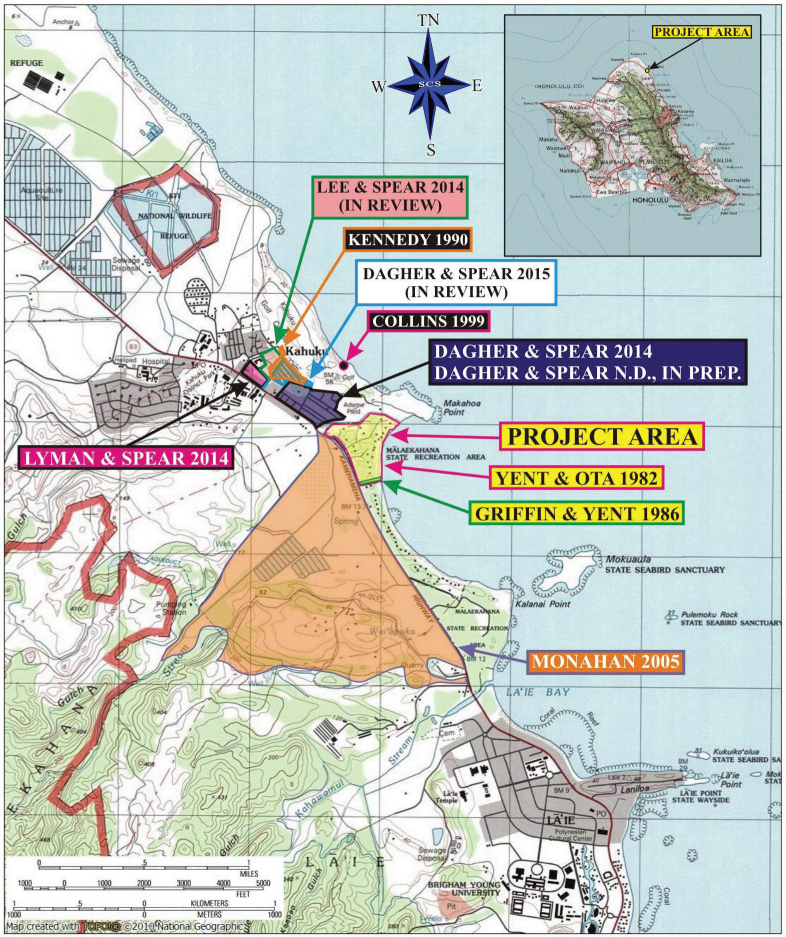

Figure 6: USGS (Kahuku 1998) Quadrangle Map Showing Previous Archaeological Studies in the Vicinity of the Project Area.

fenced area located upon a limestone ridge with several historic-era graves, just north of the stream.

In 1981, Yent and Ota (1982) conducted auger coring at Mālaekahana State Recreation Area, as part of the Phase II investigations, which is an extension of the Phase I archaeological investigations conducted by Yent and Estioko-Griffin (1980) (see Figure 6). No historic properties were identified, with the exception of a possible cultural deposit near the mouth of Mālaekahana Stream (current Site 50-80-02-7774).

During the mid-1980s, Barrera (1984) conducted an archaeological field inspection of a proposed well location along the Mālaekahana Stream. During the fieldwork, Barrera (Ibid.) identified a "large stacked basalt rock wall …and a concrete structure", but assigned no particular significance to this site, which is likely to date to the Historic Plantation Era (1879 through 1947). Barrera (Ibid.) also noted the presence of State Site 50-80-02-1055, known as "Opihi Rock Shelter."

In 1986, Griffin and Yent (1986) conducted test coring at Mālaekahana State Recreation Area on TMK: (1) 5-6-001:053, as part of the Phase II investigations (see Figure 6). No historic properties were identified.

Paul H. Rosendahl, Inc. (Jensen 1989) conducted an archaeological inventory survey, with limited excavation, of a 228-acre project area. During the survey, Jensen (Ibid.) identified six sites in this area, including the following:

- State Site 50-80-02-4088—A platform/mound "constructed of large waterworn boulders" interpreted as a possible habitation and/or historic burial site.
- State Site 50-80-02-4089—A large limestone cave with internal terraces, a rock alignment and rock mound, surface midden, and surface basalt debitage, interpreted as a habitation site; two radiocarbon dates were obtained in a test unit within the cave; according to Jensen (1989), one of these dates was contaminated, while the other (from 55–58 centimeters below the ground surface, or cmbs) yielded a very early date, calibrated to A.D. 1010 and 1375.
- State Site 50-80-02-4090—Two limestone overhang shelters, in association with surface (traditional) artifacts and midden, interpreted as a habitation site.

- State Site 50-80-02- 4091—A limestone overhang shelter, with an associated rock alignment, and surface artifacts (both traditional and historic) and midden.
- State Site 50-80-02- 4092—A small limestone cave, with little or no obvious signs of occupation, except for *kūkui* located on the ground surface.
- State Site 50-80-02-4093—A ditch/tunnel feature dating to the turn-of-the-century (20th), Plantation-Era.

In 1990, Archaeological Consultants of Hawaii (Kennedy 1990) conducted an archaeological reconnaissance survey, in the form of subsurface testing for the Kahuku Sand Mining Project. A total of 47 stratigraphic trenches were mechanically excavated, via backhoe. No archaeological sites were identified. However, Kennedy did identify "an early to mid-twentieth century dump containing typical household refuse", including butchered bones fragments and the skeletal remains of "small, feral animals".

Paul H. Rosendahl, Inc. (Dunn and Rosendahl 1992) conducted an archaeological inventory survey in several parcels located between the southern end of Lā`ie Ahupua`a and the southern border of Mālaekahana Ahupua`a. Most of the sites and features identified were located in and around the town of Lā`ie (e.g., a pre-Contact agricultural complex, State Site 50-80-02-4463, and, a pond field, State Site 50-80-02-4466). A small portion of the project area studied by Dunn and Rosendahl (Ibid.) partially overlaps the project area described by Jensen (1989), and borders the southern boundary of the current project area. In addition to State Site 50-80-02-4093, the ditch/tunnel described by Jensen (1989), Dunn and Rosendahl (1992) reported eight sites, described as follows, near the southern boundary of the current project area, from *makai* to *mauka*:

- State Site 50-80-02-4465—A platform-mound complex, interpreted (but not tested) as a possible burial, dating from the Late Pre-Contact to early historic era.
- State Site 50-80-02-4468—A cemetery (not tested), interpreted as an historic site.
- State Site 50-80-02-4469—An upright stone, interpreted as a marker (tested, yielding no significant finds), interpreted as a possible property marker.
- State Site 50-80-02-4471—A mound-paved area complex, interpreted as a Pre-Contact agricultural site (not tested).

- State Site 50-80-02-4472—A cave, interpreted as a Pre-Contact, temporary habitation with disturbed, surface human remains, presumably once part of a burial (the habitation area was tested, yielding traditional stone tool flakes and midden).

- State Site 50-80-02-4473—A complex consisting of an enclosure, retaining wall, and other walls, interpreted as a Pre-Contact agricultural site (not tested).

- State Site 50-80-02-4475—A retaining wall, interpreted as a Pre-Contact agricultural site.

- State Site 50-80-02-4464—A terrace-modified bedrock site, interpreted as a Pre-Contact habitation site.

The remains of at least one individual between the age of 15 and 22 were exposed in a sand slope on Kahuku Golf Course (Collins 1999), south of the project area. The remains appeared to reflect a primary burial that had been exposed during the slump or collapse of a sand bank. Some of the remains were partially bleached white, indicating exposure to the elements for an undetermined period of time. The site was designated State Site 50-80-02-5773.

Scientific Consultant Services, Inc. (Buffum and Dega 2001) conducted an archaeological inventory survey, which included limited excavation and radiocarbon dating, immediately adjacent to (and south of) Lā`ie town, on approximately 74 acres. During the survey seven sites, including two rockshelters (State Sites 50-80-02-5866 and -5867), a limestone cliff with several overhangs (State Site 50-80-02-5868), and four historic occurrences (an *`auwai*, a bridge foundation, a ditch, and a retaining wall) were identified. State Sites 50-80-02-5866 and -5867, the two rockshelters, contained evidence of late pre-Contact habitation. State Site 50-80-02-5868, the limestone overhang, contained evidence of Historic Period occupation. All three sites also contained human skeletal remains, but only State Site 50-80-02-5868 was interpreted as a burial site, as State Sites 50-80-02-5866 and -5867 contained fragmentary human skeletal remains in non-burial context.

Scientific Consultant Services, Inc. (Monahan 2005) conducted an archaeological inventory survey on two parcels of land consisting of approximately 500 acres in Mālaekahana and Lā`ie Ahupua`a. Forty-four sites were identified during the survey. Forty-three of these sites are located in Mālaekahana Ahupua`a; State Site 50-80-02-Site 6776 is located in Lā`ie Ahupua`a. Thirty-two sites (73%) were interpreted as Historic Period and11 were interpreted as pre-Contact. The temporal affiliation of State Site 50-80-02- 6775, a human burial, was indeterminate, but possibly associated with the early Historic Period. Most of the historic sites

(21 of 32, 66%) date to the Plantation Era (i.e., later 19th century to 1960s–70s). The pre-Contact sites consist of three rockshelters (temporary habitations), three agricultural sites, two habitation/agricultural sites, one rockshelter (temporary habitation) with a burial, one buried cultural layer with an *imu* (firepit), and Wai`āpuka Pool (State Site 50-80-02-275 – McAllister Site 275).

In 2013, Scientific Consultant Services, Inc. (Dagher and Spear 2014) conducted archaeological inventory survey in advance of proposed construction improvements including, the installation of septic waste systems, eight-inch water lines, water laterals, water retention basins, improvements to existing Plantation Roads, and grading for driveway improvements, within a 25.621-acre portion of the existing Kahuku Plantation Village Subdivision Project located in Keana Ahupua`a, Ko`olauloa District, Island of O`ahu, Hawai`i [TMK: (1) 5-6-002: 027]. During the survey one site, designated as State Site 50-80-02-7508, comprised of ten features, was newly identified. With the exception of Feature 3, all features were interpreted as associated with the Plantation-Era (1890 to 1971), based on feature type, location, construction methods and materials, or associated artifact types. Feature 3, consisted of a firepit which yielded a calibrated radiocarbon date ranging from the late pre-Contact and/or early post-Contact Period.

In 2014, Scientific Consultant Services, Inc. (Lyman and Spear 2014) conducted an archaeological inventory survey on a 4.78 acre area on the Kahuku Plantation Village Subdivision Project [TMK: (1) 5-6-002:047 por.]. During the archaeological inventory survey, one previously identified site (State Site 50-80-02-7508, Feature 8 (the existing Kahuku Plantation Village houses) was found to extend westward from the east edge of the project area to the east edge of Puuluana Street. All of the houses within the project area were interpreted as associated with the Plantation-Era (1890 to 1971) based on feature type, location, construction methods and materials, and/or associated artifact types. A few Historic Period artifacts [i.e., three whiteware soup plate shards, two whiteware bowl base shards, one porcelain shard, two milk-glass shards, one flat glass shard, one bottle glass shard, and one glass jar (H.J Heinz Co.] were encountered and collected from the trench excavations during the archaeological inventory survey; modern debris was noted but not collected.

In 2014, Scientific Consultant Services, Inc. (Lee and Spear 2014, in prep.) conducted an archaeological inventory survey on 122.8 acres of land within the existing historic Plantation Era Kahuku Village Subdivision Project located in Keana Ahupua`a, Ko`olauloa District, Island of O`ahu, Hawai`i [TMK: (1) 5-6-002:047 por.]. The findings of the archaeological inventory

survey indicated the villages houses extended through the project area from the east boundary of TMK: (1) 5-6-002:027 to the west edge of TMK: (1) 5-6-002:047 por.

Scientific Consultant Services, Inc. (SCS) (Dagher and Spear 2015) conducted an archaeological inventory survey of an approximately 8.0-acre property located within the existing Historic Plantation Era Kahuku Village (State Site 50-80-02-7508) Subdivision Project in Keana Ahupua`a, Ko`olauloa District, Island of O`ahu, Hawai`i [TMK: (1) 5-6-002:049 (previously 5-6-02: 016 por.)]. During the survey thirteen features (one historic roadway corridor, one historic trash pit, eight standing historic houses, one historic house foundation, one historic rock alignment, and one pre-Contact *in situ* human burial were newly identified. The human burial was consolidated into the previously identified State Site 50-80-02-7399 as Burial 2. With the exception of the human burial, the remaining features were interpreted as associated with the Plantation-Era (1890 to 1971), consolidated into, the previously identified State Site 50-80-02-7508, based on feature type, location, construction methods and materials, and artifact types. The newly identified historic roadway corridor was interpreted as a component of State Site 50-80-02-7508, Feature 7; the eight standing historic houses were interpreted as components of Feature 8; the historic trash pit was designated Feature 9; the historic house foundation was designated Feature 10a; and the historic alignment was designated Feature 10b. One isolated find (IF-1), comprised of a single human metatarsal, was encountered in ST-1, Layer I. IF-1 likely pre-dates the Plantation-Era.

Currently, Scientific Consultant Services, Inc. (Dagher and Spear n.d., in prep.) is conducting Archaeological Monitoring in conjunction with on-going ground-altering activities associated with the approximately 50 acre existing Kahuku Plantation Village Subdivision Project located in Keana Ahupua`a, Ko`olauloa District, Island of O`ahu, Hawai`i [TMK: (1) 5-6-002: 027 and 049 (previously 046 por.)]. During the on-going Archaeological Monitoring program, five archaeological historic properties (State Sites 50-80-02-7398 through 50-80-02-7401 and 50-80-02-7511) were newly identified. State Site 50-80-02-7398 consists of three historic cesspools. State Site 50-80-02 7399, Burial 1 is an inadvertently identified Traditional-type, pre-Contact/ early post-Contact human burial; State Site 50-80-02-7400 is a Historic Period piggery, consisting of 10 features; State Site 50-80-02-7401 consists of Plantation-Era railroad tracks, and State Site 50-80-02-7511 is an inadvertently identified Traditional-type, pre-Contact/early post-Contact human burial (Burial 2), and an isolated find (IF-1) comprised of a single human skeletal fragment, which likely pre-dates the Plantation-Era. State Sites 50-80-02-7399 and 50-80-02-7511 are discussed under separate cover in Dagher *et al.* (2013). State Sites

50-80-02-7398 through 50-80-02-7400 and 50-80-02-7511 are considered to be features of State Site 50-80-02-7508, the Kahuku Village Historic District.

EXPECTED FINDINGS WITHIN THE PROJECT AREA

Archival research indicates that previous archaeological studies in the vicinity of the project area have consistently demonstrated the presence of a wide variety of traditional and historic sites and features, from the base of the Ko`olau to the sea. The Lā`ie-Mālaekahana-Keana-Kahuku area would probably have been home to a modest-sized, settled population of farmers and fishers. Given the coastal location and the sandy matrices of the current project area, it is likely that the evidence of marine-based subsistence (i.e., fishhooks, octopus lures, adzes, etc.); including tool manufacture and temporary habitation (i.e., post molds, fire pits, food refuse, human burials, cultural deposits, etc.) are likely to be present in subsurface contexts.

METHODS

FIELD METHODS

The Archaeological Inventory Survey fieldwork was conducted from January 26 through February 5, 2015, by SCS archaeologists Jeff Putzi, B.A, and Guerin Tome, B.A., under the direction of Robert L. Spear, Ph.D., Principal Investigator. The AIS was performed in order to identify and document historic properties, to gather sufficient information on these properties, to evaluate the significance of any newly identified historic properties, to determine the project effect on these properties, and to make mitigation recommendations to address possible adverse impacts to identified historic properties, pursuant to Hawaii Administrative Rules (HAR) § 13-284 and HAR § 13-276.

Multiple field tasks were completed during the current Archaeological Inventory Survey. State Site 50-80-02-7774 was initially recorded in 1981 by Yent and Ota (1982) and subsequently observed by Alan Carpenter, Archaeologist Division of State Parks, at an undisclosed time previous to the current AIS, in an exposed sand dune face within the current project area (Figure 7). State Parks archaeologists had walked the entire project area on multiple previous occasions confirming the absence of any surface features (Alan Carpenter, personal communication). Thus, only minimal pedestrian survey was conducted,, during the current survey, in order to better focus on excavation. During the survey, results were compiled on standard graphing paper as well as with digital photography. State Site 50-80-02-7774 was initially designated as SCS Temporary Site 1 (TS-1) and plotted on a United States Geological Survey (USGS) map with a handheld Garmin GPS Map 60 CSx global positioning system (GPS)

unit. The datum and coordinate system used for the GPS unit was NAD83 and UTM (Universal Transverse Mercator). Magnetic north compass orientation was also employed. All measurements were recorded in metric. Individual features were also documented in plan view. Based on feature type and function and spatial proximity the 10 newly identified subsurface features were consolidated into one site, and incorporated into the previously identified State Site 50-80-02-7774.

Site horizontal boundaries, within the current project area, were primarily determined by the manual excavation of eleven shovel probes (SP-1 through SP-11) (Figure 8), which determined presence or absence of cultural materials, as well as observations of exposed dune faces and disturbed areas. In order to prevent the destabilization of the dune, it was decided not to place a shovel probe into the crest of the dune itself. The first shovel probe was placed at the base of the west slope of the dune. The shovel probes were positioned 2.0 m apart and oriented along an east/west axis. The shovel probes were numbered chronologically, in the order they were excavated. Shovel Probes 1 through 5, SP-11, and Stratigraphic Trench 25 formed the east to west line of excavations conducted to determine the westward extend of the cultural deposit. As the westward extent of the cultural layer (State Site 50-80-02-7774) had not yet been determined, it was decided to place mechanically excavated Stratigraphic Trench 25 (ST-25) 3.0 m west of SP-11.

Based on consultation with State Parks Archaeolologist, Alan Carpenter, the AIS was conducted in the form of stratigraphic trench excavations, for the purpose of locating subsurface archaeological features and archaeological cultural material (Figure 9 and Figure 10).. A total of 25 stratigraphic trenches were mechanically excavated. Twenty-four of the trenches (ST-1 through ST-24) were excavated within the proposed development areas revealed no cultural remains whatsoever. However, ST-25 was placed outside of the proposed areas of development.



Figure 7: Photographic Overview of Dune Face and Exposed Section of State Site 50-80-02-7774. View to West.

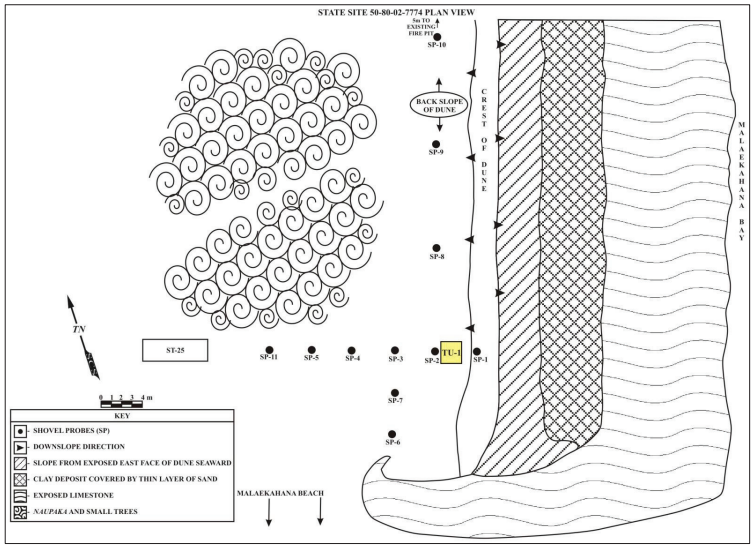

Figure 8: Plan View Drawing Showing Placement of Shovel Probes 1 through 11.

LABORATORY METHODS

Plan view sketches showing location and morphology of the identified site and subsurface features were illustrated. Significant artifacts were classified (Appendix B) and photographed (Appendix C) for qualitative analysis. All metric measurements and weights were also recorded for quantitative analysis. All data was clearly recorded on standard laboratory forms. A radiocarbon sample collected from State Site 50-80-02-7774, Subsurface Feature 7 was prepared in the laboratory for radiocarbon dating and submitted to Beta Analytic Inc. in Miami, Florida. The Beta Analytic Inc. radiocarbon dating analysis data is presented in Appendix D. The wood identification analysis of the radiocarbon sample is presented in Appendix E. Additional laboratory work involved cataloging all project photographs, drafting of sites and stratigraphic profiles, and writing. All project area records (*i.e.* notes, profiles, photographs, etc.) are currently being curated in the SCS, Honolulu office. All collected cultural material (*i.e.* artifacts and charcoal) are curated in the SCS Honolulu office.

ARCHAEOLOGICAL INVENTORY SURVEY RESULTS

During the current archaeological inventory survey, excavations revealed a contiguous cultural deposit (the previously identified State Site 50-80-02-7774; see Yent and Ota 1982) and ten newly identified features in subsurface contexts (SSFE-1 through SSFE-10). Subsurface Features 1, 2, 3, and 5, 6, and 7 consist of post molds; Subsurface Features 8, 9, and 10 consist of pit features. Possible midden materials consisting of marine and terrestrial vertebrate, marine shell, charcoal, burnt kukui, and Traditional-type artifacts were collected from the cultural layer and the subsurface features. One isolated human tooth was collected from SP-11. Subsurface Feature 4 consists of an in situ human burial representing a single individual. Based on context, construction methods and materials, feature type and function, and associated artifacts all features were interpreted as pre-Contact in age. Thus, State Site 50-50-02-7774 was interpreted as a pre-Contact habitation site with a burial component. Please note that no cultural materials or deposits were identified within the proposed development area.

State Site 50-80-02-7774 is located within a sand dune at the northern end of Mālaekahana Bay. The east side of the dune is separated from the waters of the bay by a limestone escarpment that extends approximately 100 m to the north, ending where Kahuku

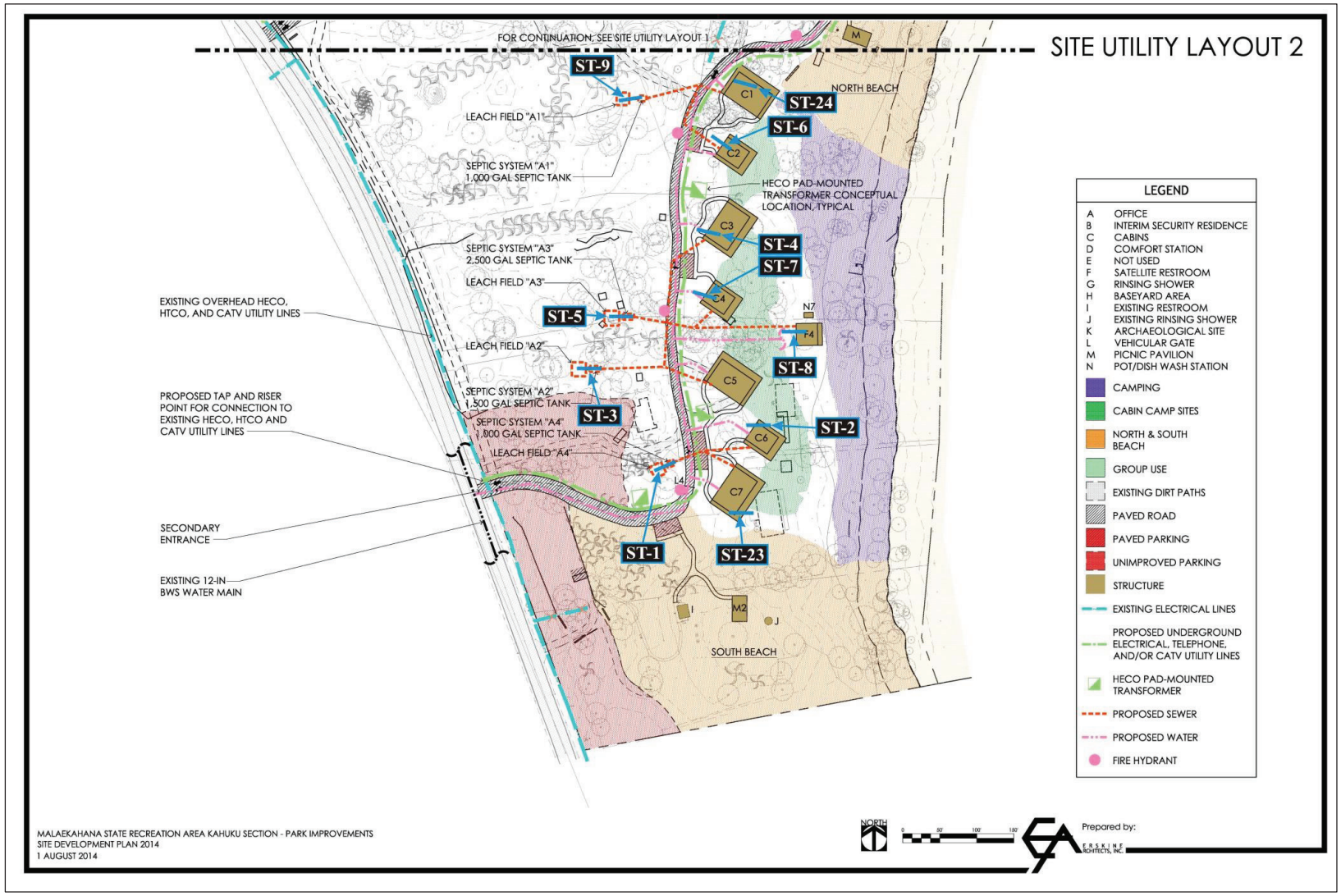

Figure 9: Conceptual Development Plan View Drawing Showing the Locations of the Stratigraphic Trenches on the South Side of the Project Area.

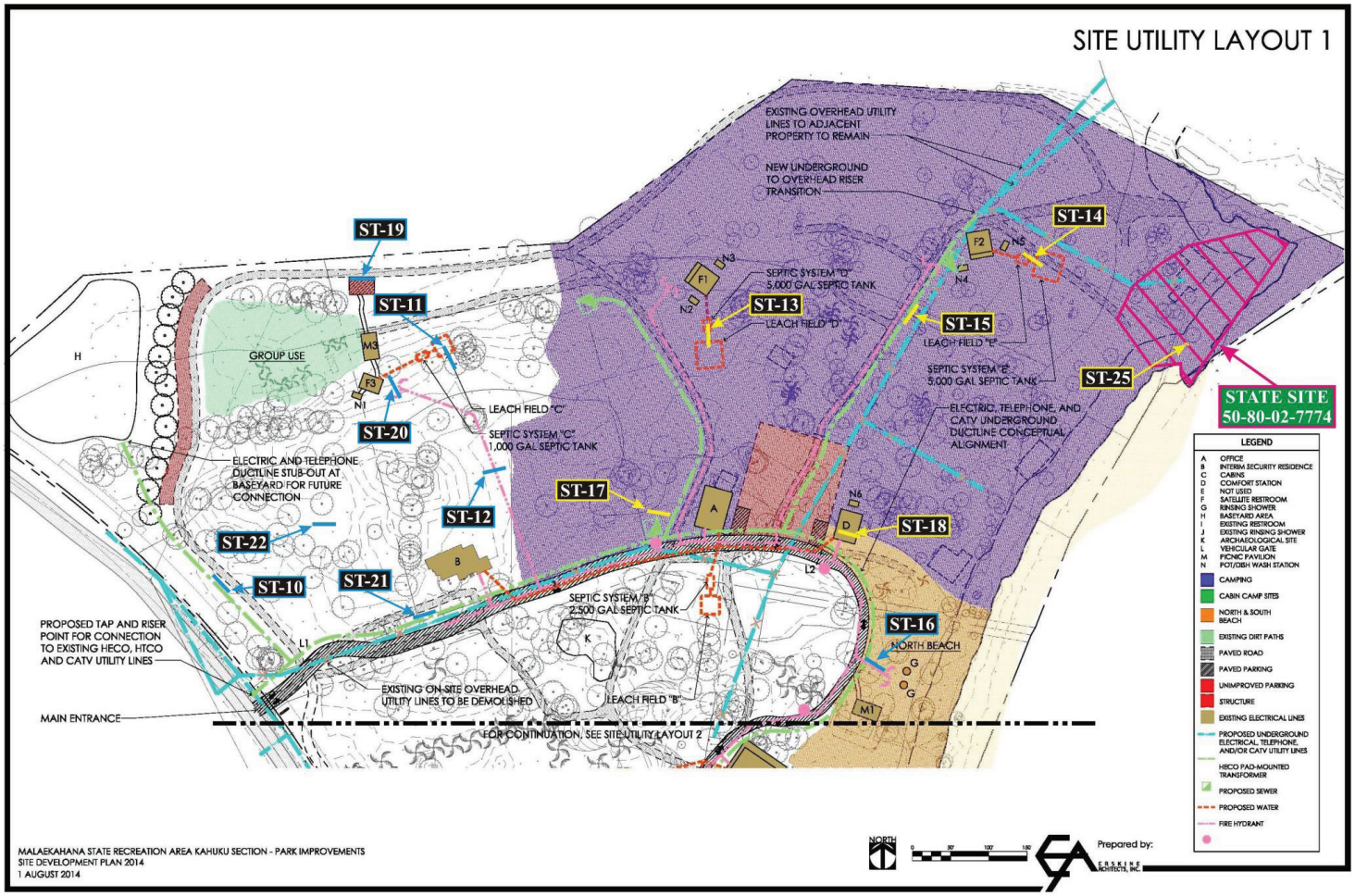

Figure 10: Conceptual Plan View Drawing Showing the Locations of the Stratigraphic Trenches on the North Side of the Project Area and State Site 50-80-02-7774.

Stream enters the bay. The escarpment is approximately 10 m wide along this length. The south end of the dune is also anchored by the escarpment, which is approximately 10.0 long, east to west, and is approximately 2.0 m wide.

The crest of the dune extends parallel to the long north to south axis of the escarpment and is approximately 1 m higher in elevation than the limestone. The crest is approximately 1 m wide. The west face of the dune descends gradually to level ground that is approximately 0.5 m below the crest. The crest, west slope and level surface of the dune are covered by a short grass that has a dense root system. There is no exposed sand of the dune in these areas. Approximately 10 m west of the crest is a dense stand of *naupaka*, a short, dense shrub.

The eastern face of the dune below the crest is almost entirely exposed sand. It is subjected to both wind and high wave action. The south face of the dune is a mix of grass and exposed sand. Both the eastern and southern faces have the cultural layer (State Site 50-80-02-7774) exposed and in some places weathering out of the dune. Possible midden materials consisting of marine and terrestrial vertebrate, marine shell, charcoal, burnt *kukui* and Traditional-type artifacts were identified within the cultural layer (see Appendices B and C).

State Site 50-80-02-7774 is described below and summarized in Table 1.

STATE SITE 50-80-02-7774
GPS Coordinates: East 610074 and North 2396968
Site Type: Cultural Layer
Function: Habitation /Burial
Feature (#): 10
Age: pre-Contact
Recommendation: Preservation

Integrity: Unaltered
Condition: Good
Significance Criteria: d, e
Dimensions: 25.0 x 15.0 m

State Site 50-80-02-7774 consists of a cultural layer eroding from the south and east faces of a sand dune (see Figure10), which was initially identified by Yent and Ota (1983) and subsequently designated State Site 50-80-02-7774. During the current archaeological inventory survey, excavations revealed a contiguous cultural deposit (the previously identified State Site 50-80-02-7774) and ten additional features in subsurface contexts (SSFE-1 through SSFE-10). Subsurface Features 1, 2, 3, and 5, 6, and 7 consist of post molds; Subsurface Features 8, 9, and 10 consist of pit features. Possible midden materials consisting of marine and terrestrial vertebrate, marine shell, charcoal, burnt kukui, and Traditional-type artifacts were collected from the cultural layer and the subsurface features. One isolated human tooth was collected from SP-11. Subsurface Feature 4 consists of an in situ human burial representing a single individual.

Table 1: Archaeological Inventory Survey Results

State Site No.	Feature Designation	Excavation Encountered	Form	Function	Condition	Temporal Affinity	GPS Coordinates	Recommendations
50-80-02-7774	Subsurface Feature (SSFE)		Cultural Layer	Habitation/Burial	Good	Pre-Contact	610074E 2396963N	Preservation
50-80-02-7774	SSFE-1	SP-2 TU-1	Post Mold	Habitation	Good	Pre-Contact	610074E 2396968N	Preservation
50-80-02-7774	SSFE-2	SP-3	Post Mold	Habitation	Good	Pre-Contact	610074E 23996963	Preservation
50-80-02-7774	SSFE-3	SP-3	Post Mold	Habitation	Good	Pre-Contact	610074E 2396963N	Preservation
50-80-02-7774	SSFE-4	ST-25	Pit	Human Burial	Fair	Pre-Contact	610057E 2396976N	Preservation
50-80-02-7774	SSFE-5	TU-1	Post Mold	Habitation	Good	Pre-Contact	610074E 2396963N	Preservation
50-80-02-7774	SSFE-6	TU-1	Post Mold	Habitation	Good	Pre-Contact	610074E 23996963N	Preservation
50-80-02-7774	SSFE-7	TU-1	Post Mold	Habitation	Good	Pre-Contact	610074E 2396968N	Preservation
50-80-02-7774	SSFE-8	TU-1	Pit	Undetermined	Good	Pre-Contact	610074E 2396968N	Preservation
50-80-02-7774	SSFE-9	TU-1	Pit	Undetermined	Good	Pre-Contact	610074E 2396968N	Preservation
50-80-02-7774	SSFE-10	TU-1	Pit	Undetermined	Good	Pre-Contact	610074E 2396968N	Preservation

NFW= No Further Work

Based on context, construction methods and materials, feature type, and associated artifacts all features were interpreted as pre-Contact in age. Thus, State Site 50-50-02-7774 was interpreted as a pre-Contact habitation site with a burial component. It should be noted that the horizontal extent of State Site 50-80-02-7774 has not been precisely established, although it is clearly outside of the proposed development area. The approximate determination of the horizontal boundaries of State Site 50-80-02-7774 was completed through testing, observation of exposed dune faces, and areas disturbed by former develoment.

A west/east trending stream, which flows to the ocean, forms the northern boundary of the site. A 1924 aerial photograph shows a stream flowing south from Kahuku and entering the ocean the ocean along the southeast side of the site. In effect, State Site 50-80-02-7774 is an island, isolated by the two streams and the ocean. State Site 50-80-02-7774 measures 25.0 by 15.0 m and is oriented along a north/south axis at a bearing of 0/180 degrees, magnetic. State Site 50-80-02-7774 is comprised of ten subsurface features (SSFE-1 through SSFE-10) identified within, and adjacent to, Stratigraphic Trench 25 (ST-25) and situated in the northeast corner of the project area within beach sand deposits. Subsurface Features 1 through 3 and 5 through 7 consist of post molds, Subsurface Features 8 through 10 consist of pit features, and Subsurface Feature 4 consists of one in situ human burial representing a minimum of one (MNI=1) individual. Based on feature types present, context, construction methods, and associated artifacts, State Site 50-80-02-7774 has been interpreted as a pre-Contact habitation/burial site. The integrity of State Site 50-80-02-7774 remains unaltered. However, the condition of the site has been altered by weathering and erosion, and possibly by the construction and use of an adjacent beach house (now demolished). State Site 50-80-02-7774 has been evaluated for significance according to the established criteria for the Hawai`i State Register of Historic Places §13-284-6(b) (4) and found to be significant under criteria “d”, as the site is likely to yield information important for research on the pre-Contact Period in Hawaii, and under criterion “e”, as it has important cultural value to the native Hawaiian people.

Subsurface Feature 1 (SSFE-1) **GPS Coordinates**:
East 610074 and North 2396968 **Condition:** Good
Subsurface Feature Type: Post Mold
Function: Habitation
Age: pre-Contact

Subsurface Feature 1 (SSFE-1) (18-48 cmbs), identified in SP-2, consists of a post mold which measures 0.27 m in diameter by 0.30 thick and was oriented along a southwest/northeast axis (30/210°, magnetic). Subsurface Feature 1 exhibited vertical sides and was identified in

Shovel Probe 2 (SP-2) within Layer II, and intruding into Layer III, with a maximum depth of 48 cmbs. Based on feature type and construction methods, SSFE -1 was interpreted as a pre-Contact habitation feature. Subsurface Feature 1 (SSFE-1), post mold, originated at the interface of Layer I and Layer II, extended 10-48 cmbs, and was excavated through Layer II and into Layer III, to the base of the excavation (Figure 11). The level base and vertical sides of the post mold were clearly identifiable against the back drop of these layers, but its surface was not as clearly defined. Materials collected from SSFE-1 feature fill consisted of marine invertebrates, fish bone, charcoal, and one fire affected vesicular basalt cobble (see Appendix B).

> State Sit 50-80-02-7774, SSFE-1 (18-48 cmbs) feature fill consisted of very dark brown (10YR 2/2, dry) loamy sand mottled with dark yellowish brown (10YR 4/6, dry) sand with some grass roots. Materials recovered from the feature fill consisted of 0.1 g. *Nerita picea,* 0.2 g. *Littorina pintado,* 0.1 g. *Strombus maculates,* 0.1g. *Cypraea sp.,* <0.1 g. *Echinothrix diadema*, 0.6 g. non-diagnostic Echinoidea, 0.1 g. non-diagnostic Osteichthyes vertebrate, 0.1 g charcoal, and one fire affected vesicular basalt cobble.

Subsurface Feature 2 (SSFE-2) **GPS Coordinates:**
East 610074 and North 2396968 **Condition:** Good
Subsurface Feature Type: Post Mold
Function: Habitation
Age: pre-Contact

Subsurface Feature 2 (SSFE-2) (13-42 cmbs), identified in SP-3, consists of a post mold which measures 0.2 m in diameter by 0.30 thick and was oriented along a north/south axis (360/180°, magnetic) (Figure 12). Subsurface Feature 2 was identified in the east face of the SP-3. Subsurface Feature 2 originated at the interface of Layer II and Layer III and was excavated through Layer III and into Layer IV. The base of the SSFE-2 was not observed. However, the vertical sides of SSFE-2 were clearly identifiable against the back drop of Layers II and III. Materials collected from SSFE-2 feature fill consisted of marine invertebrates, euryhaline invertebrate, fish bone, charcoal and one fire affected vesicular basalt cobble (see Appendix B). Subsurface Feature 1 is located approximately 2.0 meters (m) east of SSFE-2 and SSFE-3 is located immediately 0.5 cm to the southwest. Based on feature type and construction methods, SSFE -2 was interpreted as a pre-Contact habitation feature.



Figure 11: Photographic View of Subsurface Feature 1 within Shovel Probe 2. View to Southeast.



Figure 12: Photographic View of Subsurface Features 2 and 3 within Shovel Probe 3. View to Southeast.

State Site 50-8002-7774, SSFE-2) feature fill (12-42cmbs) was comprised of dark brown (10YR 3/3, dry) loamy sand. Materials collected from SSFE-2 feature fill consisted of 0.1 g. *Nerita picea,* 0.2 g. *Littorina pintado*, 0.3 g. *Strombus maculates*, 0.9 g. *Morula dumosa*, 0.1 g. non-diagnostic Echinoidea, 0.1 g *Echinometra mathaei*, 0.2 g. *Brachidontes crebristriatus*, <0.1 g. non-diagnostic *Osteichthye* vertebrate, 0.1 g. charcoal and one fire affected vesicular basalt cobble.

Subsurface Feature 3 (SSFE-3) **GPS Coordinates:**
East 610074 and North 2396968 **Condition:** Good
Subsurface Feature Type: Post Mold
Function: Habitation
Age: pre-Contact

Subsurface Feature 3 (SSFE-3) (13-42 cmbs), identified in SP-3, consists of a post mold which measures 0.2 m in diameter by 0.30 thick and was oriented along a northwest/southeast axis (see Figure 12). Subsurface Feature 3 exhibited vertical sides and was identified in the south face of SP-3. The feature begins at the interface of Layer II and Layer III, descending through Layer III and into Layer IV. The base of the feature was not observed but the vertical sides of the feature were clearly identifiable against the back drop of these layers. Subsurface Feature 1 is located approximately 2.0 m east of SSFE-3 and SSFE-2 is located immediately 0.5 cm to the northeast. The base of the feature was not observed but the vertical sides of the feature were clearly identifiable against the back drop of these layers. Materials collected from SSFE-3 feature fill consisted of marine invertebrate, euryhaline invertebrate, fish, burnt *kukui*, and charcoal. Artfactual material collected from SSFE-3 consisted of one edge-altered basalt flake (see Appendix B). Based on feature type and construction methods, SSFE-3 was interpreted as a pre-Contact habitation feature.

State Site 50-80-02-7774, SSFE-3 feature fill (12-42 cmbs) consisted of dark yellowish brown (10YR 4/4, dry) loamy sand. Subsurface Feature 3 was identified in the south face of SP-3. Materials collected from the SSFE-3 feature fill consisted of 0.5 g. *Nerita picea*, 0.2 g *Littorina pintado,* 0.5 g. *Strombus maculates*, 0.2 g. non-diagnostic Echinoidea, 0.2 g. *Brachidontes crebristriatus*, 0.1 g. non-diagnostic *Osteichthyes* vertebrate, 0.2 g charcoal, 0.1 g. burnt *kukui*, and one edge-altered basalt flake.

Subsurface Feature 4 (SSFE-4) **GPS Coordinates:**
East 610057 and North 2396976 **Condition:** Fair
Subsurface Feature Type: Pit
Function: Human Burial
Age: pre-Contact

Subsurface Feature 4 (SSFE-4) consists of a pit measuring 0.42 m long by 0.38 m, which extended from 50 to 88 cmbs and was oriented along a northwest/southeast axis (105/285°, magnetic) encountered in Stratigraphic Trench 25 (ST-25). Subsurface Feature 4 contained fragmented human skeletal remains. Charcoal flecking was observed throughout the burial pit and amongst the human skeletal remains. The burial pit originated in Layer IV (a Traditional-type cultural layer) and intruded into Layer V (i.e., during the formation of the subsurface traditional-type cultural layer, a pit was vertically excavated and the human burial was placed within). Based on feature type, construction method, context (beach sand matrix), and the absence of Historic cultural, SSFE -4was interpreted as an in situ Traditional-type human burial. Based on in-field analysis, the human skeletal remains were interpreted as representing a single (MNI=1) individual; aged 4 to 6 years of age, based on dentition, epiphyseal closure, and long bone length. Ancestry was interpreted as Pacific Islander, most likely Native Hawaiian, given the absence of historic materials (i.e., metal, wood, porcelain, fabric, etc.) and based on context (i.e., interment in beach sand matrix). Given the young age of the individual, gender was indeterminate.

Subsurface Feature 5 (SSFE-5) **GPS Coordinates:**
East 610074 and North 2396963 **Condition**: Good
Subsurface Feature Type: Post Mold
Function: Habitation
Age: pre-Contact

Subsurface Feature 5 (SSFE-5) (2-50 cmbs) consists of a circular post mold and measures 0.15 m in diameter by 0.48 thick. Subsurface Feature 5 originated in Layer III exhibited vertical sides and was identified in SP-2, within Layer III (Figure 13). Subsurface Feature 5 is located 5 cm west of SSFE-6, which extends out of the west wall from the west wall of TU-1, at the same depth as SSFE-5. The pairing of SSFE-5 and SSFE-6 is similar to the pairing of SSFE-2 and SSFE-3. Based on feature type and construction methods, SSFE -5 was interpreted as a subsurface habitation feature. One large, 1 cm in diameter, piece of charcoal was observed on the surface of SSFE-5. Material collected from SSFE-5 consisted of marine invertebrate, euryhaline invertebrate, non-diagnostic fish bone, non-diagnostic avian vertebrate, and charcoal (see Appendix B). Please note SSFE-5 was exposed in plan view only.



Figure 13: Photographic Overview of Subsurface Feature 5 with Subsurface Feature 6 to the East. View to East.

State Site 50-80-02-7774, SSFE-5 (2-50 cmbs) feature fill consisted of semi-compact very dark brown (10YR 2/2, dry) loamy sand mottled with dark yellowish brown (10YR 4/6, dry) sand. Material collected from the SSFE-5 feature fill consisted of 4.5 g *Turbo sandwicensis*, 1.6 g. of *Nerita picea*, 3.0 g. *Strombus maculates*, 0.2 g. *Melampus castaneus*, 0.3 g. *Brachidontes crebristriatus*, 0.1 g *Colobocentrotus atratus*, 0.4 g. *Trochus intextus*, 0.8 g. *Littorina pintado*, 0.2 g. *Drupa* sp., 0.6 g. *Tellina palatam*, <0.1 g. *Echinometra mathaeif*, 0.3 g. *Echinometra oblonga*, 0.1 g. *Echinothrix diadema*, 0.5 g. non-diagnostic Echinoidea, 0.3 g. non-diagnostic Osteichthyes vertebrate, 0.1 g. non-diagnostic aves vertebrate, 2.0 g. charcoal.

Subsurface Feature 6 (SSFE-6) **GPS Coordinates:**
East 610074 and North 2396963 **Condition:** Good
Subsurface Feature Type: Post Mold
Function: Habitation
Age: pre-Contact

Subsurface Feature 6 (SSFE-6) consists of a circular post mold and measures 0.10 m in diameter by 9 cm thick. Subsurface Feature 6 originated at interface of Layer III and Layer IV, in SP-2, and extends from 30 to 39 cmbs (see Figure 13). Subsurface Feature 6 intrudes into Layer IV. Subsurface Feature 6 is located 5 cm east of SSFE-5. The pairing of SSFE-5 and SSFE-6 is similar to the pairing of SSFE-2 and SSFE-3. Material collected from SSFE-6 consisted of marine shell, euryhaline invertebrate, fish bone, charcoal, and burnt *kukui* (see Appendix B). Based on feature type and construction methods, SSFE -5 was interpreted as a subsurface habitation feature.

State Site 50-80-02-7774, SSFE-6 (30-39 cmbs) feature fill consisted of semi-compact very dark brown (10YR 2/2, dry) loamy sand. Materials collected from SSFE-6 feature fill consisted of 1.6 g. *Turbo sandwicensis*, 0.2 g. *Nerita picea*, 0.2g. *Littorina pintado*, 0.1 g. *Strombus maculates*, 0.4 g. *Cypraea sp*, 0.2 g. non-diagnostic *Cirrepedia*, 0.1 g. non-diagnostic *Osteichthyes* vertebrate, 0.1 g. non-diagnostic *Echinoidea*, 0.1 g. *Echinometra oblonga*, 0.1 g. *Brachidontes crebristriatus*, 0.6 g. charcoal, and 0.2 g. burnt *kukui*.

Subsurface Feature 7 (SSFE-7)
610074 and North 2396968
Subsurface Feature Type: Post Mold
Function: Habitation
Age: pre-Contact

GPS Coordinates: East
Condition: Good

Subsurface Feature 7 (SSFE-7) (40-70 cmbs) consists of a circular post mold identified within Test Unit 1 (TU-1). Subsurface Feature 7 measures 0.34 m in diameter by 30 cm thick, and extends from 40 to 70 cmbs (Figure 14). Subsurface Feature 7 originated in SP-2 within Layer III and extends to base of excavation. Material collected from SSFE-7 consisted of marine shell, 0 euryhaline invertebrate, fish bone, small mammal (i.e., dog-size) bone, pig bone, charcoal, un-modified *kukui*, and burnt *kukui*. Artifacts collected from SSFE-7 consisted of fish bone pick and one piece basalt debitage (see Appendices B and C). Based on feature type and construction methods, SSFE -7 was interpreted as a subsurface habitation feature.

A radiocarbon sample was collected from State Site 50-80-02-7774, Subsurface Feature 7. The radiocarbon sample was submitted to BetaAnalytic for analysis and yielded a conventional radiocarbon age of 300±30 BP. Calibrated at 1 Sigma, the radiocarbon sample yielded dates ranging from 1520AD to 1580AD (74 % probability) and from 1620AD to 1650AD (26% probability). Calibrated at 2 Sigma, the radiocarbon yielded a date ranging from 1480AD to 1660AD (100% probability). Thus, the age of State Site 50-80-02-7774 is interpreted as ranging from 1480AD to 1660AD, firmly within the pre-Contact Period, as this date has the highest percentage of probability (see Appendix D).

A portion of the radiocarbon sample collected from State Site 50-80-02-7774, Subsurface Feature 7 for radiocarbon analysis was submitted for taxa identification to provide paleoenvironmental data and support for the prehistoric dating determination. Due to the small size of the sample, the results were not definitive (see Appendix E).

State Site 50-80-02-7774, SSFE-7 (40-to 70 cmbs) feature fill consisted of dark gray (10YR 4/1, dry) loamy sand. Material collected from SSFE-7 feature fill consisted of 9.0 g. *Turbo sandwicensis*, 6.9 g. *Nerita picea*, 0.1 g. *Littorina pintado*, 13.1 g. *Strombus maculatus*, 0.5 *Cypraea* sp., 2.8 g. *Cypraea caputserpentis*, 0.9 g. *Tonna perdix*, 30.g. *Conus lividus*, 0.2 g. *Isognomon incisum*, 4.3 g. *Tellina palatam*, 2.2 g. *Periglypta reticulate*, 0.2 g. of euryhaline invertebrate, 0.6 g. non-diagnostic *Echinoidea*, 0.1 g. *Echinometra mathaei*, 0.9 g. non-diagnostic



Figure 14: Photographic View of the Base of Subsurface Feature 7. View to West.

Osteichthyes vertebrate, 1.7 g. *sus scrofa* vertebrate, 1.1 g. small vertebrate (i.e., dog-size) bone, 1.2 g. of charcoal (total), 0.4 g charcoal submitted for radiocarbon dating (SCSRC692), 4.4 g. un-modified *kukui*, and 0.3 g. of burnt *kukui*. Artifacts collected from SSFE-7 feature fill consisted of one piece basalt debitage interior flake and one fish bone pick (see Appendices B and C).

Subsurface Feature 8 (SSFE-8)
610074 and North 2396968
Subsurface Feature Type: Pit
Function: Undetermined
Age: pre-Contact

GPS Coordinates: East
Condition: Good

Subsurface Feature 8 (SSFE-8) (33-50 cmbs/23-54 cmbs) consists of a roughly rectangular pit, in profile, identified within TU-1.Subsurface Feature 8 measures 1.0 m long by 0.2-0.4 m wide by 0.17 to 0.30 m thick. Subsurface Feature 8 and is oriented along a north/south axis. Subsurface Feature 8 is visible in both the north and south wall profiles (Figures 15 and 16) suggesting the feature may have been a linear depression. Subsurface Feature 8 underlies Layer III and SSFE-7 and SSFE-7 intrudes through SSFE-8, indicating that SSFE-8 pre-dates SSFE-7 and Layer III. Material collected from SSFE-8 consisted of marine shell, euryhaline invertebrate, fish bone, 0invertebrate, small mammal (i.e., dog-size) bone, terrestrial vertebrate, charcoal, burnt *kukui*, and 2 pieces angular basalt (see Appendix B). The function of SSFE-8 was indeterminate.

State Site 50-80-02-7774, SSFE-8 (33-50 cmbs/ 23-54 cmbs) feature fill consisted of dark yellowish brown (10YR 3/4, dry) loamy sand. Material collected from SSFE-8 feature fill consisted of 35.1 g. *Turbo sandwicensis*, 10.5 g. *Nerita picea*, 0.1 g. *Theodoxus cariosus*, 1.2 g. *Littorina pintado*, 10.4 g. *Strombus maculates*, 0.1 g. *Hipponix foliaceus*, 0.9 g. *Cypraea* spp., 1,5 g. *Drupa ricina*, 1.3 g. *Conus* sp., 1.6 g. *Brachidontes crebristriatus*, 0.7 g. *Isognomon californicum*, 0.1 g. *Ctena bella*, 2.0 g. *Tellina palatam*, 0.3 g. *Periglypta reticulate*, 0.2 g. *Lepas ansifera*, 0.5 g. non-diagnostic Decopada, 1.9 g non-diagnostic Echinoidea, 0.1 g. *Echinometra mathaei*, 0.6 g. *Echinometra oblonga*, 2.3.g. non-diagnostic Osteichthyes vertebrate , 0.1 g. Monacanthidae, 0.5 g, non-diagnostic Decopoda, 0.5 g. small mammal (i.e., dog-size) bone, 0.2 g. *Rattus/Mus*. sp. vertebrate, 6.1 g. of charcoal, 0.3 g. of burnt *kukui*, and 2 pieces angular basalt.



Figure 15: Photographic Overview of Subsurface Feature 5, in Lower Left, Excavated Subsurface Features 7 and 8, and Subsurface Feature 9, in Lower Right. View to South.



Figure 16: Photographic View of Subsurface Feature 8, in Profile; Subsurface Feature 9, Lower Left Profile, and Subsurface Feature 10, Lower Right Profile. View to South.

Subsurface Feature 9 (SSFE-9) **GPS Coordinates**:
East 610074 and North 2396968 **Condition**: Good
Subsurface Feature Type: Pit
Function: Undetermined
Age: pre-Contact

Subsurface Feature 9 (SSFE-9) (30-54 cmbs) consists of a bowl-shaped pit identified within TU-1. Subsurface Feature 9 measured 0.44 m long by 0.30 m wide by 0.24 m thick (see Figures 15 and 16). Subsurface Feature 9 exhibits nearly vertical sides, originates the base of Layer III, and intrudes into Layer IV, extending from 30 to 53 cmbs. Material collected from SSFE-9 consisted of marine shell, fish bone, small mammal (dog size, juvenile) bone, and charcoal. Subsurface Feature 9 was constructed by excavating into the culturally sterile Layer IV. Subsurface Feature 9 appears to be associated with SSFEs 1, 5, 6, and 10. The function of SSFE-9 was indeterminate.

> State Site 50-80-02-7774, SSFE-9 (30-54 cmbs) feature fill consisted of dark yellowish brown (10YR 3/4, dry) loamy sand. Material collected from SSFE-9 feature fill consisted of 12.4 g. *Turbo sandwicensis*, 2.9 g. *Nerita picea*, 0.3 g. *Littorina pintado*, 2.6 g. *Rhinoclavis sinensis*, 1.9 g. *Strombus maculates*, 0.5 g. *Cypraea* sp., 1.1 g. *Cypraea caputserpentis*, 0.2 g. *Conus* sp., 2.8 g. *Conus lividus,* 0.1 g. *Brachidontes crebristriatus*, 1.6 g, *Tellina palatam*, 0.1 g. non-diagnostic Decopoda, 0.1 g. non-diagnostic Echinoidea, 0.1 g. *Echinometra mathaei*, 0.1 g. *Echinothrix diadema*, 04 g. non-diagnostic Osteichthyes vertebrate, 0.1 g. *Monacanthidae*, 0.7 g. small mammal (dog-size; juvenile) vertebrate, and 4.1 g. charcoal.

Subsurface Feature 10 (SSFE-10) **GPS Coordinates:**
East 610074 and North 2396968 **Condition:** Good
Subsurface Feature Type: Pit
Function: Undetermined
Age: pre-Contact

Subsurface Feature 10 (SSFE-10) consists of a pit exhibiting a wide, flat bottom identified within TU-1. Subsurface Feature 10 measures 0. 48 cm in diameter by 0.44 m thick and extends from 9 to 53 cmbs (Figure 17; see Figure 16). Subsurface Feature 10 exhibits nearly vertical sides, originates the base of Layer II, and intrudes through Layers III and IV. In planview, SSFE 10 is immediately adjacent to SSFE-1. Material collected from feature fill is comprised of marine

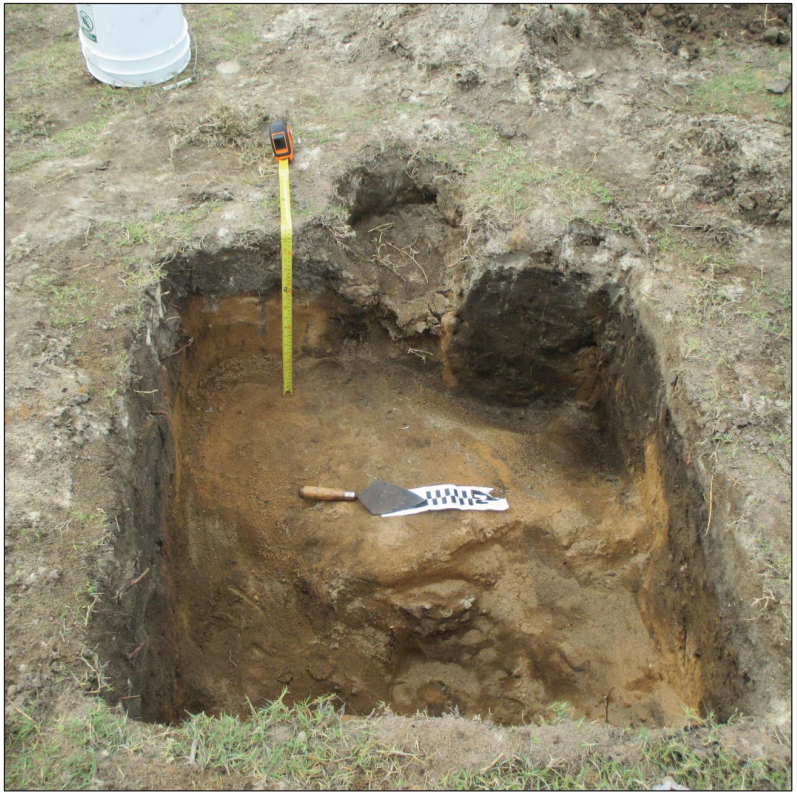

Figure 17: Photographic View of Subsurface Feature 10 in Northwest Corner, North and West Faces. View to West.

shell, fish bone, small mammal (dog size) bone, bird bone, charcoal, burnt *kukui*, and one waterworn basalt cobble. Artifactual material collected from SSFE-10 feature fill consisted of one basalt interior flake (see Appendices B and C). Subsurface Feature 10 appears to be associated with SSFEs 1, 5, 6, 8 and 9. The function of SSFE-10 was indeterminate.

> State Site 50-80-02-7774, SSFE-10 (8-60cmbs) feature fill consisted of dark yellowish brown (10YR 3/4, dry) loamy sand. Material collected fromSSFE-10 feature fill consisted of 0.8 g. *Turbo sandwicensis*, 3.3 g. *Nerita picea*, .3 g. *Littorina pintado*, 4.8 g. *Strombus maculates*, 0.3 g. *Cypraea* sp., 2.0 g. *Cypraea caputserpentis*, 0.4 g. *Drupa* sp., 2.4 g. *Conus spiceri*, 1.0 g. *Brachidontes crebristriatus*, 1.3 g. *Tellina palatam*, 0.1 g. non-diagnostic *Cirripedia*, 1.3 g. non-diagnostic Echinoidea, 0.1 g. *Echinometra mathaei*, 0.1 g. *Colobocentrotus atratus*, 0.2 g. *Echinometra oblonga*, 0.4 g. *Echinothrix diadema*, 0.3 g. *Heterocentrotus mammillatus*, 1.1 g. non-diagnostic Osteichthyes vertebrate, 0.1 g. small vertebrate (bird-size), 0.2 g. non-diagnostic aves vertebrate, 0.1 g. small mammal (dog-size) vertebrate , 2.0 g. charcoal, 0.2 g. burnt *kukui*, one piece basalt debitage interior flake, and one waterworn basalt cobble.

SHOVEL PROBE RESULTS

In an effort to determine the horizontal boundaries of State Site 50-80-02-7774, eleven shovel probes (SP-1 through SP-11), which indicated presence or absence of cultural materials, were manually excavated (see Figure 8). In order to prevent the destabilization of the dune, it was decided not to place a shovel probe into the crest of the dune itself. The first shovel probe was placed at the base of the west slope of the dune. Designated Shovel Probe 1 (SP-1), the probes extended every 2 m along a westward line. The shovel probes were numbered chronologically, in the order they were excavated. Thus, SP-5 was the designation of the westernmost unit for this initial line. The cultural layer and cultural materials were exposed in all five of these shovel probes. Subsurface Feature 1 (SSFE-1), a post mold, was identified in SP-2. Subsurface Features 2 and 3, also post molds, were identified in SP-3.

Shovel Probe 6 was placed 4.0 m south of SP-3, and SP-7 was placed 2.0 m south of SP-3. Shovel Probe 8 was placed 5.0 m north of SP-2, with SP-9 placed 5.0 m north of SP-8. Shovel Probe 10 was placed 5.0 m north of SP-9. An existing fire pit excavated into the dune was located 5 meters north of SP-10. The cultural layer and cultural materials were exposed in all three of these probes. The existing fire pit walls did not expose the cultural layer, but did show

signs of having been used often. This was the only area that contained modern materials such as broken bottle glass and metal bottle caps.

Shovel Probe 11 was placed 2.0 m west of SP-5. The excavation of Shovel Probe 11 also exposed the cultural layer and cultural materials. Shovel Probe 11 was located at the southern end of the *naupaka* stand and west of the western end of the southern arm of the limestone escarpment. The dune at this location descended at a gradual southward slope to the beach, and was generally level to the west and north.

Shovel Probe 1 (SP-1)

Shovel Probe 1 (SP-1) measured 30cm in diameter by 45cm thick. Materials collected from SP-1 consisted of: 16.2 g. *Turbo sandwicensis*, 5.8 g. *Nerita picea*, 0.2 g. *Theodoxus neglectus*, 0.3 g. *Littorina pintado*, 5.1.g. *Rhinoclavis sinensis*, 2.8 g. *Strombus maculates*, 10.9 g. *Cypraea caputserpentis*, 0.9 g. *Neothais harpa*, 1.2 g. *Conus* sp., 2.7 g. *Conus flavidus*, 0.7 g. *Brachidontes crebristriatus*, 1.7 g. *Tellina palatam*, 1.1 g. non-diagnostic Decopoda, 0.1 g. *Colobocentrotus atratu*, 0.6 g. non-diagnostic Osteichthyes vertebrate, 0.7 g. *Acanthuridae*, 0.2 g. non-diagnostic aves vertebrate, 0.2 small mammal (dog-size) vertebrate, 1.0 g. unburnt *kukui*. (see Appendix B). Three stratigraphic layers were exposed in profile (Figures 18 and 19).

> Layer I (0-6cmbs) consisted of grayish brown (10YR 5/2, dry) sand with a dense network of grass roots. Layer I was interpreted as a natural deposit.
>
> Layer II (6-10cmbs) consisted of dark yellowish brown (10YR 4/6, dry) aeolian transported sand. Layer II was interpreted as a natural deposit.
>
> Layer III (10-45cmbs) consisted of very dark brown (10 YR 2/2, dry) loamy sand and was interpreted as a natural, former A-horizon. The excavation was terminated at 45cmbs.

Shovel Probe 2 (SP-2)

Shovel Probe 2 (SP-2) measured 30cm in diameter by 45cm in depth. Site 50-80-02-7774, SSFE-1, a post mold, was identified in the eastern face of SP-2. Materials collected from SP-2 consisted of: 7.3 g. *Turbo sandwicensis*, 3.6 g. *Nerita picea*, 0.2 g. *Littorina pintado*, 1.5 g. *Strombus maculates*, 2.0 g. *Cypraea caputserpentis*, 2.6 g. *Conus pennaceus*, 0.4 g. *Melampus castaneus*, 0.4 g. *Brachidontes crebristriatus*, 0.3 g. non-diagnostic Echinoidea, 0.4 g. non-diagnostic *Osteichthyes* vertebrate, 0.4 non-diagnostic aves vertebrate, 0.1.g. small mammal

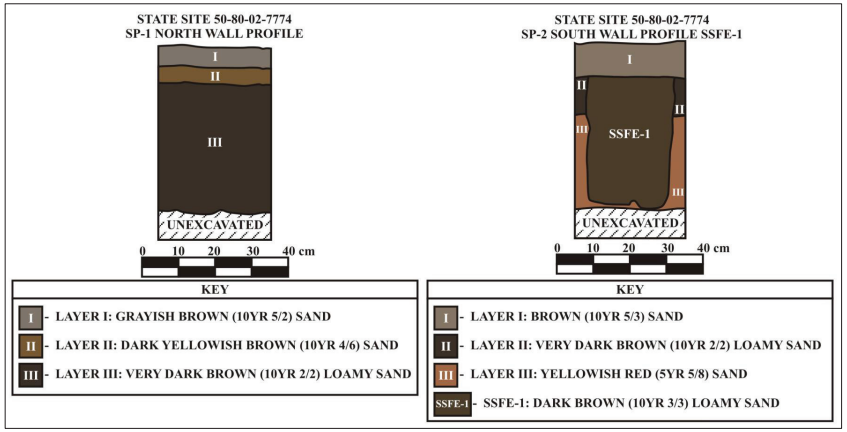

Figure 18: Profile Drawing Shovel Probe 1 and Shovel Probe 2.



Figure 19: Photographic View of Shovel Probe 1. View to Northwest.

(dog-size) vertebrate, 0.1 g. burnt *kukui*, 0.8 g. charcoal, one waterworn basalt pebble manuport, (see Appendix B). Artifactual materials collected from SP-2 consisted of one basalt pebble manuport and one Traditionally cut marine shell (*Pinctada* sp.) with two adjoining facets traditionally cut (see Appendices B and C).Three stratigraphic layers and one cultural feature were exposed in profile (see Figure 18; see Figure 12).

> Layer I (0-6 cmbs) consisted of brown (10YR 5/3, dry) sand and contained grass roots. Layer I was interpreted as a natural stratum. No cultural materials present.
>
> Layer II (6-20 cmbs) consisted of dark brown (10YR 2/2, dry) loamy sand with charcoal flecking. Site 50-80-02-7774, SSFE-1, a post mold, was identified within Layer II (see Subsurface Feature discussion). Layer II was interpreted as a natural stratum and former A-horizon.
>
> Layer III (20-45 cmbs) consisted of yellowish red (5YR 5/8, dry) aeolian transported sand mixed with alluvial soil. Layer III was interpreted as a natural stratum.

Shovel Probe 3 (SP-3) measured 30 cm in diameter by 42 cm in depth. Four stratigraphic layers and two subsurface cultural features (SSFE-2 and SSFE-3) were exposed in profile (Figure 20; see Figure 12). Both SSFE- 2 and SSFE-3 were post molds. State Site 50-80-02-7774, SSFE-2 was identified in the east face of SP-3 and SSFE-3 was identified in the south face of SP-3 (see Subsurface Feature discussion). Material collected from SP-3 consisted of: 0.2 g. *Cellana sandwicensis,* 0.8 g. *Turbo sandwicensis*, 11.4 g. *Nerita picea*, 0.7 g. *Littorina pintado*, 1.9 g. *Strombus maculates*, 1.8 g. *Cypraea* sp.,0.5 g. *Drupa* sp., 0.2 g. *Neothais harpa*, 0.2 g. *Anachis miser*, 0.2 g. *Conus* sp., 0.1 g. non-diagnostic *Pulmonata*, 0.6 g. *Melampus castaneus*, *Brachidontes crebristriatus*, 0.5 g. *Tellina palatam*, 0.4 g. non-diagnostic Echinoidea, 0.1 g. *Colobocentrotus atratus*, 0.3 g. non-diagnostic Osteichthyes, 0.3 g. non-diagnostic aves, and 0. 5 g. *sus scrofa* vertebrate (see Appendix B). Artifactual material collected from SP-3 consisted of three pieces basalt debitage interior flakes, one abraded hematite cobble which exhibits two abraded facets and striations are visible (see Appendices B and C).

> Layer I (0-7 cmbs) consisted of brown (10YR 4/3, dry) loamy sand with a dense network of grass roots. Layer I was interpreted as a natural stratum.
>
> Layer II (7-12cmbs) was comprised of very pale brown (10YR 7/4, dry) aeolian transported sand. Layer II was interpreted as a natural

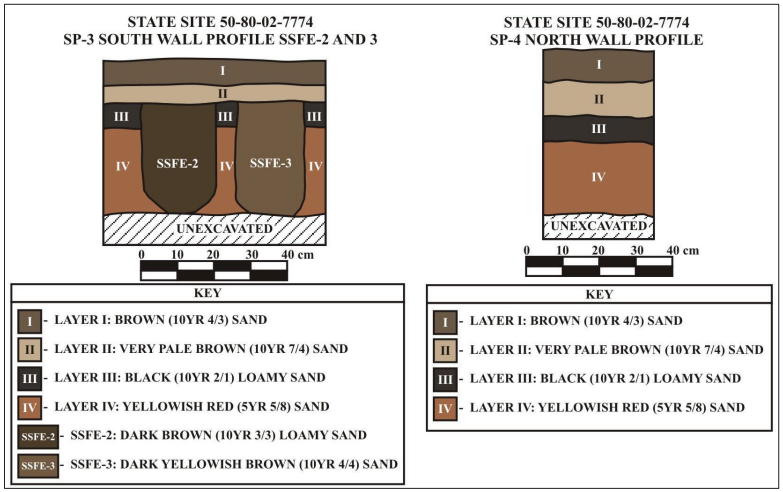

Figure 20: Profile Drawing Shovel Probe 3 and Shovel Probe 4.

stratum. Subsurface Feature 2 and SSFE-3 originated at the interface of Layer II and Layer III and were excavated through Layer III and into Layer IV.

Layer III (12-18cmbs) consisted of black (10YR 2/1, dry) loamy sand with charcoal. Layer III was interpreted as a cultural deposit (buried A-Horizon) and subsequently designated State Site 50-80-02-7774.

Layer IV (18-42) was comprised of yellowish red (5YR 5/8, dry) aeolian transported sand mixed with alluvial soil. Layer IV was culturally sterile and interpreted as a natural stratum.

Shovel Probe 4 (SP-4) measured 30cm in diameter by 45cm in depth. Four stratigraphic layers were identified within SP-4 (Figures 21; see Figure 20), corresponding with the stratigraphy of SP-3, but the depths are at slightly lower elevations. State Site 50-80-02-7774 was present within SP-4, Layer III. Materials collected from SP-4 consisted of: 0.3 g. *Trochus intextus*, 0.1 g. *Turbo sandwicensis*, 0.2 g. *Nerita* sp., 13.0 g. *Nerita picea*, 12.2 g. *Strombus maculates*, 4.5 g. *Cypraea* spp., 2.2 g. *Cypraea caputserpentis*, 0.5 g. *Drupa* sp., 0.6 g. *Drupa rubusidaeus*, 0.1 g. *Anachis miser*, 0.3 g. *Melampus castaneus*, 0.8 g. *Brachidontes crebristriatus*, 0.8 g. *Isognomon californicum*, 2 g. *Periglypta reticulate*, 0.2 g. non-diagnostic Decopoda, 0.6 g. non-diagnostic Echinoidea, 0.6 g. *Echinometra oblonga*, 0.5 g. non-diagnostic Osteichthyes, 0.4 g small mammal (dog-size) vertebrates, 0.3 g. charcoal, 1.6 g. non-burnt *kukui*, and one fire affected basalt cobble (see Appendix B). Artifactual material collected from SP-4 consisted of 2 pieces of basalt debitage interior flakes (see Appendices B and C).

Layer I (0-9cmbs) was comprised of brown (10YR 4/3, dry) sand with a dense network of short grass roots. Layer I was culturally sterile and interpreted as a natural stratum.

Layer II (9-18cmbs) consisted of very pale brown (10YR 7/4, dry) aeolian transported sand. Layer II was culturally sterile and interpreted as a natural deposit.

Layer III (18-25cmbs) consisted of black (10YR 2/1, dry) loamy sand with charcoal. Layer III was interpreted as a cultural layer, a former A-horizon, and subsequently designated State Site 50-80-02-7774.



Figure 21: Photographic View of Shovel Probe 4. View to North.

Layer IV (25-45cmbs) was comprised of yellowish red (5YR 5/8, dry) aeolian transported sand mixed with alluvial soil. Layer IV was culturally sterile and interpreted as a natural layer.

Shovel Probe 5 (SP-5) measured 30cm in diameter by 50cm in depth. Three stratigraphic layers were identified (Figures 22 and 23). Shovel Probe 5 was exceeded in depth only by SP-11, located 2.0 m to the west, and by ST-25, located 5.0 m to the west Material collected from SP-5 consisted of: 1.8 g. *Cellana sandwicensis*, 4.3 g, *Turbo sandwicensis*, 10.2 g. *Nerita picea*, 0.6 g. *Littorina pintado*, 2.6 g. *Strombus maculates*, 1.1 g. *Cypraea* sp., 8.6 g. *Cypraea caputserpentis*, 0.3 g. *Cypraea talpa*, 1.3 g. *Mitra litterata*, 3.8 g. *Conus* sp., 0.6 g. *Isognomon incisum*, 0.2 g. *Lepas ansifera*, 1.0 g. non-diagnostic Decopoda, 0.2 g. *Colobocentrotus atratus*, 0.1 g. non-diagnostic Osteichthyes, 1.5 g. small to medium mammal (dog to pig-size) vertebrates, 0.3 g. charcoal, and 9.8 g. non-burnt *kukui* (see Appendix B). Artifactual material collected from SP-5 consisted of four pieces basalt debitage interior flakes and one coral abrader fragment (see Appendices B and C). The culturally sterile sand deposit was not exposed beneath the cultural layer (Layer III; State Site 50-80-02-7774) identified within SP-5.

Layer I (0-13 cmbs) consisted of brown (10YR 4/3, dry) sand with a dense network of short grass roots. Layer I was culturally sterile and interpreted as a natural stratum.
Layer II (13-30 cmbs) was comprised of very pale brown (10YR 7/4, dry) aeolian transported sand. Layer II was culturally sterile and interpreted as a natural stratum.

Layer III (30-50 cmbs) consisted of very dark grayish brown (10YR 3/2, dry) loamy sand with 20% of the excavated soils consisted of fine to medium sized sub-angular gravels. Layer III was interpreted as a cultural layer, former A-horizon, and subsequently designated State Site 50-80-02-7774.

Shovel Probe 6 (SP-6) measured 30cm in diameter by 30cm in depth. Three stratigraphic layers were identified within SP-6 (Figures 24; see Figure 22). State Site 50-80-02-7774 was present within SP-6, Layer II. Material collected from AP-6 consisted of: 0.9 g. *Cypraea* sp., 3.5 g. *Cypraea caputserpentis*, 3.9 g. *Conus pennaceus*, 2.4 g. *Conus quercinus*, 0.2 g. *Brachidontes crebristriatus*, 0.6 g. non-diagnostic Osteichthyes, 0.8 g. non-diagnostic aves vertebrates, 0.5 g. burnt *kukui,* 3.8 g. non-burnt *kukui*, one fire affected basalt pebble (see Appendix B).

Layer I (0-7cmbs) was comprised of grayish brown (10YR 5/2, dry) loamy sand with a dense network of short grass roots. Layer I was culturally sterile and interpreted as a natural deposit.

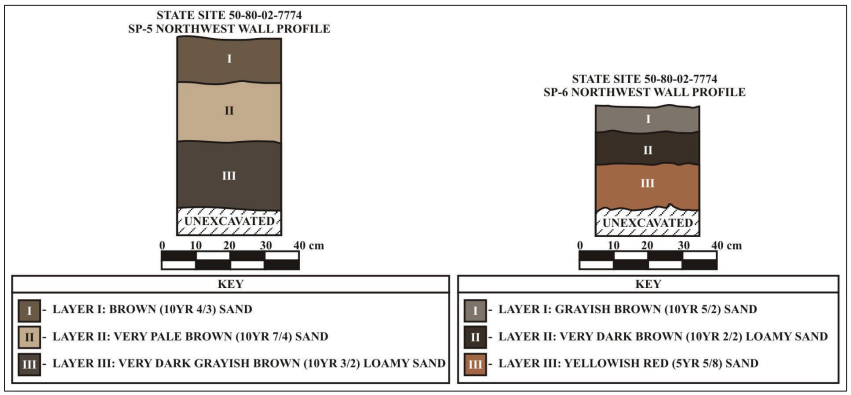

Figure 22: Profile Drawing Shovel Probe 5 and Shovel Probe 6.



Figure 23: Photographic View of Shovel Probe 5. View to North.



Figure 24: Photographic View of Shovel Probe 6. View to Northwest.

Layer II (7-16cmbs) consisted of very dark brown (10YR 2/2, dry) loamy sand with charcoal flecking. Layer II was interpreted as a cultural layer, former A-horizon, and subsequently designated State Site 50-80-02-7774.

Layer III (16-30cmbs) was comprised of yellowish red (5YR 5/8, dry) aeolian transported sand mixed with alluvial soil. Layer III was culturally sterile and interpreted as a natural deposit.

Shovel Probe 7 (SP-7) measured 30cm in diameter and was 40cm in depth. Three stratigraphic layers were identified within SP-7 (Figures 25 and 26). State Site 50-80-02-7774 was present within SP-7, Layer II. Materials collected from SP-7 consisted of 0.8 g. *Cellana exarata*, 3.7 g. *Turbo sandwicensis*, 17.3 g. *Nerita picea*, 0.9 g. *Littorina pintado*, 2.6 g. *Strombus maculates*, 0.9 g. *Cypraea* sp., 3.7 g. *Cypraea caputserpentis*, 0.1 g *Melampus castaneus*, 0.1 g. non-diagnostic Bivalvia, 0.2 g. *Brachidontes crebristriatus*, 0.3 g. *Pinctada* sp., 0.3 g. *Isognomon californicum*, 15.0 g non-diagnostic *Cirrepedia*, 0.2 g. *Lepas ansifera*, 0.6 g. nn-diagnostic Decopoda, 0.1 g. non-diagnostic Osteichthyes vertebrate, 1.6 g. small to medium mammal (dog to pig-size) vertebrates, and 0.2 g. charcoal (see Appendix B). Artifactual material collected from SP-7 consisted of piece basalt debitage interior flake and one sea urchin abrader (see Appendices B and C).

Layer I (0-7cmbs) consisted of grayish brown (10YR 5/2, dry) loamy sand with a dense network of short grass roots. Layer I was culturally sterile and interpreted as a natural deposit.

Layer II (7-16cmbs) was comprised of very dark brown (10YR 2/2, dry) loamy sand with charcoal flecking. Layer II was interpreted as a cultural layer, former A-horizon, subsequently designated State Site 50-80-02-7774.

Layer III (16-40cmbs) Yellowish Red (5YR 5/8, dry) aeolian transported sand mixed with alluvial soil. Layer III was interpreted as a natural stratum.

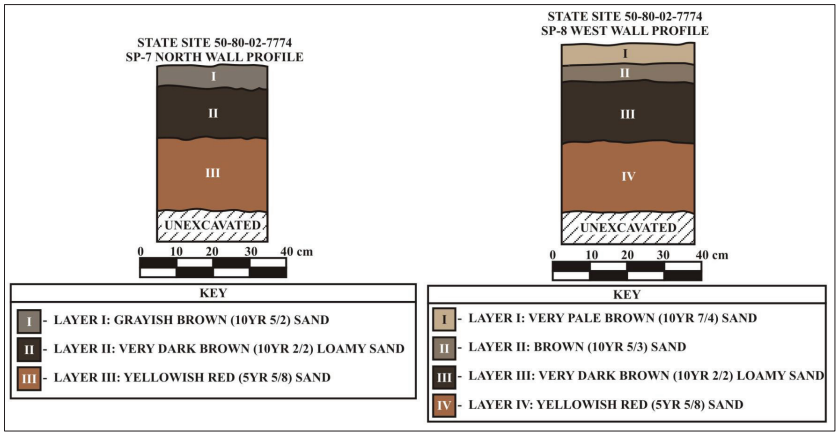

Figure 25: Figure 22: Profile Drawing Shovel Probe 7 and Shovel Probe 8.



Figure 26: Photographic View of Shovel Probe 7. View to West.

Shovel Prove 8 (SP-8) measures 35cm in diameter by 45cm in depth. Four stratigraphic layers were identified within SP-8 (Figure 27; see Figure 25). The stratigraphy pf SP-8 corresponds with that identified in the east to west line of shovel probes (SP-9 and SP-10) and shows that the northward extend of the cultural deposit is intact and greater than that as exposed in the eastern face of the dune. Material collected from SP-8 consisted of 0.3 g. *Cellana* sp., 0.6 g. *Cellana sandwicensis*, 0.3 g. *Cellana talcosa*, 3.4 g. *Turbo sandwicensis*, 7.7.g. *Nerita picea*, 0.5 g. *Strombus maculates*, 3.9 g. *Cypraea caputserpentis*, 0.9 g. *Drupella ochrostoma*, 0.9 g. *Periglypta reticulate*, 0.6 g. *Scaridae* vertebrate, 1.0 g. *cf. Gallus gallus* vertebrate, and 19.5 g. non-burnt *kukui*. Artifactual material collected from SP-8 consisted of one piece of basalt debitage primary flake (see Appendices B and C).

Layer I (0-5cmbs) consisted of very pale brown (10YR 7/4, dry) sand with a dense network of short grass roots. Layer I was culturally sterile and interpreted as a natural deposit.

Layer II (5-10cmbs) was comprised of brown (10YR 5/3, dry) sand. Layer II was interpreted as a former A-horizon Layer II was culturally sterile and interpreted as a natural stratum.

Layer III (10-25cmbs) consisted of very dark brown (10YR 2/2, dry) loamy sand with charcoal flecking. Layer III is a cultural layer, former A-horizon, and subsequently designated State Site 50-80-02-7774.

Layer IV (25-45cmbs) consisted of yellowish red (5YR 5/8, dry) aeolian transported sand mixed with alluvial soil. Layer IV was culturally sterile and interpreted as a natural stratum.

Shovel Probe 9 (SP-9) measures 40cm in diameter by 50cm in depth. Four stratigraphic layers were identified within SP-9 (Figures 28 and 29). The stratigraphy exposed in this shovel probe corresponds with others in this northward line of excavations (SP-8 and SP-10). Materials collected from SP-9 consisted of: 1.9 g. *Turbo sandwicensis*, 2.9 g. *Nerita picea*, 0.2 g. *Hipponix foliaceus*, 1.9 g. *Rhinoclavis sinensis*, 0.9 g. *Cypraea caputserpentis*, 1.2 g. *Conus* sp., 1.0 g. non-diagnostic *Pulmonata*, 1.0 g. *Tellina palatam*, 0.1 g. *Lepas ansifera*, <0.1 g. Osteichthyes vertebrate, 1.6 g. charcoal, and10.1 g. non-burnt *kukui*. Artifactual material collected from SP-9 consisted of one basalt flake with polish, five fire affected basalt rocks, one basalt abrader, and one Modern non-diagnostic ferrous metal fragment (see Appendices B and C),



Figure 27: Photographic View of Shovel Probe 8. View to West.

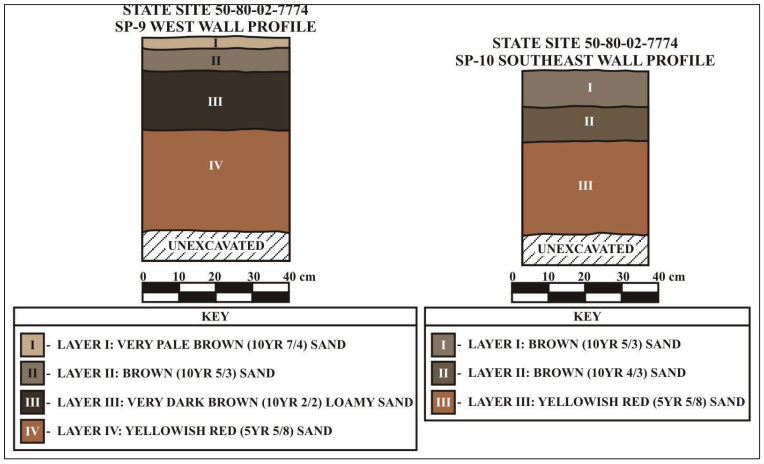

Figure 28: Profile Drawing Shovel Probe 9 and Shovel Probe 10.



Figure 29: Photographic View of Shovel Probe 9. View to West.

Layer I (0-3cmbs) was comprised of very pale brown (10YR 7/4, dry) loamy sand with a dense network of short grass roots. Layer I was culturally sterile and interpreted as a natural deposit. The lower boundary of Layer I was noticeably different from others identified in all other excavations on site in that it was visibly wavy. This may be an indication of disturbed soil in the immediate area. Layer II (3-9cmbs) consisted of brown (10YR 5/3) sand. Layer II was culturally sterile, a former A-horizon, and interpreted as a natural stratum.

Layer III (9-25cmbs) was comprised of very dark brown (10YR 2/2, dry) loamy sand and charcoal flecking. Layer III consisted of a cultural layer, former A-horizon, and subsequently designated State Site 50-80-02-7774. Small sub-angular basalt gravels were present within the deposit, but these constituted less than 10% of excavated soil.

Layer IV (25-52cmbs) consisted of yellowish red (5YR 5/8, dry) aeolian transported sand mixed with alluvial soil. Layer IV was culturally sterile and interpreted as a natural deposit.

Shovel Probe 10 (SP-10) measured 35cm in diameter by 45cm in depth. Three stratigraphic layers were identified within SP-10 (Figure 30; see Figure 28). Shovel Probe 10 was the northern most shovel probe in the northward line of excavations. An existing fire pit located 5.0 m to the north showed signs of recent use and contained the only modern and/or historic trash located on the site. This recent fire pit had been excavated into the dune to a depth of at least 30 centimeters below surface. This recent fire pit was not formally excavated during this field project. Material collected from SP-10 consisted of: 0.3 g. *Cellana sandwicensis*, 4.7 g. *Turbo sandwicensis*, 1.3 g. *Sus scrofa* vertebrate, 2.5 g. non-burnt *kukui*, and 0.4 g. burnt *kukui* (see Appendix B).

Layer I (0-9cmbs) consisted of brown (10YR 5/3) sand with a dense network of short grass roots. Layer I was , dry culturally sterile and interpreted as natural deposit.

Layer II (9-18cmbs) was comprised of brown/dark brown (10YR 4/3, dry) sand and former A-horizon. The upper and lower boundaries are diffuse and faint. It may be that Layer II has been disturbed by previous excavations in the immediate vicinity. Whether those previous activities are recent, historic or pre-Contact could not be determined.



Figure 30: Photographic View of Shovel Probe 10. View to West.

Layer III (18-45cmbs) had a mixed interface between Layer II brown/dark brown sand (10YR 4/, dry 3) and Layer III yellowish brown (5YR 5/8, dry) sand. Layer III was interpreted as a cultural layer, former A-horizon, and subsequently designated State Site 50-80-02-7774.

Shovel Probe 11 (SP-11) measured 50cm in diameter by 55cm in depth. Nine stratigraphic layers were identified within SP-11 **(**Figures 31 and 32**)**. Shovel Probe 11 was the last shovel probe excavated and was placed 2m west of SP-5 in an effort to determine the westward extent of the cultural deposit (State Site 50-80-02-7774). Shovel Probe 11 was placed north and west of the westward end of the limestone escarpment that is the southern boundary of the dune. South from SP-11 the dune descends gradually southward to Malaekahana Beach. The dune to the north is masked by a stand of *naupaka*, and the dune to the west descends slightly to the west for approximately 2m before ascending and leveling off. Material collected from SP-11 consisted of: 5.3 g. *Cellana melanostoma*, 0.3 g. *Cellana sandwicensis*, 3.0 g. *Turbo sandwicensis*, 14.5 g. *Nerita picea,* 11.1 g. *Strombus maculates*, 0.9 g. *Cypraea* sp., 7.9 g. *Cypraea caputserpentis*, 1.5 g. *Conus flavidus*, 2.7 g. *Conus pennaceus*, 7.8 g. *Conus spiceri*, 1.2 g. *Conus sponsalis*, 1.0 g. *Brachidontes crebristriatus*, 0.1 g. *Isognomon californicum*, 0.4 g. *Isognomon incisum*, 0.5 g. *Tellina palatam*, 1.0 g. non-diagnostic Echinoidea, 1.7 g. ,*Heterocentrotus mammillatus*, 0.7 g. non-diagnostic Osteichthyes vertebrate, 0.4 g. *Sus scrofa* vertebrate, 1.2 g. *Homo sapiens* maxillary incisor with broken root, 0.5 g. small mammal (tarsal; dog-size) vertebrate, 0.2 g. small to medium mammal (dog to human-size) vertebrate, 0.6 g. charcoal, and 20.5 g. non-burnt *kukui* (see Appendix B). Artifactual material collected from SP-11 consisted of one modified marine shell which exhibited a single vertical drill hole present through the top of waterworn shell. This item was interpreted as a possible human adornment (see Appendix C).

Layer I (0-3cmbs) consisted of brown/dark brown (10YR 4/3, dry) loamy sand with a dense network of short grass roots. Layer I was culturally sterile and interpreted as is a natural deposit.

Layer II (3-8cmbs) was comprised of light yellowish brown (10YR 6/4, dry) loamy aeolian transported sand. Layer II was culturally sterile and interpreted as is a natural stratum.

Layer III (8-21cmbs) consisted of very pale brown (10YR 7/3, dry) aeolian transported sand. Layer III was culturally sterile and interpreted as is a natural stratum.

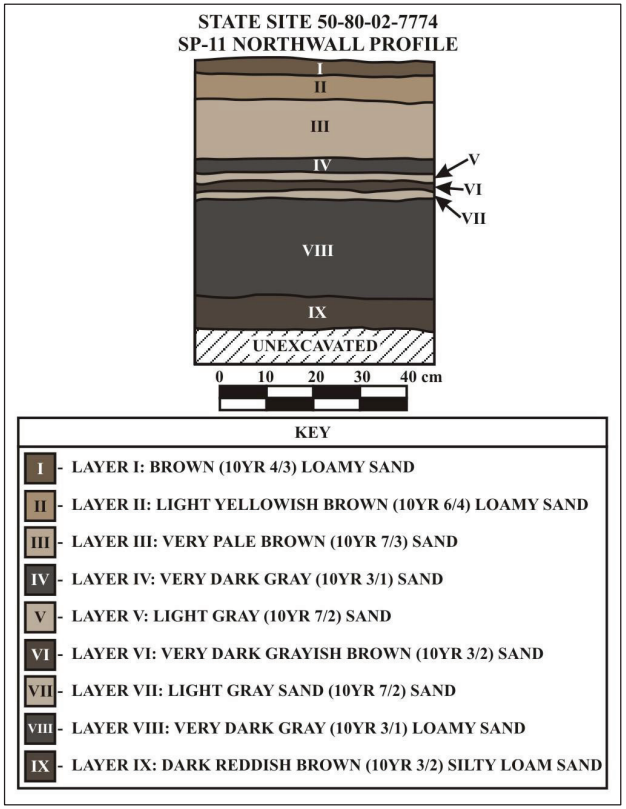

Figure 31: Profile Drawing Shovel Probe 11. North Wall.



Figure 32: Photographic View of Shovel Probe 11. View to Southeast.

Layer IV (21-24cmbs) was comprised of very dark gray (10YR 3/1, dry) sand. Layer IV was culturally sterile and interpreted as is a former A-horizon and natural stratum.

Layer V (24-26cmbs) consisted of light gray (10YR 7/2, dry) aeolian transported sand. Layer V was culturally sterile and interpreted as is a natural stratum.

Layer VI (26-28cmbs) was comprised of very dark grayish brown (10YR 3/2, dry) loamy sand containing a roots. Layer VI was culturally sterile and interpreted as is a natural stratum and former A-horizon.

Layer VII (28-30cmbs) consisted of light gray (10YR 7/2, dry) aeolian transported sand. Layer VII was culturally sterile and interpreted as a natural stratum.

Layer VIII (30-50cmbs) was comprised of very dark gray (10YR 3/1, dry) loamy sand. Layer VIII was interpreted as a cultural deposit, former A-horizon, and subsequently designated State Site 50-80-02-7774.

Layer IX (50-55cmbs) consisted of dark reddish brown (10YR 3/2, dry) silty loamy sand. Layer IX was culturally sterile and interpreted as a former A-horizon mixed with alluvial soil, and a natural stratum.

TEST UNIT 1 (TU-1)

Test Unit 1 (TU-1) was manually excavated in order to obtain stratigraphic control of State Site 50-80-02-7774, with respect to accurately locating artifact and associated cultural material. The excavation of TU-1 originated as an extension of SP-2 and was positioned along the east side SP-2, where Subsurface Feature 1 had been exposed. In order to slightly overlap the eastern side of SP-2, the TU-1measured 1.2 by 1.2 by 0.7 m in size (see Figures 8 and 10). Four strata and SSFE- 5 through -10 exposed during the excavation o TU-1 (Figure 33 through 41).

Layer I (0-5 cmbs) consisted of dark yellowish brown (10YR 4/4, dry) loamy sand with grass roots. The lower boundary is abrupt and solid. Layer I was culturally sterile.

Layer (5-8 cmbs) consisted of dark brown (10YR 3/3, dry) loamy sand. The lower boundary is abrupt and solid. Layer II was culturally sterile. Layer II was interpreted as a former A-horizon.

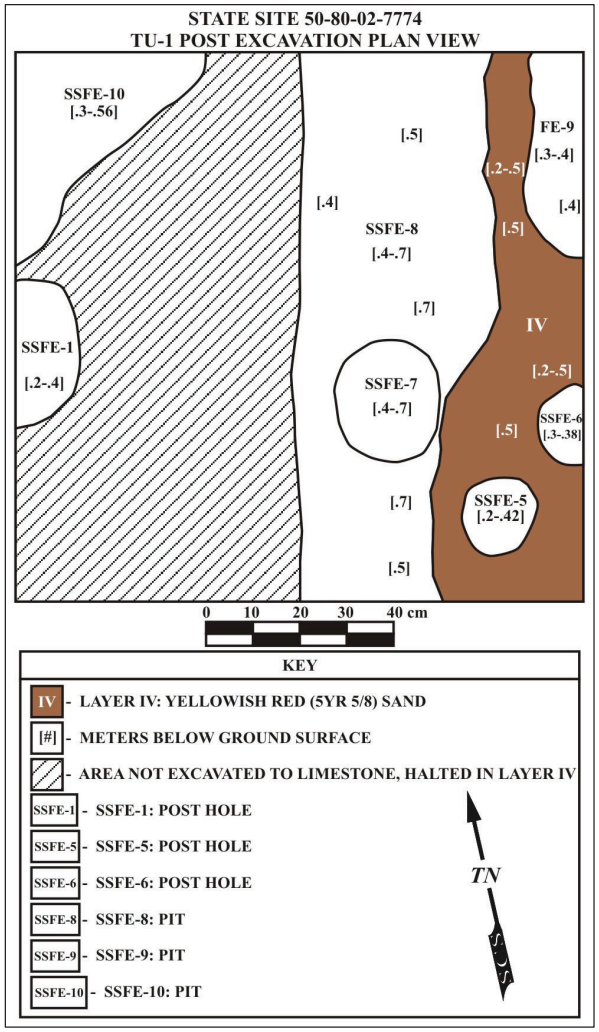

Figure 33: Plan View Drawing of Test Unit 1 Showing Location of Subsurface Features 1 and 5 through 10.

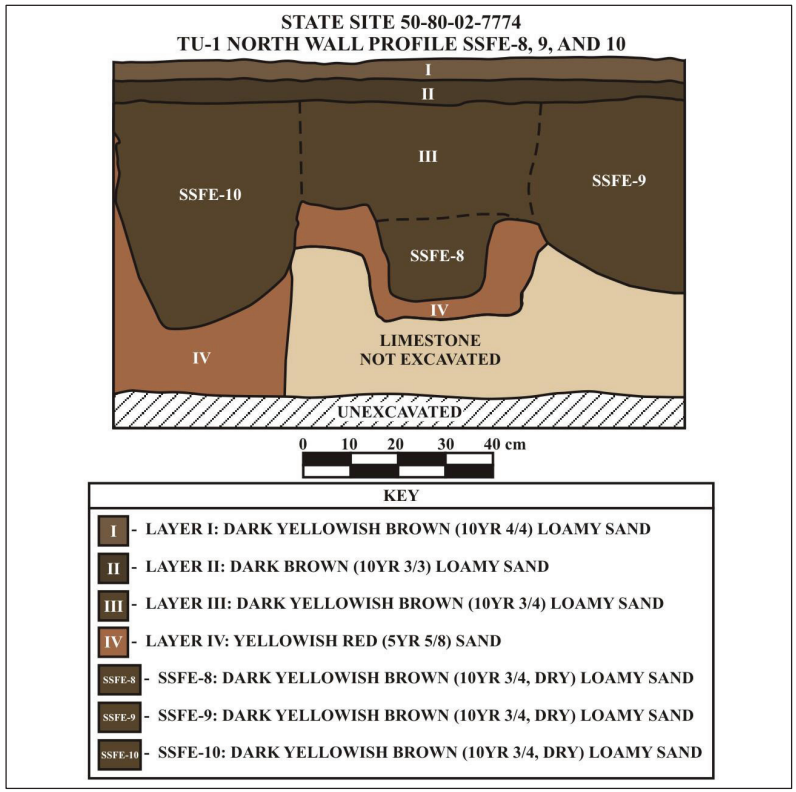

Figure 34: State Site 50-80-02-7774, Test Unit 1, Profile Drawing, North Wall.



Figure 35: Photographic View, State Site 50-80-02-7774, Test Unit 1, Profile Drawing, North Wall. View to North.

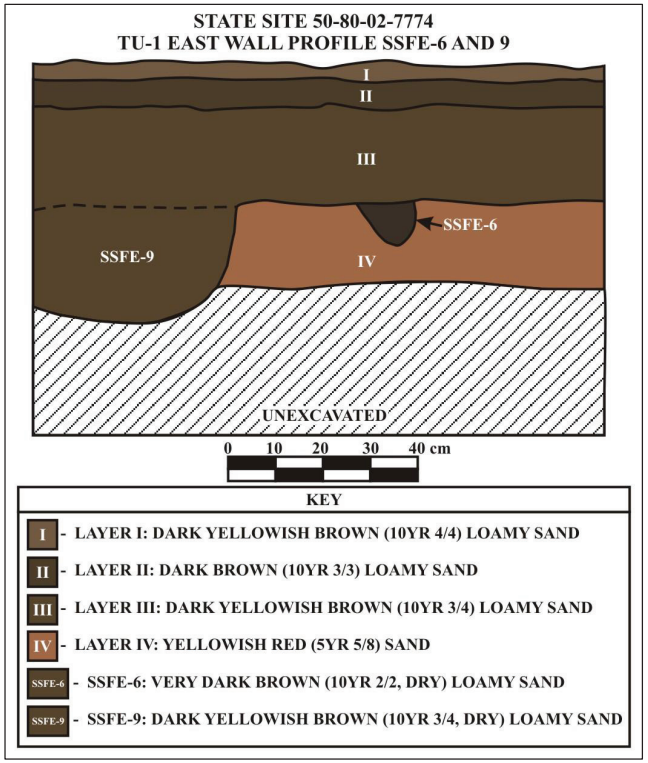

Figure 36: State Site 50-80-02-7774, Test Unit 1, Profile Drawing, East Wall.



Figure 37: Photographic View, State Site 50-80-02-7774, Test Unit 1, Profile Drawing, East Wall. View to East.

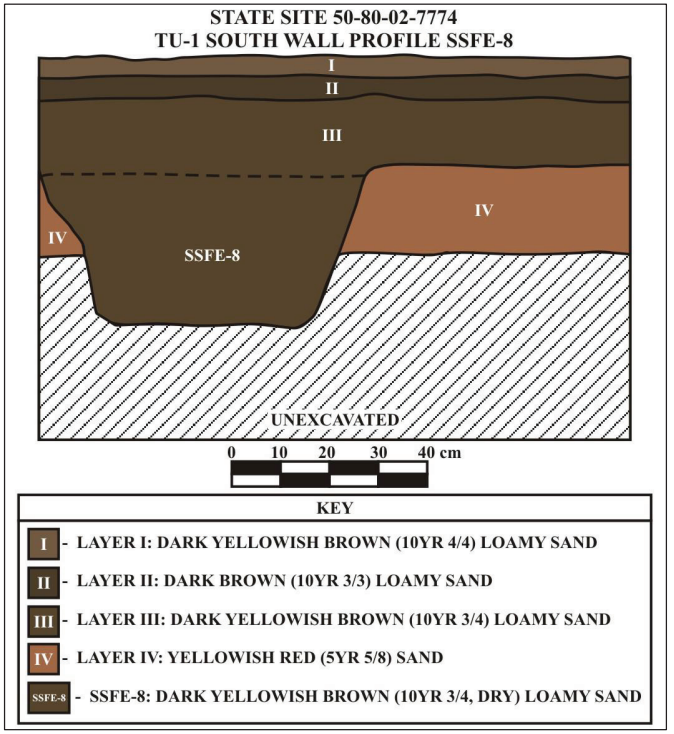

Figure 38: State Site 50-80-02-7774, Test Unit 1, Profile Drawing, South Wall.



Figure 39: Photographic View, State Site 50-80-02-7774, Test Unit 1, Profile Drawing, South Wall. View to South.

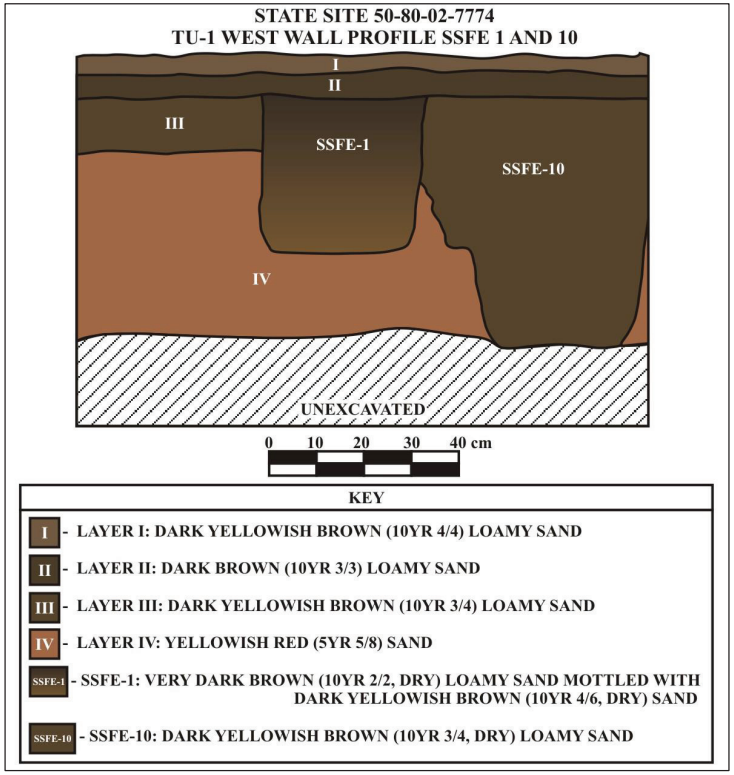

Figure 40: State Site 50-80-02-7774, Test Unit 1, Profile Drawing, West Wall.

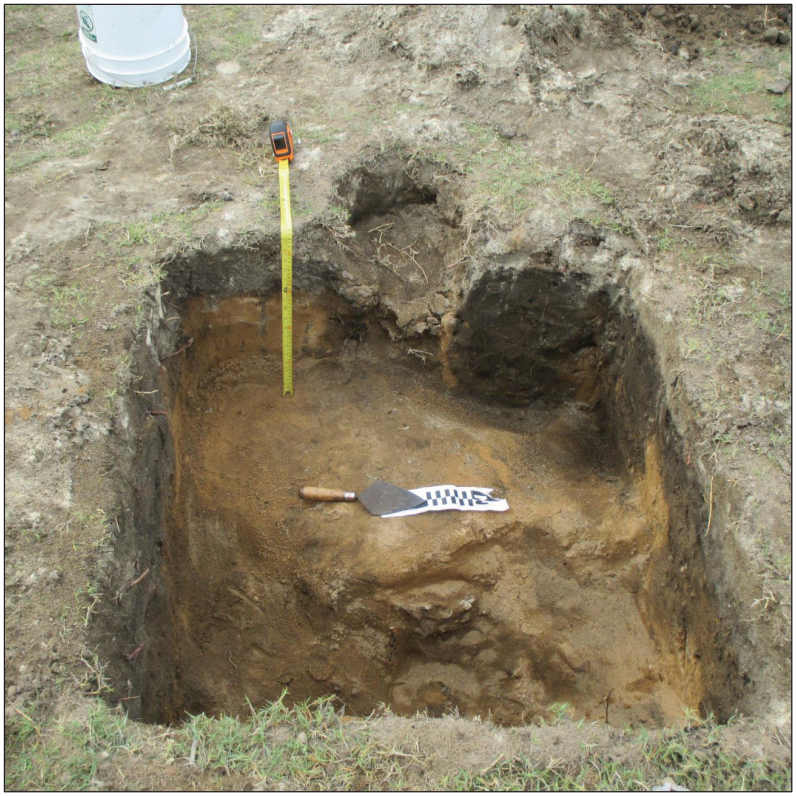

Figure 41: Photographic View, State Site 50-80-02-7774, Test Unit 1, Profile Drawing, West Wall. View to West.

Layer III (8-30 cmbs) consisted of dark yellowish brown (10YR 3/4, dry) loamy sand with charcoal flecking. Layer III is a cultural layer and a former A-horizon.

Layer IV (30-70 cmbs) consisted of yellowish red (5YR 5/8, dry) sand. Layer I V is a natural stratum of the sand dune mixed with alluvium. Layer IV was terminated due to the absence of Traditional or Historic cultural material.

STRATIGRAPHIC TRENCHES

Twenty-five stratigraphic trenches (ST-1 through ST-25) were mechanically excavated for the purpose of determining the presence/absence of historic properties (i.e., archaeological features and archaeological cultural material), in subsurface contexts within the proposed development area at Mālaekahana SRA (see Figure 9 and Figure 10). Stratigraphic Trenches ranged in size from 7.0 to 10.9 m. in length, 0.75 to 0.80 m. in width, and 0.4 to 2.0 m deep and 13 strata were exposed. Stratigraphic Trench 25 contained a traditional cultural layer (State Site 50-80-02-7774) and Subsurface Feature 4, which was interpreted as an *in situ* Traditional-type human burial. No cultural materials or layers were identified in the remaining 24 stratigraphic trenches. Stratigraphic Trenches 1 through 25 are described below and summarized in Table 2.

STRATIGRAPHY

Stratigraphic Trench 1 (ST-1

Stratigraphic Trench 1 (ST-1) contained four stratigraphic layers (Figures 42 and 43). One recent rubber slipper was observed in ST-1. No traditional or Historic artifacts or cultural materials were present in ST-1. The excavation of ST-1 was terminated due to the absence of archaeological materials.

Layer I (0-20 cmbs) consisted of semi-loose, black (10YR 2/1, dry) sandy loam with tree roots. Layer I exhibited a wavy and solid lower boundary and contained a recent rubber slipper. No other cultural materials were identified.

Layer II (20-50cmbs) consisted of semi-loose very pale brown (10YR 8/3, dry) sand with tree roots. No cultural materials were identified. The lower boundary of Layer II was wavy and diffuse.

Layer III (50-80 cmbs) consisted of semi-loose very pale brown (10YR 6/3, dry) sand with tree roots. No traditional or Historic artifacts or cultural materials were present in Layer III. Layer III exhibited a wavy and diffuse lower boundary.

Table 2: Stratigraphic Trenches Excavated within Project Area.

Stratigraphic Trench (ST-)	Length (meters)	Width (meters)	Depth (meters)	Long Axis (Degrees)	GPS Points	Strata Exposed	Stratum Interpretation
ST-1	7.0	0.75	1.8	21/201, mag.	E609856 N2396651	IV	I-Natural Stratum, A-horizon II-Local Fill III-Natural Stratum former A-horizon III-Natural Stratum, Sand Dune I-Natural Stratum, Current A-horizon II-Natural Stratum, Sand Dune
ST-2	9.0	1.0	1.5	80/260, mag	E60989 N239899	II	I-Natural Stratum, Current A-horizon II-Natural Stratum, Sand Dune
ST-3	9.4	0.75	1.7	66/246, mag	E609833 N2396695	V	I-Imported Fill, Current A-horizon II-Disturbed *in situ* Stratum III-Local Fill IV-Former A-horizon, V-Natural Stratum, Sand Dune
ST-4	8.5	0.8 – 1.3	1.5 – 2.0	110/290, mag	E609864 N2396731	II	I-currant A-horizon; II- Natural Stratum, Sand Dune
ST-5	9.7	0.75	1.5	65/245, mag	E609816 N609816	IV	I-Imported fill, Current A-horizon II-Local Fill III-Former A-horizon IV-Natural Stratum, Sand Dune
ST-6	8.7	0.8	1.5	80/260, mag	E609889 N2396791	IV	I-Current A-horizon II-Former A-horizon III-Former A-horizon IV-Natural Stratum, Sand Dune
ST-7	9.8	0.75	1.3	86/266, mag	E609871 N2396723	IV	I-Natural Stratum, current A-horizon, II-Local Fill, III-Natural, Former A-horizon, IV-Natural Stratum, Sand Dune
ST-8	8.5	0.75	1.6	80/260, mag	E609923 N2396723	II	I-Imported Fill Mixed w/ Natural Stratum II-Natural Stratum, Sand Dune
ST-9	7.5	0.85 – 1.3	1.5	_	E609841 N2396800	IV	I - current A-horizon II-Former A-horizon III- former A-horizon; IV-Natural Stratum
ST-10	10.2	0.75	1.5	129/309, mag	E609699 N2396863	VI	I-Natural Stratum, Current A-horizon II-Local Fill III-Former A-horizon IV-Local Fill V-Former A-horizon VI-Natural Stratum, Sand Dune
ST-11	10.5	0.8	1.5	_	E609766 N2396967	II	I-Current A-horizon II-Natural Stratum, Sand Dune
ST-12	9.3	0.75	1.5	67/247, mag	E609792 N2396919	III	I-Natural Stratum, Current A-horizon II-Natural Stratum III-Natural Stratum Sand Dune
ST-13	8.5	0.8	1.5	330, 150, mag	E609876 N2396978	II	I-Current A-Horizon II-Natural Stratum, Sand Dune
ST-14	7.9	0.75	0.40	119/299, mag	E610000 N2397006	II	I-Natural Stratum, Current A-horizon,

Stratigraphic Trench (ST-)	Length (meters)	Width (meters)	Depth (meters)	Long Axis (Degrees)	GPS Points	Strata Exposed	Stratum Interpretation
							II-Natural Stratum, Sand Dune
ST-15	10.9	0.75	1.0	25/205, mag	E609957 N2396978	VIII	I-Local Fill Containing Disturbed A-horizon II-Imported Fill III-Natural Stratum IV-Natural Stratum Caused by Runoff V-Natural Stratum VI-Natural Stratum VII-Natural Stratum VIII-Natural Stratum
ST-16	10.5	0.75	1.5	80/260, mag	E609953 N2396863	II	I-Natural Stratum, Current A-horizon II-Natural Stratum, Sand Dune
ST-17	10.5	0.75	1.1	90/270, mag	E609853 N2396892	II	I-Natural Stratum, Current A-horizon II-Natural Stratum, Sand Dune
ST-18	7.8	0.75	1.4	92/272, mag	E609933 N2396897	III	I-Natural Stratum, Current A-horizon II-Natural Stratum, III-Natural Stratum, Sand Dune
ST-19	10.2	0.75	1.5	80/260, mag	E609736 N23966987	IV	I-Natural Stratum, Current A-horizon, II-Natural Aeolian Transported Stratum, III-Natural Stratum Caused by Stream Overflow IV-Natural Stratum
ST-20	7.5	0.75	1.4	140/320, mag	E609753 N2396946	II	I-Natural Stratum; Current A-horizon II-Natural Stratum, Sand Dune
ST-21	10.4	0.75	1.2	65/245, mag	E6609750 N2396863	V	I-Natural Stratum, Current A-horizon II-Disturbed Natural Stratum III-Natural Aeolian Transported Stratum IV-Natural Stratum, Weak A-horizon V-Natural Stratum, Sand Dune
ST-22	10.7	0.75	1.2	130/310, mag	E609721 N2396904	II	I-Natural Stratum, Current A-horizon II-Natural Stratum, Sand Dune
ST-23	10.7	0.75	1.2	75/255, mag	E609902 N2396637	II	I-Disturbed Natural Stratum, II-Natural Stratum, Sand Dune, Lens A-Local Fill used to cover modern fire pit, Lens B-Buried Modern Fire Pit
ST-24	10.4	0.75	1.6	102/282, mag	E609903 N2396821	II	I-Imported Fill II-Natural Stratum, Sand Dune
ST-25	3.0	1.0	1.0	90/270, mag		XII	I-Natural Stratum, Current A-horizon II-Aeolian Transported Stratum III-Former A-horizon IV-Aeolian Transported Stratum

Stratigraphic Trench (ST-)	Length (meters)	Width (meters)	Depth (meters)	Long Axis (Degrees)	GPS Points	Strata Exposed	Stratum Interpretation
							V-Former A-horizon VI-Aeolian Transported Stratum VII-Former A-horizon VIII-Aeolian Transported Stratum IX-Former A-horizon X-Aeolian Transported Stratum XI-Former A-horizon XII-Traditional Cultural Stratum XIII-Alluvium Created Stratum

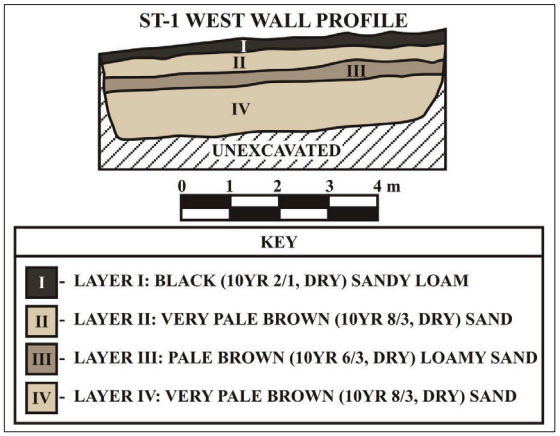

Figure 42: Photographic View, State Site 50-80-02-7774, Test Unit 1, Profile Drawing, West Wall. View to West.



Figure 43: Profile Drawing of Stratigraphic Trench 1, West Wall Profile.

Layer IV (80-180 cmbs) consisted of semi-loose very pale brown (10YR 8/3, dry) sand with tree roots l No traditional or Historic artifacts or cultural materials were present in Layer IV. The excavation of ST-4 was terminated due to the absence of archaeological materials.

Stratigraphic Trench 2 (ST-2)

Stratigraphic Trench 2 (ST-2) was positioned on level ground, with a slight ascent to the west and contained two strata (Figures 44 and 45). The excavation of ST-2 was terminated due to the absence of archaeological materials

Layer I (0-30 cmbs) consisted of very dark gray (10YR 3/1, dry) sand. Layer I contained very fine to medium sized coconut tree roots and exhibited an abrupt lower boundary. Layer I was a culturally sterile stratum.

Layer II (30-150 cmbs) consisted of very pale brown (10YR 7/3, dry) sand. Layer II was culturally sterile. Excavation terminated due to absence of Traditional and Historic cultural material.

Stratigraphic Trench 3 (ST-3)

Stratigraphic Trench 3 (ST-3) contained five strata (Figures 46 and 47) which are similar to those exposed in ST-5. The excavation of ST-3 was terminated due to the absence of archaeological materials.Layer I (0-20 cmbs) consisted of semi-loose, very dark grayish brown (10YR 3/2, dry) sandy loamy silty clay. Layer I exhibited a solid wavy lower boundary. No cultural materials were identified in Layer I.

Layer II (20-50 cmbs) semi-loose mottled light yellowish brown (10YR 6/4, dry) sand and very pale brown (10YR 8/4, dry) sand with tree roots. The lower boundary of Layer II was solid and wavy. No cultural materials were identified in Layer II.

Layer III (50-80 cmbs) semi-loose, very pale brown (10YR 8/4, dry) sand with a few tree roots. The lower boundary of Layer III was slightly undulating and solid. No cultural materials were observed within Layer III.

Layer IV (80-90 cmbs) consists of semi-loose brown (10YR 5/3, dry) loamy sand with a few tree roots. No cultural materials were observed within Layer IV.

Layer V (90-170 cmbs) consisted of semi-loose, very pale brown (10YR 8/4, dry) sand. No cultural materials were observed within

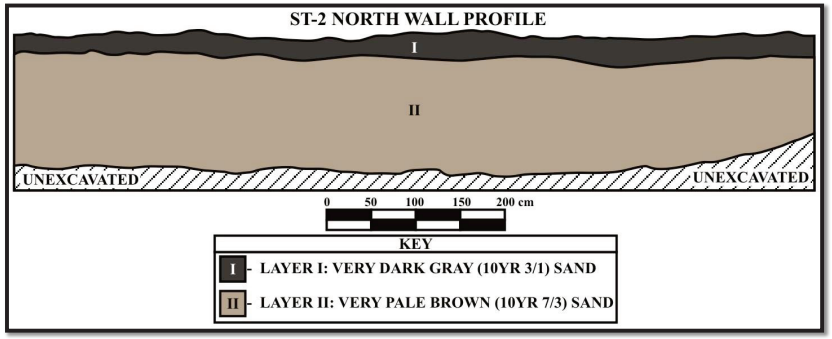

Figure 44: Profile Drawing of Stratigraphic Trench 2, North Wall Profile.



Figure 45: Photographic View of Stratigraphic Trench 2, North Wall. View to Northwest.

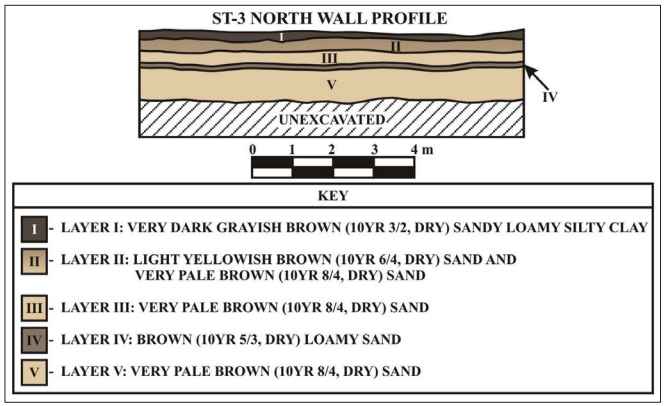

Figure 46: Profile Drawing of Stratigraphic Trench 3, North Wall Profile.



Figure 47: Photographic View of Stratigraphic Trench 3, North Wall. View to Northwest.

Layer V and the excavation was terminated due to the absence of Traditional and Historic cultural materials.

Stratigraphic Trench 4 (ST-4)

Stratigraphic Trench 1 (ST-4) contained two strata (Figures 48 and 49). Along the southern face of ST-4, the base of the excavation slopes to the east. The excavation of ST-4 was terminated due to the absence of Traditional and Historic materials.

Layer I (0-25 cmbs) dark reddish brown (5YR 3/4, dry) silty loam. Slightly plastic, slightly sticky, and exhibited an abrupt lower boundary. Layer I was culturally sterile.

Layer II (25-200 cmbs) consisted of very pale brown (10YR 7/3, dry) sand. Layer II was culturally sterile. Excavation terminated due to absence of Traditional and Historic cultural material.

Stratigraphic Trench 5 (ST-5)

Stratigraphic Trench 5 (ST-5) contained four strata (Figures 50 and 51) similar to those encountered in ST-3. The excavation of ST-5 was terminated due to the absence of archaeological materials.

Layer I (0-20 cmbs) consisted of semi-loose, very dark grayish brown (10YR 3/2, dry) sandy loamy silty clay. Layer I exhibited a solid wavy lower boundary. No cultural materials were identified in Layer I.

Layer II (20-40 cmbs) semi-loose, very pale brown (10YR 8/4, dry) sand with a few tree roots. The lower boundary of Layer II was slightly undulating and solid. No cultural materials were observed within Layer II.

Layer III (80-90 cmbs) consists of semi-loose brown (10YR 5/3, dry) loamy sand with a few tree roots. No cultural materials were observed within Layer III and the excavation was terminated due to the absence of Traditional and Historic cultural materials.

Layer IV (90-150 cmbs) consisted of semi-loose, very pale brown (10YR 8/4, dry) sand. No cultural materials were observed within Layer IV and the excavation was terminated due to the absence of Traditional and Historic cultural materials.

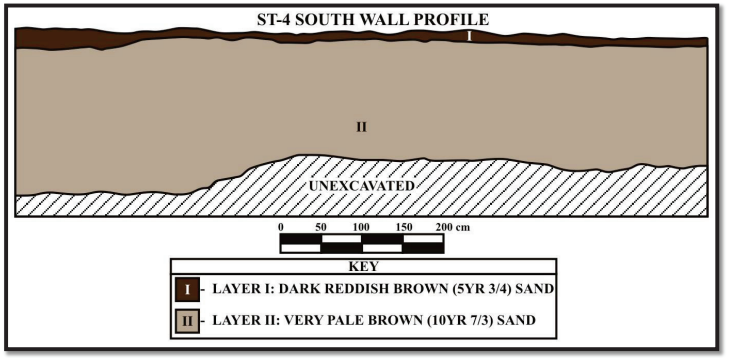

Figure 48: Profile Drawing of Stratigraphic Trench 4, South Wall Profile.



Figure 49: Photographic View of Stratigraphic Trench 4, South Wall. View to South.

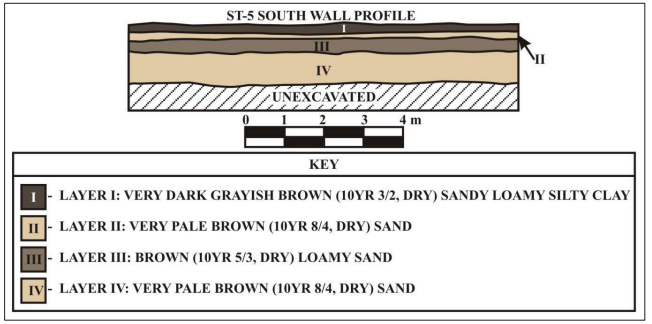

Figure 50: Profile Drawing of Stratigraphic Trench 5, South Wall Profile.



Figure 51: Photographic View of Stratigraphic Trench 5, South Wall. View to Southwest.

Stratigraphic Trench 6 (ST-6)

Stratigraphic Trench 6 (ST-6) contained four strata (Figures 52 and 53). The excavation of ST-4 was terminated due to the absence of archaeological materials.

Layer I (0-20 cmbs) consisted of semi-loose yellowish brown (10YR 5/8, dry) sand with abundant fine to medium coconut roots. Layer I exhibited a wavy and abrupt lower boundary. No cultural materials were identified in Layer I.

Layer II (20-70 cmbs) consisted of semi-loose light yellowish brown (10YR 6/4, dry) sand with abundant fine to medium coconut roots. The lower boundary of Layer II was smooth and abrupt. No cultural materials were identified in Layer II.

Layer III (70-80 cmbs) consisted of semi-loose, dark brown (7.5YR 3/4, dry) sand. The lower boundary of Layer III was smooth and wavy. No cultural materials were observed within Layer III.

Layer IV (80-150 cmbs) consisted of semi-loose very pale brown (10YR 7/3, dry) sand. No cultural materials were observed within Layer IV and the excavation was terminated due to the absence of Traditional and Historic cultural materials.

Stratigraphic Trench 7 (ST-7)

Stratigraphic Trench 7 (ST-7) contained four strata (Figures 54 and 55). The excavation of ST-7 was terminated due to the absence of archaeological materials.

Layer I (0-10 cmbs) consisted of semi-loose, black (10YR 2/1, dry sandy loam with grass and tree roots. Layer I exhibited a slightly wavy and solid lower boundary. No cultural materials were identified in Layer I.

Layer II (10-40 cmbs) semi-loose very pale brown (10YR 8/4, dry) sand with tree roots. The lower boundary of Layer II was solid and abrupt. No cultural materials were identified in Layer II.

Layer III (40-45 cmbs) semi-loose, very dark brown (10YR 2/2, dry) loamy sand with a few tree roots. The lower boundary of Layer III was diffuse and abrupt. No cultural materials were observed within Layer III.

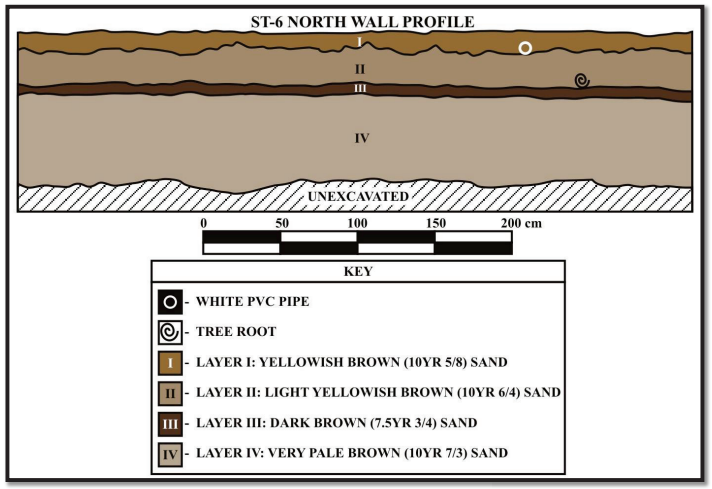

Figure 52: Profile Drawing of Stratigraphic Trench 6, North Wall Profile.



Figure 53: Photographic View of Stratigraphic Trench 6, North Wall. View to Northwest.

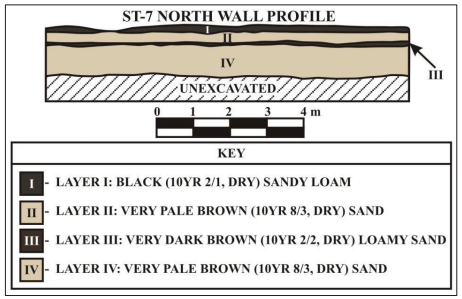

Figure 54: Profile Drawing of Stratigraphic Trench 7, North Wall Profile.



Figure 55: Photographic View of Stratigraphic Trench 7, North Wall. View to Northeast.

Layer IV (45-130 cmbs) consists of semi-loose very pale brown (10YR 8/3, dry) sand with a few tree roots. No cultural materials were observed within Layer IV and the excavation was terminated due to the absence of Traditional and Historic cultural materials.

Stratigraphic Trench 8 (ST-8)

Stratigraphic Trench 8 (ST-8) contained two strata and a disturbed lens within Layer II (Figures 56 and 57). The excavation of ST-8 was terminated due to the absence of archaeological materials.

Layer I (0-20 cmbs) consisted of semi-loose, dark brown (10YR 3/3, dry) silty sandy with grass and tree roots. Layer I exhibited a slightly wavy and solid lower boundary. No cultural materials were identified in Layer I.

Layer II (20-160 cmbs) consists of semi-loose very pale brown (10YR 8/3, dry) sand with a few tree roots. No cultural materials were observed within Layer IV and the excavation was terminated due to the absence of Traditional and Historic cultural materials. Within Layer II is a disturbed matrix comprised of mixed pale brown (10YR 6/3, dry) sand and very pale brown (10YR 8/3, dry) culturally sterile sand.

Stratigraphic Trench 9 (ST-9)

Stratigraphic Trench 9 (ST-9) contained four strata (Figures 58 and 59). The excavation of ST-9 was terminated due to the absence of archaeological materials.

Layer I (0-30 cmbs) consisted of semi-loose, dark brown (7.5YR 3/2, dry) sand. Layer I exhibited a slightly wavy and solid lower boundary. No cultural materials were identified in Layer I.

Layer II (30-50 cmbs) consisted of semi-loose yellowish brown (2.5YR 6/4, dry) sand with a few tree roots. The lower boundary of Layer II was slightly wavy and difuse. No cultural materials were observed within Layer II.

Layer III (50-60 cmbs) consisted of semi-loose dark brown (75YR 3/3, dry) sand. Lower boundary of Layer III was abrupt and solid. No cultural materials were observed within Layer III.

Layer IV (60-130 cmbs) consisted of semi-loose, very pale brown (10YR 7/3, dry) sand. No cultural materials were identified and Layer IV and the excavation was terminated due to the absence of Traditional and Historic cultural materials.

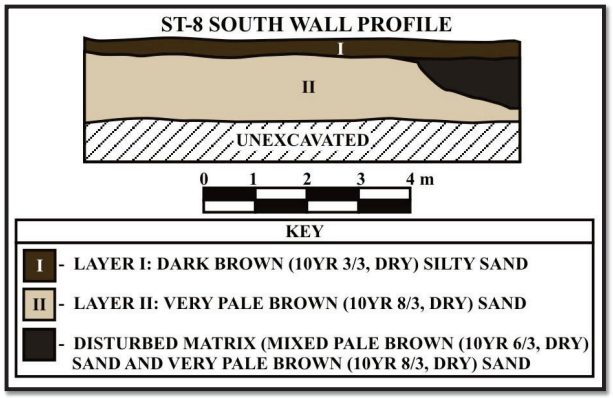

Figure 56: Profile Drawing of Stratigraphic Trench 8, South Wall Profile.



Figure 57: Photographic View of Stratigraphic Trench 8, South Wall. View to South.

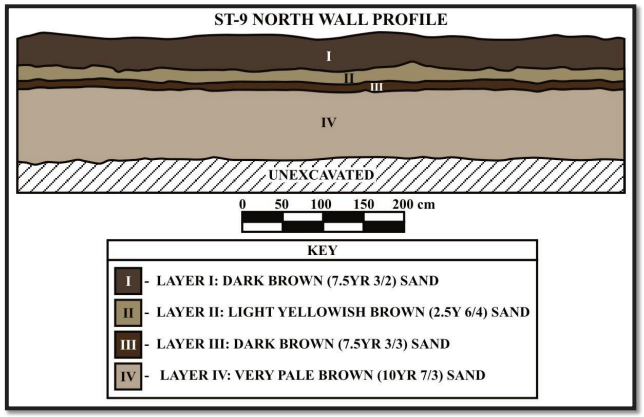

Figure 58: Profile Drawing of Stratigraphic Trench 9, North Wall Profile.



Figure 59: Photographic View of Stratigraphic Trench 9, North Wall. View to Northwest.

Stratigraphic Trench 10 (ST-10)

Stratigraphic Trench 10 (ST-10) contained six strata (Figures 60 and 61). The excavation of ST-10 was terminated due to the absence of archaeological materials.

Layer I (0-5 cmbs) consisted of semi-loose, pale brown (10YR 6/3, dry) sand with grass and tree roots. Layer I exhibited a slightly wavy and solid lower boundary. No cultural materials were identified in Layer I.

Layer II (5-45 cmbs) consisted of semi-loose, very pale brown (10YR 8/4, dry) sand with a few tree roots. The lower boundary was slightly wavy and solid. No cultural materials were observed within Layer II.

Layer III (45-55 cmbs) consisted of semi-loose, pink (7.5YR 7/3, dry) sand with a few tree roots. The lower boundary was slightly wavy and solid. No cultural materials were observed within Layer III.

Layer IV (45-47 cmbs) consisted of semi-loose, very pale brown (10YR 8/4, dry) sand with a few tree roots. The lower boundary was slightly wavy and solid. No cultural materials were observed within Layer IV.

Layer V (47-55 cmbs) consisted of semi-loose, pink (7.510YR 7/3, dry) sand with a few tree roots. The lower boundary was slightly wavy and solid. No cultural materials were observed within Layer V.

Layer VI (55-150 cmbs) consisted of semi-loose, very pale brown 10YR 8/4, dry) sand with a few tree roots. No cultural materials were observed within Layer VI. The excavation of ST-10 was terminated due to the absence of Traditional and Historic cultural material.

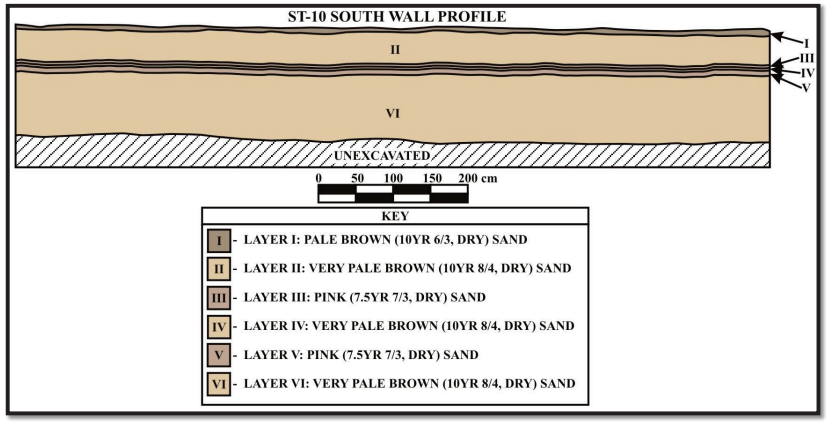

Figure 60: Profile Drawing of Stratigraphic Trench 10, South Wall Profile.



Figure 61: Photographic View of Stratigraphic Trench 10, South Wall. View to Southwest.

Stratigraphic Trench 11 (ST-11) Stratigraphic Trench 11 (ST-11) contained four strata (Figures 62 and 63). The excavation of ST-11 was terminated due to the absence of archaeological materials.

Layer I (0-50 cmbs) consisted of semi-loose, dark brown (7.5 YR 3/2, dry) sand Layer I exhibited a slightly wavy and diffuse lower boundary. No cultural materials were identified in Layer I.

Layer II (50-150 cmbs) consisted of semi-loose, very pale brown (10YR 7/3, dry) sand. No cultural materials were identified and Layer II and the excavation was terminated due to the absence of Traditional and Historic cultural materials

Stratigraphic Trench 12 (ST-12)

Trench 12 (ST-12) contained three strata (Figures 64 and 65). The excavation of ST-12 was terminated due to the absence of archaeological materials.

Layer I (0-10 cmbs) consisted of semi-loose, pale brown (10YR 6/3, dry) loamy sand with grass roots. Layer I exhibited a wavy and solid lower boundary. No cultural materials were identified in Layer I.

Layer II (10-30 cmbs) consisted of semi-loose, light brown (7.5Y 6/4, dry) sand with grass roots. No cultural materials were identified in Layer II.

Layer III (30-150 cmbs) consisted of semi-loose, very pale brown (10YR 8/3, dry) sand. No cultural materials were identified and Layer III and the excavation was terminated due to the absence of Traditional and Historic cultural materials

Stratigraphic Trench 13 (ST-13)

Stratigraphic Trench 13 (ST-13) contained two strata, a lens above Layer I, and a Modern fire pit comprised of three lenses (Figures 66 and 67). The excavation of ST-13 was terminated due to the absence of archaeological materials.

Layer I (10-30 cmbs) consisted of semi-loose, pale brown (105YR 6/3 dry) san with grass roots. Layer I exhibited a wavy and solid lower boundary. No cultural materials were identified in Layer I.

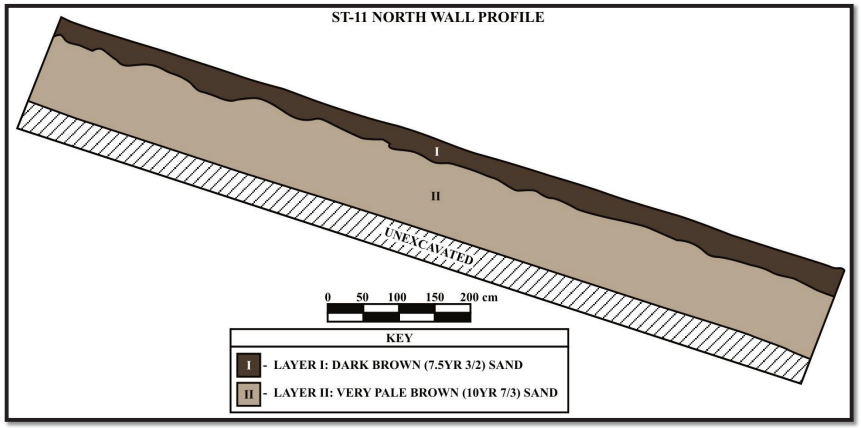

Figure 62: Profile Drawing of Stratigraphic Trench 11, North Wall Profile.



Figure 63: Profile Drawing of Stratigraphic Trench 11, North Wall Profile.

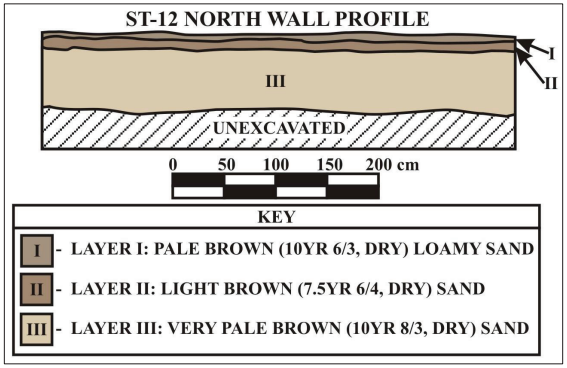

Figure 64: Profile Drawing of Stratigraphic Trench 12, North Wall Profile.



Figure 65: Photographic View of Stratigraphic Trench 12, North Wall. View to Northwest.

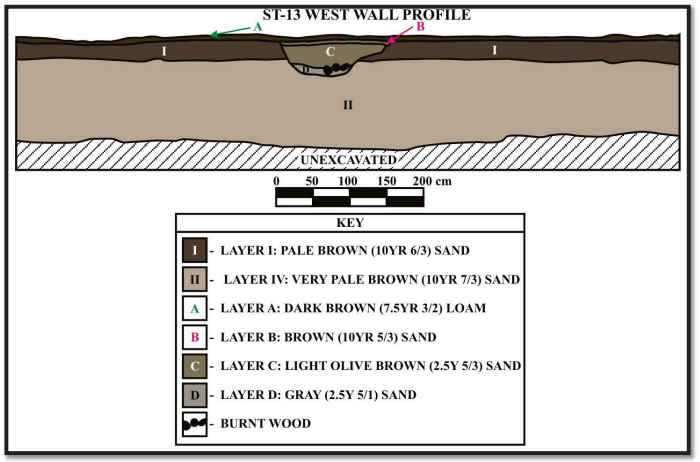

Figure 66: Profile Drawing of Stratigraphic Trench 13, West Wall Profile.



Figure 67: Photographic View of Stratigraphic Trench 13, West Wall. View to Southwest.

Layer II (30-150 cmbs) consisted of extremely compacted very pale brown (10YR 7/3, dry) sand. No cultural materials were identified in Layer II. The excavation of ST-13 was terminated due to the absence of Traditional and Historic cultural materials.

Lens A (0-10 cmbs) consisted of dark brown (10YR 3/2, dry) loam Lens A was culturally sterile.

Lens B (10- 20 cmbs) consisted of brown (10/YR 5/3) sand. Lens B was culturally sterile.

Lens C (20-50) consisted of light olive brown (2.5Y 5/3, dry) sand. Lens C was culturally sterile.

Lens D (50-60 cmbs) consisted of gray (2.5Y 5/1, dry) sand containing modern burnt wood.

Stratigraphic Trench 14 (ST-14)

Stratigraphic Trench 14 (ST-14) contained two strata (Figures 68 and 69). The excavation of ST-14 was terminated due to the absence of archaeological materials.

Layer I (0-30 cmbs) consisted of semi-loose, very dark brown (7.5YR 2.5/2, dry) sandy loam with grass roots. Layer I exhibited a wavy and solid lower boundary. No cultural materials were identified in Layer I.

Layer II (30-40 cmbs) consisted of extremely compacted white (2.5Y 8/1, dry) limestone. No cultural materials were identified in Layer II. The excavation of ST-14 was terminated due to the absence of Traditional and Historic cultural materials.

Stratigraphic Trench 15 (ST-15)

Stratigraphic Trench 15 (ST-15) contained 8 strata (Figures 70 and 71). Modern cultural material comprised of an active PVC water pipe was observed. No other cultural materials were identified in ST-15 and the excavation was terminated due to the absence of Traditional and Historic cultural materials.

Layer I (0-10 cmbs) consisted of semi-loose, very pale brown (10YR 8/3, moist) sand mottled with dark brown (10YR 3/3,

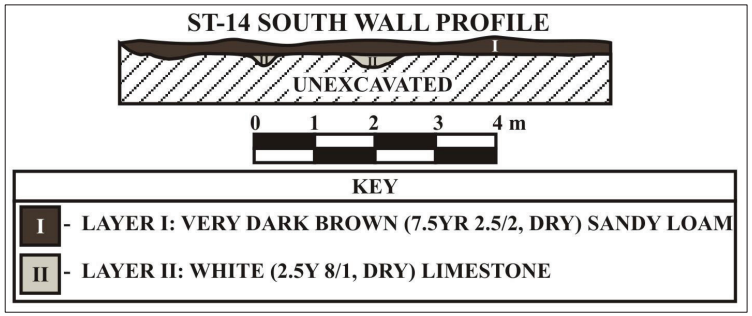

Figure 68: Profile Drawing of Stratigraphic Trench 14, South Wall Profile.



Figure 69: Photographic View of Stratigraphic Trench 14, South Wall. View to Southwest.

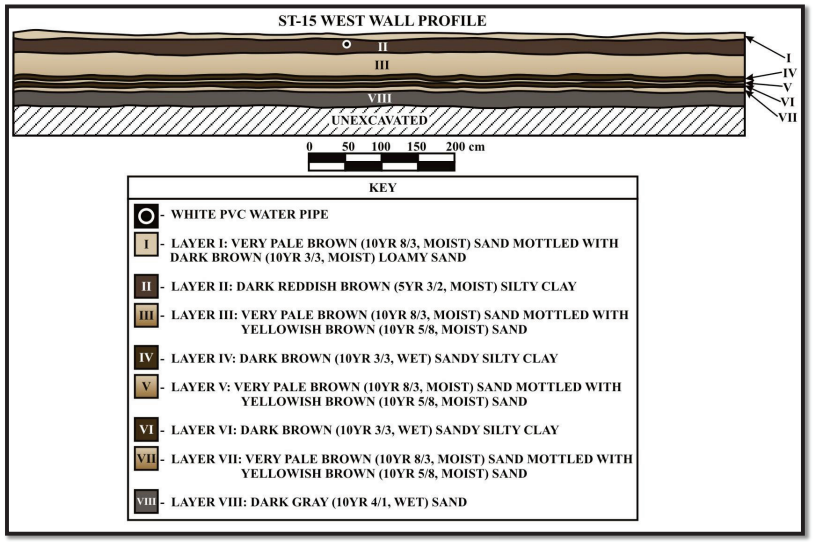

Figure 70: Profile Drawing of Stratigraphic Trench 15, West Wall Profile.



Figure 71: Photographic View of Stratigraphic Trench 15, West Wall. View to Northwest.

moist) loamy sand. Layer I exhibited a slightly wavy and solid lower boundary. No cultural materials were identified in Layer I.

Layer II (10-30 cmbs) consisted of semi-compacted dark reddish brown (5YR 3/2, moist) silty clay with a few tree roots. The lower boundary was slightly wavy and solid. Modern cultural material comprised of an active PVC water pipe was observed in Layer II. No other cultural materials were identified in Layer II.

Layer III (30-60 cmbs) consisted of very pale brown (10YR 8/3, moist) sand mottled with yellowish brown (10YR 5/8, moist) sand with a few tree roots. The lower boundary was slightly wavy and solid. No cultural materials were identified in Layer III.

Layer IV (60-65 cmbs) consisted of semi-compact dark brown (10YR 3/3, wet) sandy silty clay. The lower boundary was slightly wavy and solid. No cultural materials were identified in Layer IV.

Layer V 65-68 cmbs) consisted of very pale brown (10YR 8/3, moist) sand mottled with yellowish brown (10YR 5/8, moist) sand with a few tree roots. The lower boundary was slightly wavy and solid. No cultural materials were identified in Layer V.

Layer VI (68-72 cmbs) consisted of semi-compact dark brown (10YR 3/3, wet) sandy silty clay. The lower boundary was slightly wavy and solid. No cultural materials were identified in Layer VI.

Layer VII (72-76 cmbs) consisted of very pale brown (10YR 8/3, moist) sand mottled with yellowish brown (10YR 5/8, moist) sand with a few tree roots. The lower boundary was slightly wavy and solid. No cultural materials were identified in Layer VII.

Layer VIII) 76-100 cmbs) consisted of semi-loose, dark gray (10YR4/1, wet) sand. The lower boundary was slightly wavy and solid. No cultural materials were identified in Layer VIII. The excavation of ST-15 was terminated due to the absence of Traditional and Historic cultural materials.

Stratigraphic Trench 16 (ST-16)

Stratigraphic Trench 16 (ST-16) contained two strata (Figures 72 and 73). Modern cultural material, in the form of a grey PVC pipe) was observed in ST-16. The excavation of ST-16 was terminated due to the absence of Traditional and Historic cultural materials.

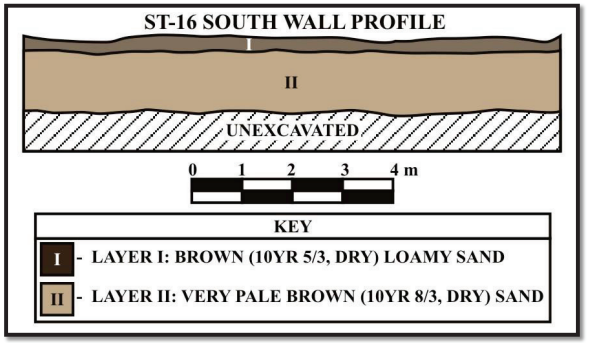

Figure 72: Profile Drawing of Stratigraphic Trench 16, South Wall Profile.



Figure 73: Photographic View of Stratigraphic Trench 16, South Wall. View to Southeast.

Layer I (0-30 cmbs) consisted of semi-loose, brown (10YR 5/3, dry) loamy sand with tree and grass roots. The lower boundary was slightly wavy and diffuse. Modern cultural material, in the form of a grey PVC pipe) was observed in Layer I. No Traditional or Historic cultural materials were identified in Layer I.

Layer II (30-110 cmbs) consisted of semi-loose, very pale brown (10YR 8/3, dry) sand, No Traditional or Historic cultural materials were identified in Layer II. The excavation of ST-16 was terminated due to the absence of Traditional or Historic cultural materials.

Stratigraphic Trench 17 (ST-17) Stratigraphic Trench 17 (ST-17) contained two strata (Figures 74 and 75). The excavation of ST-17 was terminated due to the absence of Traditional and Historic cultural materials.

Layer I (0-30 cmbs) consisted of semi-loose, brown (10YR 5/3, dry) loamy sand with tree and grass roots. The lower boundary was wavy and diffuse. No Traditional or Historic cultural materials were identified in Layer I.

Layer II (30-110 cmbs) consisted of semi-loose, very pale brown (10YR 8/3, dry) sand, No Traditional or Historic cultural materials were identified in Layer II. The excavation of ST-16 was terminated due to the absence of Traditional or Historic cultural materials.

Stratigraphic Trench 18 (ST-18)

Stratigraphic Trench 18 (ST-18) consisted of three strata (Figures 76 and 77). No cultural materials were observed within ST-18 and the excavation was terminated due to the absence of Traditional and Historic cultural materials.

Layer I (0-10 cmbs) consisted of semi-loose, light yellowish brown (10YR 6/4, dry) loamy sand with grass roots. Layer I was culturally sterile. The lower boundary of Layer I was wavy and diffuse.

Layer II (10-30 cmbs) consisted of semi-loose very pale brown (10YR 7/4, dry) sand with tree roots. The lower boundary of Layer II was wavy and diffuse. No cultural materials were identified in Layer II.

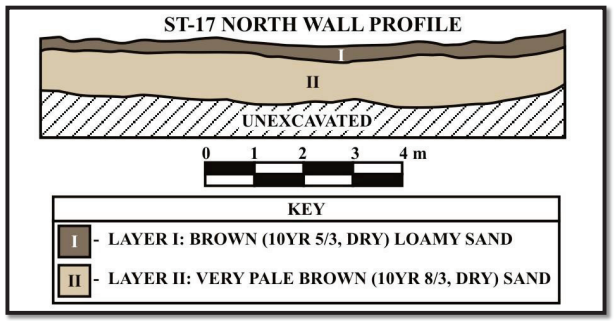

Figure 74: Profile Drawing of Stratigraphic Trench 17, North Wall Profile.



Figure 75: Photographic View of Stratigraphic Trench 17, North Wall. View to Northwest.

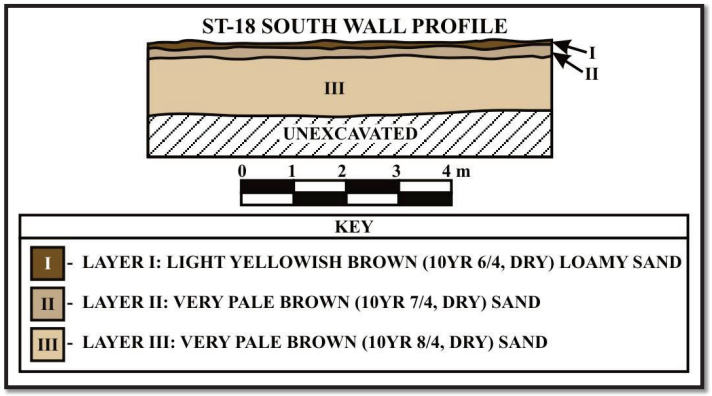

Figure 76: Profile Drawing of Stratigraphic Trench 18, South Wall Profile.



Figure 77: Photographic View of Stratigraphic Trench 18, South Wall. View to South.

Layer III (30-140 cmbs) consisted of semi-loose very pale brown (10YR 8/4, dry) sand. No cultural materials were observed within ST-18 and the excavation was terminated due to the absence of Traditional and Historic cultural materials.

Stratigraphic Trench 19 (ST-19)

Stratigraphic Trench 19 (ST-1) consisted of four strata (Figures 78 and 79). No cultural materials were observed within ST-19 and the excavation was terminated due to the absence of Traditional and Historic cultural materials.

Layer I (0-15 cmbs) consisted of semi-loose, dark brown (10YR 63/3, dry) sandy silty loam with grass roots. Layer I was culturally sterile. The lower boundary of Layer I was slightly wavy and solid.

Layer II (15-90 cmbs) consisted of semi-loose very pale brown (10YR 8/4, dry) sand with tree roots. The lower boundary of Layer II was wavy and solid. No cultural materials were identified in Layer II.

Layer III (15-120 cmbs) consisted of semi-compact very dark brown (10YR 2/2, moist) silty clay with tree roots. No cultural materials were observed within Layer III. The lower boundary was wavy and solid.

Layer IV (120-150 cmbs) consisted of semi-loose light gray (10YR 7/1, moist) sand. No Traditional or Historic materials were identified in Layer IV and the excavation was terminated due to the absence of Traditional and Historic cultural materials.

Stratigraphic Trench 20 (ST-20)

Stratigraphic Trench 20 contained two strata (Figures 80 and 81). One Modern golf ball was observed during the excavation of ST-20. The excavation of ST-20 was terminated due to the absence of archaeological materials.

Layer I (0-30 cmbs) consisted of semi-loose, grayish brown (10YR 5/2, dry) sand with grass and tree roots. The lower boundary of Layer I was wavy and diffuse. Layer I was culturally sterile.

Layer II (30-140 cmbs) consisted of semi-loose, very pale brown (10YR 7/4, dry) sand with tree roots. Layer II was culturally sterile. The excavation of ST-2 was terminated due to the absence of archaeological materials.

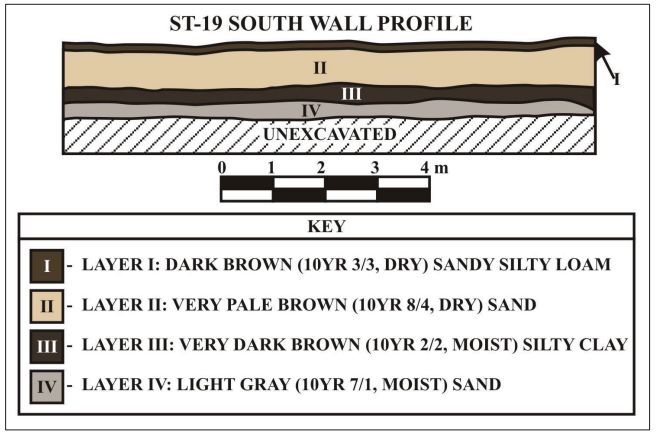

Figure 78: Profile Drawing of Stratigraphic Trench 19, South Wall Profile.



Figure 79: Photographic View of Stratigraphic Trench 19, South Wall. View to Southeast.

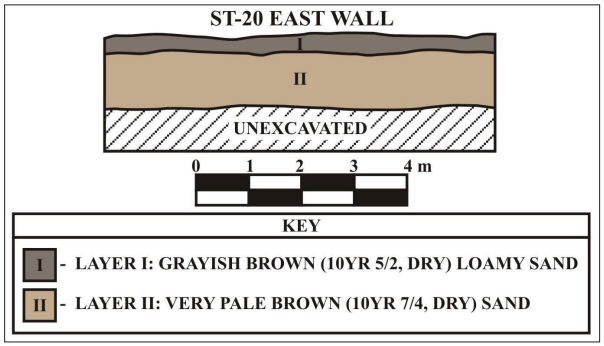

Figure 80: Profile Drawing of Stratigraphic Trench 20, East Wall Profile.



Figure 81: Photographic View of Stratigraphic Trench 20, East Wall. View to Northeast.

Stratigraphic Trench 21 (ST-21)

Stratigraphic Trench 21 contained five strata (Figures 82 and 83). Modern white plastic PVC pipe was observed in ST-21.The excavation of ST-21 was terminated due to the absence of archaeological materials.

Layer I (0-10 cmbs) consisted of semi-loose, black (10YR 4/2, dry) sandy loam with tree roots. The lower boundary of Layer I was wavy and solid. Layer I was culturally sterile.

Layer II (10-20 cmbs) consisted of semi-loose, yellowish brown (10YR 5/4, moist) sand. The lower boundary of was wavy and diffuse. Modern white plastic PVC pipe was observed in Layer II. No Traditional or Historic cultural material was present.

Layer III (20-90 cmbs) consisted of semi-loose, very pale brown (10YR 7/4, dry) sand. The lower boundary was wavy and solid. Layer III was culturally sterile.

Layer IV (90-95 cmbs) consisted of semi-loose light gray (7.5YR 7/1, dry) sand. The lower boundary was wavy and solid. Layer IV was culturally sterile.

Layer V (95-120 cmbs) consisted of semi-loose very pale brown (10YR 7/4, dry) sand. Layer V was culturally sterile. The excavation of ST-21 was terminated due to the absence of Traditional and Historic cultural materials.

Stratigraphic Trench 22 (ST-22)

Stratigraphic Trench 22 contained two strata (Figures 84 and 85). The excavation of ST-22 was terminated due to the absence of archaeological materials.

Layer I (0-30 cmbs) consisted of semi-loose, dark brown (10YR 3/3, dry) sand with tree roots. The lower boundary of Layer I was wavy and diffuse. Layer I was culturally sterile.

Layer II (30-120 cmbs) consisted of semi-loose, very pale brown (10YR 7/4, dry) sand with tree roots. Layer II was culturally sterile. The excavation of ST-22 was terminated due to the absence of archaeological materials.

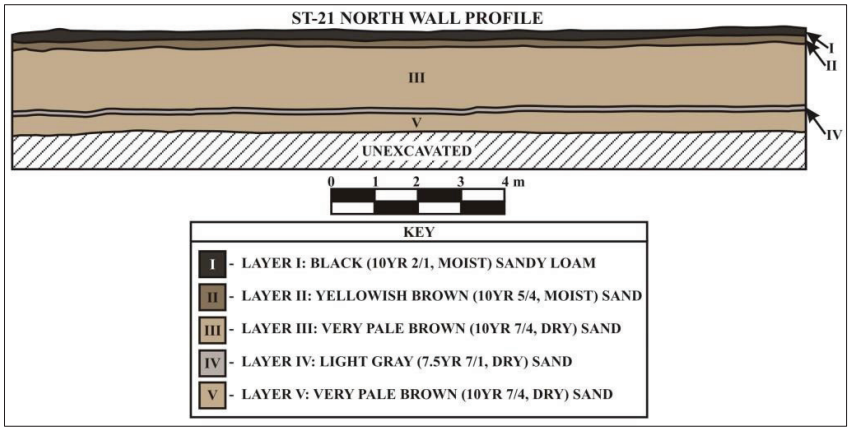

Figure 82: Profile Drawing of Stratigraphic Trench 21, North Wall Profile.



Figure 83: Photographic View of Stratigraphic Trench 21, North Wall. View to North.

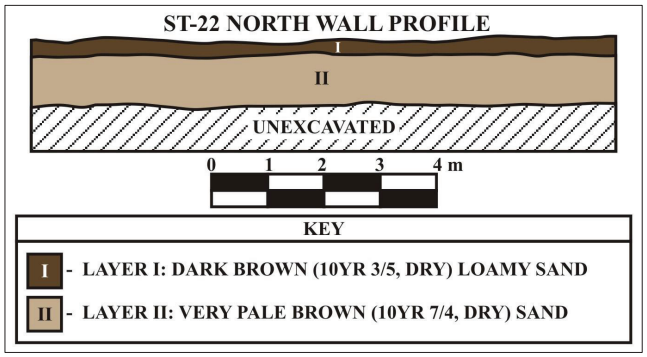

Figure 84: Profile Drawing of Stratigraphic Trench 22, North Wall Profile.



Figure 85: Photographic View of Stratigraphic Trench 22, North Wall. View to Northeast.

Stratigraphic Trench 23 (ST-23)

Stratigraphic Trench 23 contained two strata and two lenses (Lens A and Lens B) (Figures 86 and 87). Modern artifacts consisting of a white covered plastic electrical line and ferrous metal water pipe were observed *in situ* during the excavation of ST-23. The excavation of ST-23 was terminated due to the absence of archaeological materials.

Layer I (0-30 cmbs) consisted of semi-loose, pale brown (10YR 6/3, moist) sand with a few tree roots. Modern artifacts consisting of a white covered plastic electrical line and ferrous metal water pipe were observed *in situ* in Layer I. The lower boundary of Layer I was wavy and solid. Layer I was culturally sterile. No Traditional or Historic cultural materials were identified.

Layer II (30-120 cmbs) consisted of semi-loose, very pale brown (10YR 8/4, dry) sand with tree roots. No Traditional or Historic cultural materials were identified in Layer II. The excavation of ST-23 was terminated due to the absence of archaeological materials.

Lens A (0-90 cmbs) consisted of semi-loose, very pale brown (10YR 8/4, dry) sand mottled with grayish brown (10YR5/3, dry) sand and pale brown (10YR6/3, moist) sand with a few tree roots. The lower boundary of Lens A was wavy and solid. Charcoal flecking and an abandoned Modern ferrous metal pipe were observed.

Lens B (40-120 cmbs) consisted of semi-loose brown (10YR 5/3, dry) sand mottled with very pale brown (10YR 6/3, moist) sand with a few tree roots. The lower boundary of Lens B was wavy and solid. Modern cultural material observed was identified as charcoal, fine threaded plastic mesh, and a ceramic tile sherd. As this material was Modern, no matrix samples or materials were collected. Lens B was located near a recently demolished cabin.

Stratigraphic Trench 24 (ST-24)

Stratigraphic Trench 24 contained two strata (Figures 88 and 89). One Modern golf ball was observed during the excavation of ST-24. The excavation of ST-24 was terminated due to the absence of archaeological materials.

Layer I (0-15 cmbs) consisted of semi-compacted brown (10YR 4/3, dry) sandy silt with crushed limestone mottled with black (10YR 2/1, moist) sandy loam and yellowish red (5YR 4/6, dry).

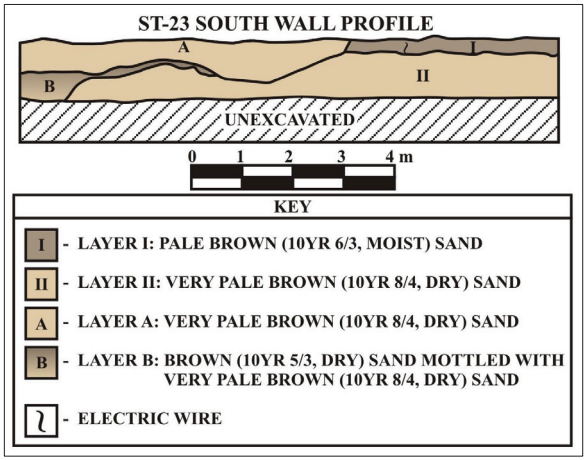

Figure 86: Profile Drawing of Stratigraphic Trench 23, South Wall Profile.



Figure 87: Photographic View of Stratigraphic Trench 23, South Wall. View to Southeast.

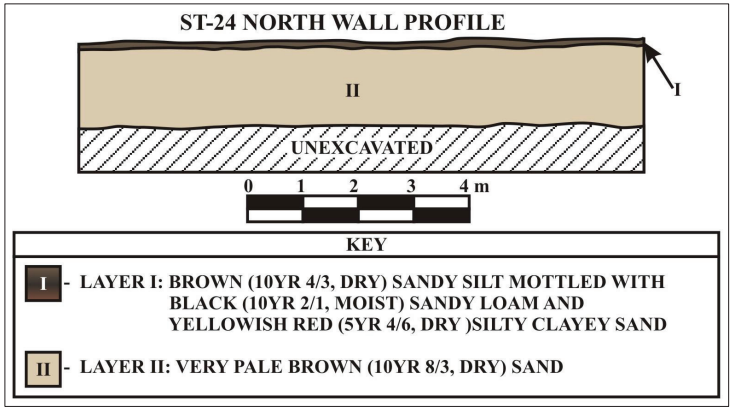

Figure 88: Profile Drawing of Stratigraphic Trench 24, North Wall Profile.



Figure 89: Photographic View of Stratigraphic Trench 24, North Wall. View to North.

silty clayey sand with tree roots. The lower boundary of Layer I was wavy and solid. The black sandy loam component contained charcoal flecking which likely came from somewhere else within the project area.

Layer II (15-160 cmbs) consisted of semi-loose, very pale brown (10YR 8/3, dry) sand with tree roots. Layer II was culturally sterile. The excavation of ST-24 was terminated due to the absence of archaeological materials.

Stratigraphic Trench 25 (ST-25)

As previously discussed, ST-25 is outside of the proposed development area, and was excavated within Site 7774 for the purpose of clarifying that site's mauka extent. Stratigraphic Trench 25 consisted of thirteen strata (Figure 90 and Figure 91). Subsurface Feature 4 (SSFE-4) was identified within ST-25 and is described above in the Subsurface Feature Section. The cultural layer (State Site 50-80-02-7774) was exposed in ST-25. Subsurface Feature 4, a burial pit containing human skeletal remains, was identified with human skeletal material encountered in the excavated (i.e., backfill) material and in situ within the pit feature, which was located in the south face of ST-25. The excavation was terminated upon exposure of human skeletal remains and the associated burial pit (SSFE-4).

Layer I (0-5 cmbs) consisted of semi-compacted grayish brown (10YR 5/2, dry) loamy sand with grass and tree roots. The lower boundary of Layer I was wavy and diffuse. Layer I was culturally sterile

Layer II (5-15 cmbs) consisted of semi-loose, very pale brown (10YR 7/4, dry) sand. The lower boundary was wavy and solid. Layer II was culturally sterile.

Layer III (15-16 cmbs) consisted of semi-loose, very pale brown (10YR 8/2, dry) sand. The lower boundary was wavy and solid. Layer III was culturally sterile.

Layer IV (16-18 cmbs) consisted of semi-loose, very pale brown (10YR 7/4, dry) sand. The lower boundary was wavy and solid. Layer IV was culturally sterile.

Layer V (18-19 cmbs) consisted of semi-loose, very pale brown (10YR 8/2, dry) sand. The lower boundary was wavy and solid. Layer V was culturally sterile.

Layer VI (19-28 cmbs) consisted of semi-loose, very pale brown (10YR 7/4, dry) sand. The lower boundary was wavy and solid. Layer VI was culturally sterile.

Layer VII (28-29 cmbs) consisted of semi-loose, very pale brown (10YR 8/2, dry) sand. The lower boundary was wavy and solid. Layer VII was culturally sterile.

Layer VIII (29-31 cmbs) consisted of semi-loose, very pale brown (10YR 7/4, dry) sand. The lower boundary was wavy and solid. Layer VIII was culturally sterile.

Layer IX (31-32 cmbs) consisted of semi-loose, very pale brown (10YR 8/2, dry) sand. The lower boundary was wavy and solid. Layer IX was culturally sterile.

Layer X (32-35 cmbs) consisted of semi-loose, very pale brown (10YR 7/4, dry) sand. The lower boundary was wavy and solid. Layer X was culturally sterile.

Layer XI (35-40 cmbs) consisted of semi-loose, light grayish brown (10YR 6/2, dry) loamy sand with grass roots. The lower boundary was wavy and diffuse. Layer XI was culturally sterile.

Layer XII (40-60 cmbs) consisted of semi-loose, dark grayish brown (10YR 4/2, dry) loamy sand with grass roots. The lower boundary was slightly wavy and diffuse. Cultural material identified within Layer XII was consisted of charcoal flecking (not collected) and a human burial pit (SSFE-4) containing the remains of a single sub-adult. Due to the presence of the charcoal flecking and the presence of the burial pit originating from Layer XII, Layer XII was interpreted as a Traditional cultural stratum.

Pit Fill
State Site 50-80-02-7774, SSFE-4 feature fill (50-80 cmbs) consisted of semi-loose dark grayish brown (0YR 4/2, dry) loamy sand mottled with semi-compact dark brown (7.5YR 3/4, dry) clayey silt. In profile the unidentified human skeletal remains of a single sub-adult, charcoal, and a few grass roots were observed.

Layer XIII (60-90 cmbs) consisted of semi-compact, dark brown (7.5YR 3/4, dry) clayey silt with grass roots. Layer XIII was culturally sterile. The excavation was terminated upon exposure of human skeletal remains and the associated burial pit (SSFE-4).

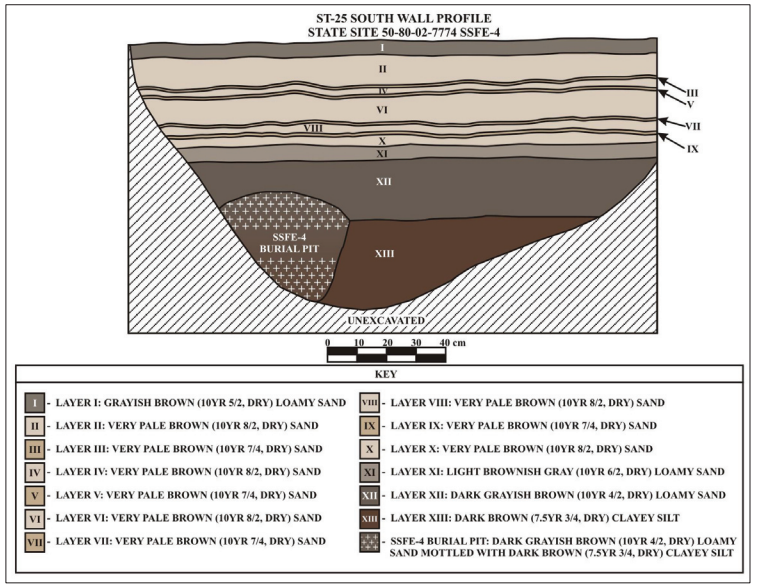

Figure 90: Profile Drawing of Stratigraphic Trench 25, South Wall Profile.



Figure 91: Photographic View of Stratigraphic Trench 25, South Wall. View to Southwest.

SUMMARY

At the request of Limitiaco Consulting Group, for the Division of State Parks, SCS conducted an archaeological inventory survey of 36.0 acres of land in advance of improvements at the Mālakahana State Recreation Area, Kahuku Section. The project area is located in located in the town of Lā`ie, Mālaekahana Ahupua`a Ko`olauloa District, Island of O`ahu, Hawai`i [TMK: (1) 5-6-001: 047, 049, 051, 053, 055 through 057, 059, 061 through 065]. The project area is owned by the State of Hawai`i, and administered by the Division of State Parks.

As stated elsewhere in this document, the current AIS was performed in order to identify and document historic properties within the proposed development area at Mālaekahana SRA, to gather sufficient information on these properties, to evaluate the significance of any newly identified historic properties, to determine the project effect on these properties, and to make mitigation recommendations to address possible adverse impacts to identified historic properties, pursuant to Hawaii Administrative Rules (HAR) § 13-284 and HAR § 13-276. A secondary goal of the current archaeological inventory survey was to further investigate a subsurface cultural deposit previously identified in 1981 by the Division of State Parks (Yent and Ota 1982) that is visible in the eroding shoreline adjacent to Malaekahana Stream. This site is outside of the area to be affected by the proposed development, but State Parks wanted to better understand the nature and extent of the site for management, education, and preservation purposes. Following further investigation by SCS, the exposed cultural deposit was subsequently designated State Site 50-80-02-7774.

During the current archaeological inventory survey, a total of 25 stratigraphic trenches were excavated. Twenty-four of the trenches (ST-1 through ST-24) were excavated within the proposed development areas and revealed no cultural remains whatsoever. Stratigraphic Trench 25 was excavated within State Site 50-80-02-7774, which was outside of the proposed areas of development, in addition to eleven shovel probes and one test unit. These excavations collectively revealed a contiguous cultural deposit (the previously identified State Site 50-80-02-7774) and ten additional features in subsurface contexts (SSFE-1 through SSFE-10).

Subsurface Features 1, 2, 3, and 5, 6, and 7 consist of post molds. Subsurface Features 2 and 3 were not exposed in plan view but they were 20cm in width in profile. The two features are clearly separated by a 5cm width of Layers III and IV. These features are associated with one another, and represent posts that probably supported the roof or canopy of a structure.

Subsurface Features 8, 9, and 10 consist of pit features. Possible midden materials consisting of marine and terrestrial vertebrate, marine shell, charcoal, burnt *kukui*, and Traditional-type artifacts were collected from the cultural layer and the subsurface features. One isolated human tooth was collected from SP-11. Subsurface Feature 4 consists of an *in situ* human burial representing a single individual. Based on context, construction methods and materials, feature type, and associated artifacts all features were interpreted as pre-Contact in age. Thus, State Site 50-50-02-7774 was interpreted as a pre-Contact habitation/ burial complex.

A radiocarbon sample collected from State Site 50-80-02-7774, Subsurface Feature 7, yielded a conventional radiocarbon age of 300±30 BP. Calibrated at 1 Sigma, the radiocarbon sample yielded dates ranging from 1520AD to 1580AD (74 % probability) and from 1620AD to 1650AD (26% probability). Calibrated at 2 Sigma, the radiocarbon yielded a date ranging from 1480AD to 1660AD (100% probability). Thus, the age of State Site 50-80-02-7774 is interpreted as ranging from 1480AD to 1660AD, firmly within the pre-Contact Period, as this date has the highest percentage of probability.

A portion of the radiocarbon sample collected from State Site 50-80-02-7774, Subsurface Feature 7 for radiocarbon analysis was submitted for taxa identification to provide paleoenvironmental data and support for the prehistoric dating determination. Due to the small size of the sample, the results were not definitive (see Appendix E).

SIGNIFICANCE ASSESSMENTS

The current archaeological inventory survey revealed only one site in the entire project area, consisting of a contiguous cultural deposit (the previously identified State Site 50-80-02-7774; see Yent and Ota 1982) and ten newly identified features in subsurface contexts. Based on architectural type and function, temporal affiliation, topographic location, and spatial relationships, the newly identified 10 subsurface features were interpreted as elements of a single site, and it can be it can be inferred that the site may contain additional features, likely including human burials, in subsurface contexts. State Site 50-80-02-7774 has been evaluated for significance according to the established criteria for the Hawai`i State Register of Historic Places HAR §13-284-6. In accordance with HAR §13-284-6(b), to be considered significant, an historic property must possess integrity of location, design, setting, materials, workmanship, feeling, and association, and meet one or more of the following criteria:

- **Criterion a:** Site is associated with events that have made a significant contribution to the broad patterns of our history.
- **Criterion b:** Site is associated with the lives of persons significant to our past.
- **Criterion c:** Site is an excellent site type; embodies distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual construction.
- **Criterion d:** Site has yielded or has the potential to yield information important in prehistory or history.
- **Criterion e:** Site has cultural significance to an ethnic group; examples include religious structures, burials, major traditional trails, and traditional cultural places.

State Sites 50-80-02-7774 is assessed as being significant under the following criteria: criteria “d”, as the site is likely to yield information important for research on the pre-Contact Period in Hawai`i, and under criterion “e”, as it has important cultural value to the native Hawaiian people.

DISCUSSION AND CONCLUSION

Laboratory results of Shovel Probes 1 through 11 and Test Unit 1 suggested that suspected food remains primarily consisted of marine fish and marine shellfish (see Appendix B). Vertebrate remains also included in the laboratory analysis consisted of Rattus/Mus species and a non-diagnostic small bird. Although it is possible these materials are food refuse, it could not expressly be determined if these particular remains were utilized for food, given the coastal proximity of the project area. Likely, rodents such as rat were stowaways rather than food (Buck 1964 Section I: 2). Small birds, although sometimes eaten, were usually stripped of feathers for cloaks and likewise products (Buck 1964 Section I: 4). In terms of a numerical count, the dominant taxon class in the analysis of Test Units 1 and 2 was the Class of Gastropoda represented by seven families (Appendix B). The next taxon to contain a decent amount of families was Class of Osteichthyes that was represented by five families. The third highest taxon following the Class of Osteichthyes was that the Class of Echinoidea represented by three families.

The current archaeological inventory, consisting of subsurface testing, has yielded definitive indications of Traditional cultural activities within the project area and advanced the archaeological record. Evidence of pre-Contact use of this area may be found in Features 1 through 10, with no evidence of use of the area during the Historic Period - possibly due to the remoteness of the area and the distance from Honolulu. Subsurface Feature 2 and Subsurface Feature 3 are almost identical. The two features are clearly separated by a 5cm width of Layers III and IV. These features are clearly associated with one another, and represent posts that probably supported the roof or canopy of a structure, which in turn, suggests this area may have been used as a habitation site.

RECOMMENDATIONS

The current work has yielded strikingly diferent results within the proposed development area and the previously recorded stream mouth site location (Site 7774). Despite the negative findings in the project area where park improvements are planned, the potential for undocumented features, including burials, remains and we recommend an archaeological monitoring plan (AMP) be completed, outlining specific activities to be monitored during the construction phase as a precautionary measure.

Within Site 50-80-02-7774, significant cultural layers/materials and one Traditional-type, *in situ* human burial representing a single, sub-adult, of Polynesian ancestry. State Parks does not envision any significant development within Site -7774. In keeping with its mission of preserving and protecting cultural resources, DSP has indicated that it will consider Site -7774 a no development zone and the site will be preserved in its present state, and possibly stabilized. Should any type of use or facility be proposed in this area in the future, further archaeological data recovery work should precede construction, in compliance with HAR §13-275. In addition, additional investigations may help to clarify the precise horizontal extent of the site.

A burial treatment plan will be prepared, in consultation with the State Historic Preservation Division, for State Site 50-80-02-7774, Subsurface Feature 4; under separate cover.

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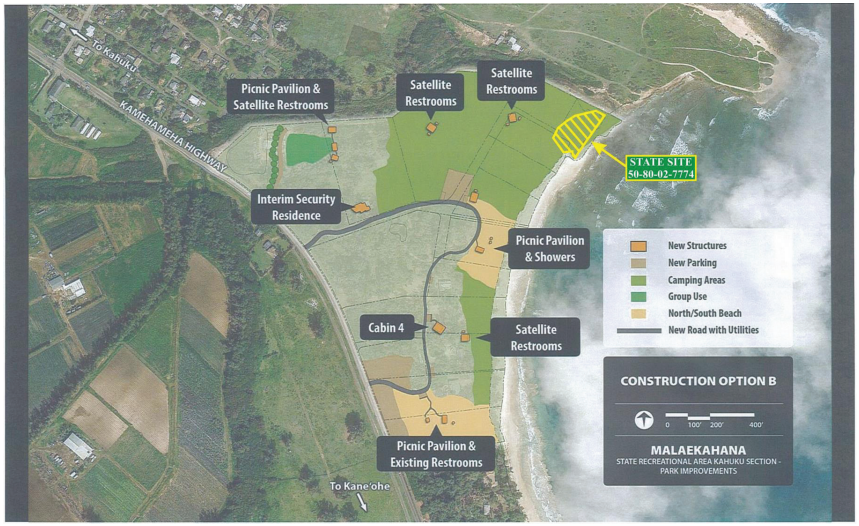
APPENDIX A: CONSTRUCTION PLANS




To Kahuku
KAMEHAMEHA HIGHWAY
Picnic Pavilion & Satellite Restrooms
Satellite Restrooms
Satellite Restrooms
STATE SITE 50-80-02-7774
Interim Security Residence
Picnic Pavilion & Showers
Cabin 4
Satellite Restrooms
Picnic Pavilion & Existing Restrooms
To Kane'ohe
New Structures
New Parking
Camping Areas
Group Use
North/South Beach
New Road with Utilities
CONSTRUCTION OPTION B
0 100' 200' 400'
MALAEKAHANA
STATE RECREATIONAL AREA KAHUKU SECTION - PARK IMPROVEMENTS

A-3


To Kahuku
KAMEHAMEHA HIGHWAY
Office
STATE SITE 50-80-02-7774
Cabins (1-7)
To Kane'ohe
New Structures
New Parking
Camping Areas
Cabin Camping Areas
Group Use
North/South Beach
New Road with Utilities
CONSTRUCTION OPTION C
0 100' 200' 400'
MALAEKAHANA
STATE RECREATIONAL AREA KAHUKU SECTION - PARK IMPROVEMENTS

A-4

APPENDIX B: CULTURAL MATERIAL ANALYSIS

SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
1	SP-2	1	-	20–45 cmbs	Marine Invertebrate	0.1 g	1	Gastropoda: *Nerita picea*
1	SP-2	1	-	20–45 cmbs	Marine Invertebrate	0.2 g	1	Gastropoda: *Littorina pintado*
1	SP-2	1	-	20–45 cmbs	Marine Invertebrate	0.1 g	1	Gastropoda: *Strombus maculatus*
1	SP-2	1	-	20–45 cmbs	Marine Invertebrate	0.1 g	1	Gastropoda: *Cypraea* sp.
1	SP-2	1	-	20–45 cmbs	Marine Invertebrate	0.6 g	1	Echinoidea: non-diagnostic
1	SP-2	1	-	20–45 cmbs	Marine Invertebrate	< 0.1 g	1	Echinoidea: *Echinothrix diadema*
1	SP-2	1	-	20–45 cmbs	Vertebrate	0.1 g	1	Osteichthyes: non-diagnostic
1	SP-2	1	-	20–45 cmbs	Charcoal	0.1 g	-	-
1	SP-2	1	-	20–45 cmbs	Soil Matrix	3.8 g	-	1/8" matrix
1	SP-2	1	-	20–45 cmbs	Soil Matrix	~ 563.0 g	-	< 1/8" matrix
1	SP-2	1	-	20–45 cmbs	Fire Affected Basalt Cobble	-	1	Cobble is vesicular.
2	SP-3	2	-	-	Marine Invertebrate	0.1 g	1	Gastropoda: *Nerita picea*
2	SP-3	2	-	-	Marine Invertebrate	0.2 g	1	Gastropoda: *Littorina pintado*
2	SP-3	2	-	-	Marine Invertebrate	0.3 g	1	Gastropoda: *Strombus maculatus*
2	SP-3	2	-	-	Marine Invertebrate	0.9 g	1	Gastropoda: *Morula dumosa*
2	SP-3	2	-	-	Euryhaline Invertebrate	0.2 g	2	Bivalvia: *Brachidontes crebristriatus*

SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
2	SP-3	2	-	-	Marine Invertebrate	0.1 g	1	Echinoidea: non-diagnostic
2	SP-3	2	-	-	Marine Invertebrate	0.1 g	1	Echinoidea: *Echinometra mathaei*
2	SP-3	2	-	-	Vertebrate	< 0.1 g	1	Osteichthyes: non-diagnostic
2	SP-3	2	-	-	Charcoal	0.1 g	-	-
2	SP-3	2	-	-	Soil Matrix	3.2 g	-	1/8" matrix
2	SP-3	2	-	-	Soil Matrix	~ 340.2 g	-	< 1/8" matrix
2	SP-3	2	-	-	Fractured Fire Affected Basalt Rock	-	1	-
3	SP-3	3	-	-	Marine Invertebrate	0.5 g	2	Gastropoda: *Nerita picea*
3	SP-3	3	-	-	Marine Invertebrate	0.2 g	1	Gastropoda: *Littorina pintado*
3	SP-3	3	-	-	Marine Invertebrate	0.5 g	1	Gastropoda: *Strombus maculatus*
3	SP-3	3	-	-	Euryhaline Invertebrate	0.2 g	1	Bivalvia: *Brachidontes crebristriatus*
3	SP-3	3	-	-	Marine Invertebrate	0.2 g	1	Echinoidea: non-diagnostic
3	SP-3	3	-	-	Vertebrate	0.1 g	1	Osteichthyes: non-diagnostic
3	SP-3	3	-	-	Charcoal	0.2 g	-	-
3	SP-3	3	-	-	Burnt *Kukui*	0.1 g	-	-
3	SP-3	3	-	-	Edge Altered Basalt Flake	Length: 6.2 cm Width: 5.7 cm Thickness: 1.5 cm Weight: 65.4 g	1	Artifact based on a secondary flake; one 2.5 cm long unifacial edge present.
3	SP-3	3	-	-	Soil Matrix	12.1 g	-	1/8" matrix
3	SP-3	3	-	-	Soil Matrix	~ 340.2 g	-	< 1/8" matrix

SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
4A	TU-1	5	-	-	Marine Invertebrate	2.6 g	1	Gastropoda: *Turbo sandwicensis*
4A	TU-1	5	-	-	Marine Invertebrate	0.2 g	1	Gastropoda: *Nerita picea*
4A	TU-1	5	-	-	Marine Invertebrate	1.7 g	1	Gastropoda: *Strombus maculatus*
4A	TU-1	5	-	-	Marine Invertebrate	0.2 g	1	Gastropoda: *Melampus castaneus*
4A	TU-1	5	-	-	Euryhaline Invertebrate	0.1 g	1	Bivalvia: *Brachidontes crebristriatus*
4A	TU-1	5	-	-	Marine Invertebrate	0.1 g	1	Echinoidea: *Colobocentrotus atratus*
4A	TU-1	5	-	-	Marine Invertebrate	< 0.1 g	1	Echinoidea: *Echinometra mathaei*
4A	TU-1	5	-	-	Marine Invertebrate	0.1 g	1	Echinoidea: *Echinometra oblonga*
4A	TU-1	5	-	-	Marine Invertebrate	0.1 g	1	Echinoidea: *Echinothrix diadema*
4A	TU-1	5	-	-	Vertebrate	0.1 g	1	Osteichthyes: non-diagnostic
4A	TU-1	5	-	-	Avian Vertebrate	0.1 g	1	Aves: non-diagnostic
4A	TU-1	5	-	-	Charcoal	0.2 g	-	-
4A	TU-1	5	-	-	Soil Matrix	10.9 g	-	1/8" matrix
4A	TU-1	5	-	-	Soil Matrix	~ 786.6 g	-	< 1/8" matrix
4B	TU-1	5	-	40–50 cmbs	Marine Invertebrate	0.4 g	1	Gastropoda: *Trochus intextus*
4B	TU-1	5	-	40–50 cmbs	Marine Invertebrate	1.9 g	1	Gastropoda: *Turbo sandwicensis*
4B	TU-1	5	-	40–50 cmbs	Marine Invertebrate	1.4 g	5	Gastropoda: *Nerita picea*

SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
4B	TU-1	5	-	40–50 cmbs	Marine Invertebrate	0.8 g	3	Gastropoda: *Littorina pintado*
4B	TU-1	5	-	40–50 cmbs	Marine Invertebrate	1.3 g	2	Gastropoda: *Strombus maculatus*
4B	TU-1	5	-	40–50 cmbs	Marine Invertebrate	0.2 g	1	Gastropoda: *Drupa* sp.
4B	TU-1	5	-	40–50 cmbs	Euryhaline Invertebrate	0.2 g	2	Bivalvia: *Brachidontes crebristriatus*
4B	TU-1	5	-	40–50 cmbs	Marine Invertebrate	0.6 g	1	Bivalvia: *Tellina palatam*
4B	TU-1	5	-	40–50 cmbs	Marine Invertebrate	0.5 g	1	Echinoidea: non-diagnostic
4B	TU-1	5	-	40–50 cmbs	Marine Invertebrate	0.2 g	1	Echinoidea: *Echinometra oblonga*
4B	TU-1	5	-	40–50 cmbs	Vertebrate	0.2 g	1	Osteichthyes: non-diagnostic
4B	TU-1	5	-	40–50 cmbs	Charcoal	1.8 g	-	
5	TU-1	6	-	20–30 cmbs	Marine Invertebrate	1.6 g	1	Gastropoda: *Turbo sandwicensis*
5	TU-1	6	-	20–30 cmbs	Marine Invertebrate	0.2 g	1	Gastropoda: *Nerita picea*
5	TU-1	6	-	20–30 cmbs	Marine Invertebrate	0.2 g	1	Gastropoda: *Littorina pintado*
5	TU-1	6	-	20–30 cmbs	Marine Invertebrate	1.0 g	1	Gastropoda: *Strombus maculatus*
5	TU-1	6	-	20–30 cmbs	Marine Invertebrate	0.4 g	1	Gastropoda: *Cypraea* sp.
5	TU-1	6	-	20–30 cmbs	Euryhaline Invertebrate	0.1 g	1	Bivalvia: *Brachidontes crebristriatus*
5	TU-1	6	-	20–30 cmbs	Marine Invertebrate	0.2 g	1	Cirrepedia: non-diagnostic

SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
5	TU-1	6	-	20–30 cmbs	Marine Invertebrate	0.1 g	1	Echinoidea: non-diagnostic
5	TU-1	6	-	20–30 cmbs	Marine Invertebrate	0.1 g	1	Echinoidea: *Echinometra oblonga*
5	TU-1	6	-	20–30 cmbs	Vertebrate	0.1 g	1	Osteichthyes: non-diagnostic
5	TU-1	6	-	20–30 cmbs	Charcoal	0.6 g	-	-
5	TU-1	6	-	20–30 cmbs	Burnt *Kukui*	0.2 g	-	-
5	TU-1	6	-	20–30 cmbs	Soil Matrix	7.6 g	-	-
5	TU-1	6	-	20–30 cmbs	Soil Matrix	~ 680.4 g	-	-
6A	TU-1	7	-	-	Marine Invertebrate	1.3 g	5	Gastropoda: *Nerita picea*
6A	TU-1	7	-	-	Marine Invertebrate	0.7 g	2	Gastropoda: *Strombus maculatus*
6A	TU-1	7	-	-	Marine Invertebrate	0.1 g	1	Gastropoda: *Cypraea caputserpentis*
6A	TU-1	7	-	-	Euryhaline Invertebrate	0.1 g	1	Bivalvia: *Brachidontes crebristriatus*
6A	TU-1	7	-	-	Marine Invertebrate	0.6 g	2	Echinoidea: non-diagnostic
6A	TU-1	7	-	-	Marine Invertebrate	0.1 g	1	Echinoidea: *Echinometra mathaei*
6A	TU-1	7	-	-	Vertebrate	0.3 g	1	Osteichthyes: non-diagnostic
6A	TU-1	7	-	-	Vertebrate	< 0.1 g	1	Small vertebrate (dog-size)
6A	TU-1	7	-	-	Charcoal	0.8 g	-	-
6A	TU-1	7	-	-	Burnt *Kukui*	0.3 g	-	-
6A	TU-1	7	-	-	Non-burnt *Kukui*	1.4 g	-	-

SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
6A	TU-1	7	-	-	Soil Matrix	10.8 g	-	1/8" matrix
6A	TU-1	7	-	-	Soil Matrix	~ 559.8 g	-	< 1/8" matrix
6B-1	TU-1	7	-	40–70 cmbs	Marine Invertebrate	9.0 g	2	Gastropoda: *Turbo sandwicensis*
6B-1	TU-1	7	-	40–70 cmbs	Marine Invertebrate	5.6 g	15	Gastropoda: *Nerita picea*
6B-1	TU-1	7	-	40–70 cmbs	Marine Invertebrate	0.1 g	1	Gastropoda: *Littorina pintado*
6B-1	TU-1	7	-	40–70 cmbs	Marine Invertebrate	12.4 g	11	Gastropoda: *Strombus maculatus*
6B-1	TU-1	7	-	40–70 cmbs	Marine Invertebrate	0.5 g	1	Gastropoda: *Cypraea* sp.
6B-1	TU-1	7	-	40–70 cmbs	Marine Invertebrate	2.7 g	2	Gastropoda: *Cypraea caputserpentis*
6B-1	TU-1	7	-	40–70 cmbs	Marine Invertebrate	0.9 g	1	Gastropoda: *Tonna perdix*
6B-1	TU-1	7	-	40–70 cmbs	Marine Invertebrate	3.0 g	1	Gastropoda: *Conus lividus*
6B-1	TU-1	7	-	40–70 cmbs	Euryhaline Invertebrate	0.1 g	1	Bivalvia: *Brachidontes crebristriatus*
6B-1	TU-1	7	-	40–70 cmbs	Marine Invertebrate	0.2 g	1	Bivalvia: *Isognomon incisum*
6B-1	TU-1	7	-	40–70 cmbs	Marine Invertebrate	4.3 g	2	Bivalvia: *Tellina palatam*
6B-1	TU-1	7	-	40–70 cmbs	Marine Invertebrate	2.2 g	2	Bivalvia: *Periglypta reticulata*
6B-1	TU-1	7	-	40–70 cmbs	Vertebrate	0.6 g	1	Osteichthyes: non-diagnostic
6B-1	TU-1	7	-	40–70 cmbs	Terrestrial Vertebrate	1.7 g	1	*Sus scrofa* (juvenille incisor)
6B-1	TU-1	7	-	40–70 cmbs	Vertebrate	1.0 g	1	Small mammal (dog-size vertebra)

SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
6B-1	TU-1	7	-	40–70 cmbs	Charcoal	0.4 g	-	0.1 g submitted for radiocarbon dating (SCSRC692).
6B-1	TU-1	7	-	40–70 cmbs	Non-burnt *Kukui*	3.0 g	-	-
6B-1	TU-1	7	-	40–70 cmbs	Soil Matrix	0.6 g	-	-
6B-1	TU-1	7	-	40–70 cmbs	Basalt Debitage	-	-	Interior flake
6B-1	TU-1	7	-	40–70 cmbs	Fish Bone Pick	Length: 4.1 cm Width: 0.5 cm Weight: 0.4 g	1	-
6B-2	TU-1	8	-	50–70 cmbs	Marine Invertebrate	35.1 g	7	Gastropoda: *Turbo sandwicensis*
6B-2	TU-1	8	-	50–70 cmbs	Marine Invertebrate	10.5 g	35	Gastropoda: *Nerita picea*
6B-2	TU-1	8	-	50–70 cmbs	Euryhaline Invertebrate	0.1 g	1	Gastropoda: *Theodoxus cariosus*
6B-2	TU-1	8	-	50–70 cmbs	Marine Invertebrate	1.2 g	4	Gastropoda: *Littorina pintado*
6B-2	TU-1	8	-	50–70 cmbs	Marine Invertebrate	10.4 g	8	Gastropoda: *Strombus maculatus*
6B-2	TU-1	8	-	50–70 cmbs	Marine Invertebrate	0.1 g	1	Gastropoda: *Hipponix foliaceus*
6B-2	TU-1	8	-	50–70 cmbs	Marine Invertebrate	0.9 g	2	Gastropoda: *Cypraea* spp.
6B-2	TU-1	8	-	50–70 cmbs	Marine Invertebrate	1.9 g	2	Gastropoda: *Cypraea caputserpentis*
6B-2	TU-1	8	-	50–70 cmbs	Marine Invertebrate	0.2 g	1	Gastropoda: *Cypraea leviathan*
6B-2	TU-1	8	-	50–70 cmbs	Marine Invertebrate	0.2 g	1	Gastropoda: *Cypraea mauritiana*

SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
6B-2	TU-1	8	-	50–70 cmbs	Marine Invertebrate	1.5 g	2	Gastropoda: *Drupa ricina*
6B-2	TU-1	8	-	50–70 cmbs	Marine Invertebrate	1.3 g	1	Gastropoda: *Conus* sp.
6B-2	TU-1	8	-	50–70 cmbs	Euryhaline Invertebrate	1.6 g	6	Bivalvia: *Brachidontes crebristriatus*
6B-2	TU-1	8	-	50–70 cmbs	Marine Invertebrate	0.7 g	1	Bivalvia: *Isognomon californicum*
6B-2	TU-1	8	-	50–70 cmbs	Marine Invertebrate	0.1 g	1	Bivalvia: *Ctena bella*
6B-2	TU-1	8	-	50–70 cmbs	Marine Invertebrate	2.0 g	1	Bivalvia: *Tellina palatam*
6B-2	TU-1	8	-	50–70 cmbs	Marine Invertebrate	0.3 g	1	Bivalvia: *Periglypta reticulata*
6B-2	TU-1	8	-	50–70 cmbs	Marine Invertebrate	0.2 g	1	Cirrepedia: *Lepas ansifera*
6B-2	TU-1	8	-	50–70 cmbs	Invertebrate	0.5 g	1	Decapoda: non-diagnostic
6B-2	TU-1	8	-	50–70 cmbs	Marine Invertebrate	1.9 g	1	Echinoidea: non-diagnostic
6B-2	TU-1	8	-	50–70 cmbs	Marine Invertebrate	0.1 g	1	Echinoidea: *Echinometra mathaei*
6B-2	TU-1	8	-	50–70 cmbs	Marine Invertebrate	0.6 g	1	Echinoidea: *Echinometra oblonga*
6B-2	TU-1	8	-	50–70 cmbs	Vertebrate	2.3 g	1	Osteichthyes: non-diagnostic
6B-2	TU-1	8	-	50–70 cmbs	Marine Vertebrate	0.1 g	1	Osteichthyes: Monacanthidae
6B-2	TU-1	8	-	50–70 cmbs	Terrestrial Vertebrate	0.2 g	1	*Rattus/ Mus* sp.
6B-2	TU-1	8	-	50–70 cmbs	Vertebrate	0.5 g	1	Small vertebrate (dog-size)

SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
6B-2	TU-1	8	-	50–70 cmbs	Charcoal	5.5 g	-	-
6B-2	TU-1	8	-	50–70 cmbs	Burnt *Kukui*	0.3 g	-	-
6B-2	TU-1	8	-	50–70 cmbs	Angular Basalt	-	2	Non-diagnostic
6B-2	TU-1	8	-	50–70 cmbs	Soil Matrix	1.1 g	-	1/8" matrix
6B-2	TU-1	8	-	50–70 cmbs	Soil Matrix	25.6 g	-	< 1/8" matrix
6C	TU-1	8	-	70 cmbs	Charcoal	0.6 g	-	-
6C	TU-1	8	-	70 cmbs	Soil Matrix	1.5 g	-	1/8" matrix
6C	TU-1	8	-	70 cmbs	Soil Matrix	31.5 g	-	< 1/8" matrix
7A	TU-1	9	-	-	Marine Invertebrate	0.7 g	1	Gastropoda: *Turbo sandwicensis*
7A	TU-1	9	-	-	Marine Invertebrate	1.4 g	5	Gastropoda: *Nerita picea*
7A	TU-1	9	-	-	Marine Invertebrate	0.2 g	1	Gastropoda: *Littorina pintado*
7A	TU-1	9	-	-	Marine Invertebrate	0.4 g	1	Gastropoda: *Strombus maculatus*
7A	TU-1	9	-	-	Marine Invertebrate	0.2 g	1	Gastropoda: *Conus* sp.
7A	TU-1	9	-	-	Euryhaline Invertebrate	0.1 g	1	Bivalvia: *Brachidontes crebristriatus*
7A	TU-1	9	-	-	Marine Invertebrate	1.2 g	1	Bivalvia: *Tellina palatam*
7A	TU-1	9	-	-	Invertebrate	0.1 g	1	Decopoda: non-diagnostic
7A	TU-1	9	-	-	Marine Invertebrate	0.1 g	1	Echinoidea: non-diagnostic
7A	TU-1	9	-	-	Marine Invertebrate	0.1 g	1	Echinoidea: *Echinometra mathaei*

SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
7A	TU-1	9	-	-	Marine Invertebrate	0.1 g	1	Echinoidea: *Echinothrix diadema*
7A	TU-1	9	-	-	Vertebrate	0.2 g	1	Osteichthyes: non-diagnostic
7A	TU-1	9	-	-	Marine Invertebrate	< 0.1 g	1	Osteichthyes: Monacanthidae
7A	TU-1	9	-	-	Charcoal	0.6 g	-	-
7A	TU-1	9	-	-	Soil Matrix	11.4 g	-	1/8" matrix
7A	TU-1	9	-	-	Soil Matrix	~ 900.0 g	-	< 1/8" matrix
7B	TU-1	9	-	40–48 cmbs	Marine Invertebrate	11.7 g	2	Gastropoda: *Turbo sandwicensis*
7B	TU-1	9	-	40–48 cmbs	Marine Invertebrate	1.5 g	4	Gastropoda: *Nerita picea*
7B	TU-1	9	-	40–48 cmbs	Marine Invertebrate	0.1 g	1	Gastropoda: *Littorina pintado*
7B	TU-1	9	-	40–48 cmbs	Marine Invertebrate	2.6 g	1	Gastropoda: *Rhinoclavis sinensis*
7B	TU-1	9	-	40–48 cmbs	Marine Invertebrate	1.5 g	2	Gastropoda: *Strombus maculatus*
7B	TU-1	9	-	40–48 cmbs	Marine Invertebrate	0.5 g	1	Gastropoda: *Cypraea* sp.
7B	TU-1	9	-	40–48 cmbs	Marine Invertebrate	1.1 g	1	Gastropoda: *Cypraea caputserpentis*
7B	TU-1	9	-	40–48 cmbs	Marine Invertebrate	2.8 g	1	Gastropoda: *Conus lividus*
7B	TU-1	9	-	40–48 cmbs	Marine Invertebrate	0.4 g	1	Bivalvia: *Tellina palatam*
7B	TU-1	9	-	40–48 cmbs	Vertebrate	0.2 g	1	Osteichthyes: non-diagnostic
7B	TU-1	9	-	40–48 cmbs	Terrestrial Vertebrate	0.7 g	1	Small mammal (dog-size; juvenille)

SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
7C	TU-1	9	-	49 cmbs	Charcoal with Matrix	30.7 g	-	-
8A	TU-1	10	-	40–50 cmbs	Marine Invertebrate	0.7 g	1	Gastropoda: *Turbo sandwicensis*
8A	TU-1	10	-	40–50 cmbs	Marine Invertebrate	0.9 g	3	Gastropoda: *Nerita picea*
8A	TU-1	10	-	40–50 cmbs	Marine Invertebrate	1.0 g	2	Gastropoda: *Strombus maculatus*
8A	TU-1	10	-	40–50 cmbs	Marine Invertebrate	0.3 g	1	Gastropoda: *Cypraea* sp.
8A	TU-1	10	-	40–50 cmbs	Euryhaline Invertebrate	< 0.1 g	1	Bivalvia: *Brachidontes crebristriatus*
8A	TU-1	10	-	40–50 cmbs	Marine Invertebrate	0.9 g	1	Echinoidea: non-diagnostic
8A	TU-1	10	-	40–50 cmbs	Marine Invertebrate	0.1 g	1	Echinoidea: *Echinometra mathaei*
8A	TU-1	10	-	40–50 cmbs	Marine Invertebrate	0.1 g	1	Echinoidea: *Echinometra oblonga*
8A	TU-1	10	-	40–50 cmbs	Marine Invertebrate	0.3 g	1	Echinoidea: *Heterocentrotus mammillatus*
8A	TU-1	10	-	40–50 cmbs	Vertebrate	0.7 g	1	Osteichthyes: non-diagnostic
8A	TU-1	10	-	40–50 cmbs	Vertebrate	0.1 g	1	Small vertebrate (bird-size)
8A	TU-1	10	-	40–50 cmbs	Charcoal	1.2 g	-	-
8A	TU-1	10	-	40–50 cmbs	Soil Matrix	16.5 g	-	1/8" matrix
8A	TU-1	10	-	40–50 cmbs	Soil Matrix	~ 1,013.4 g	-	< 1/8" matrix
8B	TU-1	10	-	40–50 cmbs	Marine Invertebrate	0.1 g	1	Gastropoda: *Turbo sandwicensis*

SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
8B	TU-1	10	-	40–50 cmbs	Marine Invertebrate	2.4 g	9	Gastropoda: *Nerita picea*
8B	TU-1	10	-	40–50 cmbs	Marine Invertebrate	0.3 g	1	Gastropoda: *Littorina pintado*
8B	TU-1	10	-	40–50 cmbs	Marine Invertebrate	3.8 g	5	Gastropoda: *Strombus maculatus*
8B	TU-1	10	-	40–50 cmbs	Marine Invertebrate	2.0 g	1	Gastropoda: *Cypraea caputserpentis*
8B	TU-1	10	-	40–50 cmbs	Marine Invertebrate	0.4 g	1	Gastropoda: *Drupa* sp.
8B	TU-1	10	-	40–50 cmbs	Marine Invertebrate	2.4 g	1	Gastropoda: *Conus spiceri*
8B	TU-1	10	-	40–50 cmbs	Euryhaline Invertebrate	0.9 g	3	Bivalvia: *Brachidontes crebristriatus*
8B	TU-1	10	-	40–50 cmbs	Marine Invertebrate	1.3 g	1	Bivalvia: *Tellina palatam*
8B	TU-1	10	-	40–50 cmbs	Marine Invertebrate	0.1 g	1	Cirripedia: non-diagnostic
8B	TU-1	10	-	40–50 cmbs	Marine Invertebrate	0.4 g	1	Echinoidea: non-diagnostic
8B	TU-1	10	-	40–50 cmbs	Marine Invertebrate	0.1 g	1	Echinoidea: *Colobocentrotus atratus*
8B	TU-1	10	-	40–50 cmbs	Marine Invertebrate	0.1 g	1	Echinoidea: *Echinometra oblonga*
8B	TU-1	10	-	40–50 cmbs	Marine Invertebrate	0.4 g	1	Echinoidea: *Echinothrix diadema*
8B	TU-1	10	-	40–50 cmbs	Vertebrate	0.4 g	1	Osteichthyes: non-diagnostic
8B	TU-1	10	-	40–50 cmbs	Avian Vertebrate	0.2 g	1	Aves: non-diagnostic

SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
8B	TU-1	10	-	40–50 cmbs	Terrestrial Vertebrate	0.1 g	1	Small mammal (dog-size)
8B	TU-1	10	-	40–50 cmbs	Charcoal	0.8 g	-	-
8B	TU-1	10	-	40–50 cmbs	Burnt *Kukui*	0.2 g	-	-
8B	TU-1	10	-	40–50 cmbs	Basalt Debitage	-	1	Interior flake
8B	TU-1	10	-	40–50 cmbs	Waterworn Basalt Cobble	-	1	-
8B	TU-1	10	-	40–50 cmbs	Soil Matrix	0.7 g	-	1/8" matrix
8C	TU-1	-	I/II	0–9 cmbs	Marine Invertebrate	0.9 g	2	Gastropoda: *Nerita picea*
8C	TU-1	-	I/II	0–9 cmbs	Marine Invertebrate	0.4 g	1	Gastropoda: *Strombus maculatus*
8C	TU-1	-	I/II	0–9 cmbs	Marine Invertebrate	0.6 g	1	Gastropoda: *Cypraea* sp.
8C	TU-1	-	I/II	0–9 cmbs	Marine Invertebrate	0.4 g	1	Bivalvia: *Isognomon californicum*
8C	TU-1	-	I/II	0–9 cmbs	Marine Invertebrate	0.3 g	1	Bivalvia: *Tellina palatam*
8C	TU-1	-	I/II	0–9 cmbs	Ferrous Metal Bottle Cap	-	1	Heineken bottle cap
8C	TU-1	-	I/II	0–9 cmbs	Aluminum Foil Fragment	-	1	-
8C	TU-1	-	I/II	0–9 cmbs	Cigarette Butt	-	1	-
8C	TU-1	-	I/II	0–9 cmbs	Non-diagnostic Plastic	-	1	-
8C	TU-1	-	I/II	0–9 cmbs	Plastic Fishing String	-	1	-

SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
8D	TU-1	-	II	5–10 cmbs	Marine Invertebrate	1.0 g	1	Gastropoda: *Turbo sandwicensis*
8D	TU-1	-	II	5–10 cmbs	Marine Invertebrate	6.4 g	16	Gastropoda: *Nerita picea*
8D	TU-1	-	II	5–10 cmbs	Marine Invertebrate	0.4 g	2	Gastropoda: *Littorina pintado*
8D	TU-1	-	II	5–10 cmbs	Marine Invertebrate	10.5 g	8	Gastropoda: *Strombus maculatus*
8D	TU-1	-	II	5–10 cmbs	Marine Invertebrate	0.9 g	2	Gastropoda: *Cypraea* sp.
8D	TU-1	-	II	5–10 cmbs	Marine Invertebrate	5.4 g	2	Gastropoda: *Cypraea caputserpentis*
8D	TU-1	-	II	5–10 cmbs	Euryhaline Invertebrate	0.2 g	1	Bivalvia: *Brachidontes crebristriatus*
8D	TU-1	-	II	5–10 cmbs	Marine Invertebrate	1.1 g	2	Bivalvia: *Isognomon californicum*
8D	TU-1	-	II	5–10 cmbs	Marine Invertebrate	0.4 g	1	Bivalvia: *Tellina palatam*
8D	TU-1	-	II	5–10 cmbs	Marine Invertebrate	0.3 g	1	Bivalvia: Periglypta reticulata
8D	TU-1	-	II	5–10 cmbs	Marine Invertebrate	0.2 g	1	Echinoidea: non-diagnostic
8D	TU-1	-	II	5–10 cmbs	Vertebrate	1.4 g	1	Small Vertebrate (chicken-size)
8D	TU-1	-	II	5–10 cmbs	Non-burnt *Kukui*	6.7 g	-	-
8D	TU-1	-	II	5–10 cmbs	Milk Glass Button	Diameter: 1.0 cm Thickness: 0.2 cm Weight: 0.4 g	1	Four-holes, obverse center depressed, reverse domed with orange peel platform center; possible Prosser button (manufactured post-1840).
8D	TU-1	-	II	5–10 cmbs	Bottle Glass Body Sherd	-	1	Clear

SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
8D	TU-1	-	II	5–10 cmbs	Bottle Glass Body Sherd	-	1	Amber color
8D	TU-1	-	II	5–10 cmbs	Roofing Tar Fragments	-	3	-
8E	TU-1	-	III	10–28 cmbs	Marine Invertebrate	0.2 g	1	Gastropoda: *Cellana* sp.
8E	TU-1	-	III	10–28 cmbs	Marine Invertebrate	1.5 g	1	Gastropoda: *Trochus intextus*
8E	TU-1	-	III	10–28 cmbs	Marine Invertebrate	11.6 g	4	Gastropoda: *Turbo sandwicensis*
8E	TU-1	-	III	10–28 cmbs	Marine Invertebrate	8.9 g	25	Gastropoda: *Nerita picea*
8E	TU-1	-	III	10–28 cmbs	Marine Invertebrate	0.9 g	2	Gastropoda: *Littorina pintado*
8E	TU-1	-	III	10–28 cmbs	Marine Invertebrate	19.7 g	19	Gastropoda: *Strombus maculatus*
8E	TU-1	-	III	10–28 cmbs	Marine Invertebrate	9.3 g	4	Gastropoda: *Cypraea* sp.
8E	TU-1	-	III	10–28 cmbs	Marine Invertebrate	4.4 g	3	Gastropoda: *Cypraea caputserpentis*
8E	TU-1	-	III	10–28 cmbs	Marine Invertebrate	2.2 g	1	Gastropoda: *Cassis cornuta*
8E	TU-1	-	III	10–28 cmbs	Marine Invertebrate	4.3 g	1	Gastropoda: *Conus* sp.
8E	TU-1	-	III	10–28 cmbs	Marine Invertebrate	1.7 g	1	Gastropoda: *Conus abbreviatus*
8E	TU-1	-	III	10–28 cmbs	Marine Invertebrate	1.8 g	1	Gastropoda: *Conus pennaceus*
8E	TU-1	-	III	10–28 cmbs	Euryhaline Invertebrate	0.6 g	3	Bivalvia: *Brachidontes crebristriatus*

SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
8E	TU-1	-	III	10–28 cmbs	Marine Invertebrate	0.1 g	1	Bivalvia: *Isognomon californicum*
8E	TU-1	-	III	10–28 cmbs	Marine Invertebrate	0.3 g	1	Bivalvia: *Isognomon incisum*
8E	TU-1	-	III	10–28 cmbs	Marine Invertebrate	1.8 g	1	Bivalvia: *Tellina palatam*
8E	TU-1	-	III	10–28 cmbs	Marine Invertebrate	1.0 g	1	Echinoidea: non-diagnostic
8E	TU-1	-	III	10–28 cmbs	Marine Invertebrate	0.4 g	1	Echinoidea: *Echinometra oblonga*
8E	TU-1	-	III	10–28 cmbs	Marine Invertebrate	0.3 g	1	Echinoidea: *Echinothrix diadema*
8E	TU-1	-	III	10–28 cmbs	Vertebrate	0.2 g	1	Osteichthyes: non-diagnostic
8E	TU-1	-	III	10–28 cmbs	Marine Invertebrate	0.3 g	1	Osteichthyes: cf. Labridae
8E	TU-1	-	III	10–28 cmbs	Avian Vertebrate	0.2 g	1	Aves: non-diagnostic
8E	TU-1	-	III	10–28 cmbs	Vertebrate	0.7 g	1	Small mammal (dog-size)
8E	TU-1	-	III	10–28 cmbs	Charcoal	0.3 g	-	-
8E	TU-1	-	III	10–28 cmbs	Burnt *Kukui*	0.3 g	-	-
8E	TU-1	-	III	10–28 cmbs	Non-burnt *Kukui*	12.9 g	-	-
8E	TU-1	-	III	10–28 cmbs	Fire Affected Basalt Pebble	-	1	-
8E	TU-1	-	III	10–28 cmbs	Basalt Debitage	-	1	Interior flake

SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
8E	TU-1	-	III	10–28 cmbs	Coral Abrader	Length: 3.3 cm Width: 1.1 cm Thickness: 0.7 cm Weight: 2.2 g	1	Tapered from one end to opposite end, six-sided polygon cross-section.
8E	TU-1	-	III	10–28 cmbs	Traditionally Cut Bone	Length: 1.3 cm Width: 0.7 cm Thickness: 0.15 cm Weight: 0.1 g	1	Small mammal (dog-size) bone, with one cut facet.
8E	TU-1	-	III	10–28 cmbs	Soil Matrix	1.6 g	-	1/8" matrix
8F	TU-1	-	III	20–40 cmbs	Marine Invertebrate	0.1 g	1	Gastropoda: *Cellana sandwicensis*
8F	TU-1	-	III	20–40 cmbs	Marine Invertebrate	79.3 g	13	Gastropoda: *Turbo sandwicensis*
8F	TU-1	-	III	20–40 cmbs	Marine Invertebrate	30.0 g	88	Gastropoda: *Nerita picea*
8F	TU-1	-	III	20–40 cmbs	Marine Invertebrate	2.1 g	9	Gastropoda: *Littorina pintado*
8F	TU-1	-	III	20–40 cmbs	Marine Invertebrate	31.0 g	35	Gastropoda: *Strombus maculatus*
8F	TU-1	-	III	20–40 cmbs	Marine Invertebrate	20.9 g	6	Gastropoda: *Cypraea* sp.
8F	TU-1	-	III	20–40 cmbs	Marine Invertebrate	14.0 g	6	Gastropoda: *Cypraea caputserpentis*
8F	TU-1	-	III	20–40 cmbs	Marine Invertebrate	0.8 g	1	Gastropoda: *Drupa rubusidaeus*
8F	TU-1	-	III	20–40 cmbs	Marine Invertebrate	6.6 g	1	Gastropoda: *Nassa serta*
8F	TU-1	-	III	20–40 cmbs	Marine Invertebrate	1.6 g	2	Gastropoda: *Conus* sp.
8F	TU-1	-	III	20–40 cmbs	Marine Invertebrate	6.4 g	2	Gastropoda: *Conus abbreviatus*

SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
8F	TU-1	-	III	20–40 cmbs	Marine Invertebrate	4.8 g	1	Gastropoda: *Conus flavidus*
8F	TU-1	-	III	20–40 cmbs	Marine Invertebrate	7.5 g	1	Gastropoda: *Conus pennaceus*
8F	TU-1	-	III	20–40 cmbs	Invertebrate	2.0 g	2	Bivalvia: non-diagnostic
8F	TU-1	-	III	20–40 cmbs	Euryhaline Invertebrate	3.2 g	10	Bivalvia: *Brachidontes crebristriatus*
8F	TU-1	-	III	20–40 cmbs	Marine Invertebrate	0.2 g	1	Bivalvia: *Pinctada* sp.
8F	TU-1	-	III	20–40 cmbs	Marine Invertebrate	0.9 g	1	Bivalvia: *Isognomon incisum*
8F	TU-1	-	III	20–40 cmbs	Marine Invertebrate	14.9 g	2	Bivalvia: *Tellina palatam*
8F	TU-1	-	III	20–40 cmbs	Marine Invertebrate	0.4 g	1	Cirrepedia: non-diagnostic
8F	TU-1	-	III	20–40 cmbs	Invertebrate	0.8 g	1	Decopoda: non-diagnostic
8F	TU-1	-	III	20–40 cmbs	Marine Invertebrate	1.4 g	1	Echinoidea: non-diagnostic
8F	TU-1	-	III	20–40 cmbs	Marine Invertebrate	0.2 g	1	Echinoidea: *Colobocentrotus atratus*
8F	TU-1	-	III	20–40 cmbs	Marine Invertebrate	0.4 g	1	Echinoidea: *Echinometra oblonga*
8F	TU-1	-	III	20–40 cmbs	Vertebrate	1.9 g	1	Osteichthyes: non-diagnostic
8F	TU-1	-	III	20–40 cmbs	Marine Vertebrate	0.5 g	1	Osteichthyes: Scaridae
8F	TU-1	-	III	20–40 cmbs	Vertebrate	0.6 g	1	Small mammal (dog-size; juvenille)
8F	TU-1	-	III	20–40 cmbs	Vertebrate	1.7 g	1	Small mammal (dog-size)

SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
8F	TU-1	-	III	20–40 cmbs	Charcoal	0.8 g	-	-
8F	TU-1	-	III	20–40 cmbs	Burnt *Kukui*	0.2 g	-	-
8F	TU-1	-	III	20–40 cmbs	Non-Burnt *Kukui*	21.4 g	-	-
8F	TU-1	-	III	20–40 cmbs	Basalt Core Fragment		1	-
8F	TU-1	-	III	20–40 cmbs	Basalt Debitage	-	1	Interior flake
8F	TU-1	-	III	20–40 cmbs	Abraded Hematite Fragment	Weight: 0.8 g	1	Two adjoining facets abraded.
8F	TU-1	-	III	20–40 cmbs	Waterworn Basalt Pebbles	-	2	Manuports
8F	TU-1	-	III	20–40 cmbs	Abraded Vertebrate Bone	Length: 4.4 cm Width: 2.7 cm Thickness: 0.6 cm Weight: 3.6 g	1	Two adjoining facets abraded of small to medium mammal bone (pig-size), bone burnt with flesh.
8F	TU-1	-	III	20–40 cmbs	Abraded Vertebrate Bone	Length: 1.9 cm Width: 1.8 cm Thickness: 0.3 cm Weight: 1.0 g	1	Two facets abraded of small to medium mammal bone (pig-size), bone burnt with flesh.
8F	TU-1	-	III	20–40 cmbs	Cut Vertebrate Bone	Length: 1.4 cm Width: 0.9 cm Thickness: 0.3 cm Weight: 0.2 g	1	Small mammal bone (dog-size) with four cut facets (multiple striations present on largest facet).
8F	TU-1	-	III	20–40 cmbs	Soil Matrix	6.5 g	-	1/8" matrix
8G	TU-1	-	III	40–50 cmbs	Marine Invertebrate	0.2 g	1	Gastropoda: *Cellana melanostoma*

SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
8G	TU-1	-	III	40–50 cmbs	Marine Invertebrate	0.2 g	1	Gastropoda: *Cellana sandwicensis*
8G	TU-1	-	III	40–50 cmbs	Marine Invertebrate	47.3 g	9	Gastropoda: *Turbo sandwicensis*
8G	TU-1	-	III	40–50 cmbs	Marine Invertebrate	26.8 g	85	Gastropoda: *Nerita picea*
8G	TU-1	-	III	40–50 cmbs	Marine Invertebrate	1.2 g	4	Gastropoda: *Littorina pintado*
8G	TU-1	-	III	40–50 cmbs	Marine Invertebrate	17.7 g	12	Gastropoda: *Strombus maculatus*
8G	TU-1	-	III	40–50 cmbs	Marine Invertebrate	5.5 g	2	Gastropoda: *Cypraea* sp.
8G	TU-1	-	III	40–50 cmbs	Marine Invertebrate	3.7 g	2	Gastropoda: *Cypraea caputserpentis*
8G	TU-1	-	III	40–50 cmbs	Marine Invertebrate	0.5 g	1	Gastropoda: *Cypraea maculifera*
8G	TU-1	-	III	40–50 cmbs	Marine Invertebrate	0.4 g	1	Gastropoda: *Tonna perdix*
8G	TU-1	-	III	40–50 cmbs	Marine Invertebrate	0.5 g	1	Gastropoda: *Drupa ochrostoma*
8G	TU-1	-	III	40–50 cmbs	Marine Invertebrate	0.9 g	1	Gastropoda: *Drupa rubusidaeus*
8G	TU-1	-	III	40–50 cmbs	Marine Invertebrate	1.1 g	1	Gastropoda: *Thais intermedia*
8G	TU-1	-	III	40–50 cmbs	Marine Invertebrate	1.5 g	1	Gastropoda: *Mitra litterata*
8G	TU-1	-	III	40–50 cmbs	Marine Invertebrate	2.1 g	1	Gastropoda: *Conus* sp.
8G	TU-1	-	III	40–50 cmbs	Marine Invertebrate	3.7 g	1	Gastropoda: *Conus ebraeus*

SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
8G	TU-1	-	III	40–50 cmbs	Marine Invertebrate	11.8 g	1	Gastropoda: *Conus lividus*
8G	TU-1	-	III	40–50 cmbs	Marine Invertebrate	3.7 g	1	Gastropoda: *Conus pennaceus*
8G	TU-1	-	III	40–50 cmbs	Marine Invertebrate	5.9 g	1	Gastropoda: *Conus quercinus*
8G	TU-1	-	III	40–50 cmbs	Marine Invertebrate	0.1 g	1	Gastropoda: *Melampus castaneus*
8G	TU-1	-	III	40–50 cmbs	Euryhaline Invertebrate	4.5 g	19	Bivalvia: *Brachidontes crebristriatus*
8G	TU-1	-	III	40–50 cmbs	Marine Invertebrate	1.2 g	1	Bivalvia: *Isognomon incisum*
8G	TU-1	-	III	40–50 cmbs	Marine Invertebrate	11.4 g	1	Bivalvia: *Tellina palatam*
8G	TU-1	-	III	40–50 cmbs	Marine Invertebrate	0.9 g	1	Bivalvia: *Periglypta reticulata*
8G	TU-1	-	III	40–50 cmbs	Marine Invertebrate	0.1 g	1	Cirrepedia: *Lepas ansifera*
8G	TU-1	-	III	40–50 cmbs	Invertebrate	0.2 g	1	Decopoda: non-diagnostic
8G	TU-1	-	III	40–50 cmbs	Marine Invertebrate	1.1 g	1	Echinoidea: non-diagnostic
8G	TU-1	-	III	40–50 cmbs	Marine Invertebrate	0.3 g	1	Echinoidea: *Echinometra oblonga*
8G	TU-1	-	III	40–50 cmbs	Vertebrate	2.3 g	1	Osteichthyes: non-diagnostic
8G	TU-1	-	III	40–50 cmbs	Terrestrial Vertebrate	2.1 g	1	*Sus scrofa* (juvenille pre-molar)
8G	TU-1	-	III	40–50 cmbs	Vertebrate	0.8 g	1	Small mammal (dog-size)
8G	TU-1	-	III	40–50 cmbs	Basalt Debitage	-	1	Interior flake

SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
8G	TU-1	-	III	40–50 cmbs	Non-Diagnostic Angular Basalt	-	1	-
8G	TU-1	-	III	40–50 cmbs	Basalt Flake with Polish	-	1	One polished facet
8G	TU-1	-	III	40–50 cmbs	Volcanic Glass Debitage	-	1	Secondary flake
8G	TU-1	-	III	40–50 cmbs	Charcoal	0.6 g	-	-
8G	TU-1	-	III	40–50 cmbs	Soil Matrix	2.2 g	-	1/8" matrix
9	SP-1	-	-	0–45 cmbs	Marine Invertebrate	16.2 g	5	Gastropoda: *Turbo sandwicensis*
9	SP-1	-	-	0–45 cmbs	Marine Invertebrate	5.8 g	18	Gastropoda: *Nerita picea*
9	SP-1	-	-	0–45 cmbs	Euryhaline Invertebrate	0.2 g	1	Gastropoda: *Theodoxus neglectus*
9	SP-1	-	-	0–45 cmbs	Marine Invertebrate	0.3 g	1	Gastropoda: *Littorina pintado*
9	SP-1	-	-	0–45 cmbs	Marine Invertebrate	5.1 g	1	Gastropoda: *Rhinoclavis sinensis*
9	SP-1	-	-	0–45 cmbs	Marine Invertebrate	2.8 g	3	Gastropoda: *Strombus maculatus*
9	SP-1	-	-	0–45 cmbs	Marine Invertebrate	10.9 g	5	Gastropoda: *Cypraea caputserpentis*
9	SP-1	-	-	0–45 cmbs	Marine Invertebrate	0.9 g	1	Gastropoda: *Neothais harpa*
9	SP-1	-	-	0–45 cmbs	Marine Invertebrate	1.2 g	2	Gastropoda: *Conus* sp.
9	SP-1	-	-	0–45 cmbs	Marine Invertebrate	2.7 g	1	Gastropoda: *Conus flavidus*

SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
9	SP-1	-	-	0–45 cmbs	Euryhaline Invertebrate	0.7 g	4	Bivalvia: *Brachidontes crebristriatus*
9	SP-1	-	-	0–45 cmbs	Marine Invertebrate	1.5 g	1	Bivalvia: *Tellina palatam*
9	SP-1	-	-	0–45 cmbs	Invertebrate	1.1 g	1	Decopoda: non-diagnostic
9	SP-1	-	-	0–45 cmbs	Marine Invertebrate	0.1 g	1	Echinoidea: *Colobocentrotus atratus*
9	SP-1	-	-	0–45 cmbs	Vertebrate	0.6 g	1	Osteichthyes: non-diagnostic
9	SP-1	-	-	0–45 cmbs	Marine Vertebrate	0.7 g	1	Osteichthyes: Acanthuridae
9	SP-1	-	-	0–45 cmbs	Vertebrate	0.2 g	1	Aves: non-diagnostic
9	SP-1	-	-	0–45 cmbs	Vertebrate	2.0 g	1	Small mammal (dog-size)
9	SP-1	-	-	0–45 cmbs	Non-Burnt *Kukui*	1.0 g		-
10	SP-2	-	-	0–45 cmbs	Marine Invertebrate	7.3 g	4	Gastropoda: *Turbo sandwicensis*
10	SP-2	-	-	0–45 cmbs	Marine Invertebrate	3.6 g	12	Gastropoda: *Nerita picea*
10	SP-2	-	-	0–45 cmbs	Marine Invertebrate	0.2 g	1	Gastropoda: *Littorina pintado*
10	SP-2	-	-	0–45 cmbs	Marine Invertebrate	1.5 g	3	Gastropoda: *Strombus maculatus*
10	SP-2	-	-	0–45 cmbs	Marine Invertebrate	2.0 g	2	Gastropoda: *Cypraea caputserpentis*
10	SP-2	-	-	0–45 cmbs	Marine Invertebrate	2.6 g	2	Gastropoda: *Conus pennaceus*
10	SP-2	-	-	0–45 cmbs	Marine Invertebrate	0.4 g	2	Gastropoda: *Melampus castaneus*
10	SP-2	-	-	0–45 cmbs	Euryhaline Invertebrate	0.4 g	2	Bivalvia: *Brachidontes crebristriatus*

SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
10	SP-2	-	-	0–45 cmbs	Marine Invertebrate	0.3 g	1	Echinoidea: non-diagnostic
10	SP-2	-	-	0–45 cmbs	Vertebrate	0.4 g	1	Osteichthyes: non-diagnostic
10	SP-2	-	-	0–45 cmbs	Vertebrate	0.4 g	1	Aves: non-diagnostic
10	SP-2	-	-	0–45 cmbs	Vertebrate	1.0 g	1	Small mammal (dog-size)
10	SP-2	-	-	0–45 cmbs	Burnt *Kukui*	0.1 g		-
10	SP-2	-	-	0–45 cmbs	Waterworn Basalt Pebble	-	1	Manuport
10	SP-2	-	-	0–45 cmbs	Traditionally Cut Marine Shell	Length: 2.3 cm Width: 1.8 cm Thickness: 0.2 cm Weight: 0.7 g	1	*Pinctada* sp. shell; two adjoining facets traditionally cut.
10	SP-2	-	-	0–45 cmbs	Charcoal	0.8 g	-	-
10	SP-2	-	-	0–45 cmbs	Soil Matrix	1.5 g	-	1/8" matrix
11	SP-3	-	-	0–42 cmbs	Marine Invertebrate	0.2 g	1	Gastropoda: *Cellana sandwicensis*
11	SP-3	-	-	0–42 cmbs	Marine Invertebrate	0.8 g	1	Gastropoda: *Turbo sandwicensis*
11	SP-3	-	-	0–42 cmbs	Marine Invertebrate	11.4 g	32	Gastropoda: *Nerita picea*
11	SP-3	-	-	0–42 cmbs	Marine Invertebrate	0.7 g	4	Gastropoda: *Littorina pintado*
11	SP-3	-	-	0–42 cmbs	Marine Invertebrate	1.9 g	2	Gastropoda: *Strombus maculatus*
11	SP-3	-	-	0–42 cmbs	Marine Invertebrate	1.8 g	2	Gastropoda: *Cypraea* sp.
11	SP-3	-	-	0–42 cmbs	Marine Invertebrate	0.5 g	1	Gastropoda: *Drupa* sp.
11	SP-3	-	-	0–42 cmbs	Marine Invertebrate	0.2 g	1	Gastropoda: *Neothais harpa*

SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
11	SP-3	-	-	0–42 cmbs	Marine Invertebrate	0.2 g	1	Gastropoda: *Anachis miser*
11	SP-3	-	-	0–42 cmbs	Marine Invertebrate	0.2 g	1	Gastropoda: *Conus* sp.
11	SP-3	-	-	0–42 cmbs	Invertebrate	0.1 g	1	Gastropoda: Pulmonata (non-diagnostic)
11	SP-3	-	-	0–42 cmbs	Marine Invertebrate	0.6 g	3	Gastropoda: *Melampus castaneus*
11	SP-3	-	-	0–42 cmbs	Euryhaline Invertebrate	0.4 g	2	Bivalvia: *Brachidontes crebristriatus*
11	SP-3	-	-	0–42 cmbs	Marine Invertebrate	0.5 g	1	Bivalvia: *Tellina palatam*
11	SP-3	-	-	0–42 cmbs	Marine Invertebrate	0.4 g	1	Echinoidea: non-diagnostic
11	SP-3	-	-	0–42 cmbs	Marine Invertebrate	0.1 g	1	Echinoidea: *Colobocentrotus atratus*
11	SP-3	-	-	0–42 cmbs	Vertebrate	0.3 g	1	Osteichthyes: non-diagnostic
11	SP-3	-	-	0–42 cmbs	Vertebrate	0.3 g	1	Aves: non-diagnostic
11	SP-3	-	-	0–42 cmbs	Terrestrial Vertebrate	0.5 g	1	*Sus scrofa*
11	SP-3	-	-	0–42 cmbs	Charcoal	0.9 g	-	-
11	SP-3	-	-	0–42 cmbs	Burnt *Kukui*	0.1 g	-	-
11	SP-3	-	-	0–42 cmbs	Non-burnt *Kukui*	0.4 g	-	-
11	SP-3	-	-	0–42 cmbs	Fractured Waterworn Basalt Pebble	-	1	-
11	SP-3	-	-	0–42 cmbs	Fire Cracked Basalt Spall	-	1	-
11	SP-3	-	-	0–42 cmbs	Basalt Debitage	-	3	Interior flakes

SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
11	SP-3	-	-	0–42 cmbs	Abraded Hematite Cobble	Length: 4.0 cm Width: 3.2 cm Thickness: 2.6 cm Weight: 71.2 g	1	Two abraded facets, striations visible.
12	SP-4	-	-	0–45 cmbs	Marine Invertebrate	0.3 g	1	Gastropoda: *Trochus intextus*
12	SP-4	-	-	0–45 cmbs	Marine Invertebrate	0.1 g	1	Gastropoda: *Turbo sandwicensis*
12	SP-4	-	-	0–45 cmbs	Marine Invertebrate	0.2 g	1	Gastropoda: *Nerita* sp.
12	SP-4	-	-	0–45 cmbs	Marine Invertebrate	13.0 g	46	Gastropoda: *Nerita picea*
12	SP-4	-	-	0–45 cmbs	Marine Invertebrate	12.2 g	6	Gastropoda: *Strombus maculatus*
12	SP-4	-	-	0–45 cmbs	Marine Invertebrate	4.5 g	2	Gastropoda: *Cypraea* spp.
12	SP-4	-	-	0–45 cmbs	Marine Invertebrate	2.2 g	2	Gastropoda: *Cypraea caputserpentis*
12	SP-4	-	-	0–45 cmbs	Marine Invertebrate	0.5 g	1	Gastropoda: *Drupa* sp.
12	SP-4	-	-	0–45 cmbs	Marine Invertebrate	0.6 g	1	Gastropoda: *Drupa rubusidaeus*
12	SP-4	-	-	0–45 cmbs	Marine Invertebrate	0.1 g	1	Gastropoda: *Anachis miser*
12	SP-4	-	-	0–45 cmbs	Marine Invertebrate	0.3 g	2	Gastropoda: *Melampus castaneus*
12	SP-4	-	-	0–45 cmbs	Euryhaline Invertebrate	0.8 g	3	Bivalvia: *Brachidontes crebristriatus*
12	SP-4	-	-	0–45 cmbs	Marine Invertebrate	0.8 g	1	Bivalvia: *Isognomon californicum*

SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
12	SP-4	-	-	0–45 cmbs	Marine Invertebrate	2.0 g	1	Bivalvia: *Periglypta reticulata*
12	SP-4	-	-	0–45 cmbs	Invertebrate	0.2 g	1	Decopoda: non-diagnostic
12	SP-4	-	-	0–45 cmbs	Marine Invertebrate	0.6 g	1	Echinoidea: non-diagnostic
12	SP-4	-	-	0–45 cmbs	Marine Invertebrate	0.6 g	1	Echinoidea: *Echinometra oblonga*
12	SP-4	-	-	0–45 cmbs	Vertebrate	0.5 g	1	Osteichthyes: non-diagnostic
12	SP-4	-	-	0–45 cmbs	Vertebrate	0.4 g	1	Small mammal (dog-size)
12	SP-4	-	-	0–45 cmbs	Charcoal	0.3 g	-	-
12	SP-4	-	-	0–45 cmbs	Non-burnt *Kukui*	1.6 g	-	-
12	SP-4	-	-	0–45 cmbs	Basalt Debitage	-	2	Interior flakes
12	SP-4	-	-	0–45 cmbs	Fire Affected Basalt Cobble	-	1	-
13	SP-5	-	-	0–50 cmbs	Marine Invertebrate	1.8 g	1	Gastropoda: *Cellana sandwicensis*
13	SP-5	-	-	0–50 cmbs	Marine Invertebrate	4.3 g	2	Gastropoda: *Turbo sandwicensis*
13	SP-5	-	-	0–50 cmbs	Marine Invertebrate	10.2 g	28	Gastropoda: *Nerita picea*
13	SP-5	-	-	0–50 cmbs	Marine Invertebrate	0.6 g	1	Gastropoda: *Littorina pintado*
13	SP-5	-	-	0–50 cmbs	Marine Invertebrate	2.6 g	5	Gastropoda: *Strombus maculatus*
13	SP-5	-	-	0–50 cmbs	Marine Invertebrate	1.1 g	1	Gastropoda: *Cypraea* sp.
13	SP-5	-	-	0–50 cmbs	Marine Invertebrate	8.6 g	2	Gastropoda: *Cypraea caputserpentis*

SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
13	SP-5	-	-	0–50 cmbs	Marine Invertebrate	0.3 g	1	Gastropoda: *Cypraea talpa*
13	SP-5	-	-	0–50 cmbs	Marine Invertebrate	1.3 g	1	Gastropoda: *Mitra litterata*
13	SP-5	-	-	0–50 cmbs	Marine Invertebrate	3.8 g	2	Gastropoda: *Conus* sp.
13	SP-5	-	-	0–50 cmbs	Marine Invertebrate	0.6 g	1	Bivalvia: *Isognomon incisum*
13	SP-5	-	-	0–50 cmbs	Marine Invertebrate	0.2 g	1	Cirrepedia: *Lepas ansifera*
13	SP-5	-	-	0–50 cmbs	Invertebrate	1.0 g	1	Decopoda: non-diagnostic
13	SP-5	-	-	0–50 cmbs	Marine Invertebrate	0.2 g	1	Echinoidea: *Colobocentrotus atratus*
13	SP-5	-	-	0–50 cmbs	Vertebrate	1.0 g	1	Osteichthyes: non-diagnostic
13	SP-5	-	-	0–50 cmbs	Vertebrate	1.5 g	1	Small to medium mammal (dog to pig-size)
13	SP-5	-	-	0–50 cmbs	Charcoal	0.3 g	-	-
13	SP-5	-	-	0–50 cmbs	Non-burnt *Kukui*	9.8 g	-	-
13	SP-5	-	-	0–50 cmbs	Basalt Debitage	-	4	Interior flakes
13	SP-5	-	-	0–50 cmbs	Coral Abrader Fragment	Length: 2.2 cm Width: 1.6 cm Thickness: 0.8 cm Weight: 2.3 g	1	Two adjoining, abraded facets; artifact triangular in plan view and in cross-section.
14	SP-6	-	-	0–30 cmbs	Marine Invertebrate	2.4 g	6	Gastropoda: *Nerita picea*
14	SP-6	-	-	0–30 cmbs	Marine Invertebrate	2.4 g	4	Gastropoda: *Strombus maculatus*
14	SP-6	-	-	0–30 cmbs	Marine Invertebrate	0.9 g	1	Gastropoda: *Cypraea* sp.

SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
14	SP-6	-	-	0–30 cmbs	Marine Invertebrate	3.5 g	3	Gastropoda: *Cypraea caputserpentis*
14	SP-6	-	-	0–30 cmbs	Marine Invertebrate	3.9 g	1	Gastropoda: *Conus pennaceus*
14	SP-6	-	-	0–30 cmbs	Marine Invertebrate	2.4 g	1	Gastropoda: *Conus quercinus*
14	SP-6	-	-	0–30 cmbs	Euryhaline Invertebrate	0.2 g	2	Bivalvia: *Brachidontes crebristriatus*
14	SP-6	-	-	0–30 cmbs	Invertebrate	0.6 g	1	Osteichthyes: non-diagnostic
14	SP-6	-	-	0–30 cmbs	Invertebrate	0.8 g	1	Aves: non-diagnostic
14	SP-6	-	-	0–30 cmbs	Burnt *Kukui*	0.5 g	-	-
14	SP-6	-	-	0–30 cmbs	Non-burnt *Kukui*	3.8 g	-	-
14	SP-6	-	-	0–30 cmbs	Fire Affected Basalt Pebble	-	1	-
15	SP-7	-	-	0–40 cmbs	Marine Invertebrate	0.8 g	1	Gastropoda: *Cellana exarata*
15	SP-7	-	-	0–40 cmbs	Marine Invertebrate	3.7 g	2	Gastropoda: *Turbo sandwicensis*
15	SP-7	-	-	0–40 cmbs	Marine Invertebrate	17.3 g	53	Gastropoda: *Nerita picea*
15	SP-7	-	-	0–40 cmbs	Marine Invertebrate	0.9 g	4	Gastropoda: *Littorina pintado*
15	SP-7	-	-	0–40 cmbs	Marine Invertebrate	2.6 g	4	Gastropoda: *Strombus maculatus*
15	SP-7	-	-	0–40 cmbs	Marine Invertebrate	0.9 g	1	Gastropoda: *Cypraea* sp.
15	SP-7	-	-	0–40 cmbs	Marine Invertebrate	3.7 g	1	Gastropoda: *Cypraea caputserpentis*
15	SP-7	-	-	0–40 cmbs	Marine Invertebrate	0.1 g	1	Gastropoda: *Melampus castaneus*

SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
15	SP-7	-	-	0–40 cmbs	Invertebrate	0.1 g	1	Bivalvia: non-diagnostic
15	SP-7	-	-	0–40 cmbs	Euryhaline Invertebrate	0.2 g	3	Bivalvia: *Brachidontes crebristriatus*
15	SP-7	-	-	0–40 cmbs	Marine Invertebrate	0.3 g	1	Bivalvia: *Pinctada* sp.
15	SP-7	-	-	0–40 cmbs	Marine Invertebrate	0.3 g	1	Bivalvia: *Isognomon californicum*
15	SP-7	-	-	0–40 cmbs	Marine Invertebrate	15.0 g	2	Cirrepedia: non-diagnostic
15	SP-7	-	-	0–40 cmbs	Marine Invertebrate	0.2 g	1	Cirrepedia: *Lepas ansifera*
15	SP-7	-	-	0–40 cmbs	Invertebrate	0.6 g	1	Decopoda: non-diagnostic
15	SP-7	-	-	0–40 cmbs	Vertebrate	1.0 g	1	Osteichthyes: non-diagnostic
15	SP-7	-	-	0–40 cmbs	Vertebrate	1.6 g	1	Small to medium mammal (dog to pig-size)
15	SP-7	-	-	0–40 cmbs	Charcoal	0.2 g	-	-
15	SP-7	-	-	0–40 cmbs	Basalt Debitage	-	-	Interior flake
15	SP-7	-	-	0–40 cmbs	Sea Urchin Spine Abrader	Length: 2.2 cm Width: 0.6 cm Thickness: 0.6 cm Weight: 0.4 g	1	*Hetercentrotus mammillatus* spine, one abraded facet.
16	SP-8	-	-	0–45 cmbs	Marine Invertebrate	0.3 g	1	Gastropoda: *Cellana* sp.
16	SP-8	-	-	0–45 cmbs	Marine Invertebrate	0.6 g	1	Gastropoda: *Cellana sandwicensis*
16	SP-8	-	-	0–45 cmbs	Marine Invertebrate	0.3 g	1	Gastropoda: *Cellana talcosa*
16	SP-8	-	-	0–45 cmbs	Marine Invertebrate	3.4 g	2	Gastropoda: *Turbo sandwicensis*
16	SP-8	-	-	0–45 cmbs	Marine Invertebrate	7.7 g	22	Gastropoda: *Nerita picea*

SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
16	SP-8	-	-	0–45 cmbs	Marine Invertebrate	0.5 g	1	Gastropoda: *Strombus maculatus*
16	SP-8	-	-	0–45 cmbs	Marine Invertebrate	3.9 g	2	Gastropoda: *Cypraea caputserpentis*
16	SP-8	-	-	0–45 cmbs	Marine Invertebrate	0.9 g	1	Gastropoda: *Drupella ochrostoma*
16	SP-8	-	-	0–45 cmbs	Marine Invertebrate	0.9 g	1	Bivalvia: *Periglypta reticulata*
16	SP-8	-	-	0–45 cmbs	Vertebrate	0.6 g	1	Osteichthyes: Scaridae
16	SP-8	-	-	0–45 cmbs	Vertebrate	1.0 g	1	Aves: cf. *Gallus gallus*
16	SP-8	-	-	0–45 cmbs	Non-burnt *Kukui*	19.5 g	-	-
16	SP-8	-	-	0–45 cmbs	Basalt Debitage	-	1	Primary flake
17	SP-9	-	-	0–50 cmbs	Marine Invertebrate	1.9 g	1	Gastropoda: *Turbo sandwicensis*
17	SP-9	-	-	0–50 cmbs	Marine Invertebrate	2.9 g	7	Gastropoda: *Nerita picea*
17	SP-9	-	-	0–50 cmbs	Marine Invertebrate	0.2 g	1	Gastropoda: *Hipponix foliaceus*
17	SP-9	-	-	0–50 cmbs	Marine Invertebrate	1.9 g	1	Gastropoda: *Rhinoclavis sinensis*
17	SP-9	-	-	0–50 cmbs	Marine Invertebrate	0.9 g	1	Gastropoda: *Cypraea caputserpentis*
17	SP-9	-	-	0–50 cmbs	Marine Invertebrate	1.2 g	1	Gastropoda: *Conus* sp.
17	SP-9	-	-	0–50 cmbs	Invertebrate	0.1 g	1	Gastropoda: Pulmonata (non-diagnostic)
17	SP-9	-	-	0–50 cmbs	Marine Invertebrate	1.0 g	1	Bivalvia: *Tellina palatam*
17	SP-9	-	-	0–50 cmbs	Marine Invertebrate	0.1 g	1	Cirrepedia: *Lepas ansifera*

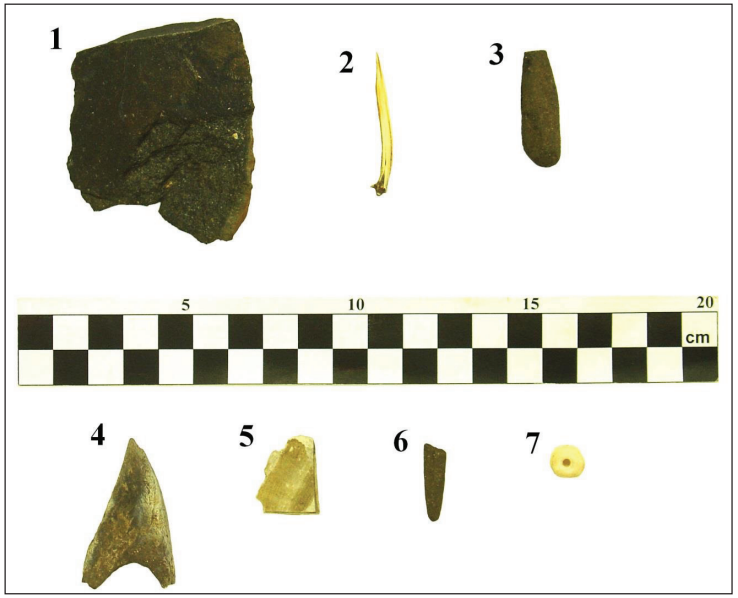
SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
17	SP-9	-	-	0–50 cmbs	Vertebrate	< 0.1 g	1	Osteichthyes: non-diagnostic
17	SP-9	-	-	0–50 cmbs	Charcoal	1.6 g	-	-
17	SP-9	-	-	0–50 cmbs	Non-burnt *Kukui*	10.1 g	-	-
17	SP-9	-	-	0–50 cmbs	Basalt Flake with Polish	-	1	One polished facet
17	SP-9	-	-	0–50 cmbs	Fire Affected Basalt Rocks	-	5	-
17	SP-9	-	-	0–50 cmbs	Basalt Abrader	Length: 7.0 cm Width: 3.8 cm Thickness: 1.3 cm Weight: 40.2 g	1	Striations present on one facet.
17	SP-9	-	-	0–50 cmbs	Ferrous Metal Fragment	-	1	Non-diagnostic
18	SP-10	-	-	0–45 cmbs	Marine Invertebrate	5.6 g	1	Gastropoda: *Cellana melanostoma*
18	SP-10	-	-	0–45 cmbs	Marine Invertebrate	0.3 g	1	Gastropoda: *Cellana sandwicensis*
18	SP-10	-	-	0–45 cmbs	Marine Invertebrate	4.7 g	1	Gastropoda: *Turbo sandwicensis*
18	SP-10	-	-	0–45 cmbs	Terrestrial Vertebrate	1.3 g	1	*Sus scrofa*
18	SP-10	-	-	0–45 cmbs	Non-burnt *Kukui*	2.5 g	-	-
18	SP-10	-	-	0–45 cmbs	Burnt *Kukui*	0.4 g	-	-
19	SP-11	-	-	0–55 cmbs	Marine Invertebrate	5.3 g	1	Gastropoda: *Cellana melanostoma*
19	SP-11	-	-	0–55 cmbs	Marine Invertebrate	0.3 g	1	Gastropoda: *Cellana sandwicensis*
19	SP-11	-	-	0–55 cmbs	Marine Invertebrate	3.0 g	1	Gastropoda: *Turbo sandwicensis*

SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
19	SP-11	-	-	0–55 cmbs	Marine Invertebrate	14.5 g	31	Gastropoda: *Nerita picea*
19	SP-11	-	-	0–55 cmbs	Marine Invertebrate	11.1 g	8	Gastropoda: *Strombus maculatus*
19	SP-11	-	-	0–55 cmbs	Marine Invertebrate	0.9 g	1	Gastropoda: *Cypraea* sp.
19	SP-11	-	-	0–55 cmbs	Marine Invertebrate	7.9 g	5	Gastropoda: *Cypraea caputserpentis*
19	SP-11	-	-	0–55 cmbs	Marine Invertebrate	1.5 g	1	Gastropoda: *Conus flavidus*
19	SP-11	-	-	0–55 cmbs	Marine Invertebrate	2.7 g	1	Gastropoda: *Conus pennaceus*
19	SP-11	-	-	0–55 cmbs	Marine Invertebrate	7.8 g	1	Gastropoda: *Conus spiceri*
19	SP-11	-	-	0–55 cmbs	Marine Invertebrate	1.2 g	1	Gastropoda: *Conus sponsalis*
19	SP-11	-	-	0–55 cmbs	Euryhaline Invertebrate	1.0 g	1	Bivalvia: *Brachidontes crebristriatus*
19	SP-11	-	-	0–55 cmbs	Marine Invertebrate	0.1 g	1	Bivalvia: *Isognomon californicum*
19	SP-11	-	-	0–55 cmbs	Marine Invertebrate	0.4 g	1	Bivalvia: *Isognomon incisum*
19	SP-11	-	-	0–55 cmbs	Marine Invertebrate	0.5 g	1	Bivalvia: *Tellina palatam*
19	SP-11	-	-	0–55 cmbs	Marine Invertebrate	1.0 g	1	Echinoidea: non-diagnostic
19	SP-11	-	-	0–55 cmbs	Marine Invertebrate	1.7 g	1	Echinoidea: *Heterocentrotus mammillatus*
19	SP-11	-	-	0–55 cmbs	Vertebrate	0.7 g	1	Osteichthyes: non-diagnostic
19	SP-11	-	-	0–55 cmbs	Terrestrial Vertebrate	0.4 g	1	*Sus scrofa*

SCS PROJECT 1647 STATE SITE 50-80-02-7774 COLLECTED MATERIAL INVENTORY								
Lab Bag	**Excavation Unit**	**Subsurface Feature**	**Layer**	**Depth**	**Collected Item**	**Measurements**	**Count[1]**	**Remarks**
19	SP-11	-	-	0–55 cmbs	Terrestrial Vertebrate	1.2 g	1	*Homo sapiens* maxillary incisor with broken root.
19	SP-11	-	-	0–55 cmbs	Vertebrate	0.5 g	1	Small mammal (tarsal; dog-size)
19	SP-11	-	-	0–55 cmbs	Vertebrate	0.2 g	1	Small to medium mammal (dog to human-size)
19	SP-11	-	-	0–55 cmbs	Charcoal	0.6 g	-	-
19	SP-11	-	-	0–55 cmbs	Non-burnt *Kukui*	20.5 g	-	-
19	SP-11	-	-	0–55 cmbs	Possible Marine Shell Personal Adornment	Maximum diameter: 1.0 cm Thickness: 0.3 cm Weight: 0.5 g	1	Single vertical hole present through top of waterworn shell.

Note 1: If vertebrate, then count is Minimum Number of Individuals (MNI). If artifact, then count is number of artifacts.

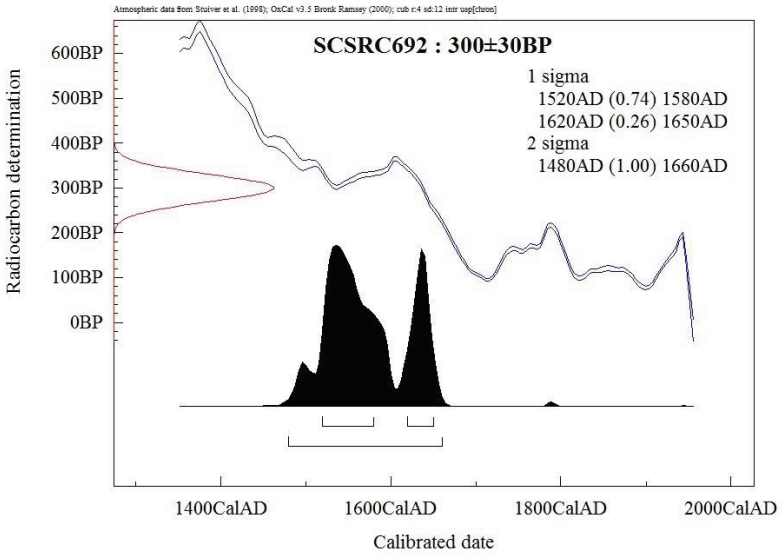
APPENDIX C: SELECTED ARTIFACT PHOTOGRAPHS



State Site 50-80-02-7774 Selected Artifacts Photo

1. Lab Bag 3: edge altered basalt flake.
2. Lab Bag 6B: fish bone pick.
3. Lab Bag 8E: coral abrader.
4. Lab Bag 8F: abraded small to medium mammal bone.
5. Lab Bag 10: cut *Pinctada* sp. shell.
6. Lab Bag 15: sea urchin spine abrader.
7. Lab Bag 19: possible marine shell bead (personal adornment).

APPENDIX D: RADICARBON ANALYSIS



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REPORT OF RADIOCARBON DATING ANALYSES

Dr. Robert L. Spear — Report Date: 5/7/2015

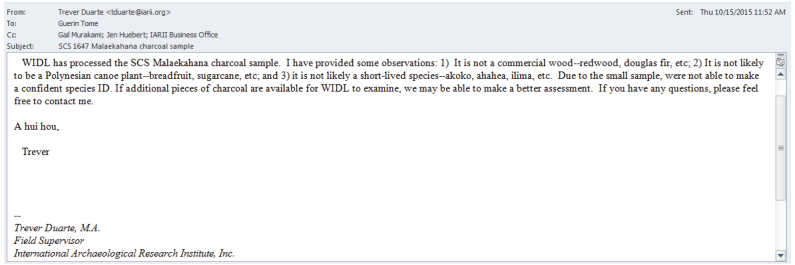
Scientific Consultant Services, Incorporated — Material Received: 4/29/2015

Sample Data	Measured Radiocarbon Age	d13C	Conventional Radiocarbon Age(*)
Beta - 409783	300 +/- 30 BP	-24.9 o/oo	300 +/- 30 BP

SAMPLE : SCSRC692
ANALYSIS : AMS-Standard delivery
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid
2 SIGMA CALIBRATION : Cal AD 1490 to 1655 (Cal BP 460 to 295)

Dates are reported as RCYBP (radiocarbon years before present, "present" = AD 1950). By international convention, the modern reference standard was 95% the 14C activity of the National Institute of Standards and Technology (NIST) Oxalic Acid (SRM 4990C) and calculated using the Libby 14C half-life (5568 years). Quoted errors represent 1 relative standard deviation statistics (68% probability) counting errors based on the combined measurements of the sample, background, and modern reference standards. Measured 13C/12C ratios (delta 13C) were calculated relative to the PDB-1 standard.

The Conventional Radiocarbon Age represents the Measured Radiocarbon Age corrected for isotopic fractionation, calculated using the delta 13C. On rare occasion where the Conventional Radiocarbon Age was calculated using an assumed delta 13C, the ratio and the Conventional Radiocarbon Age will be followed by "*". The Conventional Radiocarbon Age is not calendar calibrated. When available, the Calendar Calibrated result is calculated from the Conventional Radiocarbon Age and is listed as the "Two Sigma Calibrated Result" for each sample.



From: Trever Duarte <tduarte@iarii.org> Sent: Thu 10/15/2015 11:52 AM
To: Guerin Tome
Cc: Gal Murakami; Jen Huebert; IARII Business Office
Subject: SCS 1647 Malaekahana charcoal sample

WIDL has processed the SCS Malaekahana charcoal sample. I have provided some observations: 1) It is not a commercial wood--redwood, douglas fir, etc; 2) It is not likely to be a Polynesian canoe plant--breadfruit, sugarcane, etc; and 3) it is not likely a short-lived species--akoko, ahahea, ilima, etc. Due to the small sample, were not able to make a confident species ID. If additional pieces of charcoal are available for WIDL to examine, we may be able to make a better assessment. If you have any questions, please feel free to contact me.

A hui hou,

Trever

--
Trever Duarte, M.A.
Field Supervisor
International Archaeological Research Institute, Inc.

APPENDIX E: WOOD IDENTIFICATION ANALYSIS

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APPENDIX C

Cultural Impact Assessment

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SCS Project Number 1648-1 CIA

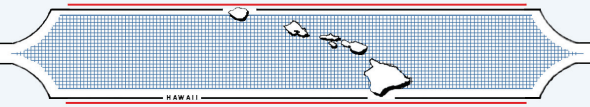
A CULTURAL IMPACT ASSESSMENT FOR THE MĀLAEKAHANA STATE RECREATION AREA KAHUKU SECTION MĀLAEKAHANA AHUPUA`A, KO`OLAULOA DISTRICT ISLAND OF O`AHU, HAWAI`I [TMK: (1) 5-6-001: VARIOUS]

Prepared by:
Cathleen A. Dagher
and
Robert L. Spear, Ph.D.

February 2016
DRAFT

Prepared for:
The Limitiaco Consulting Group
1622 Kanakanui Street
Honolulu, HI 96817

SCIENTIFIC CONSULTANT SERVICES Inc.



1347 Kapiolani Blvd., Suite 408 Honolulu Hawai`i 96814

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INTRODUCTION

At the request of Limitiaco Consulting Group, for the Division of State Parks, Scientific Consultant Services, Inc. (SCS) conducted a cultural impact assessment (CIA) in advance of proposed improvements on 36.0 acres of land at the Mālakahana State Recreation Area, Kahuku Section. The project area is located in located in the town of Lā`ie, Mālaekahana Ahupua`a Ko`olauloa District, Island of O`ahu, Hawai`i [TMK: (1) 5-6-001: 047, 049, 051, 053, 055 through 057, 059, 061 through 065] (Figures 1 through 3). The project area is owned by the State of Hawai`i

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



Figure 1: USGS (Kahuku 1998; 1:24,000) Quadrangle Map Showing Project Area Location.

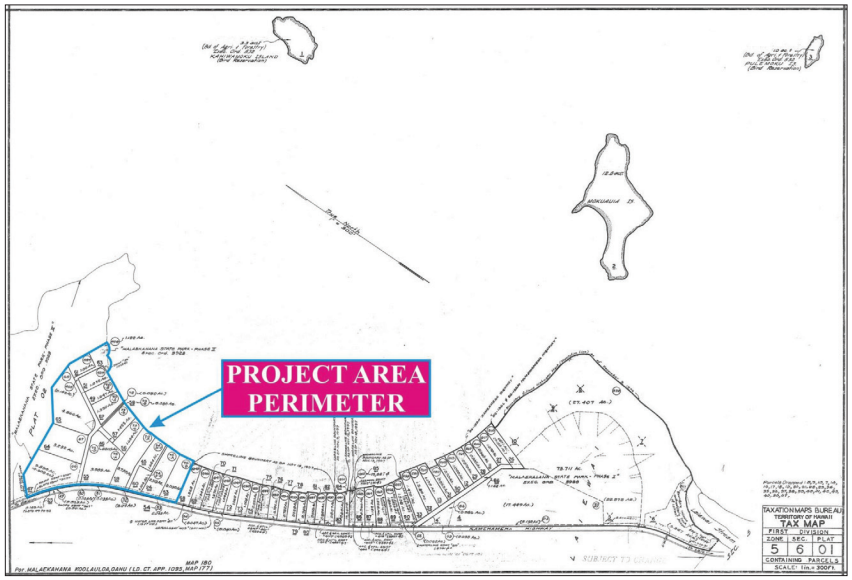

Figure 2: Tax Map Key [TMK: (1) 5-6-001] Showing Project Area Location.



Figure 3: Google Earth Image (Aerial imagery from Google, Digital Globe dated) Showing Project Area Location.

and other developers to assess the effects of proposed land use or shore line developments on the "cultural practices of the community and State" as part of the HRS Chapter 343 (2001) environmental review process.

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 2012:12). 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 2012:12):

> 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 2012:11-13). In outlining the "Cultural Impact Assessment Methodology", the OEQC (2012:11) 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 of the letters of inquiry is presented in Appendix B, copies of the posted newspaper notice and Affidavit are presented in Appendix C, an example Follow-up Letter of Inquiry is presented in Appendix D, and responses to the letters of inquiry are presented inn Appendix E. This Cultural Impact Assessment was prepared in accordance with the suggested methodology and content protocol provided in the Guidelines for Assessing Cultural Impacts (OEQC 2012:13), whenever possible. The assessment concerning cultural impacts may include, but not be limited to:

A. 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.

B. 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.

C. Ethnographic and oral history 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.

D. 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 interviewed, their particular knowledge and cultural expertise, if any, and their historical and genealogical relationship to the project area.

E. A discussion concerning historical and cultural source materials consulted, the institutions and repositories searched and the level of effort undertaken. This discussion should include, if appropriate, the particular perspective of the authors, any opposing views, and any other relevant constraints, limitations or biases.

F. A discussion concerning the cultural resources, practices and beliefs identified, and, for 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.

G. 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.

H. An explanation of confidential information that has been withheld from public disclosure in the assessment.

I. A discussion concerning any conflicting information in regard to identified cultural resources, practices and beliefs.

J. 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.

K. A 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* (2012). 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.

GEOGRAPHIC SETTING

The island of O`ahu ranks third in size of the eight main islands in the Hawaiian Archipelago. The Ko`olau and Wai`anae Mountain ranges (forming the eastern and western portions of the island, respectively), 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). The region were the project area is located was created by delta drainage from the Ko`olau Mountains. As the modern reef formed offshore, a barrier was created leaving the drainage from the mountains to form a lagoon behind it. Numerous volcanic eruptions created a number of today's well-known landmarks, including the Mōkapu Peninsula, on the windward side of O`ahu, Ka`au Crater, Kaimukī Dome, and Diamond Head Crater (Stearns (1966:86-87). According to Stearns (ibid: 89):

> The most spectacular and one of the youngest eruptions on Oahu occurred about 5, 000 years ago when a fissure opened through Round Top and Tantalus. High fire fountains played along the fissure, and glowing lava made huge firefalls down the step valley walls into Pauoa, Makiki, and Manoa valleys.

PROJECT AREA

The 36-acre project area in the town of Lā`ie, Mālaekahana Ahupua`a Ko`olauloa District, Island of O`ahu, Hawai`i [TMK: (1) 5-6-001: 047, 049, 051, 053, 055 through 057, 059, 061 through 065] (see Figures 1 through 3). The project area is situated along the east (windward) coast of the island of O`ahu, on the northern portion of Mālakahana Bay, between sea level and approximately 10 feet above mean sea level (amsl). Kamehameha Highway forms the western project area boundary, Mālakahana Bay forms the northern boundary, the Pacific Ocean forms the eastern boundary, and private residences are located to the south.

CLIMATE

Compared with other locations in Windward O`ahu, the project area is only moderately wet, with mean annual rainfall of approximately 1154 mm (45 in) (Giambelluca et al. 2013). In general, the climate here is more similar to the relatively drier North Shore of O`ahu, than it is to the rest of the Windward coast. Particularly in during the pre-Contact Period, *i.e.*, before the advent of commercial farming, ranching, and other ventures in this area, a great amount of through-flowing, fresh water would have been locally available in the streams that drain the uplands to the west of the project area.

SOILS

According to Foote et al. (1972: Sheet Map 46; Figure 4), two types of soils - Beaches and Jaucus Sand - are present in the project area. The coastal portion, approximately 15 percent, of the project area is comprised Beaches (BS) Soil Series. According to Foote (et al. 1972:28), BS deposits are typically "…light-colored sands derived from ocean corals and seashells." This type of deposit is most often utilized for recreational purposes and as resorts.

The remaining 85 percent of the project area consist of soils of the Jaucas Series (Foote et al. 1972: 48-49), specifically Jaucas sand (JaC). Soils of the Jaucas Series typically are comprised of well-drained calcareous soils "…that occur as narrow strips on coastal plains, adjacent to the ocean." These soils can be found at elevations ranging from sea level to 100 feet amsl in areas with annual rainfall ranging from 10 to 40 inches (ibid: 48). These deposits formed from aeolian and water-deposited sand which, in turn, derived from coral and marine shell. The JaC soils exhibit 0 to 5 percent slopes, rapid permeability, and slow to very slow runoff. The water erosion hazard is minimal. However, then hazard of wind erosion can be acute, particularly in areas where there is no vegetation.

VEGETATION

Vegetation within the project area typifies lower valley leeward environments in Hawai'i, reflecting domination today by alien species, including False Kamani (*Terminalia catappa*), *koa haole* (*Leucaena glauca*), Chinese Violet (*Asystasia gangetica*), Castor Bean (*Ricinus communis*), Ironwood trees (*Casuarina Sp.*), Christmas Berry (*Casuarina sp.*), sourbush (*Pluchea symphytifolia*), Indian pluchea (*Pluchea indica*), *Heliotropium procumbens*, Boerhavia Sp., Bidens Sp., and pickleweed (*Batis maritima*). Indigenous and endemic vegetation observed within the project area perimeter included *hau* (*Hibiscus tiliaceus*), coconut (*Cocos nucifera*), and beach *naupaka* (*Scaevola sericea*).

CULTURAL AND HISTORICAL CONTEXT

This section relies heavily on information from several classic references on traditional Native Hawaiian lifeways, traditions, and archaeological sites (e.g., Handy 1940; Handy and Handy 1972; Kirch 1985; McAllister 1933; Sterling and Summers 1978). The discussion

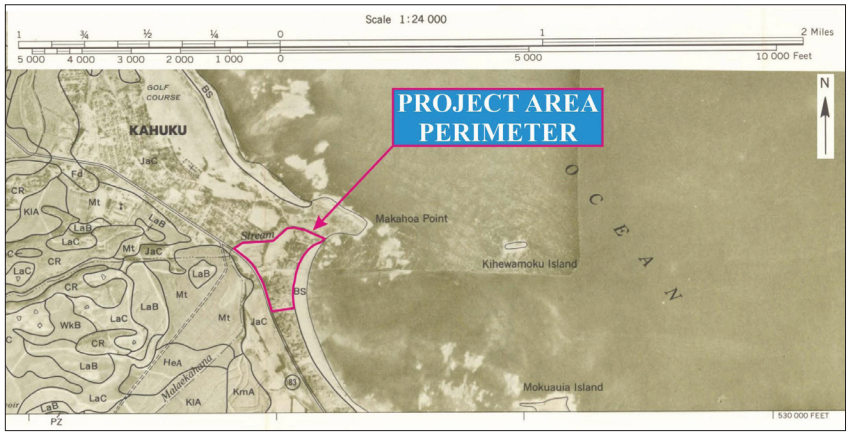

Figure 4: USDA Soil Survey Map (Foote et al. 1972; Sheet Map 46) Showing Soil Types within Project Area.

focuses on the four *ahupua`a* between the towns of Lā`ie and Kahuku (*i.e.,* from south to north, Lā`ie, Mālaekahana, Keana, and Kahuku Ahupua`a.

PAST POLITICAL BOUNDARIES

Traditionally, the division of O`ahu's land into districts (*moku*) and sub-districts was said to be performed by Mā`ilikukahi who was chosen by the chiefs to be the *mō`īho`oponopono o ke aupuni* (administrator of the government (Kamakau 1991:53–55). Cordy (2002) places Mā`ilikukahi 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* (the *ali`i* who eats the island/district), 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* (commoners) all over the island of O`ahu (ibid.).

In general, several terms, such as *moku*, *ahupua`a*, *`ili* or *`ili`* ā*ina* 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 to 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).

TRADITIONAL SETTLEMENT PATTERNS

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 pre-Contact times, 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 produced. 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).

Early settlement and agricultural development was probably first established on the windward side of the Hawaiian Islands and may have begun as early as A.D. 900-1000 on O`ahu during what is known as the Colonization Period (Kirch 2011:22). Most likely arriving from east Polynesia, these early inhabitants brought with them tools, fishing gear, and other artifacts, as well as useful plants and animals. Settling in favorable localities offering both fishing and agricultural opportunities and having near access to inland resources was a priority (Kirch 1985). Although receiving the majority of their protein from fish, Handy and Handy (1972: vi) have stated: "…for every fisherman's house along the coasts there were hundreds of homesteads of planters in the valley and on the slopes and plains between the shore and forest."

During the pre- and early post-Contact Periods, there were primarily two types of agriculture, wetland (*lo`i*) and dry land (*kula*), both of which were dependent upon geography and physiography. River valleys, especially those on the windward side of an island, provided ideal conditions for wetland *kalo* (C*olocasia esculenta*) that incorporated pond fields and irrigation canals. Other cultigens such as *kō* (sugar cane, *Saccharum officinaruma*) and *mai`a* (bananas, *Musa* sp) were also grown and, where appropriate on the tablelands and dryer slopes, the production of such crops as *`uala* (sweet potato, *Ipomoea batatas*) occurred. Coastal sections with fringing reefs eventually gave rise to the only true aquaculture developed in Polynesia: the fishpond (Kirch 1985:211). Unique to Hawai`i, fishpond technology allowed production and harvesting of marine life on a scale that was no longer dependent on the natural population, greatly expanding the food base. This was a typical pattern seen during traditional times on all the Hawaiian Islands (Kirch 1985; Kirch and Sahlins Vol. 1, 1992:5, 119).

PRE-CONTACT PERIOD

The project area is located in the traditional cultural district, or *moku*, of Ko`olau Loa, a large land division comprising some 150 sq. km (58 sq. mi.), and extending from Pūpūkea, on the North Shore, to Ka`a`awa, on the Windward Coast. Ko`olau Loa Moku extends from the highest ridge tops of the Ko`olau Mountains down to the sea. Compared with the southern portion of the *moku* of Ko`olau Loa, where several large valleys provided ideal conditions for wet-taro cultivation, the Lā`ie-Mālaekahana-Keana-Kahuku area is relatively drier and would have been relatively less productive, other factors being equal. As stated above, the project area is probably more similar to the drier North Shore, than it is to the classic Windward valleys south of Lā`ie (e.g., Kahana, Kahalu`u, and Kāne`ohe). In any case, there is no doubt that the area, in

general, would have been permanently settled and, at least in part, intensely cultivated during the pre-Contact Period. Commercial sugarcane agriculture has taken a heavy toll on the preservation of archaeological sites and features throughout this area.

EARLY SETTLEMENT IN THE REGION

As Kirch (1985:69) states:

> There are excellent environmental reasons why windward O`ahu should have attracted early Polynesian settlers of the Hawaiian archipelago. Blessed with numerous permanently flowing streams, annual rainfall averaging about 1,250 mm, and large tracts of alluvial and colluvial soils, the amphitheater-like basins of Waimānalo, Maunawili, He`eia, Kahalu`u, Waiāhole, and Waikāne were ideally suited to the cultivation of Polynesian crops, especially taro, bananas, and breadfruit. Nor was the region lacking in marine resources…for early Polynesians with their mixed horticultural and fishing subsistence base, the windward O`ahu valleys were an ideal locus in which to establish permanent settlements.

Early archaeological deposits dating to perhaps as early as A.D. 300 have been reported from Waimānalo (Bellows Site O18) and Kailua (Kawainui Marsh). A remnant sand dune (Site 1546) along the eastern shore of Kahana Valley has been dated to the eighth century A.D. It is important to note that the earliest dates (A.D. 300) have been challenged not only on technical grounds specific to radiocarbon dating (the "old wood" problem), but also on the basis of palynological (pollen) data. Athens, for example, has argued for an initial settlement of Windward O`ahu of no earlier than *c.* A.D. 900 (Athens 1997). As discussed below (see PREVIOUS ARCHAEOLOGY), Jensen (1989) dated a buried sample of charcoal from a cave site (4089) near the southern boundary of the project area to A.D. 1010–1375. It is therefore quite possible that this area was initially settled approximately 1,000 years ago.

HEIAU

The earliest archaeological survey of this region was conducted by McAllister (1933), under the auspices of the Bernice Pauahi Bishop Museum. McAllister's (ibid.) identified relatively few religious shrines (*heiau*) in Kahuku Ahupua`a and Lā`ie Ahupua`a, and none in Mālaekahana Ahupua`a. It is important to note that this work was conducted in the early 1930s, during and after the advent of commercial sugarcane agriculture in these areas. Thus, it is by no means a complete record of sites in the area. This work also tended to focus on the largest, most visible sites, and/or those that were firmly engrained in the local, collective memory (e.g., in the case of sites that were destroyed by historic activities). This work also tended to be biased in favor of coastal and near-coastal sites, which were relatively easy to access. Notwithstanding

these shortcomings, observations from McAllister's early survey are useful in providing general data for inter-*ahupua`a* comparisons. The nearby *heiau* include:

- Puuala Heiau (McAllister Site 260), Kahuku Ahupua`a, located "on the ridge overlooking the Kahuku Ranch" (Sterling and Summers 1978:152); totally destroyed by the time of McAllister's survey.
- Kalaewila Heiau (McAllister Site 266), Kahuku Ahupua`a, located "on a slight elevation at Kahuku Point" (Sterling and Summers 1978:154); possibly a *ko`a* (fishing shrine), based on its relatively small size.
- Nioi Heiau (McAllister Site 281), Lā`ie Ahupua`a, located "on a small ridge on the mountain side of the Mormon temple, Laie" (Sterling and Summers 1978:157); this *heiau* was purportedly one at which human sacrifices were performed.
- Moohekili Heiau (McAllister Site 283), Lā`ie Ahupua`a, located "in taro patches on the sea side of the Mormon temple" (Sterling and Summers 1978:158); no traces were found of this *heiau*. This location is very close to the present-day shopping center in the center of town.

Nioi Heiau (see also Cachola-Abad 1995; Collins 1995; Stagner and Beaver 1996), located near the Mormon Temple, in Lā`ie, was built on a north-facing limestone ridge, using locally-available limestone rocks. Priests (*kahuna*) reportedly lived in nearby rockshelters along this same north-facing limestone ridge.

Compared with other populated regions of O`ahu, and the Hawaiian Islands, in general, the number of *heiau* in the vicinity of the project area (*i.e.,* three or four) is not particularly large. Keeping in mind the well-documented impact of commercial activities in this area, which undoubtedly would have destroyed any number of traditional sites, this low number of *heiau* is consistent with other indicators (e.g., climatic) of a relatively modest-sized, local population. Several *ko`a* (fishing shrines) have also been documented in the vicinity of the project area (see Figure 5), including: Keanakua *ko`a* (Site 263), at Kahuku Point (Kahuku Ahupua`a), Makahoa *ko`a* (Site 272), at Makahoa Point (present-day north end of Mālaekahana Bay (Mālaekahana Ahupua`a), near the mouth of Mālaekahana, also known as Kaukanalaau, Stream), Kalanai *ko`a* (Site 274), at the south end of Mālaekahana Bay (Lā`ie Ahupua`a), and Kaihukuuna *ko`a* (Site 285), on the south side of Laniloa Point (Lā`ie Ahupua`a).

Traditional sites in the vicinity of the project area (see Figure 5) include a raised platform of limestone slabs (McAllister Site 269) and a rockshelter in limestone (McAllister Site

270) (both in Keana Ahupua`a). Fishponds, also, have been documented in the vicinity of the project area (see Figure 5), including: Kaauhelemoa Fishpond (McAllister Site 268) (Kahuku Ahupua`a), Waikuukuu (McAllister Site 276) and Paeo (McAllister Site 277) Fishponds (Lā`ie Ahupua`a).

WAHI PANI

According to Pukui et al. (1974:143): *Mālaekahana* is "the name of the mother of Lā`ieikawai … and also the name of an image that enraptured (*ho`ohihi*) Kumu-kahi, the rascal child in the Halemano legend"; *Lā`iekawai* "is the traditional birthplace of the sacred princess Lā`ieikawai (Lā`ie in the water). The princess was taken to the mythical paradise Paliuli (green cliff) on Hawai`i." (ibid:127–128); and, *Wai`āpuka* is a "[p]ond near the [Kamehameha] highway, Lā`ie, O`ahu, formerly containing a secret cave where Lā`ieikawai was hidden as an infant until maturity so that her father would not kill, as he had vowed to do." [Literally] "water coming out." (ibid:221, brackets added).

Oral historical reports also suggest that Mālaekahana was home to a family of *`awa* (kava) growers with supernatural powers, and was the last place on O`ahu to be taken by Kamehameha I (Rice 1923; McAllister in Sterling and Summers 1978).

There once was a fishpond near Makahoa *ko`a* (Site 272) that was known as Waipunaea. According to legend, the fish came, of their own accord, to Waipunaea Fishpond from Pearl Harbor. "To this day schools of mullet come around then island to this northern point of Malaekahana. They go no further, and their apparent disappearance still mystifies the Hawaiians (McAllister in Sterling and Summers 1978:154).

McAllister (in Sterling and Summers 1978:155) describes "Waiapuka" (McAllister Site 275; see Figure 5) as "a pool on the Kahuku side of Laie in Malaekahana, inland from the road in the midst of a cane field…made famous by the legend of Laieikawai." Handy and Handy (1972:461) state that the "long and complicated story of La`ie-i-ka-wai, *which is not an old native legend*, is connected with this district. Here also is the water cave named Wai-a-puka, where Waka was said to have hidden her granddaughter La`ie-i-ka-wai, when the latter was in peril." (italics added)

Another pool, located in Lā`ie, was described by Handy and Handy (1972:461) as follows:

> *Makai* of the roadside [*i.e.,* Kamehameha Highway], on entering the present town of La`ie, is a small but deep pool which, according to legend, was anciently the habitation of a giant *mo`o* ["dragon", "serpent", "water spirit"] who menaced all travelers pausing to refresh themselves beside his pool. The *mo`o* once challenged two warrior brothers (Niheu and Kana) from Maui, who slew the creature and threw its dismembered body out to sea. The long point known as Lani-loa and the small coral islets beyond are these remains." (brackets added)

There is also a fresh water spring, still in use, located near the residence of the rancher, Mr. Cagle. This spring currently produces fresh water at approximately 30 gallons per minute; during the pre-Contact and early Historic Periods, it is likely that this served as an important resource. Numerous additional water holes, basins, pools, and/or water-filled underground tunnels have been documented from Kahuku to Lā`ie Ahupua`a (*i.e.,* McAllister Sites 261, 262, 271, and 279; see Figure 5).

The house site of Manuwahi (McAllister Site 273; see Figure 5) was located just *makai* of Kamehameha Highway, in Mālaekahana Ahupua`a. Manuwahi, according to legend, was the "keeper of the god of Mālaekahana" (Sterling and Summers 1978:155). The following extended quotation (Sterling and Summers 1978:155–156) is particularly relevant to the present study, in terms of site expectations and expected findings in the lower dune areas:

> Only a few large rocks remain by the site of the railroad track, but the site has great importance in the eyes of the natives because of the prominence of the kahuna Manuwahi. About this area is said to have been a rather large Hawaiian settlement, which formerly was level land, but which owing to the removal of flora has formed into dunes…Many skeletons were unearthed in plowing the cane fields of this region and in digging the foundations for the beach houses, indicative, some think, of many battles in this region…After cattle destroyed the vegetation along the shore, the sand formed dunes, greatly changing the topography. In removing sand recently a perpendicular face exposed a small oven (*imu*) on the former surface level…

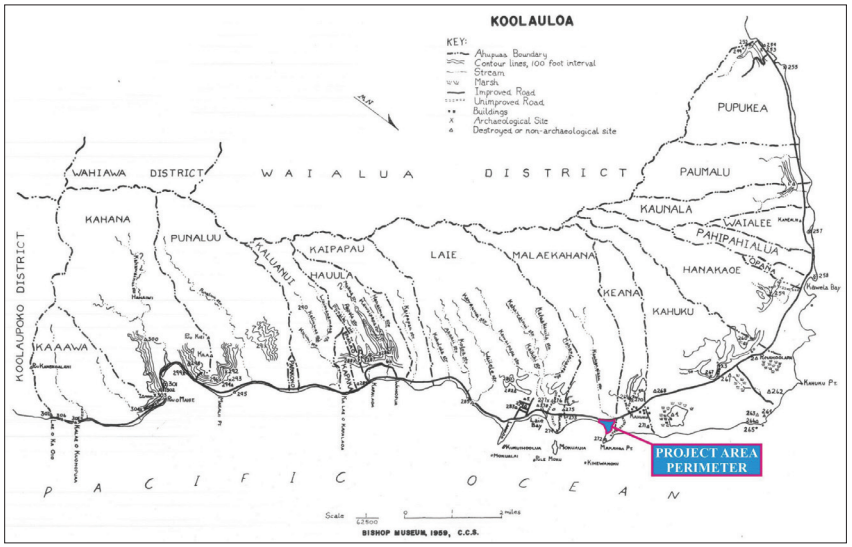

Figure 5: Ko`olauloa District Map (Sterling and Summers 1978) Showing the Location of McAllister Sites in the Vicinity of the Project Area Location.

SUBSISTENCE ECONOMY

The importance of marine resources and fishing, in general, to the traditional inhabitants of this area cannot be overstated. Certainly the large number of *ko`a* in the vicinity of the current project area indicates the importance of these food resources. In their compendium of Native Hawaiian agriculture, Handy and Handy (1972:460) describe the *ahupua`a* from Lā`ie to Kahuku:

> Progressing northward along the Ko`olau coast we find conditions comparatively less and less suitable for wet-taro culture than in our Type Area which includes the great valleys of Kahana and Punalu`u. In Kaipapa`u (Shallow-sea) the *ahupua`a* adjacent to Hau`ula, the upper stream valley is steep and narrow, yet natives of the district say that, making the most of small opportunity, a few *lo`i* used to be worked there. The level land to seaward may once have supported a moderate amount of terracing, but as this was all under cane when the area was studied in 1953, the extent could not be determined.

Referring specifically to Lā`ie, in an area that is physiographically analogous to much of the current project area, Handy and Handy (1972:461) state:

> The comparatively flat land between the rough hills and the bay…was anciently divided into numerous named districts and was thoroughly cultivated…Up Koloa (Wild-duck) Stream, which is toward Hau`ula from La`ie Stream, there are many groups of stone-faced terraces, formerly taro *lo`i*, now overrun with the spreading roots of great mango and breadfruit trees which marked old homesites along this twisting, rocky, and very beautiful watercourse…We have the names of several large taro terraces that were famous anciently and have survived only in memory…

An extensive tract of taro land was known to be located near the Mormon temple (Lā`ie). McAllister Site 282 was described as follows:

> A flat lowland, now drained and planted in cane, formerly a famous taro land…In with the taro were extremely large fish…About this taro land the old Hawaiian settlement was located and on the mountain side of the site are the only foundations of a heiau (Site 281) in Laie. (Sterling and Summers 1978:158)

Finally, Handy (1940:89) makes a single, specific reference to Mālaekahana Ahupua`a: "There were terraces in this *ahupua`a*, irrigated by Kaukanalaau Stream." This refers to the area presently occupied by commercial agricultural and aquacultural operations (north-northwest

portion of the current project area). Handy (1940:75) also notes that sweet potatoes were grown form "Kaena to Laie."

HISTORIC PERIOD (POST-1778)

As noted by Mitchell et al. (2005), both Cook and Vancouver described their impressions of the Kahuku area, which had apparently been transformed from "…a fine expanse of Low Land bounteously cloath'd with Verdure, on which were situate[d] many large Villages and extensive plantations…" in 1779 (Beaglehole 1967:572) to a "…country [that] did not appear in so flourishing a state, nor to be so numerously inhabited…" in 1794 [Vancouver 1798(3):71]. Vancouver suggested ongoing native hostilities as the cause of this de-population, but, as Mitchell et al. (2005) observe, the introduction of European-borne disease must also been a major factor. Census data from the 1830s show a continuing decline in the local population between 1831 and 1835 (*cf.* Schmitt 1973), and an 1838 account by E.O. Hall mentions extensive taro lands left wasted and untended (*cf.* McAllister 1933).

MĀHELE

In the 1840s, traditional land tenure shifted drastically with the introduction of private land ownership based on Western law. 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 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), 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). According to Kelly (in Haun et al. 1991:319-320), Kauikeaouli later leased much of it to high chiefs and foreigners for use in ranching. In many cases commoners were denied access to the land, upland agriculture ended, and traditional life was greatly altered. In 1850 *kuleana* (small property) awards were granted for individual parcels; these awards were presented to tenants (not only to Native Hawaiians, but also to non-Hawaiians born in the islands, naturalized foreigners, and long-term foreign residents) who could prove their occupancy on the parcels before 1845.

Mitchell et al. (2005) compiled information from 19 LCAs for Mālaekahana Ahupua`a. These mid-19th century legal documents provide some of the earliest (admittedly self-reported) records of land utilization of Native Hawaiian lands. The LCAs for Mālaekahana Ahupua`a mention the following food plants: potatoes, bananas, and breadfruit; other useful plants mentioned in these LCAs are: *wauke* (paper mulberry, for making *tapa*, or bark cloth), *tī*, which was primarily used for wrapping food and other items (and had great spiritual significance), and *noni*, used as medicine and as a dye (for *tapa*); also mentioned were *hau* and *hala* (both of which were identified in the current project area during this Inventory Survey), *koa*, and "2 canoe trees." Several houses or house lots were also mentioned, as well as *kula* lands, which typically referred to dryland agricultural plots and/or pasture.

RANCHING

Mitchell et al. (2005), citing work by Yent and Estioko-Griffin (1980), summarize the long and complex history of land ownership changes in and around Mālaekahana, from royal (Hawaiian) descendants at the time of the Māhele (1848) through to James Campbell's purchase of the entire project area by 1876. The details of these changes are beyond the scope of this Inventory Survey, and are not relevant to the basic questions of changes to the physical environment and land utilization through time. In short, as stated above, the sheep and cattle ranching that came to dominate this area from the middle-19th century onwards to the advent of commercial sugarcane agriculture devastated the landscape. For example, native accounts speak of *hala* forests destroyed by herds of animals left to roam freely. Several decades of ranching then gave way to sugarcane.

SUGARCANE AND RAILROADS

Commercial sugarcane agriculture began in this area during the later 19th century, and continued into the early 1970s. Before sugarcane, commercial ranching (sheep and cattle) was the major economic activity in this area. Ranching, in particular, had a devastating impact on the landscape, which was transformed in many areas from lush woodlands of native forests to a barren zone of introduced grass and weeds. As with many areas of the Hawaiian Islands, grazing animals contributed to the large-scale destruction of native vegetation and massive soil erosion.

Wilcox's (1996) *Sugar Water* is a "history of surface water development by sugar plantations primarily between 1876 and 1920", including a focus on ditch- and tunnel-digging, the people who did the work, and the politics of 'sugar water.' According to Wilcox (1996:3–5), by 1884, the Laie Plantation, located in Lā`ie, was operated by J.T. Waterhouse. By the 1930s, the Laie Plantation Co., then under the control of Alexander & Baldwin (A&B), had its lease

transferred (*i.e.,* merged operations) into the Kahuku Plantation Co., which operated until the 1970s, when all sugar operations in this region were terminated.

According to Wilcox (1996:110–111):

> Kahuku Plantation was started in 1890 by James Castle and Alexander Young on land leased from James Campbell…In 1902, Alexander & Baldwin became the agent for Kahuku. The plantation was handicapped by its small size (about 2500 acres in cane) and its difficult land, soil, and climate. Water was supplied entirely by groundwater sources…In 1906, Kahuku Plantation Company expanded to Punaluu lands with a lease from the Bishop Estate giving it access to more lands and to Punaluu stream…In 1931, Kahuku Plantation increased its fields by leasing Laie Plantation agricultural lands from Zions Securities for twenty-five years, although it had been milling Laie cane prior to this time. Kahuku Plantation became a wholly owned subsidiary of A&B in 1968. It closed in 1971.

In their history of commercial sugarcane in Hawai`i, Dorrance and Morgan (2000) state the following:

> In 1872 its [Mormon Church] leaders set aside 6,000 acres for sugarcane, rice, and pasturage. A quarter century later, in 1896, the railroad at neighboring Kahuku Plantation Company was extended two miles to Laie Plantation. This allowed Lā`ie's cane to be ground at the Kahuku mill. The arrangements lasted for decades but the operation was a small one. In 1930 Lā`ie's sugar production peaked at 4,788 tons. At this point the corporation was dissolved and the lands assigned to the Kahuku Plantation Company. (Dorrance and Morgan 2000:42)

> And, also: In 1891 it [Kahuku Plantation Company] subleased 2,800 acres of Campbell's lands from Dillingham for farming sugarcane…Just a year after being organized, Kahuku Plantation's first crop was ground in 1892…Yet its managers had to struggle to compete in an area severely limited by the surrounding rugged terrain. The fields of the Koolau Agricultural Company [which was established in 1909, and extended from Lā`ie to Kahana Bay]…were bought in 1925. In 1931 an additional 2,700 acres of Laie Plantation were purchased…Shipping costs went up when the O.R.& L. railroad ceased operations in 1947. Denied the economies of scale, the owner … A&B, Inc., shut down the plantation in 1971. (Dorrance and Morgan 2000:46)

These accounts suggest that the project area was probably home to both the Laie and Kahuku Plantations, at different times, but never the Koolau Plantations, which apparently never extended north of Lā`ie. Condè and Best's (1973) *Sugar Trains: Narrow Gauge Rails of Hawaii* reports that the Koolau Railroad was a 36" gauge track.

Condè and Best (1973) reproduce an historic 1920s map from the Kahuku Plantation showing 'cane fields' throughout most of the area, with the exception of the limestone ridges and the Jaucas sand area.

PREVIOUS ARCHAEOLOGY

The following discussion of previously conducted archaeological studies illustrates the types of sites and features that may be encountered in the project area. The locations of these studies are presented in Figure 6. While not an exhaustive survey of every previous archaeological project in and around the current project area, it does include all major (large-scale) studies. Relevant information from older, classic references (e.g., McAllister 1933; Handy and Handy 1972; Sterling and Summers 1978) can be found above (TRADITIONAL AND HISTORIC SETTING). Lā`ie and Kahuku Ahupua`a, in particular, seem to be somewhat richer in archaeological resources, compared with Mālaekahana and Keana Ahupua`a. All of these land divisions have yielded a variety of site types dating from the pre- to post- Contact Periods. Rockshelters and other exposed bedrock features (e.g., overhangs) with evidence of human occupation are common in the *mauka* (upland) areas. These locations are particularly resistant to destruction by historic activities (*e.g.,* sugarcane agriculture) because of their relative inaccessibility and difficult terrain. Based on the findings of previous archaeological studies, both pre- and post-Contact human burials are known to have been encountered in rockshelter/outcrops and in sand-dune burials in the coastal areas, where Jaucas sand deposits are located.

Yent and Estioko-Griffin (1980) defined the entire beachfront area *makai* of the Kamehameha Highway at the southern end of Mālaekahana Bay (Kalanai Point) as State Site 50-80-02-2801. This area includes portions of both Mālaekahana and Lā`ie Ahupua`a. A multi-year program of mapping, subsurface testing, dating, and analysis of recovered materials yielded a substantial amount of archaeological and cultural information on pre-Contact Hawaiian lifeways in this area. The only surface structure in this area was a *ko`a* (fishing shrine), previously identified by McAllister (McAllister Site 274). In addition, subsurface testing (auger corings) identified several other buried areas of pre-Contact human occupation. These studies identified three major periods of pre-Contact site occupation, dating from *c.* A.D. 1600–1780,

and numerous buried features were documented, including: multiple *imu* (firepits), postholes from (inferred) thatched structures, traditional artifacts, and food remains (midden). Subsequent phases of work within other portions of the Mālaekahana State Recreation Area (e.g., Yent and Ota 1983; Yent and Griffin 1986) documented a human burial, an *imu*, and other firepit features, as well as a probable buried ground surface. In short, this coastal area of Mālaekahana and Lā`ie Ahupua`a was clearly populated during the pre-Contact Period.

Ahlo and Hommon (1981) conducted an archaeological reconnaissance survey of a portion of the Kahawainui Stream floodplain. Ahlo and Hamilton (ibid.) noted that the entire area had been extensively disturbed by commercial agricultural activities in historic times, and did not document any significant sites. Ahlo and Hamilton (ibid.) did, however, document a fenced area located upon a limestone ridge with several historic-era graves, just north of the stream.

In 1981, Yent and Ota (1982) conducted auger coring at Mālaekahana State Recreation Area, as part of the Phase II investigations, which is an extension of the Phase I archaeological investigations conducted by Yent and Estioko-Griffin (1980) (see Figure 6). No historic properties were identified, with the exception of a possible cultural deposit near the mouth of Mālaekahana Stream (current Site 50-80-02-7774).

During the mid-1980s, Barrera (1984) conducted an archaeological field inspection of a proposed well location along the Mālaekahana Stream. During the fieldwork, Barrera (ibid.) identified a "large stacked basalt rock wall …and a concrete structure", but assigned no particular significance to this site, which is likely to date to the Historic Plantation Era (1879 through 1947). Barrera (ibid.) also noted the presence of State Site 50-80-02-1055, known as "Opihi Rock Shelter."

In 1986, Griffin and Yent (1986) conducted test coring at Mālaekahana State Recreation Area on TMK: (1) 5-6-001:053, as part of the Phase II investigations (see Figure 6). No historic properties were identified.

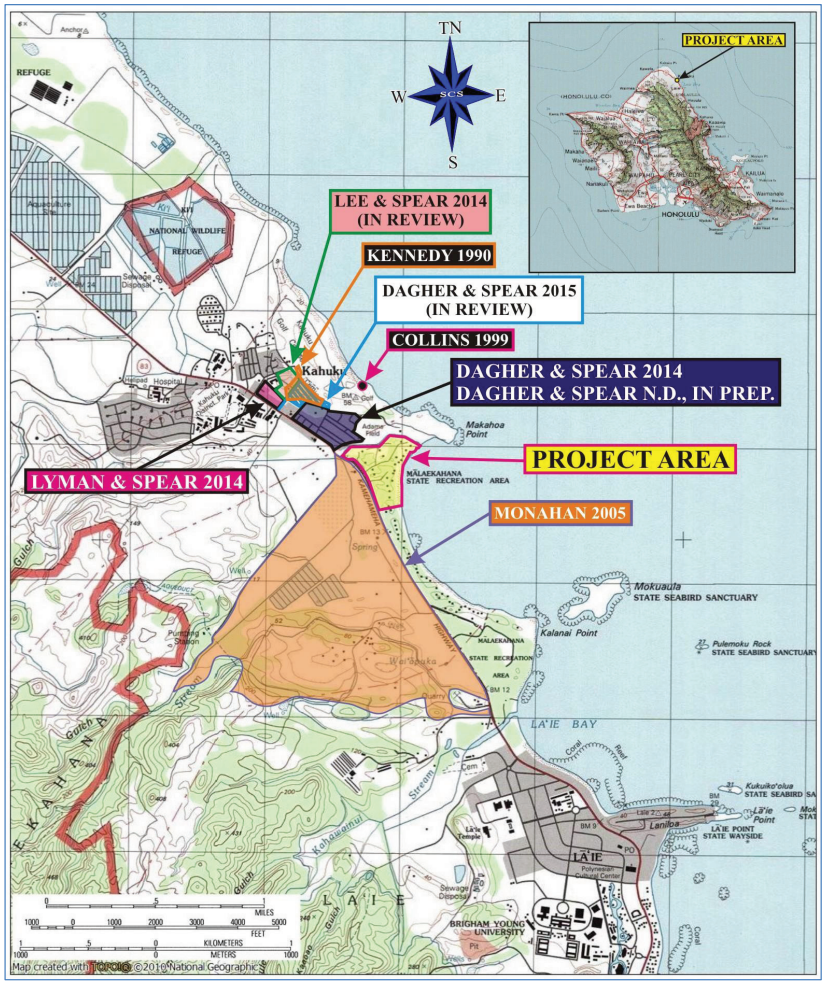

Figure 6: USGS (Kahuku 1998: 1:24,000) Quadrangle Map Showing Previous Archaeological Studies in the Vicinity of the Project Area.

Paul H. Rosendahl, Inc. (Jensen 1989) conducted an archaeological inventory survey, with limited excavation, of a 228-acre project area. During the survey, Jensen (ibid.) identified six sites in this area, including the following:

- State Site 50-80-02-4088—A platform/mound "constructed of large waterworn boulders" interpreted as a possible habitation and/or historic burial site.
- State Site 50-80-02-4089—A large limestone cave with internal terraces, a rock alignment and rock mound, surface midden, and surface basalt debitage, interpreted as a habitation site; two radiocarbon dates were obtained in a test unit within the cave; according to Jensen (1989), one of these dates was contaminated, while the other (from 55–58 centimeters below the ground surface, or cmbs) yielded a very early date, calibrated to A.D. 1010 and 1375.
- State Site 50-80-02-4090—Two limestone overhang shelters, in association with surface (traditional) artifacts and midden, interpreted as a habitation site.
- State Site 50-80-02- 4091—A limestone overhang shelter, with an associated rock alignment, and surface artifacts (both traditional and historic) and midden.
- State Site 50-80-02- 4092—A small limestone cave, with little or no obvious signs of occupation, except for *kūkui* located on the ground surface.
- State Site 50-80-02-4093—A ditch/tunnel feature dating to the turn-of-the-century (20th), Plantation-Era.

In 1990, Archaeological Consultants of Hawaii (Kennedy 1990) conducted an archaeological reconnaissance survey, in the form of subsurface testing for the Kahuku Sand Mining Project. A total of 47 stratigraphic trenches were mechanically excavated, via backhoe. No archaeological sites were identified. However, Kennedy did identify "an early to mid-twentieth century dump containing typical household refuse", including butchered bones fragments and the skeletal remains of "small, feral animals".

Paul H. Rosendahl, Inc. (Dunn and Rosendahl 1992) conducted an archaeological inventory survey in several parcels located between the southern end of Lā`ie Ahupua`a and the southern border of Mālaekahana Ahupua`a. Most of the sites and features identified were located in and around the town of Lā`ie (e.g., a pre-Contact agricultural complex, State Site 50-80-02-4463, and, a pond field, State Site 50-80-02-4466). A small portion of the project area studied by Dunn and Rosendahl (bid.) partially overlaps the project area described by Jensen

(1989), and borders the southern boundary of the current project area. In addition to State Site 50-80-02-4093, the ditch/tunnel described by Jensen (1989), Dunn and Rosendahl (1992) reported eight sites, described as follows, near the southern boundary of the current project area, from *makai* to *mauka*:

- State Site 50-80-02-4465—A platform-mound complex, interpreted (but not tested) as a possible burial, dating from the Late Pre-Contact to early historic era.
- State Site 50-80-02-4468—A cemetery (not tested), interpreted as an historic site.
- State Site 50-80-02-4469—An upright stone, interpreted as a marker (tested, yielding no significant finds), interpreted as a possible property marker.
- State Site 50-80-02-4471—A mound-paved area complex, interpreted as a Pre-Contact agricultural site (not tested).
- State Site 50-80-02-4472—A cave, interpreted as a Pre-Contact, temporary habitation with disturbed, surface human remains, presumably once part of a burial (the habitation area was tested, yielding traditional stone tool flakes and midden).
- State Site 50-80-02-4473—A complex consisting of an enclosure, retaining wall, and other walls, interpreted as a Pre-Contact agricultural site (not tested).
- State Site 50-80-02-4475—A retaining wall, interpreted as a Pre-Contact agricultural site.
- State Site 50-80-02-4464—A terrace-modified bedrock site, interpreted as a Pre-Contact habitation site.

The remains of at least one individual between the age of 15 and 22 were exposed in a sand slope on Kahuku Golf Course (Collins 1999), south of the project area. The remains appeared to reflect a primary burial that had been exposed during the slump or collapse of a sand bank. Some of the remains were partially bleached white, indicating exposure to the elements for an undetermined period of time. The site was designated State Site 50-80-02-5773.

Scientific Consultant Services, Inc. (Buffum and Dega 2001) conducted an archaeological inventory survey, which included limited excavation and radiocarbon dating, immediately adjacent to (and south of) Lā`ie town, on approximately 74 acres. During the survey seven sites, including two rockshelters (State Sites 50-80-02-5866 and -5867), a limestone cliff with several overhangs (State Site 50-80-02-5868), and four historic occurrences (an *`auwai*, a bridge foundation, a ditch, and a retaining wall) were identified. State Sites 50-80-02-5866 and -5867,

the two rockshelters, contained evidence of late pre-Contact habitation. State Site 50-80-02-5868, the limestone overhang, contained evidence of Historic Period occupation. All three sites also contained human skeletal remains, but only State Site 50-80-02-5868 was interpreted as a burial site, as State Sites 50-80-02-5866 and -5867 contained fragmentary human skeletal remains in non-burial context.

Scientific Consultant Services, Inc. (Monahan 2005) conducted an archaeological inventory survey on two parcels of land consisting of approximately 500 acres in Mālaekahana and Lā`ie Ahupua`a. Forty-four sites were identified during the survey. Forty-three of these sites are located in Mālaekahana Ahupua`a; State Site 50-80-02-Site 6776 is located in Lā`ie Ahupua`a. Thirty-two sites (73%) were interpreted as Historic Period and11 were interpreted as pre-Contact. The temporal affiliation of State Site 50-80-02- 6775, a human burial, was indeterminate, but possibly associated with the early Historic Period. Most of the historic sites (21 of 32, 66%) date to the Plantation Era (i.e., later 19th century to 1960s–70s). The pre-Contact sites consist of three rockshelters (temporary habitations), three agricultural sites, two habitation/agricultural sites, one rockshelter (temporary habitation) with a burial, one buried cultural layer with an *imu* (firepit), and Wai`āpuka Pool (State Site 50-80-02-275 – McAllister Site 275).

In 2013, Scientific Consultant Services, Inc. (Dagher and Spear 2014) conducted archaeological inventory survey in advance of proposed construction improvements including, the installation of septic waste systems, eight-inch water lines, water laterals, water retention basins, improvements to existing Plantation Roads, and grading for driveway improvements, within a 25.621-acre portion of the existing Kahuku Plantation Village Subdivision Project located in Keana Ahupua`a, Ko`olauloa District, Island of O`ahu, Hawai`i [TMK: (1) 5-6-002: 027]. During the survey one site, designated as State Site 50-80-02-7508, comprised of ten features, was newly identified. With the exception of Feature 3, all features were interpreted as associated with the Plantation-Era (1890 to 1971), based on feature type, location, construction methods and materials, or associated artifact types. Feature 3, consisted of a firepit which yielded a calibrated radiocarbon date ranging from the late pre-Contact and/or early post-Contact Period.

In 2014, Scientific Consultant Services, Inc. (Lyman and Spear 2014) conducted an archaeological inventory survey on a 4.78 acre area on the Kahuku Plantation Village Subdivision Project [TMK: (1) 5-6-002:047 por.]. During the archaeological inventory survey, one previously identified site (State Site 50-80-02-7508, Feature 8 (the existing Kahuku Plantation Village houses) was found to extend westward from the east edge of the project area

to the east edge of Puuluana Street. All of the houses within the project area were interpreted as associated with the Plantation-Era (1890 to 1971) based on feature type, location, construction methods and materials, and/or associated artifact types. A few Historic Period artifacts [i.e., three whiteware soup plate shards, two whiteware bowl base shards, one porcelain shard, two milk-glass shards, one flat glass shard, one bottle glass shard, and one glass jar (H.J Heinz Co.] were encountered and collected from the trench excavations during the archaeological inventory survey; modern debris was noted but not collected.

In 2014, Scientific Consultant Services, Inc. (Lee and Spear 2014, in prep.) conducted an archaeological inventory survey on 122.8 acres of land within the existing historic Plantation Era Kahuku Village Subdivision Project located in Keana Ahupua`a, Ko`olauloa District, Island of O`ahu, Hawai`i [TMK: (1) 5-6-002:047 por.]. The findings of the archaeological inventory survey indicated the villages houses extended through the project area from the east boundary of TMK: (1) 5-6-002:027 to the west edge of TMK: (1) 5-6-002:047 por.

Scientific Consultant Services, Inc. (SCS) (Dagher and Spear 2015) conducted an archaeological inventory survey of an approximately 8.0-acre property located within the existing Historic Plantation Era Kahuku Village (State Site 50-80-02-7508) Subdivision Project in Keana Ahupua`a, Ko`olauloa District, Island of O`ahu, Hawai`i [TMK: (1) 5-6-002:049 (previously 5-6-02: 016 por.)]. During the survey thirteen features (one historic roadway corridor, one historic trash pit, eight standing historic houses, one historic house foundation, one historic rock alignment, and one pre-Contact *in situ* human burial were newly identified. The human burial was consolidated into the previously identified State Site 50-80-02-7399 as Burial 2. With the exception of the human burial, the remaining features were interpreted as associated with the Plantation-Era (1890 to 1971), consolidated into, the previously identified State Site 50-80-02-7508, based on feature type, location, construction methods and materials, and artifact types. The newly identified historic roadway corridor was interpreted as a component of State Site 50-80-02-7508, Feature 7; the eight standing historic houses were interpreted as components of Feature 8; the historic trash pit was designated Feature 9; the historic house foundation was designated Feature 10a; and the historic alignment was designated Feature 10b. One isolated find (IF-1), comprised of a single human metatarsal, was encountered in ST-1, Layer I. IF-1 likely pre-dates the Plantation-Era.

Currently, Scientific Consultant Services, Inc. (Dagher and Spear n.d., in prep.) is conducting Archaeological Monitoring in conjunction with on-going ground-altering activities associated with the approximately 50 acre existing Kahuku Plantation Village Subdivision

Project located in Keana Ahupua`a, Ko`olauloa District, Island of O`ahu, Hawai`i [TMK: (1) 5-6-002: 027 and 049 (previously 046 por.)]. During the on-going Archaeological Monitoring program, five archaeological historic properties (State Sites 50-80-02-7398 through 50-80-02-7401 and 50-80-02-7511) were newly identified. State Site 50-80-02-7398 consists of three historic cesspools. State Site 50-80-02 7399, Burial 1 is an inadvertently identified Traditional-type, pre-Contact/ early post-Contact human burial; State Site 50-80-02-7400 is a Historic Period piggery, consisting of 10 features; State Site 50-80-02-7401 consists of Plantation-Era railroad tracks, and State Site 50-80-02-7511 is an inadvertently identified Traditional-type, pre-Contact/early post-Contact human burial (Burial 2), and an isolated find (IF-1) comprised of a single human skeletal fragment, which likely pre-dates the Plantation-Era. State Sites 50-80-02-7399 and 50-80-02-7511 are discussed under separate cover in Dagher et al. (2013). State Sites 50-80-02-7398 through 50-80-02-7400 and 50-80-02-7511 are considered to be features of State Site 50-80-02-7508, the Kahuku Village Historic District.

Scientific Consultant Services, Inc. (SCS) conducted an archaeological inventory survey (AIS) of the current project area (Dagher and Spear 2016, in prep.). During the current archaeological inventory survey, a total of 25 stratigraphic trenches (ST) were excavated. Twenty-four of the trenches (ST-1 through ST-24) were excavated within the proposed development areas revealed no cultural remains whatsoever. Stratigraphic Trench 25 was excavated within State Site 50-80-02-7774, which was outside of the proposed areas of development, in addition to eleven shovel probes and one test unit. These excavations collectively revealed a contiguous cultural deposit (the previously identified State Site 50-80-02-7774) and ten additional features in subsurface contexts (SSFE-1 through SSFE-10). Subsurface Features 1, 2, 3, and 5, 6, and 7 consist of post molds; Subsurface Features 8, 9, and 10 consist of pit features. Possible midden materials consisting of marine and terrestrial vertebrate, marine shell, charcoal, burnt *kukui*, and Traditional-type artifacts were collected from the cultural layer and the subsurface features. One isolated human tooth was collected from SP-11. Subsurface Feature 4 consists of an *in situ* human burial representing a single individual. Based on context, construction methods and materials, feature type, and associated artifacts all features were interpreted as pre-Contact in age. Thus, State Site 50-50-02-7774 was interpreted as a pre-Contact habitation site with a burial component. Outside of Site 7774, no additional sites were encountered during the inventory survey project.

CONSULTATION

Consultation was sought from Dr. Kamana`opono M. Crabbe, Chief Executive Officer Office of Hawaiian Affairs; Vincent H. Rodrigues, Cultural Historian, State Historic Preservation Division; William Ho`ohuli, community member; Ahi Logan, community member; Dawn Wasson, community member; Cy Bridges, former Ko`olauloa District Rep. O`ahu Island Burial Council and community member; Cathleen Mattoon, Ko`olauloa Hawaiian Civic Club; Jenilea Heath, Neighborhood Assistant, Neighborhood Commission Office; Verla Moore, Chair, Ko`olauloa Neighborhood Board No. 28; Burton Albert Greene, Vice Chair, Ko`olauloa Neighborhood Board No. 28; Kela Miller, Secretary, Ko`olauloa Neighborhood Board No. 28; Melissa Primacio, President, Kahuku Community Association; Pane Meatoga, President, Lā`ie Community Association; Dee Dee Letts, Ko`olauloa Neighborhood Board No. 28; Creighton Mattoon, Ko`olauloa Neighborhood Board No. 28; James C Reynolds Inc., community member.

In addition, a Cultural Impact Assessment Notice was published on May 6, 7 and 10, 2015 in *The Honolulu Star-Advertise*r and in the June 2015 issue of the OHA newspaper, *Ka Wai Ola* (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, 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 (2012:13). As stated earlier, this includes the cultural resources of the different groups comprising the multi-ethnic community of Hawai`i. The only response received was from Dr. Kamana`opono M. Crabbe. This comment did not indicate that the proposed undertaking would have an impact on traditional cultural practices currently, or previously, conducted in the vicinity of the proposed undertaking.

DR. KAMANA`OPONO CRABBE

Dr. Kamana`opono M. Crabbe, Chief Executive Officer Office of Hawaiian Affairs, responded via a letter, dated June 2, 2015. Dr. Crabbe's letter acknowledged the receipt of SCS's letter of inquiry and stated that "[t]he letter did not provide enough information" and that OHA

"…could not comment at this time." However, Dr. Crabbe stated that OHA"… requests assurances that should iwi kupuna or Native Hawaiian cultural deposits be identified during ground altering activities, all work will immediately cease and the appropriate agencies, including OHA…" be contacted.

SUMMARY

The "level of effort undertaken" to identify potential effect by a project to cultural resources, places or beliefs (OEQC 2012) 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, research 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 already developed industrial area 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.

In the case of the current undertaking, letters of inquiry were sent to individuals and organizations, via the U.S. Postal Service and e-mail, that may have knowledge or information pertaining to the collection of cultural resources and/or practices currently, or previously conducted in close proximity to the improvements at the Mālakahana State Recreation Area, Kahuku Section, located in the town of Lā`ie, Mālaekahana Ahupua`a Ko`olauloa District, Island of O`ahu, Hawai`i [TMK: (1) 5-6-001: 047, 049, 051, 053, 055 through 057, 059, 061 through 065].

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 Database (2015).

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 (2012). Based on historical research, and no additional suggestions from contacts, 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 a requirement of the OEQC (2012). The project area is not currently being used for traditional cultural purposes. However, based on historical research and limited responses from the individual and organizations contacted, it is reasonable to conclude that Hawaiian rights related to gathering, access or other customary activities within the project area will not be affected and there will be no adverse effect upon cultural practices or beliefs.

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APPENDIX A: EXAMPLE LETTER OF INQUIRY

Dear:

In compliance with 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 preparing a Cultural Impact Assessment (CIA) in advance of proposed improvements at Mālaekahana State Recreation Area, Kahuku Section. The project area is located in Lā`ie, Mālaekahana Ahupua`a Ko`olauloa District, Island of O`ahu, Hawai`i [TMK: (1) 5-6-001: 024, 047, 049, 051, 053, 055 through 057, 059, 060 through 065]. The 36-acre project area is owned by the State of Hawai`i.

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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 previously, or currently, conducted in the vicinity of the proposed project area. 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 you.

Enclosed are maps showing the proposed project area location. Please contact me at the Scientific Consultant Services, Honolulu, office at (808) 597-1182 with any information or recommendations concerning this Cultural Impact Assessment.

Sincerely yours,

Cathleen Dagher
Senior Archaeologist
Enclosures (3)

Cc:

APPENDIX B: NEWSPAPER NOTICE AND AFFIDAVIT

Scientific Consultant Services, Inc. (SCS) is seeking information on cultural resources and cultural practices on or near the Mālakahana State Recreation Area, Kahuku Section. The 36-acre project area is located in the town of Lā`ie, Mālaekahana Ahupua`a Ko`olauloa District, Island of O`ahu, Hawai`i [TMK: (1) 5-6-001: Various.] Please respond within 30 days to Cathleen Dagher at (808) 597-1182.

1648

AFFIDAVIT OF PUBLICATION

IN THE MATTER OF
SCS Proj 1648 CIA for Malaekana State Park

STATE OF HAWAII)
) **SS.**
City and County of Honolulu)

Doc. Date: MAY 11 2015 **# Pages:** 1
Notary Name: Patricia K. Reese First Judicial **Circuit**
Doc. Description: Affidavit of Publication

PATRICIA K. REESE NOTARY PUBLIC Comm. No. 86-467 STATE OF HAWAII

Notary Signature MAY 11 2015 Date

Julie Clark 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, MidWeek, The Garden Island, West Hawaii Today, and Hawaii Tribune-Herald, 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:
05/06, 05/07, 05/10/2015
MidWeek 0 times on:
The Garden Island 0 times on:
Hawaii Tribune-Herald 0 times on:
West Hawaii Today 0 times on:
Other Publications: 0 times on:

And that affiant is not a party to or in any way interested in the above entitled matter.

Julie Clark

Subscribed to and sworn before me this 11th day of May A.D. 20 15

Patricia K. Reese, Notary Public of the First Judicial Circuit, State of Hawaii

My commission expires: Oct 07, 2018

Ad # 0000752568 SP.NO.: _____ L.N.

PATRICIA K. REESE NOTARY PUBLIC Comm. No. 86-467 STATE OF HAWAII

Information on cultural resources and customary practices on or near the Malaekahana State Recreation Area, Kahuku Section. The 36-acre project area is located in the town of La'ie, M?laekahana Ahupua'a Ko'olauloa District, Island of O'ahu, Hawai'i. (TMK: (1) 5-6-001: Various.) Please respond within 30 days to Cathleen Dagher at (808) 597-1182.
(SA752568 5/6, 5/7, 5/10/15)

APPENDIX C: EXAMPLE FOLLOW-UP LETTER

Dear:

This is our follow-up letter to our May 8, 2015letter 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 preparing a Cultural Impact Assessment (CIA) in advance of proposed improvements at Mālaekahana State Recreation Area, Kahuku Section. The project area is located in Lā`ie, Mālaekahana Ahupua`a Ko`olauloa District, Island of O`ahu, Hawai`i [TMK: (1) 5-6-001: 024, 047, 049, 051, 053, 055 through 057, 059, 060 through 065]. The 36-acre project area is owned by the State of Hawai`i.

We are asking you for any information that you, or other individuals, have which might contribute to the knowledge of traditional cultural activities previously, or currently, conducted in the vicinity of the proposed project area. 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 you and the Ko`olauloa Neighborhood Board No. 28.

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

APPENDIX D: RESPONSE

PHONE (808) 594-1888

FAX (808) 594-1938

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
560 N. NIMITZ HWY., SUITE 200
HONOLULU, HAWAI'I 96817

HRD15-7242B

June 2, 2015

Cathleen Dagher, Senior Archaeologist
Scientific Consultant Services, Inc.
1347 Kapi'olani Boulevard, Suite 408
Honolulu, HI 96814

Re: Cultural Impact Assessment Consultation
Mālaekahana State Recreation Area
Lā'ie Ahupua'a, Ko'olauloa Moku, O'ahu Mokupuni
Tax Map Key: (1) 5-6-001:024,

Aloha e Cathleen Dagher:

The Office of Hawaiian Affairs (OHA) is in receipt of your May 8, 2015 letter, regarding a cultural impact assessment (CIA) for the proposed improvements at Mālaekahana State Recreation Area ("project"). The letter did not provide enough project information, therefore we cannot determine what impacts may occur from the project. The maps attached provide the area of the project, however, without sufficient project details, OHA cannot comment at this time.

OHA requests assurances that should iwi kūpuna or Native Hawaiian cultural deposits be identified during ground altering activities, all work will immediately cease and the appropriate agencies, including OHA, will be contacted pursuant to applicable law.

Thank you for initiating consultation at this early stage. Should you have any questions, please contact Kathryn Keala at 594-0272 or kathyk@oha.org.

'O wau iho nō me ka 'oia 'i'o,

Kamana'opono M. Crabbe, Ph.D.
Ka Pouhana, Chief Executive Officer

KC:kk

* Please address replies and similar, future correspondence to our agency:
Dr. Kamana'opono Crabbe
Attn: OHA Compliance Enforcement
560 N. Nimitz Hwy, Ste. 200
Honolulu, HI 96817

APPENDIX D

Pre-Assessment Consultation

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THE LIMTIACO CONSULTING GROUP
CIVIL ENGINEERING AND ENVIRONMENTAL CONSULTANTS

August 14, 2014

Subject: Pre-Consultation for the Environmental Assessment
Malaekahana State Recreation Area - Kahuku Section Park Improvements
Tax Map Keys (1) 5-6-001: 024, 045 to 047, 049, 051, and 053 to 065
Laie, Oahu, Hawaii

Dear Sir or Madam,

The State of Hawaii, Department of Land and Natural Resources (DLNR) is proposing to improve the 36-acre portion of the Malaekahana State Recreation Area - Kahuku Section, currently operated by the "Friends of Malaekahana" (see attached location map). The project site consists of the shoreline area along the northern end of Malaekahana Bay, and is owned by DLNR, Division of State Parks ("State Parks"). The remaining portion of the project site is maintained by State Parks and utilized by the public for daytime outdoor recreational activities and beach access.

In May 2013, Erskine Architects, Inc. and EnviroServices and Training Center, LLC assessed the current site conditions. Several structures were observed to be severely deteriorated. These structures will be demolished and removed in Fall 2014. In addition, the cesspools servicing these structures will be closed in compliance with current rules and regulations administered by the State Department of Health.

DLNR's proposed project would improve this park section for continued recreational use including camping, lodging and day use activities. DLNR seeks to balance the development of adequate recreational facilities and venues with concerns about public beach access, increased traffic and other related impacts. The proposed project is not intended to increase the density of the area nor increase the number of rental cabins within the park. Improvements will include the installation of new infrastructure (e.g., water, wastewater and electrical/communication systems) and construction of a comfort station and satellite restroom facilities. The project includes the replacement of the administration office, a security office and seven (7) cabins along with related improvements. The structures and associated infrastructure would be sited to optimize the functionality and spatial aesthetics of the park. Proposed park improvements may be phased due to cost and available funding options.

The project provides the opportunity to construct facilities that conform to the International Building Code (IBC), the applicable sections of the National Fire Protection Association (NFPA), and the 2010 Americans with Disabilities Standards for Accessible Design. Construction activities are expected to generate short-term effects such as fugitive dust, noise, intermittent traffic, solid waste, and potential disruptions to utility services that would cease upon project completion.

Three known historic sites are located beyond the boundaries of the project site. No structures within the affected area are listed on the National or Hawaii Register of Historic Places. A reinterment site for disinterred remains (or *iwi*) will not be disturbed as a result of proposed park

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improvements. DLNR is aware that the potential for subsurface artifacts remains high in the area landward (or *mauka*) of sand dunes according to the archaeological investigation conducted in 1980 by the Division of State Parks. Consultation with the State Historic Preservation Division is on-going and will continue throughout the project.

We kindly seek your input on potential impacts to environmental, biological (e.g., flora, fauna and aquatic habitat and species), scenic, aesthetic, archaeological and historic resources. Additionally, any information with regards to potential impacts on traditional and cultural practices and beliefs in the project area will assist us and project stakeholders in determining appropriate mitigation measures.

An Environmental Assessment (EA) will be prepared for this project pursuant to Chapter 343, Hawaii Revised Statutes. The environmental review process is expected to continue through early 2015. Facility and infrastructure design improvements are on-going. Demolition activities that addresses public health and safety hazards are expected to occur in Fall 2014. Construction work will occur no sooner than 2016 and will not begin before the EA is completed. Public comments received during the EA process will be incorporated into final design.

If you wish to provide input on the project at this time or be a consulted party while the EA is being prepared, please respond to this letter and submit any written comments to the address below by Friday, September 5, 2014.

Please send comments to:

Dan Quinn, Administrator
DLNR, Division of State Parks
P.O. Box 621
Honolulu, HI 96809
Fax: (808) 587-0311

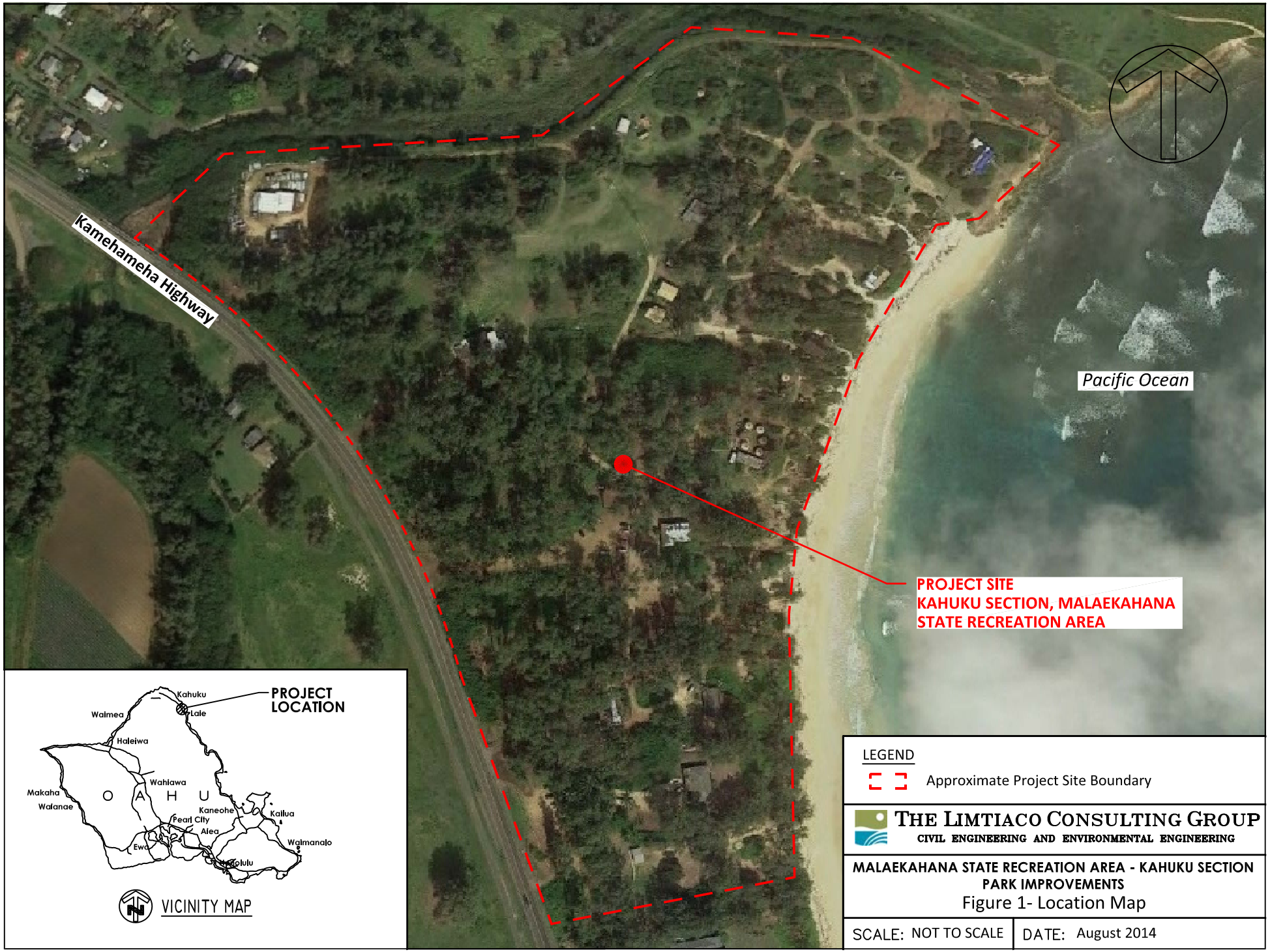
And please provide a copy to:

Joe Kwan, P.E.
The Limtiaco Consulting Group
1622 Kanakanui Street
Honolulu, HI 96817

Thank you for your interest and participation in the environmental review process. Should you have any questions, please contact me at (808) 596-7790.

Best regards,
The Limtiaco Consulting Group, Inc.

Joe Kwan, P.E.
Project Manager


Kamehameha Highway
Pacific Ocean
PROJECT SITE
KAHUKU SECTION, MALAEKAHANA
STATE RECREATION AREA
PROJECT LOCATION
Kahuku
Lale
Waimea
Haleiwa
Wahiawa
Makaha
Waianae
O A H U
Kaneohe
Kailua
Pearl City
Aiea
Waimanalo
Ewa
Honolulu
VICINITY MAP
LEGEND
Approximate Project Site Boundary
THE LIMTIACO CONSULTING GROUP
CIVIL ENGINEERING AND ENVIRONMENTAL ENGINEERING
MALAEKAHANA STATE RECREATION AREA - KAHUKU SECTION
PARK IMPROVEMENTS
Figure 1- Location Map
SCALE: NOT TO SCALE
DATE: August 2014

THE LIMTIACO CONSULTING GROUP
CIVIL ENGINEERING AND ENVIRONMENTAL CONSULTANTS

April 8, 2016

Ms. Ipo Tano, President
Lanihuli Community Development Corporation
P.O. Box 305
Laie, HI 96762

Subject: Response to Pre-Assessment Consultation for the Environmental Assessment for Malaekahana State Recreation Area - Kahuku Section Park Improvements, Laie, Island of Oahu, Hawaii

Dear Ms. Tano:

Thank you for your email dated 08/18/14 regarding pre-assessment consultation for the Environmental Assessment (EA). We acknowledge that your response is also in reference to the presentation that was shared at the KoolauLoa Neighborhood Board No. 28 meeting on 8/14/14.

Your specific design-related comments pertaining to day use access, picnic pavilions and restrooms, the office and entrance, and the middle road were forwarded to the Department of Land and Natural Resources (DLNR) for its consideration. We acknowledge your statement about liking the density and open space aspects of DLNR's project. Proposed park improvements have the potential to foster appreciation, understanding and educational opportunities pertaining to the natural and cultural environment.

The Draft EA is anticipated to be available for public review in April 2016 and we look forward to your department's continued participation in the environmental review process. If you have any questions, please do not hesitate to contact me at 596-7790.

Sincerely,
The Limtiaco Consulting Group, Inc.

Joe Kwan, P.E.
Project Manager

cc: Carty Chang, P.E., Chief Engineer, DLNR Engineering Division

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(808) 596-7790 • tlcghawaii.com

John Katahira

From: Ipo Tano
Sent: Monday, August 18, 2014 12:09 PM
To: John Katahira
Cc: Pane Meatoga; Verla K. Moore; melissa primacio; Bill Aila - DLNR; Richard Fale
Subject: RE: Malaekahana presentation from 8/14/14 neighborhood board

Hi John – thanks again for sharing the Limtiaco Consulting Group Malaekahana plan with us last Friday. Spent some time reviewing your plan over the weekend - I have a few comments for your consideration.

1. **Day Use Access** — I see challenges with open vehicular traffic at the North Beach access. If the intent is to allow all day use users to drive thru the entire park, it introduces issues with:
    a. Speeding & safety – teens used to speed thru the park – which is one reason we started locking the back gate and put a coded gate at the front. Also, many day users come to check out surf – they aren't watching out for kids playing in the area as they drive by. So minimal car traffic thru the park is ideal.
    b. Theft – we don't want folks driving thru the park to case out cabins and camp sites, rob guests, then have a getaway car. Again, this is the reason we put security gates at both ends of the park.
    c. Noise – we've had issues in the past with day users driving up to the beach and blasting their radios, disturbing campers and guests. When guests complain and security intervenes, the offenders become confrontational. By keeping day use vehicles out of the park we eliminate this nuisance.
    d. Alcohol – as much as we police the area, day use folks often bring alcohol to the beach and get loud/obnoxious with campers. You will also create a safety issue by allowing them to drive thru the park after they've been drinking.
    e. Daily Beach Closure – gates must lock at sunset (7pm) with no vehicle traffic after that for safety & security reasons. If you allow all day users full vehicle access, getting them out of the park before 7pm will become an operational issue.

    RECOMMENDATION: Minimize traffic through the park – have secure entry/exit gates at both ends of the park and keep the middle road and parking area available for day use and registered guests after-hours night exit. We are known as the safest park in the State because we put safety & security of our guests first.
2. **Picnic Pavilions & Restrooms** — I'm not sure how the Mauka river picnic/pavilion area will work – most folks coming to the beach to picnic want to see the beach & go swimming. But if the intent is to provide a more private area for large parties and camping (as an extension of the current surf camp) that could work. My concerns with the north beach pavilion area and unrestricted vehicle access are summarized in item #1 above.

    RECOMMENDATION: Extend the river pavilion area to incorporate the current surf camp for large group overnight camping. This space is heavily used by surf groups, churches and other orgs for large camping activity. Also recommend designating a pavilion yard area makai of the large cabin to facilitate a luau party tent. This central area (close to the cabin by present Tutus Hale) is truly the heart of the Malaekahana Park. And again, parking in middle road provides convenient parking for party & cabin guests.

3. **Office & Entrance –** I don't understand the logic for moving the office off the highway where it's visible to inside the park down the back gate road – where you diminish visibility and a necessary security check point. The office should be visible with easy access, and be located near the cabins where you'll have the highest paying guests – this is where you want security and easy people access. It's also important to have the office there for the State-run Malaekahana Laie Park. We often have guests from that park come to us to report theft & physical assault. They don't need to be wandering through the Malaekahana Kahuku Park looking for someone to help them.

    RECOMMENDATION: Put the office in the Castle Beach Park area where the current DOCARE house is (next to

cabins) - and make it large enough to function as a sundries shop and internet café/meeting place. Our idea was to have storage space for linens, bedding, etc. for cabins and merchandising items guests often forget (lamps, lights, batteries, sun screen, etc.). We want to create a space where guests can hang out, charge mobile devices, interact with each other, and have something to eat (coffee, tea, croissants, etc.). We'd also like to provide a comfortable space where community members can meet. We currently let them meet in our house lanai (current managers house) on Saturdays. But would be better to have a space in the internet café where folks can gather in a comfortable, open public environment.

4. **Middle Road** – our current middle road is VERY important for day use and overnight guests – yet it's been removed from your plan. Our middle road provides surfers line of sight to check out surf and clear sight to their parked cars for security. It also provides overnight guests an option for 24x7 ability to leave (they park one car inside and another outside to leave if necessary). It is the natural entry point for surf and beach access – it's been our community access for 40 years. We re-opened this middle parking space and added rinse-off showers to accommodate our day use guests – as this is their preferred direct route to the beach and surf spot. Not sure what the logic is to close off this access and make it inconvenient for surfers, boogie boarders and their families to access the surf.

   RECOMMENDATION: Keep & extend the middle road parking area. Provide a wide pathway (the current path) to the beach so our community members/surfers continue to have the easy access & security they have had for the past 20 years.

In closing I want to restate that I like the density and open spaces in your plan. I'm sharing the above input & ideas to share what we've learned over the past 20 years. Malaekahana is a much loved & valued place to the Ko'olauloa communities – appreciate your help to keep it that way. Regardless of whether DLNR lets us participate in the RFP process, we're native Hawaiian descendants of this ahupua'a and want what's best for our 'aina & families.
aloha,

Ipolani Tano
President, Lanihuli CDC
Corp Secretary, Hawaii Yurt Adventures
221-5858

THE LIMTIACO CONSULTING GROUP
CIVIL ENGINEERING AND ENVIRONMENTAL CONSULTANTS

April 8, 2016

Mr. Guy Kaulukukui, Director
City and County of Honolulu
Department of Enterprise Services
777 Ward Avenue
Honolulu, Hawaii 96814

Subject: Response to Pre-Assessment Consultation for the Environmental Assessment for Malaekahana State Recreation Area - Kahuku Section Park Improvements, Laie, Island of Oahu, Hawaii

Dear Mr. Kaulukukui:

We received the letter dated 08/19/14 from your predecessor, Director Gerald Saito, regarding pre-assessment consultation for the Environmental Assessment (EA). The Draft EA will include the following statement from your department's letter: *The project appears to have minimal or no impact to Kahuku Golf Course.* We acknowledge that your agency provided no other comments and did not wish to be a consulted party while the EA is being prepared per that correspondence.

The Draft EA is anticipated to be available for public review in April 2016. We will not pursue further consultation with your agency for the remainder of the EA process; however, please do not hesitate to contact me at 596-7790 if you have any questions or concerns.

Sincerely,
The Limtiaco Consulting Group, Inc.

Joe Kwan, P.E.
Project Manager

cc: Carty Chang, P.E., Chief Engineer, DLNR Engineering Division

1622 Kanakanui Street • Honolulu, Hawaii 96817
(808) 596-7790 • tlcghawaii.com

DEPARTMENT OF ENTERPRISE SERVICES
GOLF COURSE DIVISION * HONOLULU ZOO * NEAL S. BLAISDELL CENTER * WAIKIKI SHELL
CITY AND COUNTY OF HONOLULU
777 WARD AVENUE · HONOLULU, HAWAII 96814-2166
PHONE: (808) 768-5400 * FAX: (808) 768-5433 * INTERNET: www.honolulu.gov/des

KIRK CALDWELL
MAYOR

GERALD H. SAITO
DIRECTOR

TRACY S. KUBOTA
DEPUTY DIRECTOR

08-22-14P04:22 RCVD

August 19, 2014

Mr. Dan Quinn
Administrator
DLNR, Division of State Parks
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Quinn:

I am receipt of your letter dated August 14, 2014, regarding Pre-Consultation for the Environmental Assessment Malaekahana State Recreation Area.

Since the project appears to have minimal or no impact to the Kahuku Golf Course, the Department of Enterprise Services has no comments to offer nor do we wish to be a consulted party while the EA is being prepared.

Thank you for your consideration on this matter.

Sincerely,

Gerald H. Saito
Director

cc: Joe Kwan, P.E
The Limtiaco Consulting Group

THE LIMTIACO CONSULTING GROUP
CIVIL ENGINEERING AND ENVIRONMENTAL CONSULTANTS

April 8, 2016

Assistant Chief Socrates D. Bratakos
City and County of Honolulu
Honolulu Fire Department
636 South Street
Honolulu, Hawaii 96813

Subject: Response to Pre-Assessment Consultation for the Environmental Assessment for Malaekahana State Recreation Area - Kahuku Section Park Improvements, Laie, Island of Oahu, Hawaii

Dear Assistant Chief Bratakos:

Thank you for your letter dated 08/27/14 regarding pre-assessment consultation for the Environmental Assessment (EA). We acknowledge the specific design-related comments in your letter and are aware that civil drawings must be submitted for review and approval by the Fire Prevention Bureau of the Honolulu Fire Department. The Draft EA will include the following statement: *The review of civil drawings will occur when the building permit application is submitted to ensure that fire department access, water supply for on-site fire protection, and public safety requirements are met.*

The Draft EA is anticipated to be available for public review in April 2016 and we look forward to your department's continued participation in the environmental review process. If you have any questions, please do not hesitate to contact me at 596-7790.

Sincerely,
The Limtiaco Consulting Group, Inc.

Joe Kwan, P.E.
Project Manager

cc: Carty Chang, P.E., Chief Engineer, DLNR Engineering Division

1622 Kanakanui Street • Honolulu, Hawaii 96817
(808) 596-7790 • tlcghawaii.com

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

08-29-14P02:47 RCVD

August 27, 2014

Mr. Dan Quinn, Administrator
Department of Land and Natural Resources
Division of State Parks
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Quinn:

Subject: Preconsultation for an Environmental Assessment
Malaekahana State Recreation Area - Kahuku Section Park Improvements
Tax Map Keys: 5-6-001: 024, 045 to 047, 049, 051, and 053 to 065

In response to your letter of August 14, 2014, regarding the above-mentioned subject, the Honolulu Fire Department (HFD) reviewed the material provided and requires that the following be complied with:

1. Fire department access roads shall be provided such that any portion of the facility or any portion of an exterior wall of the first story of the building is located not more than 150 feet from fire department access roads as measured by an approved route around the exterior of the building or facility. (National Fire Protection Association [NFPA] 1, Uniform Fire Code [UFC]™, 2006 Edition, Section 18.2.3.2.2.)

   A fire department access road shall extend to within 50 ft of at least one exterior door that can be opened from the outside and that provides access to the interior of the building. (NFPA 1, UFC™, 2006 Edition, Section 18.2.3.2.1.)

2. A water supply approved by the county, capable of supplying the required fire flow for fire protection, shall be provided to all premises upon which facilities or buildings, or portions thereof, are hereafter

constructed, or moved into or within the county. When any portion of the facility or building is in excess of 150 feet from a water supply on a fire apparatus access road, as measured by an approved route around the exterior of the facility or building, on-site fire hydrants and mains capable of supplying the required fire flow shall be provided when required by the AHJ [Authority Having Jurisdiction]. (NFPA 1, UFC™, 2006 Edition, Section 18.3.1, as amended.)

3. The unobstructed width and unobstructed vertical clearance of a fire apparatus access road shall meet county requirements. (NFPA 1, UFC™, 2006 Edition, Section 18.2.3.4.1.1, as amended.)

4. Submit civil drawings to the HFD for review and approval.

Should you have questions, please contact Battalion Chief Terry Seelig of our Fire Prevention Bureau at 723-7151 or tseelig@honolulu.gov.

Sincerely,

SOCRATES D. BRATAKOS
Assistant Chief

SDB/DO:bh

cc: Joe Kwan, P.E., The Limtiaco Consulting Group

THE LIMTIACO CONSULTING GROUP
CIVIL ENGINEERING AND ENVIRONMENTAL CONSULTANTS

April 8, 2016

Ms. Sina Pruder, P.E., Chief
State of Hawaii Department of Health, Wastewater Branch
P.O. Box 3378
Honolulu, HI 96801-3378

Subject: Response to Pre-Assessment Consultation for the Environmental Assessment for Malaekahana State Recreation Area - Kahuku Section Park Improvements, Laie, Island of Oahu, Hawaii
LUD-1 5 6 001 024 etc Pre Cons EA Malaekahana Rec Area-ID1844

Dear Ms. Pruder:

Thank you for your letter dated 08/27/14 regarding pre-assessment consultation for the Environmental Assessment (EA). We also thank you for the copies of the pertinent cesspool cards. The EA will include the following statements: *There are no public sewer systems in the vicinity of the project site. The proposed project is located in the critical wastewater disposal area as determined by the Oahu Wastewater Advisory Committee. Wastewater generated at the project site was previously discharged to individual wastewater systems (IWSs) including cesspools and an aerobic treatment unit (ATU) that were considered recorded and approved for use.*

Multiple septic tanks (for waste treatment) and leach fields (for effluent disposal) are recommended to accommodate the proposed improvements including replacement rental units and the installation of comfort stations and satellite restrooms. New restroom and shower facilities are expected to contribute to a cleaner park. Proposed park improvements will avoid the established reinterment site for disinterred remains (or *iwi*), a preservation zone that encompasses State Site 50-50-02-7774, and areas *mauka* of sand dunes where the potential for subsurface artifacts remains high based on the findings from archaeological investigations.

The Draft EA is anticipated to be available for public review in April 2016 and we look forward to your department's continued participation in the environmental review process. If you have any questions, please do not hesitate to contact me at 596-7790.

Sincerely,
The Limtiaco Consulting Group, Inc.

Joe Kwan, P.E.
Project Manager

cc: Carty Chang, P.E., Chief Engineer, DLNR Engineering Division

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(808) 596-7790 • tlcghawaii.com

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

LINDA ROSEN, M.D., M.P.H.
DIRECTOR OF HEALTH

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

In reply, please refer to:
File:

LUD-1 5 6 001 024 etc Pre Cons EA
Malaekahana Rec Area-ID1844

August 27, 2014

08-29-14P02:48 RCVD

Mr. Dan Quinn, Administrator
Division of State Parks
Department of Land & Natural Resources
State of Hawaii
P O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Quinn:

Subject: Pre-Consultation for the Environmental Assessment
Malaekahana State Recreation Area – Kahuku Section Park Improvements
56-291 Kam Highway, Kahuku, Oahu 96731 TMK (1) 5-6-001: 024, 045, 046, 047, 049, 051, 053, 054, 055, 056, 057, 058, 059, 060, 061, 062 & 063

Thank you for allowing us the opportunity to provide comments on the above subject project. We have the following information to offer.

The subject project is located in the critical wastewater disposal area as determined by the Oahu Wastewater Advisory Committee. We have several individual wastewater systems (IWSs) information on file, such as cesspools and an aerobic treatment unit (ATU). It appears that the area is currently not connected to the City sewer service system.

We have a Sanitary Inspector's Report of Cesspools (cesspool cards) for the following TMKs: (1) 5-6-001: 024, 045, 047, 051, 053 and 055. The existing cesspools are considered "recorded" and approved for use. The ATU for TMK (1) 5-6-001: 051 was approved for use on October 22, 2012.

As the property will be undergoing major improvements, the wastewater systems proposed for the project shall conform to applicable provisions of the Hawaii Administrative Rules, Chapter 11-62, "Wastewater Systems." Please be informed that the design plans should address any effects associated with the construction of and/or discharges from the wastewater systems to any public trust, Native Hawaiian resources or the exercise of traditional cultural practices.

Should you have any questions, please contact Mark Tomomitsu of our branch at 586-4294.

Sincerely,

SINA PRUDER, P.E., CHIEF
Wastewater Branch

LM/MST:lmj

c: Mr. Joe Kwan, P.E., The Limtiaco Consulting Group
Mr. George I. Atta, C&C of Honolulu, Dept. of Planning & Permitting 7th Floor
Ms. Laura McIntyre, DOH-Environmental Planning Office

Dist. ..... Prec't. .....

TERRITORY OF HAWAII
DEPARTMENT OF HEALTH
DIVISION OF SANITATION

FEB 1 1957

San. Form 40

Cert. No. .....

SANITARY INSPECTOR'S REPORT OF CESSPOOLS

5-6-1-24 Date 1/29 1957

Property owner Mary Pflugger Address 56-289 Kam Hwy.

Island Oahu City ..... District Kahuku

New Construction Yes Intended for Dwl.

Builder or Contractor F. Rambaan

Distance from building 10:55 Boundary over 100 ft. Stream or well None

Diameter (clear)-ft. 6 Depth-ft. 10 No. ft. down to water if any None

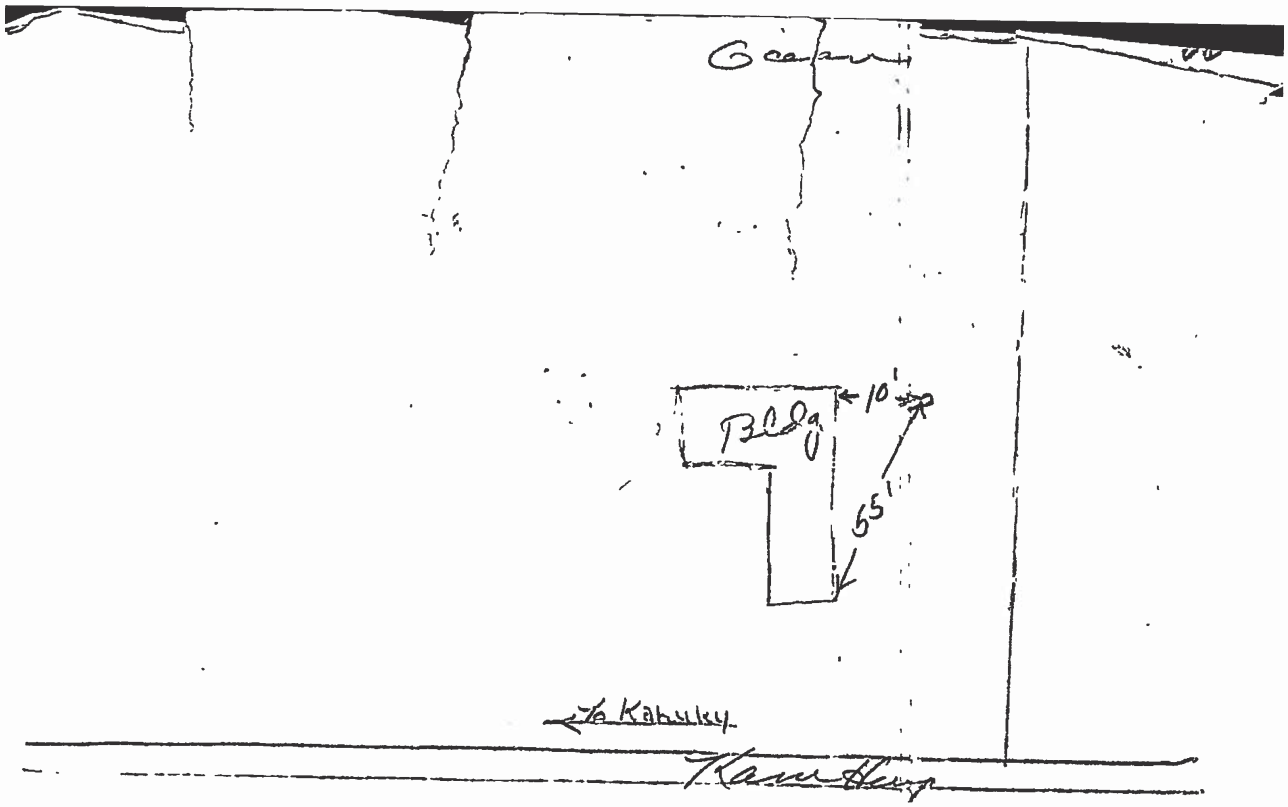
Capacity (Gallons) 2115.10 Ground slope 0-0

State soil or rock formation starting from surface Sand

Kind of wall or curb Tile Kind of cover Concrete

Distance from surface of ground to top of cover-ft. 1 ft.

Approved 1/31 1957 FEB 1 1957 Harry [illegible]
Sanitary Inspector



Dist. 4 Prec't

TERRITORY OF HAWAII
DEPARTMENT OF HEALTH
DIVISION OF SANITATION

NOV 17 1961
San Form 40

Cert. No. (4)

SANITARY INSPECTOR'S REPORT OF CESSPOOLS

56-295 Date 7-25-61 19

Property owner John (Pretsch) Address Kam Hwy TK 5-6-01-45

Island Oahu City Hon District Kahuku

New Construction Yes Intended for dw

Builder or Contractor Kahuku Sug Co

Distance from building 30 Boundary 30 Stream or well over 250'

Diameter (clear)-ft. 6' Depth-ft. 12' No. ft. down to water if any. Dry

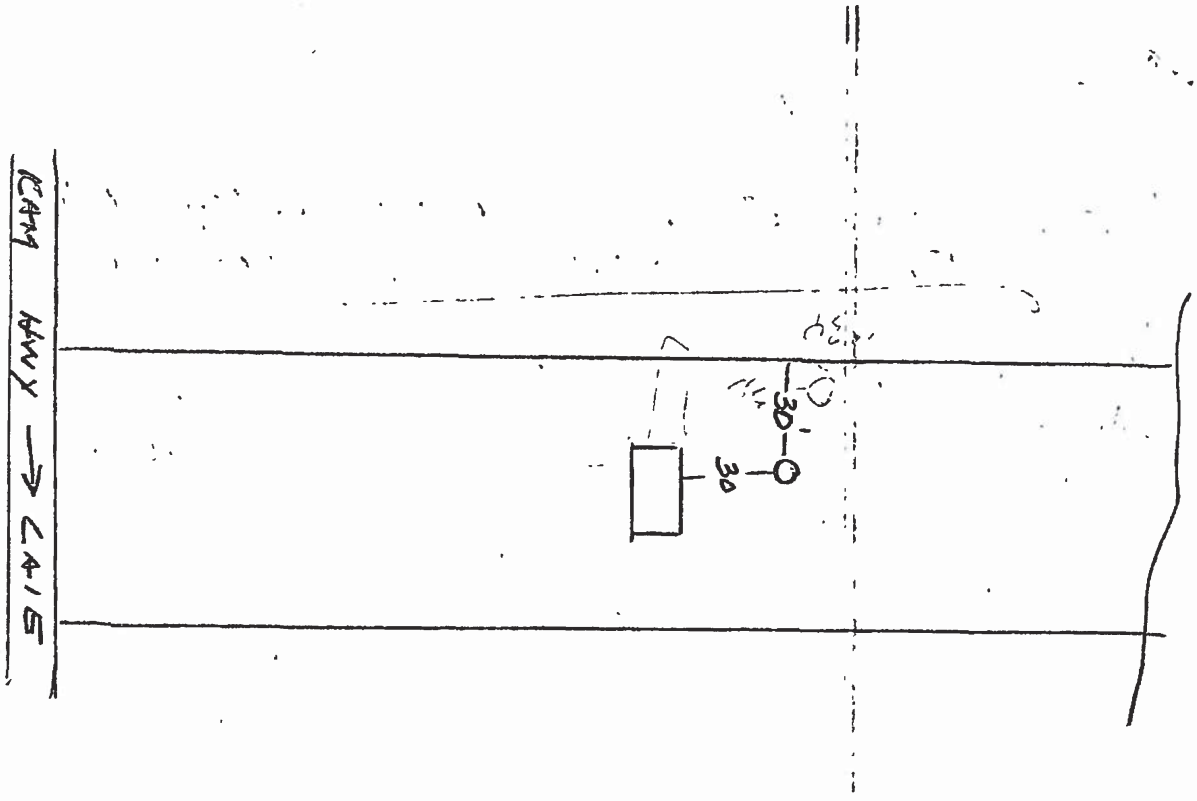
Capacity (Gallons) Ground slope Level

State soil or rock formation starting from surface All Sand

Kind of wall or curb Precast Cone Ring Kind of cover Precast cover

Distance from surface of ground to top of cover-ft. 1'

Approved 11-16-61 19 K Habe
Sanitary Inspector



STATE OF HAWAII
DEPARTMENT OF HEALTH

Oil Recirculating Waterless Toilet system

NOV - 6 1978

SANITATION BRANCH
ENVIRONMENTAL PROTECTION AND HEALTH SERVICES DIVISION

~~CESSPOOL~~ SURVEY 56-295 Kam Hwy

Property Owner Malae kahana State Park Address Malae kahana

Tax Map Key 5-6-1-45-7 Lot No

Island Oahu City Hon District Malae Kahana

Builder or Contractor State of Hawaii Intended For Rest rooms

Primary N/A Secondary N/A Other two holding tanks

Distance From Building 42' Boundary - Stream, Well, Body of Water, Etc 50'+

Diameter (Clear) Ft. N/A Depth-Ft N/A Capacity (Gal.) 2 x (1000)

No Ft Down to Water Table N/A Ground Slope 0°

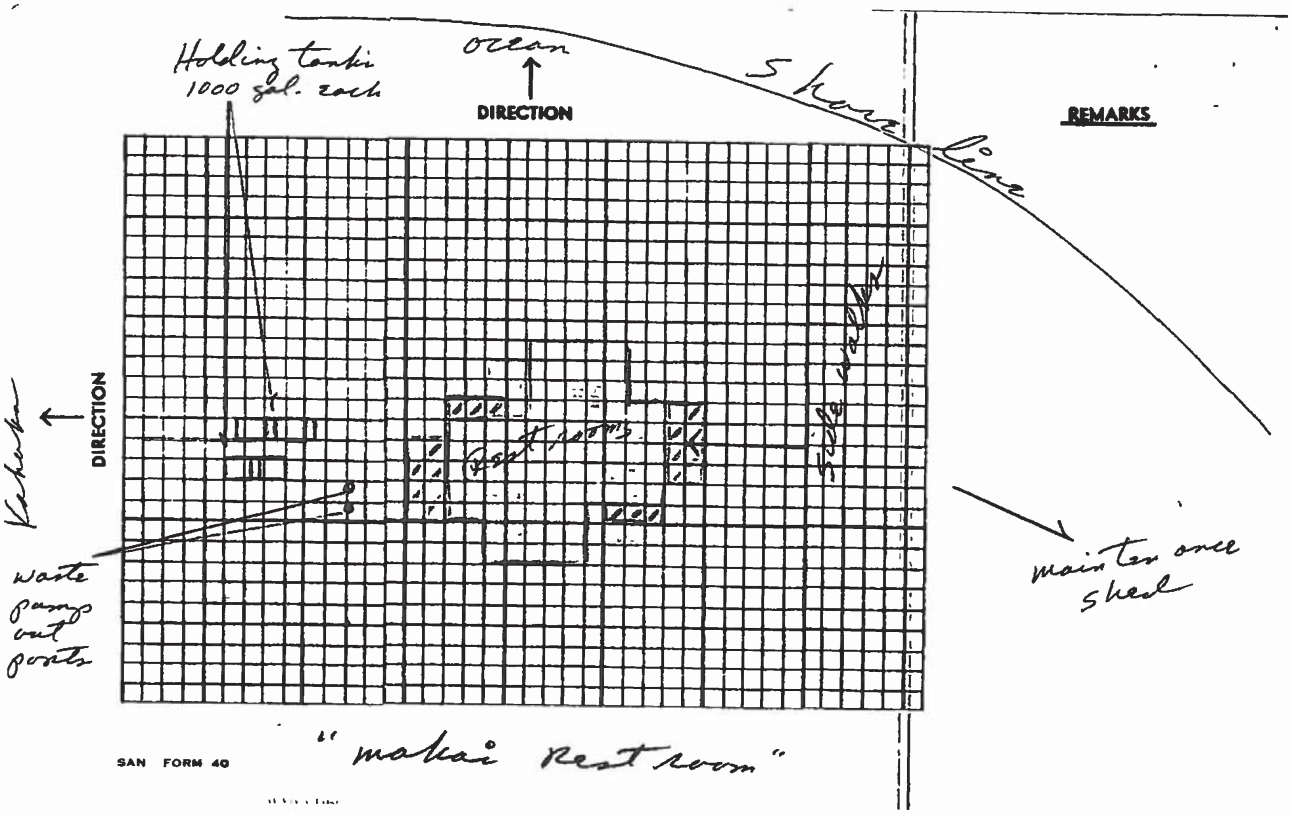
Soil Profile (Starting from Surface) (SAND) N/A

Type of Wall or Curb fiber glass Reinforced Concrete Cover N/A

Distance from Finished Ground to Top of Cover (Ft) ground level

Date Certificate Issued 4 Oct 78

Date Approved 19 S Nakahara
Sanitarian



SAN FORM 40

STATE OF HAWAII
DEPARTMENT OF HEALTH

Oil Recirculating Waterless Toilet System

~~CESSPOOL SURVEY~~

SANITATION BRANCH
ENVIRONMENTAL PROTECTION AND HEALTH SERVICES DIVISION

NOV - 6 1978

56-295 Kam Hwy

Property Owner Malae Kahana State Park Address Malae Kahana

Tax Map Key 5-6-1-45-7 Lot No.

Island Oahu City Hon District Malae Kahana

Builder or Contractor State of Hawaii Intended For Rest rooms

Primary N/A Secondary N/A Other Holding tanks (2)

Distance From Building 11.5' Boundary — Stream, Well, Body of Water, Etc 50'+

Diameter (Clear) Ft N/A Depth-Ft N/A Capacity (Gal) 2 (1000)

No Ft Down to Water Table N/A Ground Slope 0°

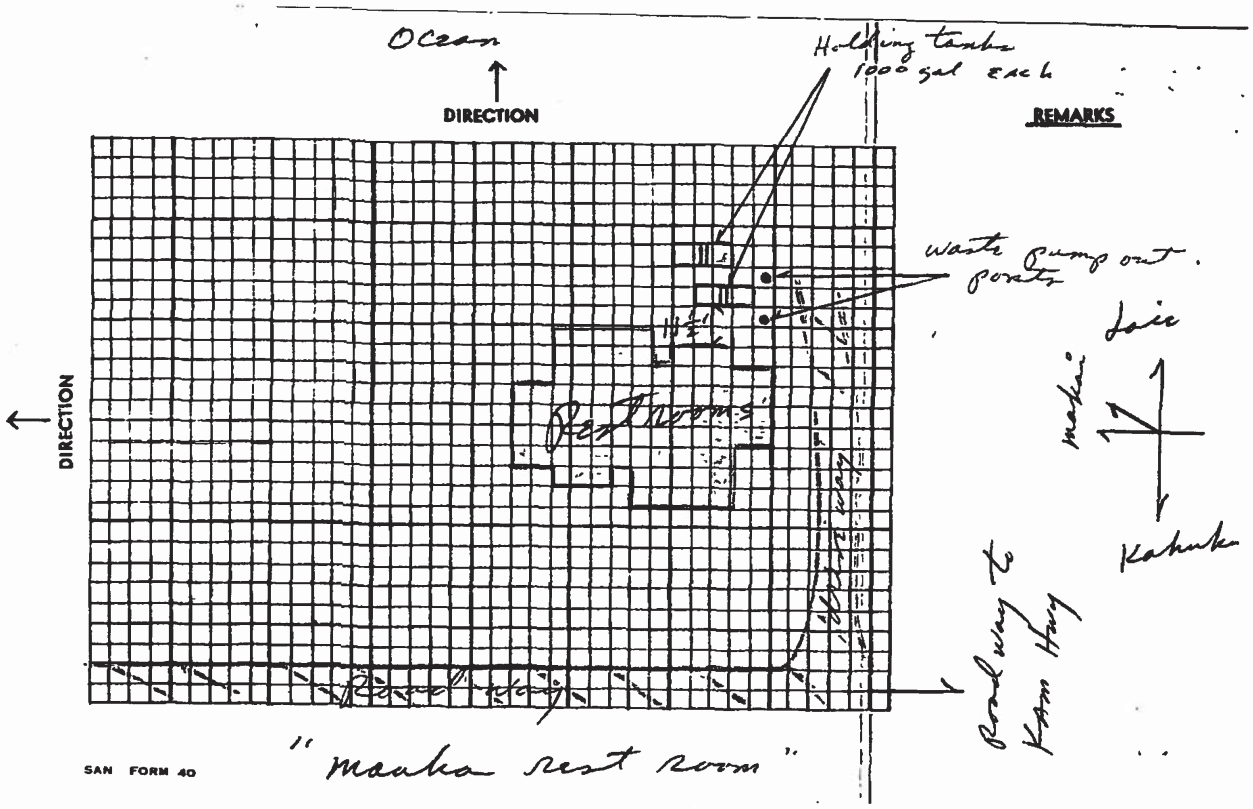
Soil Profile (Starting from Surface) (SAND) N/A

Type of Wall or Curb fiberglass Reinforced Concrete Cover N/A

Distance from Finished Ground to Top of Cover (Ft) ground level

Date Certificate Issued 4 oct 78

Date Approved 19 [signature]
Sanitarian



SAN FORM 40

Dist..... Prec't.....

TERRITORY OF HAWAII
DEPARTMENT OF HEALTH
DIVISION OF SANITATION

FEB 10 1958

San. Form 40

Cert. No. 9

SANITARY INSPECTOR'S REPORT OF CESSPOOLS

Date 5 Feb 4 1958

Property owner Stan Taylor 56-349 AP B1 Address 5-6-01-47 Kam Hwy

Island Oahu City Honolulu District Malae Kahana (Kahuku)

New Construction Yes Intended for Residence

Builder or Contractor Price Concrete Tank Co

Distance from building 14 Boundary 70 + 75 Stream ~~or well~~ 80'

Diameter (clear)-ft. 6 Depth-ft. 10 No. ft. down to water if any 5

Capacity (Gallons) 2113 Ground slope level

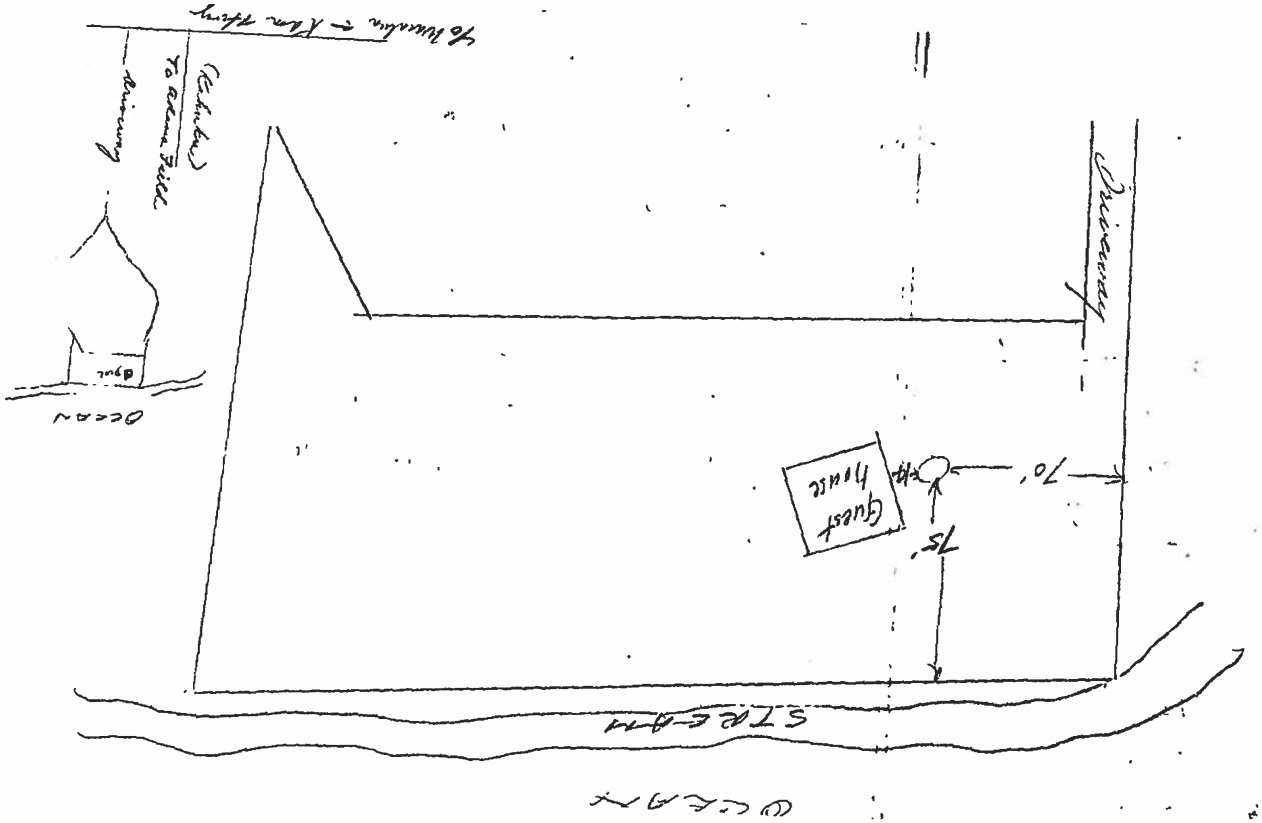
State soil or rock formation starting from surface 5 ft hard porous coral
5 ft soft coral (loose)

Kind of wall or curb precast rings Kind of cover precast cover

Distance from surface of ground to top of cover-ft. ~~4~~ ft

Approved 2/7 1958

K. Y. Ohing
Sanitary Inspector



SAN FORM 40

FHA _____

STATE OF HAWAII
DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH DIVISION
SANITARIAN'S REPORT OF CESSPOOLS

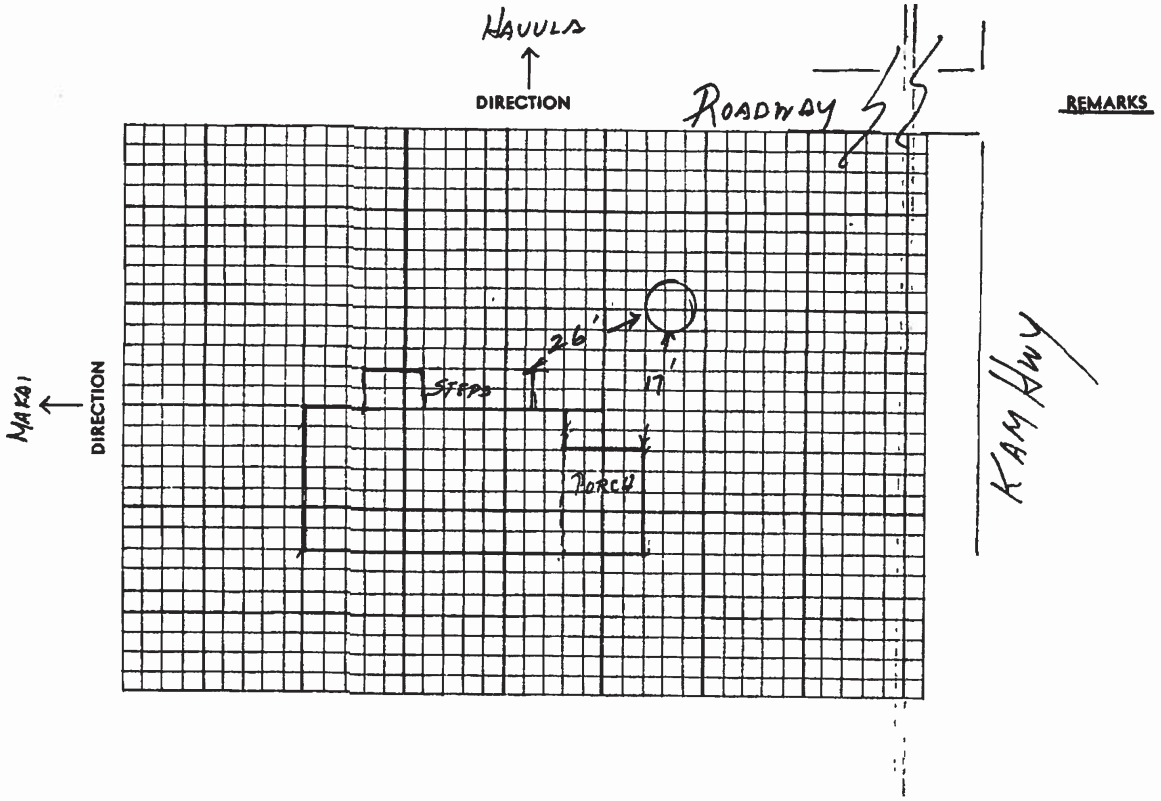
5-6-1-47

Cert No JUN 22 1972
Issued _____
Date 6/8 19 72

Property owner J REYNOLDS Address 56-347 KAM Hwy
Island OAHU City HONOLULU District KAHUKU
Builder or Contractor ROLAND CHAR Intended for DWELLING
Primary YES Secondary — Seepage —
Distances from building 17'-36' Boundary — Stream, well, body or water, etc. 50'

Dia. (clear)-ft 6' Depth-ft 10' Capacity (Gal) 2115.10 No ft down to water 5'
Ground slope 0-0 State soil or rock formation starting from surface
2' SANDY LOAM, 5' SANDY SILT & CORAL, 3' CORAL

Kind of wall or curb 8" TILE Reinforced concrete cover YES
Distance from surface of ground to top of cover-ft. 10"
Approved 6/16 19 72 W. Isaki Kawa
SANITARIAN



SAN FORM 40

FHA —

STATE OF HAWAII
DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH DIVISION
SANITARIAN'S REPORT OF CESSPOOLS

Cert No AUG 8 1972
Issued

5-6-1-47 (66) Date 7/3 19 72

Property owner CLARK REYNOLDS Address 56 349A KAM HWY

Island OAHU City HONOLULU District KAHUKU

Builder or Contractor ROLAND CHAR Intended for DWELLING

Primary YES Secondary — Seepage —

Distances from building 14'-16' Boundary — Stream, well, body or water, etc 160'

Dia. (clear)-ft. 6' Depth-ft 11' Capacity (Gal) ~~2326.6~~ No ft. down to water 8'

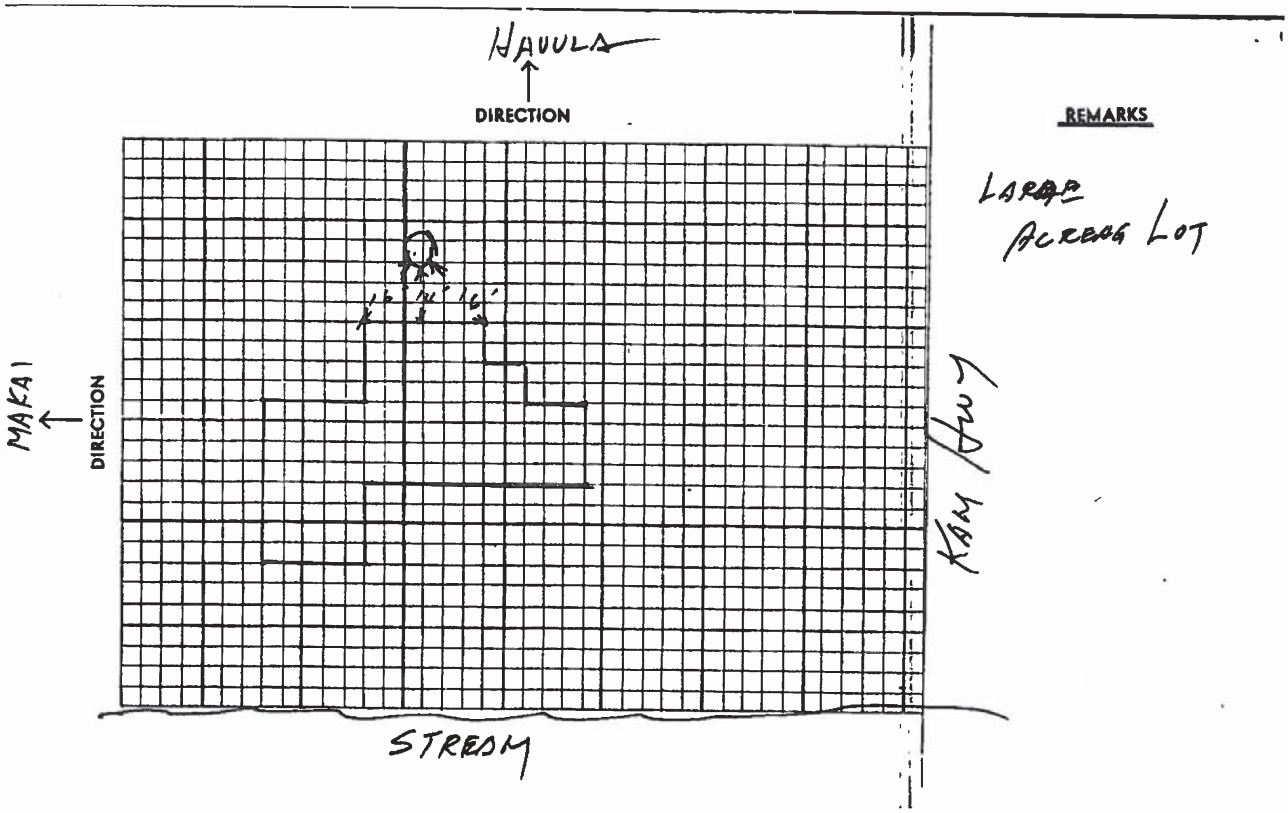
Ground slope 0-0 State soil or rock formation starting from surface

7' SAND, 4' MIXTURE OF CORAL & SAND

Kind of wall or curb 8" TILE Reinforced concrete cover YES

Distance from surface of ground to top of cover-ft 1FT

Approved 7/3 19 72 W. Ishikawa
SANITARIAN



pumping (1 cp.)

FHA

SAN FORM 40

Cert. No SEP 8 1972

Issued

Date 8/31 19 72

STATE OF HAWAII
DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH DIVISION
SANITARIAN'S REPORT OF CESSPOOLS

TMK 5-6-1-51

Property owner ALAN BEALL Address 56-335 Kam Hwy

Island OAHU City HONOLULU District KAHUKU

Builder or Contractor ROLAND CHAR Intended for DWELLING

Primary YES Secondary — Seepage —

Distances from building 13-10 Boundary — Stream, well, body or water, etc 100'+

Dia (clear)-ft 6' Depth-ft 10 Capacity (Gal) 2115.10 No ft down to water 5'

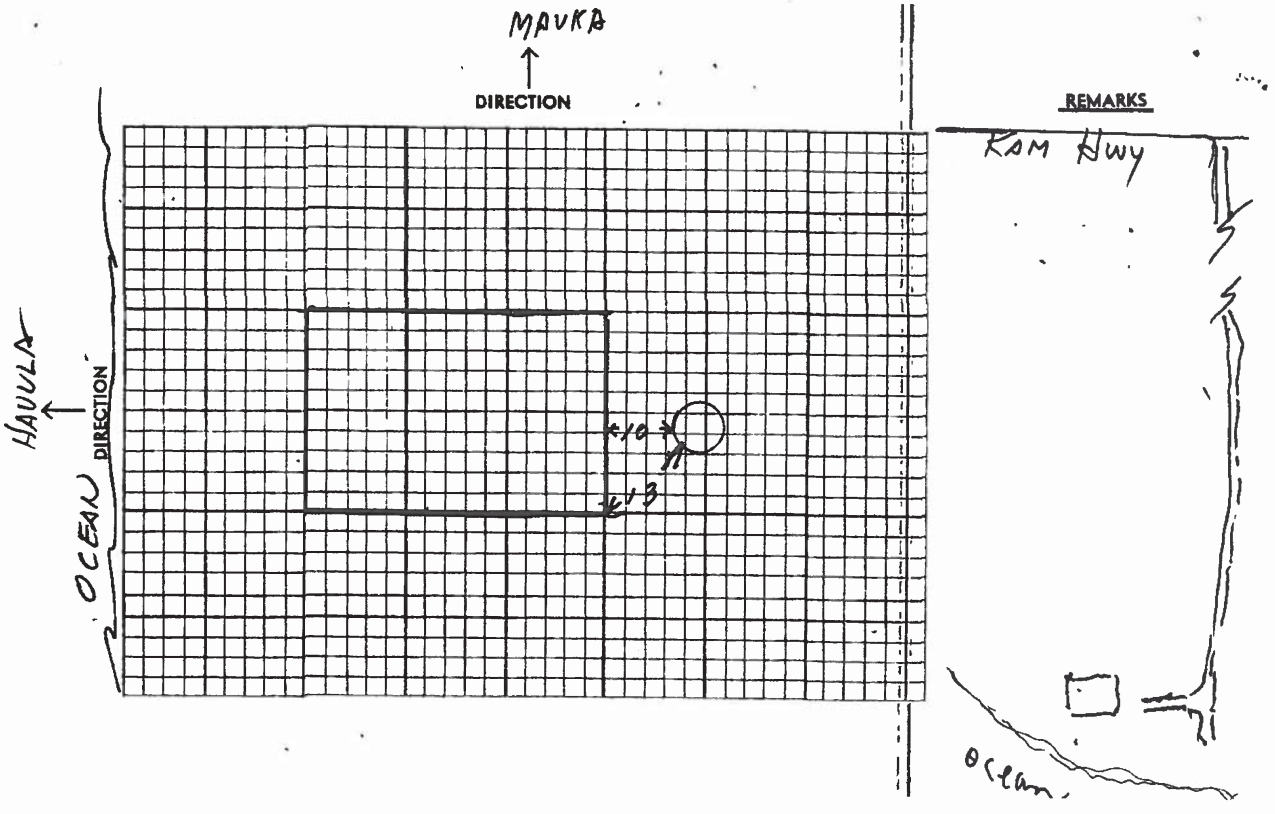
Ground slope 0-0 State soil or rock formation starting from surface

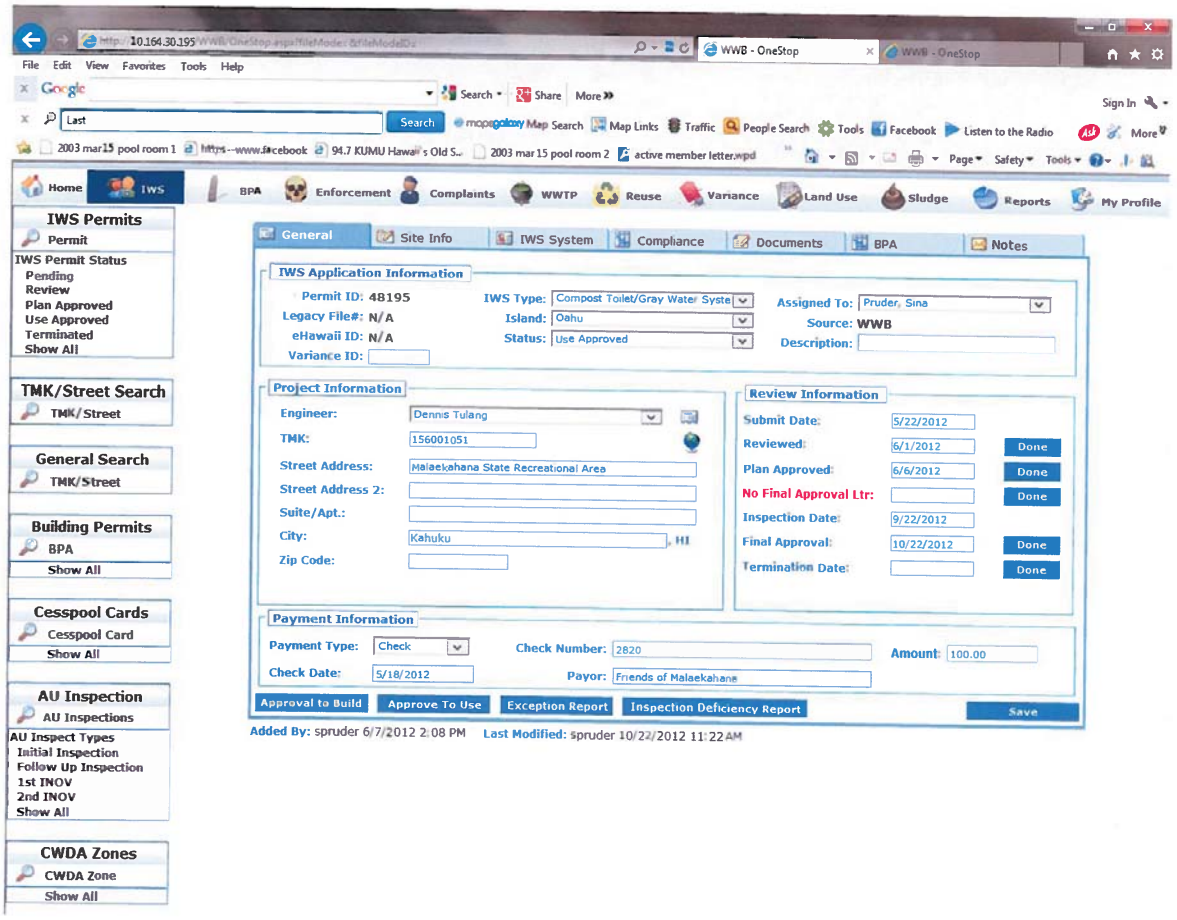
10' MIXTURE OF FINGER CORAL & SAND

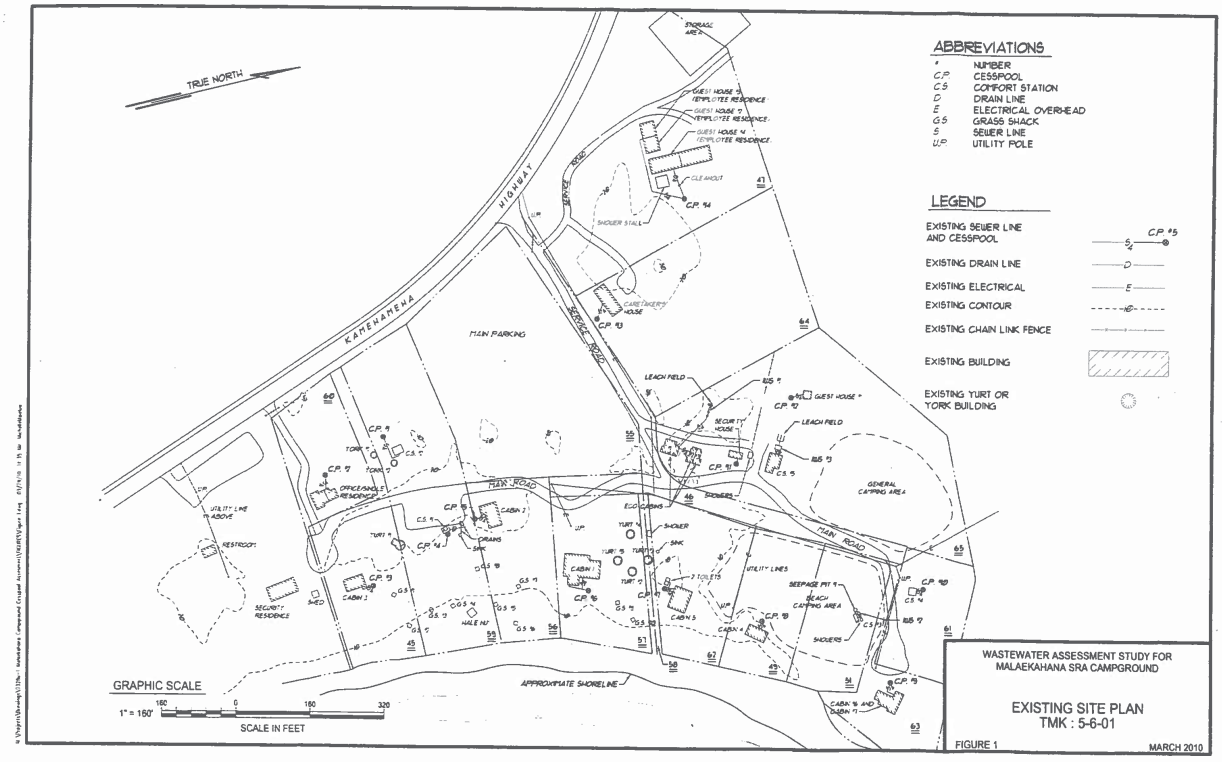
Kind of wall or curb 8" TILE Reinforced concrete cover YES

Distance from surface of ground to top of cover-ft. FLUSH TO GROUND — MOUNDED

Approved 9/7 19 72 W. Ishitani
SANITARIAN




WWB - OneStop
Home
IWS
BPA
Enforcement
Complaints
WWTP
Reuse
Variance
Land Use
Sludge
Reports
My Profile
IWS Permits
Permit
IWS Permit Status
Pending
Review
Plan Approved
Use Approved
Terminated
Show All
TMK/Street Search
TMK/Street
General Search
TMK/Street
Building Permits
BPA
Show All
Cesspool Cards
Cesspool Card
Show All
AU Inspection
AU Inspections
AU Inspect Types
Initial Inspection
Follow Up Inspection
1st INOV
2nd INOV
Show All
CWDA Zones
CWDA Zone
Show All
General
Site Info
IWS System
Compliance
Documents
BPA
Notes
IWS Application Information
Permit ID: 48195
Legacy File#: N/A
eHawaii ID: N/A
Variance ID:
IWS Type: Compost Toilet/Gray Water Syste
Island: Oahu
Status: Use Approved
Assigned To: Pruder, Sina
Source: WWB
Description:
Project Information
Engineer: Dennis Tulang
TMK: 156001051
Street Address: Malaekahana State Recreational Area
Street Address 2:
Suite/Apt.:
City: Kahuku, HI
Zip Code:
Review Information
Submit Date: 5/22/2012
Reviewed: 6/1/2012 Done
Plan Approved: 6/6/2012 Done
No Final Approval Ltr: Done
Inspection Date: 9/22/2012
Final Approval: 10/22/2012 Done
Termination Date: Done
Payment Information
Payment Type: Check
Check Number: 2820
Amount: 100.00
Check Date: 5/18/2012
Payor: Friends of Malaekahana
Approval to Build
Approve To Use
Exception Report
Inspection Deficiency Report
Save
Added By: spruder 6/7/2012 2:08 PM
Last Modified: spruder 10/22/2012 11:22 AM


TRUE NORTH
KAMEHAMEHA HIGHWAY
MAIN PARKING
MAIN ROAD
SERVICE ROAD
LEACH FIELD
GENERAL CAMPING AREA
BEACH CAMPING AREA
APPROXIMATE SHORELINE
ABBREVIATIONS
NUMBER
C.P. CESSPOOL
C.S. COMFORT STATION
D DRAIN LINE
E ELECTRICAL OVERHEAD
G.S. GRASS SHACK
S SEWER LINE
U.P. UTILITY POLE
LEGEND
EXISTING SEWER LINE AND CESSPOOL
EXISTING DRAIN LINE
EXISTING ELECTRICAL
EXISTING CONTOUR
EXISTING CHAIN LINK FENCE
EXISTING BUILDING
EXISTING YURT OR YORK BUILDING
GRAPHIC SCALE
1" = 160'
SCALE IN FEET
WASTEWATER ASSESSMENT STUDY FOR MALAEKAHANA SRA CAMPGROUND
EXISTING SITE PLAN
TMK : 5-6-01
FIGURE 1
MARCH 2010

BWS

FHA _____

DEC 30 1975 SAN FORM 40

Cert No 29 · D 75-1

Issued: _____

Date 29 Dec 19 75

STATE OF HAWAII
DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH DIVISION
SANITARIAN'S REPORT OF CESSPOOLS

5-6-1-53

Property owner B. B. Cassiday Address 56-289 Kam Hwy

Island Oahu City Kaa. District Kahuku

Builder or Contractor Bill Crane Service Intended for residential

Primary ✓ Secondary — Seepage —

Distances from building 22' Boundary 14' Stream, well, body or water, etc. N/A

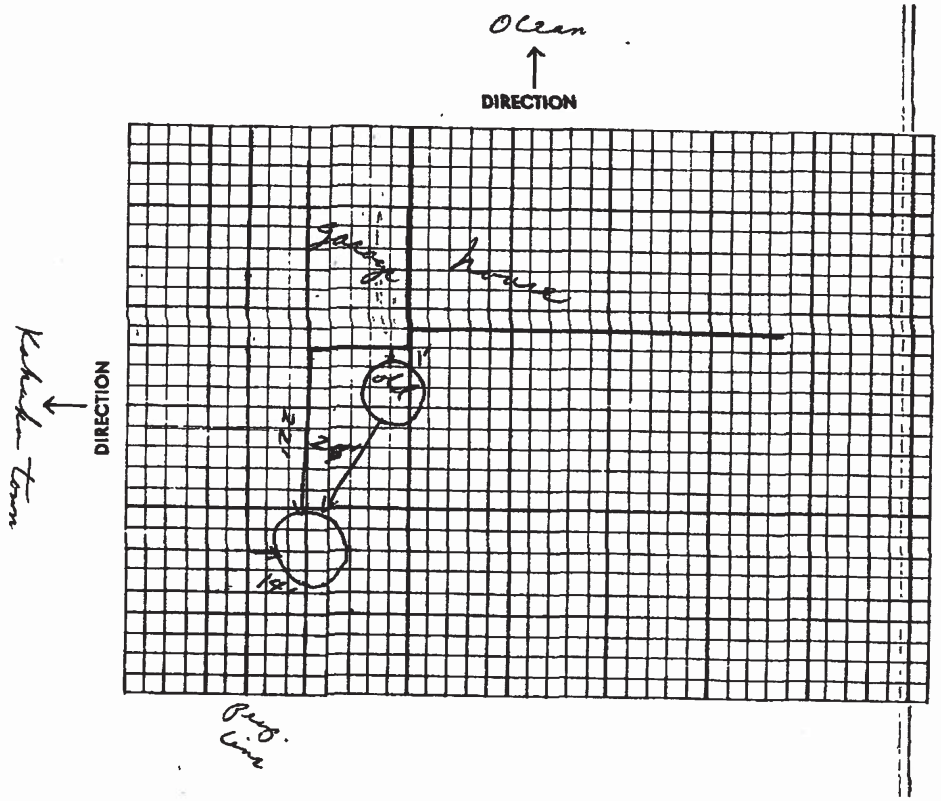
Dia. (clear)-ft. 8' Depth-ft. 10' Capacity (Gal.) 3760.1 No. ft. down to water N/A

Ground slope 10° State soil or rock formation starting from surface 0 - 10'
Sand

Kind of wall or curb hollow tile Reinforced concrete cover 6" concrete

Distance from surface of ground to top of cover-ft. 1'

Approved 29 Dec 19 75 S Nakahara
SANITARIAN



REMARKS

25' - pum to pum
old to new
14' boundry
22' to garage
[1' old cs to garage]

Chemical Tep 92 Cap

Dist. 3 Prec't.

TERRITORY OF HAWAII
DEPARTMENT OF HEALTH
DIVISION OF SANITATION

San. Form 40

Cert. No. 9

SANITARY INSPECTOR'S REPORT OF CESSPOOLS

5-6-1-53 Date 1-26-61 19

Property owner Paul Cassidy Address 56-289 Kam. Hwy

Island Oahu City Hon District Kahuku

New Construction Yes Intended for Dw

Builder or Contractor Far Crane Service

Distance from building 10 Boundary 25 Stream or well —

Diameter (clear)-ft. 6 Depth-ft. 11' No. ft. down to water if any 10'

Capacity (Gallons) 2326 Ground slope Level

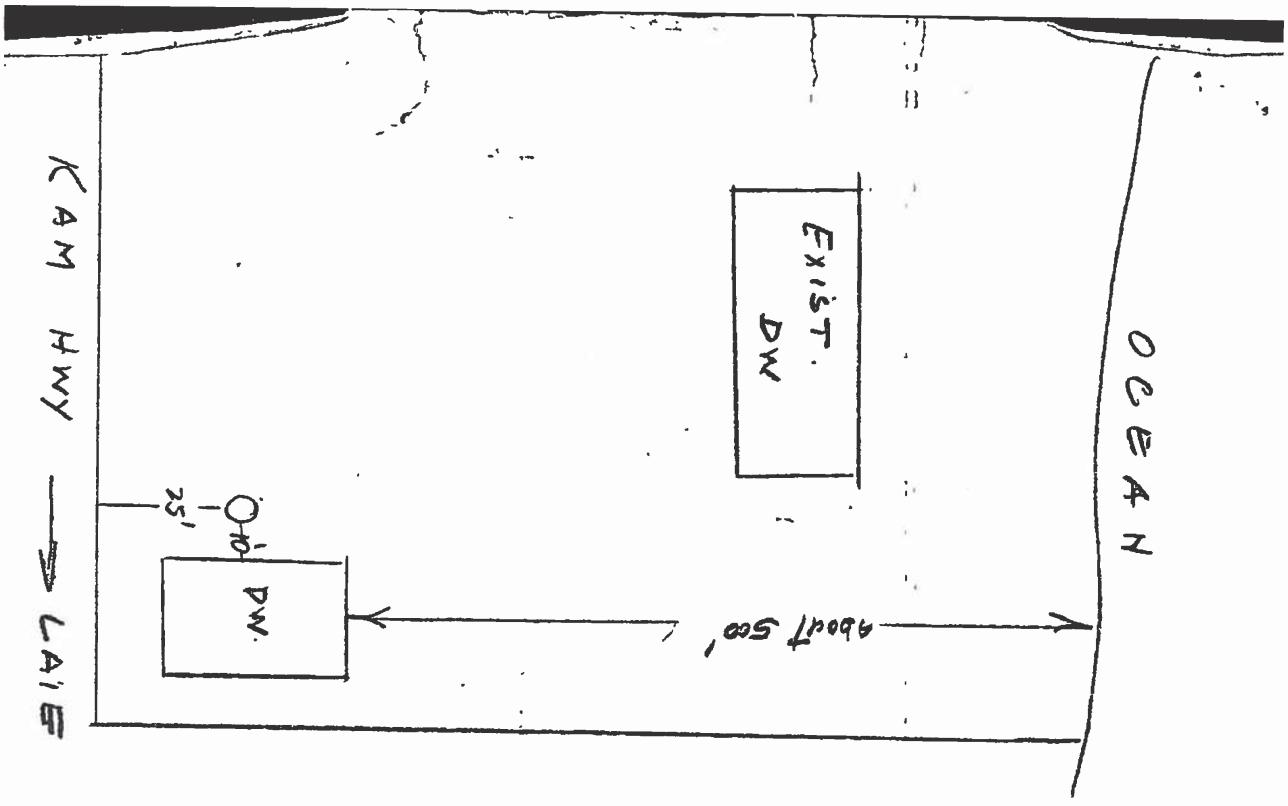
State soil or rock formation starting from surface all Sand

Kind of wall or curb 8" Tile Kind of cover precast concrete

Distance from surface of ground to top of cover-ft. 1'

Approved 1-26-61 19 KHabe

Sanitary Inspector



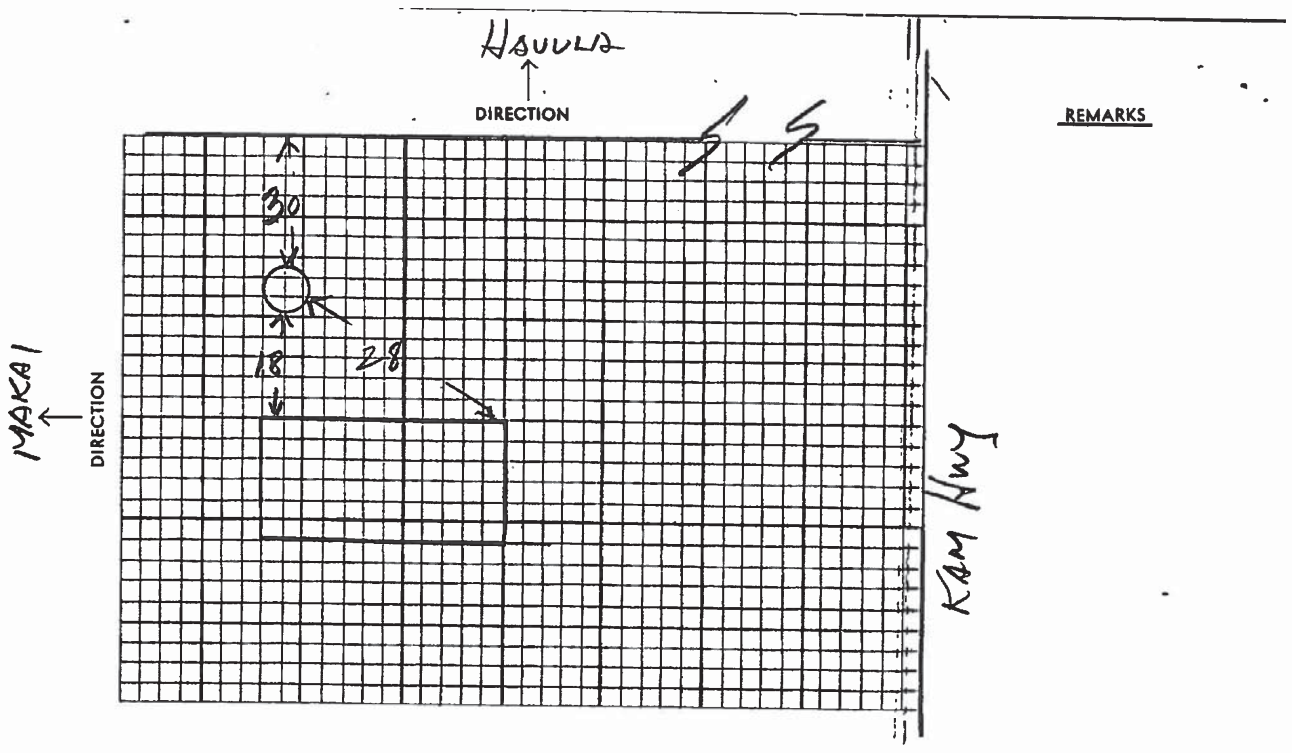
EHA 5-6-1:55

JAN 11 1967 SAN FORM 40

STATE OF HAWAII
DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH DIVISION
SANITARIAN'S REPORT OF CESSPOOLS

Cert No ____
Issued ____
Date 1/5 19 67

Property owner RICHARD KIMBALL Address 56-335 KAMEHAMEHA HWY
Island OAHU City HONO. District KAHUKU
Builder or Contractor ROLAND CHAR Intended for DWELLING
Primary YES Secondary — Seepage —
Distances from building 18'-28' Boundary 30' Stream, well, body or water, etc NONE
Dia (clear)-ft 6 Depth-ft 12 Capacity (Gal) 253.12 No ft down to water NONE
Ground slope 0-0 State soil or rock formation starting from surface ALL SAND.
Kind of well or curb 8" TILE Reinforced concrete cover YES
Distance from surface of ground to top of cover-ft 1FT
Approved 1/5 19 67 W. Dahukawa
SANITARIAN



Dist. 3 Prec't. .....

TERRITORY OF HAWAII
DEPARTMENT OF HEALTH
DIVISION OF SANITATION

OCT 29 1959

San. Form 40

Cert. No.....

SANITARY INSPECTOR'S REPORT OF CESSPOOLS

56-1-55

Date 10-19-59 19.....

Property owner JAMES GLOVER? Address KAHUKU 56-335 KAM HWY LOT 69A

Island OAHU City..... District 3 Kahuku

New Construction NEW DW Intended for HSE SEWER

Builder or Contractor ROYAL DRILLING Co.

Distance from building 15 Boundary 25' Stream or well —

Diameter (clear)-ft. 6' Depth-ft. 12'? No. ft. down to water if any 8'

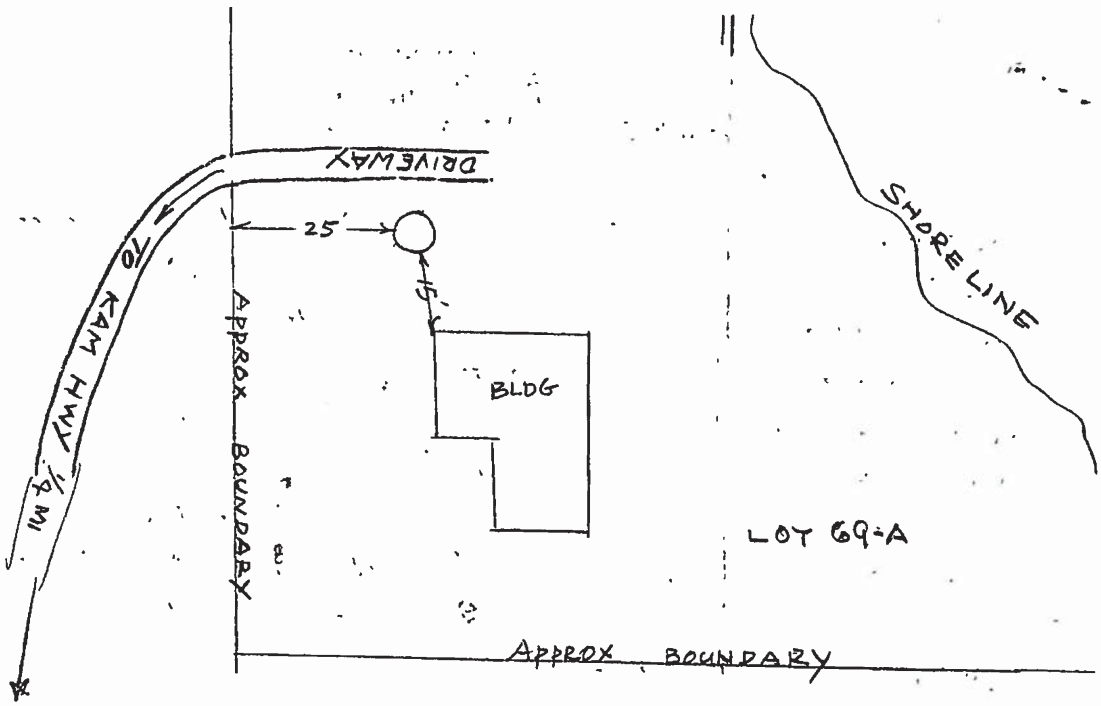
Capacity (Gallons) 2538 Ground slope LEVEL

State soil or rock formation starting from surface 3' SAND 7' CORAL SAND MIXTURE 2' LOOSE CORAL

Kind of wall or curb 8' TILE Kind of cover CONC

Distance from surface of ground to top of cover-ft. 1'

Approved 10-19-59 19..... K. H. ABE
Sanitary Inspector



FHA _____

SAN FORM 40

NOV 1 2 1971

STATE OF HAWAII
DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH DIVISION
SANITARIAN'S REPORT OF CESSPOOLS

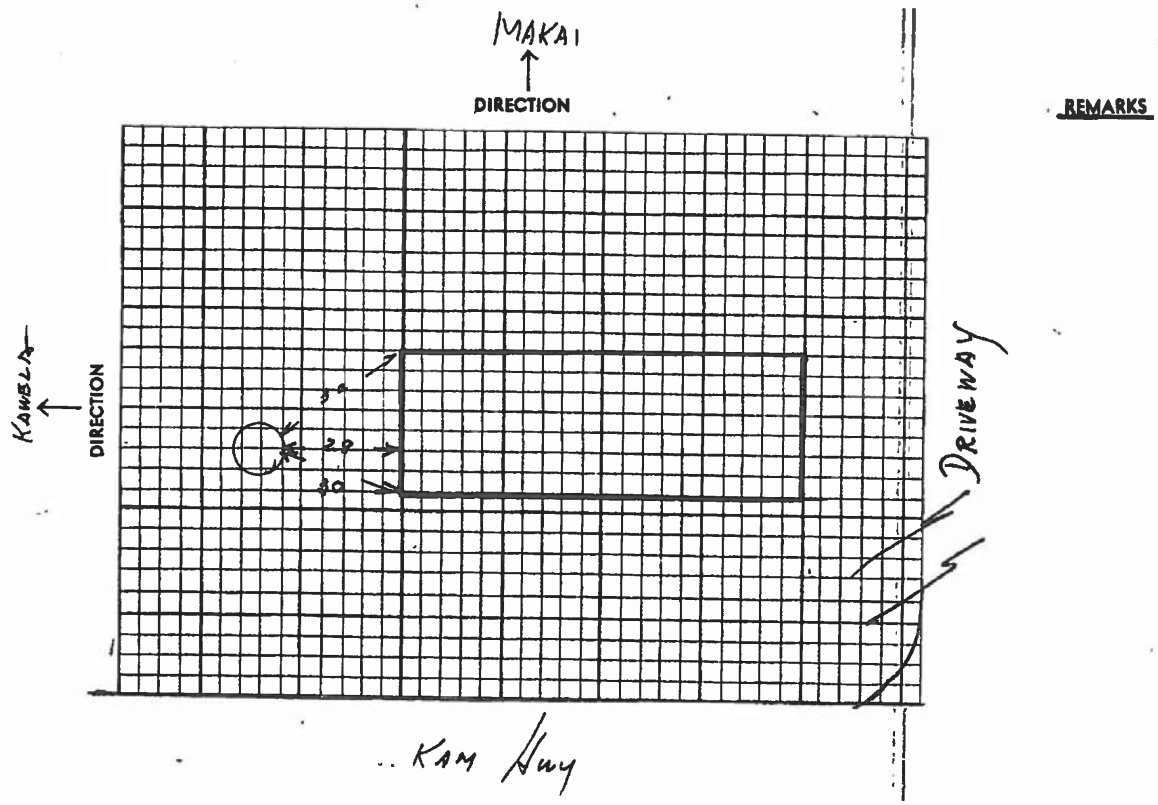
5-6-1-55

Cert No _____
Issued _____
Date 10/28 19 71

Property owner STEPHEN HERBERT Address 56-335 KAM Hwy
Island OAHU City HONOLULU District KAHUKU
Builder or Contractor BILL'S CRANE SERVICE Intended for DWELLING
Primary YES Secondary — Seepage —
Distances from building 28-30' Boundary — Stream, well, body or water, etc NONE

Dia. (clear)-ft 6 Depth-ft 15 Capacity (Gal) 3172.65 No ft down to water 12'
Ground slope 0-0 State soil or rock formation starting from surface
12' SAND, 3' MIXTURE SAND CORAL

Kind of wall or curb 8" TILE Reinforced concrete cover YES
Distance from surface of ground to top of cover-ft 1 FT
Approved 11/1 19 71 W. Ishikawa
SANITARIAN



THE LIMTIACO CONSULTING GROUP
CIVIL ENGINEERING AND ENVIRONMENTAL CONSULTANTS

April 8, 2016

Mr. Russell Y. Tsuji, Land Administrator
State of Hawaii
Department of Land and Natural Resources
Land Division
P.O. Box 621
Honolulu, Hawaii 96809

Subject: Response to Pre-Assessment Consultation for the Environmental Assessment for Malaekahana State Recreation Area - Kahuku Section Park Improvements, Laie, Island of Oahu, Hawaii

Dear Mr. Tsuji:

Thank you for your letter dated 09/04/14 regarding pre-assessment consultation for the Environmental Assessment (EA). We acknowledge that the Department of Land and Natural Resources (DLNR) Land Division - Oahu District provided no comments, the Division of Forestry and Wildlife indicated that it has no objections, the Engineering Division provided a copy of the Flood Hazard Assessment Report, and the Division of State Parks provided a statement of support for the improvements and long-term lease.

The Draft EA will include the following statement from the Division of Aquatic Resources (Ref. DAR #5008, letter dated 8/26/2014): *the project is not expected to have any significant impact on the aquatic resource values in these areas*. We further acknowledge the suggested mitigation measures and best management practices for minimizing erosion, siltation and pollution of the aquatic environment during demolition activities and the closing of cesspools.

The Draft EA is anticipated to be available for public review in April 2016 and we look forward to your department's continued participation in the environmental review process. If you have any questions, please do not hesitate to contact me at 596-7790.

Sincerely,
The Limtiaco Consulting Group, Inc.

Joe Kwan, P.E.
Project Manager

cc: Carty Chang, P.E., Chief Engineer, DLNR Engineering Division

1622 Kanakanui Street • Honolulu, Hawaii 96817
(808) 596-7790 • tlcghawaii.com

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

September 4, 2014

Dan Quinn, Administrator
DLNR, Division of State Parks
P. O. Box 621
Honolulu, HI 96809

via email: Dan.Quinn@hawaii.gov

Dear Mr. Quinn,

SUBJECT: Pre-Consultation for the Environmental Assessment, Malaekahana State Recreation Area - Kahuku Section Park Improvements

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 Aquatic Resources; (3) Engineering Division; (4) Division of Forestry & Wildlife; and (5) Division of State Parks. 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,

Russell Y. Tsuji
Land Administrator

Enclosure(s)

c: Joe Kwan, P.E. via email: joe@tlcghawaii.com
The Limtiaco Consulting Group

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

August 18, 2014

MEMORANDUM

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

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Pre-Consultation for the Environmental Assessment, Malaekahana State Recreation Area – Kahuku Section Park Improvements
LOCATION: Tax Map Keys (1) 5-6-001: 024, 045 to 047, 049, 051, and 053 to 065; Laie, Oahu, Hawaii
APPLICANT: State of Hawaii, Department of Land and Natural Resources, Division of State Parks, by its consultant, The Limtiaco Consulting Group

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

Please submit any comments by September 3, 2014. 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: 8/20/14

BL

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

RECEIVED
LAND DIVISION
2014 AUG 28 PM 2:51
DEPT. OF LAND & NATURAL RESOURCES
STATE 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

RECEIVED
AUG 21 2014
AQUATIC RESOURCES

DAR #5008

August 18, 2014

MEMORANDUM

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

JK
GH

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Pre-Consultation for the Environmental Assessment, Malaekahana State Recreation Area – Kahuku Section Park Improvements
LOCATION: Tax Map Keys (1) 5-6-001: 024, 045 to 047, 049, 051, and 053 to 065; Laie, Oahu, Hawaii
APPLICANT: State of Hawaii, Department of Land and Natural Resources, Division of State Parks, by its consultant, The Limtiaco Consulting Group

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

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Attachments

( ) We have no objections.
( ) We have no comments.
(x) Comments are attached.

Signed: _____
Print Name: Frazer McGilvray
Date: AUG 26 2014

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

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

JESSE K. SOUKI
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
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

Date: August 26, 2014
DAR # 5008

AUG 2 6 2014

MEMORANDUM

TO: Frazer McGilvray, Administrator
FROM: Glenn R. Higashi, Aquatic Biologist GRH
SUBJECT: Pre-Consultation for Environmental Assessment

Comment	Date Request	Receipt	Referral	Due Date
	8-18-14	8-21-14	8-25-14	9-3-14

Requested by: Russell Y. Tsuji, Administrator
Land Division

Summary of Proposed Project

Title: Pre-Consultation for the Environmental Assessment, Malaekahana State Recreation Area - Kahuku Section Park Improvements

Project by: State of Hawaii, Department of Land and Natural Resources, Division of State Parks, by its consultant, The Limtiaco Consulting Group

Location: Tax Map Keys (1) 5-6-001: 024, 045 to 47, 049, 051, and 053 to 065; Laie, Oahu, Hawaii

Brief Description:
The State of Hawaii, Department of Land and Natural Resources (DLNR) is proposing to improve the 36-acre portion of the Malaekahana State Recreation Area – Kahuku Section, currently operated by the "Friends of Malaekahana. The project site consists of the shoreline area along the northern endd of Malaekahana Bay, and is owned by DLNR, Division of State Parks. The remaining portion of the project is maintained by State Parks and utilized by the public for daytime outdoor recreational activities and beach access.

The proposed project involves the demolition and removal of 8 severely deteriorated building structures. In addition, the cesspools servicing these structures will be filled and closed in compliance with current rules and regulations administered by the State Department of Health.

This project would improve this park section for continued recreational use including camping, lodging and day use activities. The project includes the replacement of the administration office, a security office and seven (7) cabins along with related improvements. The structure and associated infrastructure would be sited to optimize the functionality and spatial aesthetics of the park. Proposed park improvements may be phased due to cost and available funding options.

Comments:
The proposed project is not expected to have any significant impact on the aquatic resource values in these areas.

Mitigative measures and BMPs should be implemented during the demolition and removal of the deteriorated structures and closing of the cesspools to minimize the potential for erosion, siltation and pollution of the aquatic environment.

1) The area of the cleared structures should be planted or covered as quickly as possible to prevent erosion;
2) Scheduling site work during periods of minimal rainfall; and,
3) Prevent petroleum products from the mechanized equipment, debris, and soil from falling, blowing or leaching into the aquatic environment.

Thank you for providing DAR the opportunity to review and comment on the proposed project. Should there be any changes to the project plans, DAR requests the opportunity to review and comment on those changes.

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

August 18, 2014

MEMORANDUM

TO: FYI

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

'14 AUG 19 PM 01:49 RECEIVED
LAND DIVISION

2014 SEP -2 PM 2:34
DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

TO:

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Pre-Consultation for the Environmental Assessment, Malaekahana State Recreation Area – Kahuku Section Park Improvements
LOCATION: Tax Map Keys (1) 5-6-001: 024, 045 to 047, 049, 051, and 053 to 065; Laie, Oahu, Hawaii
APPLICANT: State of Hawaii, Department of Land and Natural Resources, Division of State Parks, by its consultant, The Limtiaco Consulting Group

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

Please submit any comments by September 3, 2014. 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: Carty S. Chang, Chief Engineer
Date: 9/2/14

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/ Russell Y. Tsuji
Ref.: Pre-Consultation for the EA for Proposed Malaekahana SRA (Kahuku Section) Park Improvements, Laie
Oahu.047

COMMENTS

( ) We confirm that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone ___.

(X) Please take note that the project site according to the Flood Insurance Rate Map (FIRM), is located in Zones AE, AEF, VE, and X. The National Flood Insurance Program regulates developments within Zones AE, AEF, and VE as indicated in bold letters below, but not Zone X.

( ) Please note that the correct Flood Zone Designation for the project site according to the Flood Insurance Rate Map (FIRM) is ___.

(X) Please note that the project must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), whenever development within a Special Flood Hazard Area is undertaken. If there are any questions, please contact the State NFIP Coordinator, Ms. Carol Tyau-Beam, of the Department of Land and Natural Resources, Engineering Division at (808) 587-0267.

Please be advised that 44CFR indicates the minimum standards set forth by the NFIP. Your Community's local flood ordinance may prove to be more restrictive and thus take precedence over the minimum NFIP standards. If there are questions regarding the local flood ordinances, please contact the applicable County NFIP Coordinators below:

(X) Mr. Mario Siu Li at (808) 768-8098 of the City and County of Honolulu, Department of Planning and Permitting.
( ) Mr. Frank DeMarco at (808) 961-8042 of the County of Hawaii, Department of Public Works.
( ) Mr. Carolyn Cortez at (808) 270-7253 of the County of Maui, Department of Planning
( ) Mr. Stanford Iwamoto at (808) 241-4846 of the County of Kauai, Department of Public Works.

( ) The applicant should include project water demands and infrastructure required to meet water demands. Please note that the implementation of any State-sponsored projects requiring water service from the Honolulu Board of Water Supply system must first obtain water allocation credits from the Engineering Division before it can receive a building permit and/or water meter.

( ) The applicant should provide the water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update.

( ) Additional Comments: _____

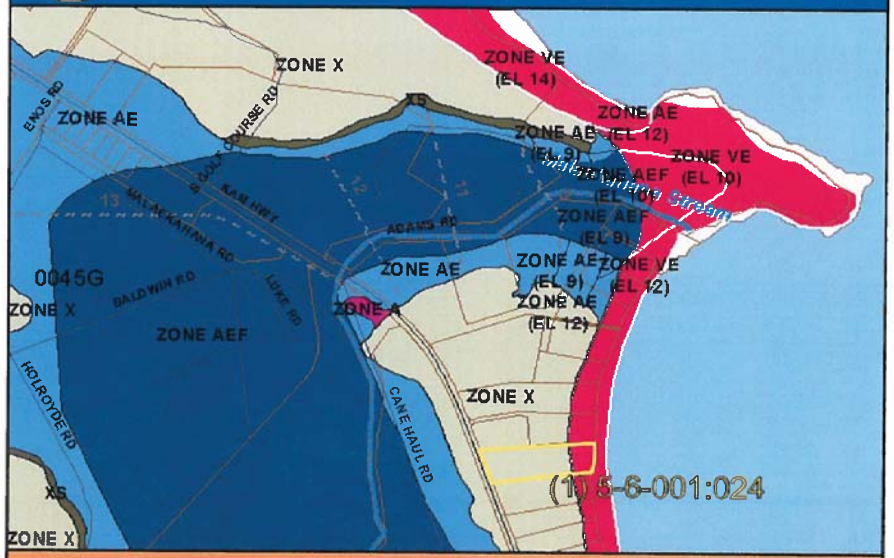
( ) Other: _____

Should you have any questions, please call Mr. Dennis Imada of the Planning Branch at 587-0257.

Signed: _____
CARTY S. CHANG, CHIEF ENGINEER
Date: 9/2/14

State of Hawaii

FLOOD HAZARD ASSESSMENT REPORT



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD ZONE DEFINITIONS

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD – The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zone A, AE, AH, AO, V, and VE. The Base Flood Elevation (BFE) is the water-surface elevation of the 1% annual chance flood. Mandatory flood insurance purchase applies in these zones:

- **Zone A:** No BFE determined.
- **Zone AE:** BFE determined.
- **Zone AH:** Flood depths of 1 to 3 feet (usually areas of ponding); BFE determined.
- **Zone AO:** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined.
- **Zone V:** Coastal flood zone with velocity hazard (wave action); no BFE determined.
- **Zone VE:** Coastal flood zone with velocity hazard (wave action); BFE determined.
- **Zone AEF:** Floodway areas in Zone AE. The floodway is the channel of stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without increasing the BFE.

NON-SPECIAL FLOOD HAZARD AREA – An area in a low-to-moderate risk flood zone. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

- **Zone XS (X shaded):** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- **Zone X:** Areas determined to be outside the 0.2% annual chance floodplain.

OTHER FLOOD AREAS

- **Zone D:** Unstudied areas where flood hazards are undetermined, but flooding is possible. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

PROPERTY INFORMATION

COUNTY:	HONOLULU
TMK NO:	(1) 5-6-001-024
PARCEL ADDRESS:	56-291 KAM HWY KAHUKU, HI 96731
FIRM INDEX DATE:	JANUARY 19, 2011
LETTER OF MAP CHANGE(S):	NONE
FEMA FIRM PANEL(S):	15003C0045G
PANEL EFFECTIVE DATE:	JANUARY 19, 2011

PARCEL DATA FROM:	APRIL 2014
IMAGERY DATA FROM:	MAY 2006

IMPORTANT PHONE NUMBERS

County NFIP Coordinator	
City and County of Honolulu	
Mario Siu-Li, CFM	(808) 768-8098
State NFIP Coordinator	
Carol Tyau-Beam, P.E., CFM	(808) 587-0267

Disclaimer: The Department of Land and Natural Resources (DLNR) assumes no responsibility arising from the use of the information contained in this report. Viewers/Users are responsible for verifying the accuracy of the information and agree to indemnify the DLNR from any liability, which may arise from its use.

If this map has been identified as 'PRELIMINARY' or 'UNOFFICIAL', please note that it is being provided for informational purposes and is not to be used for official/legal decisions, regulatory compliance, or flood insurance rating. Contact your county NFIP coordinator for flood zone determinations to be used for compliance with local floodplain management regulations.

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

August 18, 2014

MEMORANDUM

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

RECEIVED
2014 AUG 29 PM 2:50
DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII
LAND DIVISION

FROM: Russell Y. Tsuji, Land Administrator

SUBJECT: Pre-Consultation for the Environmental Assessment, Malaekahana State Recreation Area – Kahuku Section Park Improvements

LOCATION: Tax Map Keys (1) 5-6-001: 024, 045 to 047, 049, 051, and 053 to 065; Laie, Oahu, Hawaii

APPLICANT: State of Hawaii, Department of Land and Natural Resources, Division of State Parks, by its consultant, The Limtiaco Consulting Group

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

Please submit any comments by September 3, 2014. 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: LISA HADWAY
Date: 8/28/14

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

5625

TO:
- ADMINISTRATOR
- ASSISTANT ADMINISTRATO
- ADMINISTRATIVE SERVICES
- DEVELOPMENT BR
- INTERPRETIVE BR
- PLANNING BR
- PROPERTY MGT
- RESOURCE MGT BR
- CLERICAL

FOR:
- CIRC/POST/STAFF RM
- COMMENTS & REC
- DRAFT REPLY
- FILE
- FOLLOW-UP
- INFO
- RUN COPIES
- RUSH DUE
- SEE ME
- FAX/SEND COPY TO

August 18, 2014

MEMORANDUM

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

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Pre-Consultation for the Environmental Assessment, Malaekahana State Recreation Area – Kahuku Section Park Improvements
LOCATION: Tax Map Keys (1) 5-6-001: 024, 045 to 047, 049, 051, and 053 to 065; Laie, Oahu, Hawaii
APPLICANT: State of Hawaii, Department of Land and Natural Resources, Division of State Parks, by its consultant, The Limtiaco Consulting Group

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

Please submit any comments by September 3, 2014. 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: CARTY A COTTREL
Date: 9.3.14

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

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

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

JESSE K. SOUKI
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
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

September 3, 2014

MEMORANDUM

TO: Russell Y. Tsuji, Administrator
Land Division

FROM: Daniel S. Quinn, Administrator
Division of State Parks

SUBJECT: Pre-Consultation for the Environmental Assessment, Malaekahana State Recreation Area – Kahuku Section Improvements TMK's: (1) 5-6-001:24,45-47,49-51 and 53-65, Lā'ie, O'ahu, Hawaii

APPLICANT: State of Hawai'i, Department of Land and Natural Resources, Division of State Parks by its consultant, Limtiaco Consulting Group

We have reviewed the Pre-Consultation letter dated August 14, 2014, sent on behalf of the Division of State Parks by the Limtiaco Consulting Group and agree with and support the improvements and long-term lease proposed in the Environmental Assessment for the park.

If you have any questions, please contact Russell Kumabe, Development Branch Chief at 587-0300.

THE LIMTIACO CONSULTING GROUP
CIVIL ENGINEERING AND ENVIRONMENTAL CONSULTANTS

April 8, 2016

Mr. Samuel J. Lemmo, Administrator
State of Hawaii
Department of Land and Natural Resources
Office of Conservation and Coastal Lands
P.O. Box 621
Honolulu, Hawaii 96809

Subject: Response to Pre-Assessment Consultation for the Environmental Assessment for Malaekahana State Recreation Area - Kahuku Section Park Improvements, Laie, Island of Oahu, Hawaii
Ref. OCCL:LY; OA 15-34

Dear Mr. Lemmo:

Thank you for your letter dated 09/03/14 regarding pre-assessment consultation for the Environmental Assessment (EA). We acknowledge that the proposed improvements are not located within the Conservation District and your agency has no comments other than to encourage the use of best management practices since the project is adjacent to the shoreline.

The Draft EA is anticipated to be available for public review in April 2016 and we look forward to your department's continued participation in the environmental review process. If you have any questions, please do not hesitate to contact me at 596-7790.

Sincerely,
The Limtiaco Consulting Group, Inc.

Joe Kwan, P.E.
Project Manager

cc: Carty Chang, P.E., Chief Engineer, DLNR Engineering Division

1622 Kanakanui Street • Honolulu, Hawaii 96817
(808) 596-7790 • tlcghawaii.com

NEIL ABERCROMBIE
GOVERNOR OF HAWAI'I

'14 SEP 03 AM 11:09 ENGINEER

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

JESSE K. SOUKI
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
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHO'OLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

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

Ref: OCCL:LY

CORR: OA 15-34

SEP - 3 2014

MEMORANDUM

TO: Daniel Quinn, Administrator
State Parks

and

Carty Chang, Administrator
Engineering Division

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

SUBJECT: Pre-Consultation for the Environmental Assessment for the Mālaekahana State Recreation Area – Kahuku Section Park Improvements

TMK: (1) 5-6-001: 024, 045 to 07, 049, 051, and 053 to 065

LOCATION: Lā'ie, O'ahu, Hawai'i

OCCL has reviewed the subject correspondence and based on the information provided, it appears that the proposed improvements are not located within the Conservation District. OCCL has no comments, but encourages the use of best management practices as the project area is located adjacent to the shoreline.

Should you have any questions regarding this correspondence, please contact Lauren Yasaka of our Office at (808) 587-0386.

THE LIMTIACO CONSULTING GROUP
CIVIL ENGINEERING AND ENVIRONMENTAL CONSULTANTS

April 8, 2016

Ms. Michele K. Nekota, Director
City and County of Honolulu
Department of Parks and Recreation
1001 Uluohia Street, Suite 309
Kapolei, Hawaii 96707

Subject: Response to Pre-Assessment Consultation for the Environmental Assessment for Malaekahana State Recreation Area - Kahuku Section Park Improvements, Laie, Island of Oahu, Hawaii

Dear Ms. Nekota:

Thank you for your letter dated 08/22/14 regarding pre-assessment consultation for the Environmental Assessment (EA). The Draft EA will include the following statement from your letter: *The project will have no impact on any program or facility of the department.* The correspondence indicated that your agency may be removed as a consulted party while the EA is being prepared.

The Draft EA is anticipated to be available for public review in April 2016 and we will not pursue further consultation with your agency for the remainder of the EA process; however, please do not hesitate to contact me at 596-7790 if you have any questions or concerns.

Sincerely,
The Limtiaco Consulting Group, Inc.

Joe Kwan, P.E.
Project Manager

cc: Carty Chang, P.E., Chief Engineer, DLNR Engineering Division

1622 Kanakanui Street • Honolulu, Hawaii 96817
(808) 596-7790 • tlcghawaii.com

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

MICHELE K. NEKOTA
DIRECTOR

JEANNE C. ISHIKAWA
DEPUTY DIRECTOR

14 SEP 15 RCV

August 22, 2014

Mr. Dan Quinn, Administrator
DLNR, Division of State Parks
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Quinn:

SUBJECT: Pre-Consultation for the Environmental Assessment
Malaekahana State Recreation Area-Kahuku Section Park Improvements
Tax Map Keys: (1) 5-6-001: 024, 045 to 047, 049, 051, and 053 to 065
Laie, Oahu Hawaii

Thank you for the opportunity to review and comment at the pre-consultation stage of the Environmental Assessment process for the Malaekahana State Recreation Area-Kahuku Section Park Improvements.

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,

Michele K. Nekota
Director

MKN:jr
(576307)

cc: Joe Kwan P.E., The Limtiaco Consulting Group

THE LIMTIACO CONSULTING GROUP
CIVIL ENGINEERING AND ENVIRONMENTAL CONSULTANTS

April 8, 2016

Mr. Robert J. Kroning, P.E., Director
City and County of Honolulu
Department of Design and Construction
650 South King Street, 11th Floor
Honolulu, Hawaii 96813

Subject: Response to Pre-Assessment Consultation for the Environmental Assessment for Malaekahana State Recreation Area - Kahuku Section Park Improvements, Laie, Island of Oahu, Hawaii

Dear Mr. Kroning:

Thank you for your letter dated 09/03/14 regarding pre-assessment consultation for the Environmental Assessment (EA). We acknowledge that your agency has no comments to offer.

The Draft EA is anticipated to be available for public review in April 2016. If you have any questions, please do not hesitate to contact me at 596-7790.

Sincerely,
The Limtiaco Consulting Group, Inc.

Joe Kwan, P.E.
Project Manager

cc: Carty Chang, P.E., Chief Engineer, DLNR Engineering Division

1622 Kanakanui Street • Honolulu, Hawaii 96817
(808) 596-7790 • tlcghawaii.com

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
Web site: www.honolulu.gov

KIRK CALDWELL
MAYOR

ROBERT J. KRONING, P.E.
DIRECTOR DESIGNATE

MARK YONAMINE, P.E.
DEPUTY DIRECTOR

September 3, 2014

Department of Land and Natural Resources
Division of State Parks
P.O. Box 621
Honolulu, Hawaii 96809

Attn: Dan Quinn

Dear Mr. Quinn:

Subject: Pre-Consultation for Environmental Assessment
Malaekahana State Recreation Area – Kahuku Section Park Improvements
Tax Map Key (1) 5-6-001: 024, 045 to 047, 049, 051, and 053 to 065
Laie, Oahu, Hawaii

The Department of Design and Construction does not have comments to offer on the pre-consultation for environmental assessment.

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

Sincerely,

Robert J. Kroning, P.E.
Director Designate

RK: cf (576116)

cc: The Limtiaco Consulting Group, Joe Kwan ✓

THE LIMTIACO CONSULTING GROUP
CIVIL ENGINEERING AND ENVIRONMENTAL CONSULTANTS

April 8, 2016

Mr. Nolan S. Hirai, P.E., Chief
State of Hawaii Department of Health, Clean Air Branch
P.O. Box 3378
Honolulu, HI 96801-3378

Subject: Response to Pre-Assessment Consultation for the Environmental Assessment for Malaekahana State Recreation Area - Kahuku Section Park Improvements, Laie, Island of Oahu, Hawaii
Ref. 14-706A CAB

Dear Mr. Hirai:

Thank you for your letter dated 09/02/14 regarding pre-assessment consultation for the Environmental Assessment (EA). The unexpected closure of the project site in November 2014 allowed the Department of Land and Natural Resources (DLNR) to simultaneously address safety concerns from falling tree limbs and initiate planned actions for the removal of several severely deteriorated structures. The project site re-opened for public use including camping in May 2015 and there are no known asbestos concerns.

The Draft EA will include the following statements reflected in your letter:

There is a significant potential for fugitive dust emissions at all stages of construction. Proposed construction-related activities must comply with the provisions of Hawaii Administrative Rules, 11-60.1-33 on Fugitive Dust. The contractor will be responsible for the implementation of a dust control plan, which does not require approval by the Department of Health, for compliance with the above-mentioned rules. The dust control plan may incorporate but is not limited to the following measures:

- *Planning the different phases of construction, focusing on minimizing the amount of dust-generating materials and activities, centralizing on-site vehicular traffic routes, and locating potential dust-generating equipment in areas of the least impact;*
- *Providing an adequate water source at the site prior to start-up of construction activities;*
- *Landscaping and providing rapid covering of bare areas, including slopes, starting from the initial grading phase;*
- *Minimizing dust from shoulders and access roads;*
- *Providing adequate dust control measures during weekends, after hours, and prior to daily start-up of construction activities; and*
- *Controlling dust from debris being hauled away from the project site. Also, controlling dust from daily operations of material being processed, stockpiled, and hauled to and from the facility.*

1622 Kanakanui Street • Honolulu, Hawaii 96817
(808) 596-7790 • tlcghawaii.com

The Draft EA is anticipated to be available for public review in April 2016 and we look forward to your department's continued participation in the environmental review process. If you have any questions, please do not hesitate to contact me at 596-7790.

Sincerely,
The Limtiaco Consulting Group, Inc.

Joe Kwan, P.E.
Project Manager

cc: Carty Chang, P.E., Chief Engineer, DLNR Engineering Division

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

COPY

LINDA ROSEN, M.D., 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:

14-706A CAB

September 2, 2014

09-SEP-14 P01:14 RCVD

Mr. Dan Quinn
Administrator
Division of State Parks
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Quinn:

SUBJECT: **Pre-Consultation for the Environmental Assessment**
Malaekahana State Recreation Area – Kahuku Section Park Improvements
Laie, Oahu

Construction/Demolition that May Involve Asbestos
If the proposed project includes renovation/demolition activities which may involve asbestos, the applicant should contact the Asbestos Abatement Office in the Indoor and Radiological Health Branch at 586-5800.

Control of Fugitive Dust
A significant potential for fugitive dust emissions exists during all phases of construction. The activities must comply with the provisions of Hawaii Administrative Rules, §11-60.1-33 on Fugitive Dust. We encourage the contractor to implement a dust control plan, which does not require approval by the Department of Health, to comply with the fugitive dust regulations.

Dust control measures may include, but are not limited to, the following:

a) Planning the different phases of construction, focusing on minimizing the amount of dust-generating materials and activities, centralizing on-site vehicular traffic routes, and locating potential dust-generating equipment in areas of the least impact;
b) Providing an adequate water source at the site prior to start-up of construction activities;
c) Landscaping and providing rapid covering of bare areas, including slopes, starting from the initial grading phase;
d) Minimizing dust from shoulders and access roads;
e) Providing adequate dust control measures during weekends, after hours, and prior to daily start-up of construction activities; and
f) Controlling dust from debris being hauled away from the project site. Also, controlling dust from daily operations of material being processed, stockpiled, and hauled to and from the facility.

If you have any questions, please contact Mr. Barry Ching of the Clean Air Branch at 586-4200.

Sincerely,

NOLAN S. HIRAI, P.E.
Manager, Clean Air Branch

BC:rg

c: Joe Kwan, P.E., The Limtiaco Consulting Group

THE LIMTIACO CONSULTING GROUP
CIVIL ENGINEERING AND ENVIRONMENTAL CONSULTANTS

April 8, 2016

Mr. Jefferey M. Eckerd, Program Manager
State of Hawaii Department of Health, Indoor and Radiologial Health Branch
P.O. Box 3378
Honolulu, HI 96801

Subject: Response to Pre-Assessment Consultation for the Environmental Assessment for Malaekahana State Recreation Area - Kahuku Section Park Improvements, Laie, Island of Oahu, Hawaii

Dear Mr. Eckerd:

Thank you for your letter dated 09/05/14 regarding pre-assessment consultation for the Environmental Assessment (EA). The unexpected closure of the project site in November 2014 allowed the Department of Land and Natural Resources (DLNR) to simultaneously address safety concerns from falling tree limbs and initiate planned actions for the removal of several severely deteriorated structures. We acknowledge your statement that project activities shall comply with the provisions of Hawaii Administrative Rule (HAR), Title 11 that pertain to Lead-based Paint Activities, Community Noise Control, Asbestos Requirements, Fees for Asbestos Removal and Certification, Asbestos Abatement Certification Program. The project site re-opened for public use including camping in May 2015 and there are no known concerns pertaining to hazardous materials.

The Draft EA is anticipated to be available for public review in April 2016 and we look forward to your department's continued participation in the environmental review process. If you have any questions, please do not hesitate to contact me at 596-7790.

Sincerely,
The Limtiaco Consulting Group, Inc.

Joe Kwan, P.E.
Project Manager

cc: Carty Chang, P.E., Chief Engineer, DLNR Engineering Division

1622 Kanakanui Street • Honolulu, Hawaii 96817
(808) 596-7790 • tlcghawaii.com

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

LINDA ROSEN, M.D., M.P.H.
DIRECTOR OF HEALTH

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

In reply, please refer to
File:

14P0114 RCVD

September 5, 2014

Mr. Dan Quinn, Administrator
DLNR, Division of State Parks
P. O. Box 621
Honolulu, HI 96809

Dear Mr. Quinn:

Thank you for your submittal regarding Pre-Consultation for the Environmental Assessment for the Malaekahana State Recreation Area – Kahuku Section Park Improvements (Tax Map Keys: (1) 5-6-001: 024, 045 to 047, 049, 051, and 053 to 065, Laie, Oahu).

Project activities shall comply with the following Administrative Rules of the Department of Health:

- Chapter 11-41 Lead-based Paint Activities
- Chapter 11-46 Community Noise Control
- Chapter 11-501 Asbestos Requirements
- Chapter 11-503 Fees for Asbestos Removal & Certification
- Chapter 11-504 Asbestos Abatement Certification Program

Should you have any questions, please contact me at (808) 586-4700.

Sincerely,

Jeffrey M. Eckerd
Program Manager
Indoor and Radiological Health Branch

C: Joe Kwan, P.E., The Limtiaco Group

THE LIMTIACO CONSULTING GROUP
CIVIL ENGINEERING AND ENVIRONMENTAL CONSULTANTS

April 8, 2016

Assistant Chief Randal K. Macadangdang
City and County of Honolulu, Police Department
801 South Beretania Street
Honolulu, Hawaii 96813

Subject: Response to Pre-Assessment Consultation for the Environmental Assessment for Malaekahana State Recreation Area - Kahuku Section Park Improvements, Laie, Island of Oahu, Hawaii
Ref. EO-WS

Dear Assistant Chief Macadangdang:

Thank you for your letter dated 09/05/14 regarding pre-assessment consultation for the Environmental Assessment (EA). The Draft EA will include the following statements reflected in your letter: *The project site is located within HPD's District 4 (Kaneohe, Kailua, Kahuku) service area. The project should have no significant impact on HPD's services or operations.*

The Draft EA is anticipated to be available for public review in April 2016 and we look forward to your department's continued participation in the environmental review process. If you have any questions, please do not hesitate to contact me at 596-7790.

Sincerely,
The Limtiaco Consulting Group, Inc.

Joe Kwan, P.E.
Project Manager

cc: Carty Chang, P.E., Chief Engineer, DLNR Engineering Division

1622 Kanakanui Street • Honolulu, Hawaii 96817
(808) 596-7790 • tlcghawaii.com

POLICE DEPARTMENT
CITY AND COUNTY OF HONOLULU
801 SOUTH BERETANIA STREET · HONOLULU, HAWAII 96813
TELEPHONE: (808) 529-3111 · INTERNET: www.honolulupd.org

KIRK CALDWELL
MAYOR

LOUIS M. KEALOHA
CHIEF

DAVE M. KAJIHIRO
MARIE A. McCAULEY
DEPUTY CHIEFS

OUR REFERENCE EO-WS

September 5, 2014

09-03-14P01814 RCVD

Mr. Dan Quinn, Administrator
Division of State Parks
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Quinn:

This is in response to a letter dated August 14, 2014, requesting comments on the Pre-Consultation, Environmental Assessment, for the proposed Malaekahana State Recreation Area – Kahuku Section Park Improvements.

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

If there are any questions, please contact Major Ryan Borges of District 4 (Kaneohe, Kailua, Kahuku) at 723-8639 or via e-mail at rborges@honolulu.gov.

Sincerely,

LOUIS M. KEALOHA
Chief of Police

By Randal K. Macadangdang
RANDAL K. MACADANGDANG
Assistant Chief
Support Services Bureau

cc: Mr. Joe Kwan, P.E., The Limtiaco Consulting Group

Serving and Protecting With Aloha

THE LIMTIACO CONSULTING GROUP
CIVIL ENGINEERING AND ENVIRONMENTAL CONSULTANTS

April 8, 2016

Mr. Ford N. Fuchigami, Director
State of Hawaii Department Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

Subject: Response to Pre-Assessment Consultation for the Environmental Assessment for Malaekahana State Recreation Area - Kahuku Section Park Improvements, Laie, Island of Oahu, Hawaii
Ref. STP 8.1654

Dear Mr. Fuchigami:

Thank you for your letter dated 09/02/14 regarding pre-assessment consultation for the Environmental Assessment (EA). The Draft EA will include the following statement reflected in your letter: *The transport of oversized and/or overweight materials and equipment on State highway facilities requires a permit from the State of Hawaii Department of Transportation (DOT), Highways Division.*

The Draft EA is anticipated to be available for public review in April 2016 and we look forward to your department's continued participation in the environmental review process. If you have any questions, please do not hesitate to contact me at 596-7790.

Sincerely,
The Limtiaco Consulting Group, Inc.

Joe Kwan, P.E.
Project Manager

cc: Carty Chang, P.E., Chief Engineer, DLNR Engineering Division

1622 Kanakanui Street • Honolulu, Hawaii 96817
(808) 596-7790 • tlcghawaii.com

NEIL ABERCROMBIE
GOVERNOR

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

FORD N. FUCHIGAMI
INTERIM DIRECTOR

Deputy Directors
RANDY GRUNE
AUDREY HIDANO
ROSS M. HIGASHI
JADINE URASAKI

IN REPLY REFER TO:

STP 8.1654

September 2, 2014

Mr. Dan Quinn
Administrator
Department of Land and Natural Resources
Division of State Parks
P. O. Box 621
Honolulu, HI 96809

Dear Mr. Quinn:

Subject: Pre-Consultation for the Environmental Assessment
Malaekahana State Recreation Area –
Kahuku Section Park Improvements
TMK: (1) 5-6-001:024, 045 to 047, 049, 051, and 053 to 065

A permit from the Department of Transportation (DOT), Highways Division is required should the subject project need the transport of oversized and/or overweight materials and equipment on State highway facilities.

If there are any questions, please contact Mr. Norren Kato of the DOT Statewide Transportation Planning Office at telephone number (808) 831-7976.

Very truly yours,

FORD N. FUCHIGAMI
Interim Director of Transportation

c: Joe Kwan, The Limtiaco Consulting Group

THE LIMTIACO CONSULTING GROUP
CIVIL ENGINEERING AND ENVIRONMENTAL CONSULTANTS

April 8, 2016

Mr. Alec Wong, P.E., Chief
State of Hawaii Department of Health, Clean Water Branch
P.O. Box 3378
Honolulu, HI 96801

Subject: Response to Pre-Assessment Consultation for the Environmental Assessment for Malaekahana State Recreation Area - Kahuku Section Park Improvements, Laie, Island of Oahu, Hawaii
Ref. 09008PJF.14

Dear Mr. Wong:

Thank you for your letter dated 09/08/14 regarding pre-assessment consultation for the Environmental Assessment (EA). We acknowledge that the project and its potential impacts to State waters must be in compliance with the antidegradation policy (HAR Section 11-54-1.1), designated uses pertaining to the classification of the receiving waters (HAR Section 11-54-3), and water quality criteria (HAR Sections 11-54-4 through 11-54-8). We have reviewed the Standard Comments found on your department's website.

The EA will include the following statements reflected in your letter: *A National Pollutant Discharge Elimination System (NPDES) Permit for pollutant discharges including stormwater runoff (e.g., construction dewatering effluent) is required for the disturbance of one acre or more of total land area pursuant to HAR Title 11, Chapter 55, "Water Pollution Control." Sediment runoff can be reduced by maintaining vegetated areas and diverting stormwater from paved areas to vegetated bioswales. The construction contractor will be responsible for implementing a stormwater management plan that incorporates runoff and erosion control measures intended to prevent a concentration of runoff from flowing from the project site into adjacent areas.*

We further acknowledge that the Army Corps of Engineers, Regulatory Branch has permitting requirements for work in, over, or under waters of the United States; however, the proposed project does not involve work in, over, or under waters of the United States. We are also aware that all discharges related to project construction or operation activities must comply with the State's Water Quality Standards; noncompliance with water quality requirements may be subject to penalties for violations.

The Draft EA is anticipated to be available for public review in April 2016 and we look forward to your department's continued participation in the environmental review process. If you have any questions, please do not hesitate to contact me at 596-7790.

1622 Kanakanui Street • Honolulu, Hawaii 96817
(808) 596-7790 • tlcghawaii.com

Sincerely,
The Limtiaco Consulting Group, Inc.

Joe Kwan, P.E.
Project Manager

cc: Carty Chang, P.E., Chief Engineer, DLNR Engineering Division

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

LINDA ROSEN, M.D., M.P.H.
DIRECTOR OF HEALTH

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

In reply, please refer to:
EMD/CWB

09008PJF.14

September 8, 2014

Mr. Dan Quinn
Administrator
Division of State Parks
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Quinn:

SUBJECT: Pre-Consultation for the Environmental Assessment for Malaekahana State Recreation Area-Kahuku Section Park Improvements Laie, Island of Oahu, Hawaii

The Department of Health (DOH), Clean Water Branch (CWB), acknowledges receipt of your letter, dated August 14, 2014, requesting comments on the subject document. The DOH-CWB has reviewed the subject document and offers these comments. Please note that our review is based solely on the information provided in the subject document and its compliance with the Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. Your applicant may be responsible for fulfilling additional requirements related to our program. We recommend that you also read our standard comments on our website at:http://health.hawaii.gov/epo/files/2013/10/CWB_Oct22.pdf.

1. Any project and its potential impacts to State waters must meet the following criteria:

   a. Antidegradation policy (HAR, Section 11-54-1.1), which requires that the existing uses and the level of water quality necessary to protect the existing uses of the receiving State water be maintained and protected.

   b. Designated uses (HAR, Section 11-54-3), as determined by the classification of the receiving State waters.

   c. Water quality criteria (HAR, Sections 11-54-4 through 11-54-8).

2. National Pollutant Discharge Elimination System (NPDES) permit coverage is required for pollutant discharges into State surface waters and for certain situations involving storm water (HAR, Chapter 11-55).

   a. Discharges into Class 2 or Class A State waters can be covered under an NPDES general permit only if all of the NPDES general permit requirements are met. Please see the DOH-CWB website (http://health.hawaii.gov/cwb/) for the NPDES general permits and instructions to request coverage.

   b. All other discharges into State surface waters and discharges into Class 1 or Class AA State waters require an NPDES individual permit. To request NPDES individual permit coverage, please see the DOH-CWB forms website located at: http://health.hawaii.gov/cwb/site-map/clean-water-branch-home-page/forms/.

   c. NPDES permit coverage for storm water associated with construction activities is required if your project will result in the disturbance of one (1) acre or more of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. NPDES permit coverage is required before the start of the construction activities.

      Land disturbance includes, but is not limited to clearing, grading, grubbing, uprooting of vegetation, demolition (even if leaving foundation slab), staging, stockpiling, excavation into pavement areas which go down to the base course, and storage areas (including areas on the roadway to park equipment if these areas are blocked off from public usage, grassed areas, or bare ground).

3. If the project involves work in, over, or under waters of the United States, it is highly recommend that your applicant contact the Army Corp of Engineers, Regulatory Branch (Tel: 438-9258) regarding their permitting requirements.

   Pursuant to Federal Water Pollution Control Act [commonly known as the "Clean Water Act" (CWA)], Paragraph 401(a)(1), a Section 401 Water Quality Certification (WQC) is required for "[a]ny applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may **result** in any discharge into the navigable waters..." (Emphasis added). The term "discharge" is defined in CWA, Subsections 502(16), 502(12), and 502(6); Title 40 of the Code of Federal Regulations, Section 122.2; and HAR, Chapter 11-54.

4. Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 WQC are required, must comply with the State's Water Quality Standards. Noncompliance with water quality requirements contained in HAR, Chapter 11-54, and/or permitting requirements, specified in HAR, Chapter 11-55, may be subject to penalties of $25,000 per day per violation.

If you have any questions, please visit our website at: http://health.hawaii.gov/cwb, or contact the Engineering Section, CWB, at (808) 586-4309.

Sincerely,

ALEC WONG, P.E., CHIEF
Clean Water Branch

JF:bk

c: Mr. Joe Kwan, The Limtiaco Consulting Group

THE LIMTIACO CONSULTING GROUP
CIVIL ENGINEERING AND ENVIRONMENTAL CONSULTANTS

April 8, 2016

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

Subject: Response to Pre-Assessment Consultation for the Environmental Assessment for Malaekahana State Recreation Area - Kahuku Section Park Improvements, Laie, Island of Oahu, Hawaii

Dear Mr. Lau:

Thank you for your letter dated 09/05/14 regarding pre-assessment consultation for the Environmental Assessment (EA). The Draft EA will include the following statements reflected in your letter: *The existing municipal water system is adequate to accommodate the proposed improvements. The final decision by BWS with regards to the availability of water will be confirmed when the building permit application is submitted for approval.*

We thank you for informing us that the applicant will be required to pay the Water System Facilities Charges for resource development, transmission and daily storage. On-site fire protection requirements will be coordinated with the Fire Prevention Bureau of the Honolulu Fire Department. We acknowledge that the project is subject to BWS Cross-Connection Control and Backflow Prevention requirements prior to the issuance of the Building Permit Applications.

The Draft EA is anticipated to be available for public review in April 2016 and we look forward to your department's continued participation in the environmental review process. If you have any questions, please do not hesitate to contact me at 596-7790.

Sincerely,
The Limtiaco Consulting Group, Inc.

Joe Kwan, P.E.
Project Manager

cc: Carty Chang, P.E., Chief Engineer, DLNR Engineering Division

1622 Kanakanui Street • Honolulu, Hawaii 96817
(808) 596-7790 • tlcghawaii.com

BOARD OF WATER SUPPLY

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

September 5, 2014

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

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

Mr. Dan Quinn, Administrator
DLNR, Division of State Parks
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Quinn:

Subject: The Letter Dated August 14, 2014 on the Environmental Assessment Pre-Consultation for Malaekahana State Recreation Area – Kahuku Section Park Improvements – Tax Map Key: 5-6-001: 024, 045 to 047, 049, 051, 053 to 065

Thank you for the opportunity to comment on the proposed park improvements.

The existing water system is adequate to accommodate the proposed improvements. However, please be advised that this information is based upon current data, and therefore, the Board of Water Supply (BWS) reserves the right to change any position or information stated herein up until the final approval of the building permit application. The final decision on the availability of water will be confirmed when the building permit application is submitted for approval.

When water is made available, the applicant will be required to pay our Water System Facilities Charges for resource development, transmission and daily storage.

The on-site fire protection requirements should be coordinated with the Fire Prevention Bureau of the Honolulu Fire Department.

The proposed project is subject to BWS Cross-Connection Control and Backflow Prevention requirements prior to the issuance of the Building Permit Applications.

If you have any questions, please contact Robert Chun, Project Review Branch of our Water Resources Division at 748-5443.

Very truly yours,

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

cc: J. Kwan, The Limtiaco Consulting Group

THE LIMTIACO CONSULTING GROUP
CIVIL ENGINEERING AND ENVIRONMENTAL CONSULTANTS

April 8, 2016

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

Subject: Response to Pre-Assessment Consultation for the Environmental Assessment for Malaekahana State Recreation Area - Kahuku Section Park Improvements, Laie, Island of Oahu, Hawaii
Ref. TP8/14-576771R

Dear Mr. Formby:

Thank you for your letter dated 09/08/14 regarding pre-assessment consultation for the Environmental Assessment (EA). We acknowledge that your agency provided no comments.

The Draft EA is anticipated to be available for public review in April 2016 and we look forward to your department's continued participation in the environmental review process. If you have any questions, please do not hesitate to contact me at 596-7790.

Sincerely,
The Limtiaco Consulting Group, Inc.

Joe Kwan, P.E.
Project Manager

cc: Carty Chang, P.E., Chief Engineer, DLNR Engineering Division

1622 Kanakanui Street • Honolulu, Hawaii 96817
(808) 596-7790 • tlcghawaii.com

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 3RD FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 768-8305 • Fax: (808) 768-4730 • Internet: www.honolulu.gov

KIRK CALDWELL
MAYOR

MICHAEL D. FORMBY
DIRECTOR

MARK N. GARRITY, AICP
DEPUTY DIRECTOR

TP8/14-576771R

September 8, 2014

09-10-14P02:44 RCVD

Mr. Dan Quinn, Administrator
Department of Land and Natural Resources
Division of State Parks
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Quinn:

SUBJECT: Pre-Consultation for Draft Environmental Assessment (DEA)
Malaekahana State Recreational Area – Kahuku Section Park Improvements; Tax Map Keys: (1) 5-6-001: 024, 045 to 047, 049, 051, and 053 to 065; Laie, Oahu, Hawaii

In response to a letter dated August 14, 2014, from Mr. Joe Kwan, P.E., Project Manager, The Limtiaco Consulting Group, Inc., we have no comments to offer at this time.

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,

Michael D. Formby
Director

cc: Joe Kwan, P.E., Project Manager
The Limtiaco Consulting Group

THE LIMTIACO CONSULTING GROUP
CIVIL ENGINEERING AND ENVIRONMENTAL CONSULTANTS

April 8, 2016

Ms. Lea E. Albert, Complex Area Superintendent
State of Hawaii Department of Education, Windward Oahu District
46-169 Kamehameha Highway
Kaneohe, Hawaii 96744

Subject: Response to Pre-Assessment Consultation for the Environmental Assessment for Malaekahana State Recreation Area - Kahuku Section Park Improvements, Laie, Island of Oahu, Hawaii

Dear Ms. Albert:

Thank you for your letter dated 09/08/14 regarding pre-assessment consultation for the Environmental Assessment (EA). The Draft EA will include the following statements reflected in your letter: *The Department of Education noted that there is already substantive traffic congestion coming from Laie to Kahuku High and Intermediate School during peak periods (e.g., between 7:30 and 8:15 a.m. and between 2:15 and 3:15 p.m.) on school days. The Complex Area Superintendent requested advanced notification about potential traffic impacts and utility service disruptions that may significantly impact Kahuku High and Intermediate School and Kahuku Elementary School.*

We acknowledge that there are many positive aspects of the project. The Draft EA will include your comments as follows: *It is my hope that the plans for Malae Kahana will also include the use of the land, beaches and water as a learning laboratory for the students of Ko'olauloa. We are expanding our career tech education to our elementary schools and our K-12 students are already heavily vested in natural resources and conservation. Malae Kahana is a wonderful place to study ecology, preservation, marine biology, conservation, mathematics and native flora and fauna. Hopefully, those who operate Malae Kahana will open the park to K-12 students so that they learn and aspire to be stewards of the land and sea, well vested in service learning.*

The Draft EA is anticipated to be available for public review in April 2016 and we look forward to your department's continued participation in the environmental review process. If you have any questions, please do not hesitate to contact me at 596-7790.

Sincerely,
The Limtiaco Consulting Group, Inc.

Joe Kwan, P.E.
Project Manager

cc: Carty Chang, P.E., Chief Engineer, DLNR Engineering Division

1622 Kanakanui Street • Honolulu, Hawaii 96817
(808) 596-7790 • tlcghawaii.com

NEIL ABERCROMBIE
GOVERNOR

KATHRYN S. MATAYOSHI
SUPERINTENDENT

LEA E. ALBERT
COMPLEX AREA SUPERINTENDENT

C. SUZANNE MULCAHY
COMPLEX AREA SUPERINTENDENT

STATE OF HAWAII
DEPARTMENT OF EDUCATION
WINDWARD OAHU DISTRICT
46-169 KAMEHAMEHA HIGHWAY
KANEOHE, HAWAII 96744

September 8, 2014

14 P02:40 RCVD

Mr. Dan Quinn, Administrator
DLNR Division of State Parks
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Quinn:

Thank you to you and Mr. Kwan for the opportunity to give input through a pre-consultation for the Environmental Assessment Malae Kahana State Recreation.

The proposal as outlined in your correspondence sounds both timely and exciting. The plans to improve park structures, the installation of infrastructure, new cabins and an administration building are long overdue. The fact that all of this will be up to code is a bonus.

I understand that there may be some disruption during construction. I would hope that traffic problems would not be an issue between 7:30 and 8:15 a.m. as there is already substantive congestion coming from Laie to Kahuku High and Intermediate. Similarly, there is traffic congestion in the same area between 2:15 and 3:15 p.m. on school days. Also, if there are to be disruptions in utility service we would need to know well before as this would significantly impact Kahuku High school and Kahuku Elementary school.

It is my hope that plans for Malae Kahana will also include the use of the land, beaches and water as a learning laboratory for the students of Ko'olauloa. We are expanding our career tech education to our elementary schools and our K-12 students are already heavily vested in natural resources and conservation. Malae Kahana is a wonderful place to study ecology, preservation, marine biology, conservation, mathematics and native flora and fauna. Hopefully, those who operate Malae Kahana will open the park to K-12 students so that they learn and aspire to be stewards of the land and sea, well vested in service learning.

Sincerely,

Lea E. Albert
Complex Area Superintendent

C: Pauline Masaniai, Principal, Kahuku High and Intermediate
Samuel Izumi, Principal, Kahuku Elementary
Matt Ho, Principal, Laie Elementary
Bernie Tyrell, Principal, Sunset Beach Elementary
Jennifer Luke-Payne, Principal, Kaaawa Elementary
Uilani Kaitoku, Principal, Hauula Elementary
Joe Kwan, P.E., The Limtiaco Consulting Group

AN AFFIRMATIVE ACTION AND EQUAL OPPORTUNITY EMPLOYER

THE LIMTIACO CONSULTING GROUP
CIVIL ENGINEERING AND ENVIRONMENTAL CONSULTANTS

April 8, 2016

Mr. R. Eric Beaver, President and CEO
Hawaii Reserves, Inc.
55-510 Kamehameha Highway
Laie, Hawaii 96762

Subject: Response to Pre-Assessment Consultation for the Environmental Assessment for Malaekahana State Recreation Area - Kahuku Section Park Improvements, Laie, Island of Oahu, Hawaii

Dear Mr. Beaver:

Thank you for your letter dated 09/18/14 regarding pre-assessment consultation for the Environmental Assessment (EA). The Draft EA will mention your expression of support.

We acknowledge your statements pertaining to the maintenance of Malaekahana Stream and the stream bed to allow for adequate and safe drainage. Please note, however, that Malaekahana Stream is located within the adjacent privately-owned parcel.

The Draft EA is anticipated to be available for public review in April 2016 and we look forward to your department's continued participation in the environmental review process. If you have any questions, please do not hesitate to contact me at 596-7790.

Sincerely,
The Limtiaco Consulting Group, Inc.

Joe Kwan, P.E.
Project Manager

cc: Carty Chang, P.E., Chief Engineer, DLNR Engineering Division

1622 Kanakanui Street • Honolulu, Hawaii 96817
(808) 596-7790 • tlcghawaii.com

HRI
Hawaii Reserves, Inc.
A Land Management Company

R. Eric Beaver
PRESIDENT & CEO

September 18, 2014

Mr. Dan Quinn, Administrator
DLNR, Division of State Parks
P.O. Box 621
Honolulu, Hawaii 96809

Re: ***Pre-Consultation for the EA - Malaekahana State Recreation Area - Kahuku Section Park Improvement***
TMKs: (1)5-6-001:024, 045 to 047, 049, 051 and 053 to 065
Laie, Oahu, Hawaii

Dear Mr. Quinn:

Thank you for the opportunity to comment on the above referenced project that would improve the park for continued recreational use, including camping, lodging and day-use activities.

We support DLNR's effort to balance the development of adequate recreational facilities and venues with concerns about public beach access, increased traffic and other related impacts.

We note that the project site includes or is adjacent to, an intermittent stream that flows *mauka* to *makai*, along or on the northern side of the project area, and out to the ocean. If this stream is located on state/DLNR property, we encourage DLNR or the manager of the Malaekahana State Recreation Park to ensure maintenance of the stream and stream bed to allow for adequate and safe drainage.

We believe this project will benefit the community and offer our expression of support.

Kind regards,

R. Eric Beaver

cc: Joe Kwan, P.E., The Limtiaco Consulting Group

55-510 Kamehameha Highway, Laie, Hawaii 96762-1193 • Telephone: (808) 293-9201 • Fax: (808) 293-6542 • www.hawaiireserves.com

THE LIMTIACO CONSULTING GROUP
CIVIL ENGINEERING AND ENVIRONMENTAL CONSULTANTS

April 8, 2016

Mr. Aaron Nadig, Assistant Field Supervisor
U.S. Department of the Interior
Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawaii 96850

Subject: Response to Pre-Assessment Consultation for the Environmental Assessment for Malaekahana State Recreation Area - Kahuku Section Park Improvements, Laie, Island of Oahu, Hawaii
Ref. 2014-TA-0402

Dear Mr. Nadig:

Thank you for your letter dated 09/18/14 regarding pre-assessment consultation for the Environmental Assessment (EA). We acknowledge that the species documented within the project vicinity include the endangered Hawaiian hoary bat, the endangered Hawksbill sea turtle, the threatened green sea turtle and the wedge-tailed shearwater that is protected under the Migratory Bird Treaty Act. Best Management Practices (BMPs) for avoidance and minimization of impacts to listed species are included in the Draft EA.

The anchialine pools at the southern Laie end of Malaekahana State Recreation Area that support anchialine pool shrimp are noted; however, the park area referenced is presumably the separate Malaekahana State Recreation Area - Kalanai Section, which would not be disturbed by the project. Your letter indicates that the endangered Hawaiian monk seal may utilize beach habitat in the project vicinity; therefore, we contacted the National Marine Fisheries Service as recommended. BMPs pertaining to sedimentation and erosion, and landscaping with native plants to the extent practical or with "species that are thought to have a low risk of becoming invasive" are considerations included in the Draft EA.

The Draft EA is anticipated to be available for public review in April 2016 and we look forward to your department's continued participation in the environmental review process. If you have any questions, please do not hesitate to contact me at 596-7790.

Sincerely,
The Limtiaco Consulting Group, Inc.

Joe Kwan, P.E.
Project Manager

cc: Carty Chang, P.E., Chief Engineer, DLNR Engineering Division

1622 Kanakanui Street • Honolulu, Hawaii 96817
(808) 596-7790 • tlcghawaii.com

RECEIVED
STATE PARKS DIV
'14 SEP 19 P12:46
DEPT OF LAND & NATURAL RESOURCES

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawai`i 96850

In Reply Refer To:
2014-TA-0402

SEP 18 2014

Mr. Dan Quinn, Administrator
Hawaii Department of Land and Natural Resources
Division of State Parks
PO Box 621
Honolulu, Hawaii 96809

Subject: Technical Assistance for the Proposed Improvements to Mālaekahana State Recreation Area, O'ahu

Dear Mr. Quinn:

The U.S. Fish and Wildlife Service (Service) received your letter, dated July 25, 2014, in which you requested our comments on the proposed renovations to the facilities at Mālaekahana State Recreation Area as a pre-consultation for the draft environmental assessment. The proposed renovations include installation of new infrastructure (i.e., water, wastewater, and electrical/communication systems) and construction of a comfort station and satellite restroom facilities. Additionally, the proposed actions include replacement of the administrative office, security office, and seven cabins along with related improvements. Several structures and the old cesspools have been closed and will be demolished in the fall of 2014 in compliance with current rules and regulations administered by the State Department of Health. The proposed renovations are not intended to increase the density of the area nor increase the number of rental cabins within the park. The below comments are provided in accordance with section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*), as amended (ESA), the Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-712), as amended (MBTA), and the Fish and Wildlife Coordination Act of 1934 [16 U.S.C. 661 et seq.; 48 Stat. 401], as amended.

We have reviewed the information you provided and pertinent information in our files, including data compiled by the Hawaii Biodiversity and Mapping Program as it pertains to federally listed species and designated critical habitat. Species documented within the project vicinity include: the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*, 'ope'ape'a), the endangered Hawksbill sea turtle (*Eretmochelys imbricata*, 'ea) and the threatened green sea turtle (*Chelonia mydas*, honu) (collectively referred to as sea turtles. Additionally, the wedge-tailed shearwater (*Puffinus pacificus*, 'ua'u kani), protected under the MBTA, is known to occur within the project vicinity. There are also at least two anchialine pools at the southern Lā'ie end of Mālaekahana

TAKE PRIDE IN AMERICA

State Recreation Area that support the anchialine pool shrimp *Metabetaeus lohena*, candidate for listing under the ESA. We recommend that your draft Environmental Assessment address any project components that have the potential to impact these subterranean systems and minimize potential disturbance to these unique habitats. To aid in the drafting of your Environmental Assessment we provide some Best Management Practices for avoidance and minimization impacts to listed species.

Hawaiian Hoary Bat

The Hawaiian hoary bat roosts in both exotic and native woody vegetation and, while foraging, will leave young unattended in "nursery" trees and shrubs when they forage. If trees or shrubs suitable for bat roosting are cleared during the breeding season, there is a risk that young bats could inadvertently be harmed or killed. To minimize impacts to the endangered Hawaiian hoary bat, woody plants greater than 15 feet tall should not be disturbed, removed, or trimmed during the bat birthing and pup rearing season (June 1 through September 15). Site clearing should be timed to avoid disturbance to Hawaiian hoary bats in the project area.

Seabirds and sea turtles

Outdoor lighting, such as street lights, can adversely impact listed (*i.e.*, sea turtles) and migratory seabird species (*e.g.*, wedge-tailed shearwater) found in the vicinity of the proposed project. Seabirds fly at night and are attracted to artificially lighted areas which can result in disorientation and subsequent fallout due to exhaustion or collision with objects such as utility lines, guy wires, and towers that protrude above the vegetation layer. Once grounded, they are vulnerable to predators or often struck by vehicles along roadways. Wedge-tailed shearwater nesting colonies are located nearby and every year many young shearwaters are downed and struck along Oahu roadways. Any increase in the use of night-time lighting, particularly during each year's peak fallout period (September 15 through December 15), could result in additional seabird injury or mortality. Impacts to seabirds can be minimized by shielding outdoor lights associated with the project to the maximum extent possible, eliminating night-time construction, and providing all project staff and residents with information about seabird fallout. All lights, including street lights, should be shielded so the bulb can only be seen from below and use the lowest wattage bulbs possible.

Unlike other Hawaiian seabird species, shearwaters nest in littoral vegetation along coastlines. Nesting adults, eggs, and chicks are particularly susceptible to impacts from human disturbance and predators. Surveys should be conducted throughout the project area during the species' peak breeding season (August through October) to determine the presence and location of nesting areas. If it is found that wedge-tailed shearwaters nest within the proposed project area, project construction should be timed outside of the breeding season.

Sea turtles are susceptible to artificial lighting because artificial lighting can disorient turtles away from the ocean. Sea turtles come ashore to nest on beaches from May through September, peaking in June and July. Optimal nesting habitat is a dark beach free of barriers that restrict their movement. Nesting turtles may be deterred from approaching or laying successful nests on lighted or disturbed beaches. If they do come ashore, they may become disoriented by artificial lighting, leading to exhaustion and placement of a nest in an inappropriate location (such as at or

below the high tide line where nests are unlikely to be successful). Hatchlings that emerge from unprotected nests may be disoriented by artificial lighting. In addition, turtle nests and hatchlings are susceptible to human disturbance and predation by feral mammals such as small Indian mongoose (*Herpestes auropunctatus*), cats (*Felis catus*), dogs (*Canis familiaris*).

To minimize and avoid artificial lighting impacts to sea turtles and seabirds, a lighting plan should be developed and incorporated into the project description, including educating all project staff and residents with information about seabird fallout. If lights cannot be eliminated due to safety or security concerns then they should be positioned low to the ground, be motion-triggered and be shielded and/or full cut-off. Effective light shields should be completely opaque, sufficiently large, and positioned so that the bulb is only visible from below and so that light from the shielded source cannot be seen from the beach. Construction activities should occur during daylight hours only. Where appropriate, we recommend adding signage or a kiosk to educate park-goers regarding the seabird fallout issue and to let people know that downed birds can be taken to Sea Life Park for rehabilitation. The project description should address all potential impacts to seabirds and outline conservation measures to minimize these impacts.

Anchialine pools

Since there are anchialine pools adjacent to the proposed project area, the Service recommends incorporating biologist familiar with anchialine systems into your project development to ensure that the integrity of any existing anchialine pools and species within them are not compromised (e.g., filled in, crushed, etc.) by the proposed activities. Anchialine pools have complex connections with subterranean hydrological resources and damage to these resources from a distance can directly impact the anchialine pools, and subsequently, the species that depend on them.

Monk seals

In addition, the endangered Hawaiian monk seal (*Monachus schauinslandi*) may use beach habitat in the vicinity of the proposed project. The National Marine Fisheries Service (NMFS) is the Federal agency that consults on potential impacts to monk seals, both in their on-shore and ocean habitats. Therefore, we did not review the proposed project for potential project impacts to monk seals. We recommend that you contact NMFS regarding the presence of monk seals in the area and potential impacts to the species from the project.

General Comments

Because there are aquatic fish and wildlife resources (*i.e.*, Mālaekahana Stream and anchialine pools) within the proposed project vicinity or nearby adjacent areas, and the proposed activities may cause soil erosion and sedimentation into these adjacent aquatic environments, we are attaching the Service's recommended Best Management Practices regarding sedimentation and erosion in aquatic environments. We encourage you to incorporate the relevant practices into your project design.

In addition, Hawai`i's native ecosystems are heavily impacted by exotic invasive plants; we therefore recommend, to the extant practical, using native plants for landscaping purposes. If native plants do not meet the landscaping objectives, we recommend choosing species that are

thought to have a low risk of becoming invasive. The following websites are good resources to use when choosing landscaping plants: Pacific Island Ecosystems at Risk (http://www.hear.org/Pier/), Hawaii-Pacific Weed Risk Assessment (*http://www.botany.hawaii.edu/faculty/daehler/wra/full_table.asp*) and Global Compendium of Weeds (*www.hear.org/gcw*).

Thank you for the opportunity to review and comment on the proposed project. If you have questions regarding this letter, please contact Carrie Harrington, Fish and Wildlife Biologist (phone: 808-792-9400; fax: 808-792-9581).

Sincerely,



Aaron Nadig
Assistant Field Supervisor
Oahu, Kauai, NWHI, and American Samoa

Enclosure: Service BMPs for erosion and sediment control

cc: Joe Kwan, P.E.,The Limtiaco Consulting Group, Inc.

U.S. Fish and Wildlife Service
Recommended Standard Best Management Practices

The U.S. Fish and Wildlife Service (USFWS) recommends the following measures to be incorporated into project planning to avoid or minimize impacts to fish and wildlife resources. Best Management Practices (BMPs) include the incorporation of procedures or materials that may be used to reduce either direct or indirect negative impacts to aquatic habitats that result from project construction-related activities. These BMPs are recommended in addition to, and do not over-ride any terms, conditions, or other recommendations prepared by the USFWS, other federal, state or local agencies. If you have questions concerning these BMPs, please contact the USFWS Aquatic Ecosystems Conservation Program at 808-792-9400.

1. Authorized dredging and filling-related activities that may result in the temporary or permanent loss of aquatic habitats should be designed to avoid indirect, negative impacts to aquatic habitats beyond the planned project area.

2. Dredging/filling in the marine environment should be scheduled to avoid coral spawning and recruitment periods, and sea turtle nesting and hatching periods. Because these periods are variable throughout the Pacific islands, we recommend contacting the relevant local, state, or federal fish and wildlife resource agency for site specific guidance.

3. Turbidity and siltation from project-related work should be minimized and contained within the project area by silt containment devices and curtailing work during flooding or adverse tidal and weather conditions. BMPs should be maintained for the life of the construction period until turbidity and siltation within the project area is stabilized. All project construction-related debris and sediment containment devices should be removed and disposed of at an approved site.

4. All project construction-related materials and equipment (dredges, vessels, backhoes, silt curtains, etc.) to be placed in an aquatic environment should be inspected for pollutants including, but not limited to; marine fouling organisms, grease, oil, etc., and cleaned to remove pollutants prior to use. Project related activities should not result in any debris disposal, non-native species introductions, or attraction of non-native pests to the affected or adjacent aquatic or terrestrial habitats. Implementing both a litter-control plan and a Hazard Analysis and Critical Control Point plan (HACCP – see *http://www.haccp-nrm.org/Wizard/default.asp*) can help to prevent attraction and introduction of non-native species.

5. Project construction-related materials (fill, revetment rock, pipe, etc.) should not be stockpiled in, or in close proximity to aquatic habitats and should be protected from erosion (*e.g.*, with filter fabric, etc.), to prevent materials from being carried into waters by wind, rain, or high surf.

6. Fueling of project-related vehicles and equipment should take place away from the aquatic environment and a contingency plan to control petroleum products accidentally spilled during the project should be developed. The plan should be retained on site with the person responsible for compliance with the plan. Absorbent pads and containment booms should be stored on-site to facilitate the clean-up of accidental petroleum releases.

7. All deliberately exposed soil or under-layer materials used in the project near water should be protected from erosion and stabilized as soon as possible with geotextile, filter fabric or native or non-invasive vegetation matting, hydro-seeding, etc.

THE LIMTIACO CONSULTING GROUP
CIVIL ENGINEERING AND ENVIRONMENTAL CONSULTANTS

April 8, 2016

Ms. Laura Leialoha Phillips McIntyre, AICP, Manager
State of Hawaii
Department of Health
Environmental Planning Office
919 Ala Moana Boulevard, Room 312
Honolulu, HI 96814

Subject: Response to Pre-Assessment Consultation for the Environmental Assessment for Malaekahana State Recreation Area - Kahuku Section Park Improvements, Laie, Island of Oahu, Hawaii

Dear Ms. McIntyre:

Thank you for your email dated 09/30/14 regarding pre-assessment consultation for the Environmental Assessment (EA) and for routing our letter to other Department of Health (DOH) divisions, branches and offices. We have reviewed the Standard Comments found on your department's website and acknowledge the requirement to adhere to applicable comments. Best management practices for avoidance and minimization of impacts are included in the Draft EA.

We appreciate the links and information available from the Hawaii Environmental Health Portal. Thank you also for the list of sources that provide strategies to support the sustainable design of communities and buildings.

The Draft EA is anticipated to be available for public review in April 2016 and we look forward to your department's continued participation in the environmental review process. If you have any questions, please do not hesitate to contact me at 596-7790.

Sincerely,
The Limtiaco Consulting Group, Inc.

Joe Kwan, P.E.
Project Manager

cc: Carty Chang, P.E., Chief Engineer, DLNR Engineering Division

1622 Kanakanui Street • Honolulu, Hawaii 96817
(808) 596-7790 • tlcghawaii.com

Joe Kwan

From: McIntyre, Laura <Laura.McIntyre@doh.hawaii.gov>
Sent: Tuesday, September 30, 2014 11:15 AM
To: Dan S Quinn
Cc: Joe Kwan; Lileikis, Thomas G.
Subject: Pre-C for EA for Malaekahana State Recreation Area - Kahuku Section

Mr. Dan Quinn, Administrator
DLNR, Division of State Parks
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Quinn:

SUBJECT: **Pre-Consultation for the Environmental Assessment**
Malaekahana State Recreation Area – Kahuku Section Park Improvements
TMK: (1) 5-6-001: 024, 045 to 047, 049, 051, and 053 to 065, Laie, Oahu, Hawaii

The Department of Health (DOH), Environmental Planning Office (EPO), acknowledges receipt of your letter sent to myself, Mr. Keith Yamamoto, Deputy Director and Mr. Stuart Yamada, Chief of the Environmental Management Division, dated August 14, 2014. Thank you for allowing us to review and comment on the subject document. The document was routed to the relevant Environmental Health divisions, branches, and offices. They will provide specific comments to you if necessary. I am glad that the Wastewater Branch has already sent you a letter on August 27th. EPO recommends that you review the standard comments at: http://health.hawaii.gov/epo/home/landuse-planning-review-program/. You are required to adhere to all applicable standard comments. For information on appropriate demolition please contact the indoor air branch if needed.

We encourage you to examine and utilize the Hawaii Environmental Health Portal. The portal provides links to our e-Permitting Portal, Environmental Health Warehouse, Groundwater Contamination Viewer, Hawaii Emergency Response Exchange, Hawaii State and Local Emission Inventory System, Water Pollution Control Viewer, Water Quality Data, Warnings, Advisories and Postings. The Portal is continually updated. Please visit it regularly at: https://eha-cloud.doh.hawaii.gov You may also wish to review the recently revised Water Quality Standards Maps that have been updated for all islands. The new Water Quality Standards Maps can be found at: http://health.hawaii.gov/cwb/site-map/clean-water-branch-home-page/water-quality-standards/.

The EPO suggests that you examine the many sources available on strategies to support the sustainable and healthy design of communities and buildings, including the:
2014 National Climate Change Report – Highlights for Hawaii:
http://ipcc-wg2.gov/AR5/images/uploads/WGIIAR5-Chap29_FGDall.pdf;
U.S. Health and Human Services: www.hhs.gov/about/sustainability;
U.S. Environmental Protection Agency's sustainability programs: www.epa.gov/sustainability;
U.S. Green Building Council's LEED program: www.usgbc.org/leed;
Smart Growth America: www.smartgrowthamerica.org;
International Well Building Standard: http://delosliving.com; and
Intergovernmental Panel on Climate Change (IPCC):
http://ipcc-wg2.gov/AR5/images/uploads/WGIIAR5-Chap29_FGDall.pdf

We request you share all of this information with others to increase community awareness on sustainable, innovative, inspirational, and healthy community design.
Mahalo,
Laura Leialoha Phillips McIntyre, AICP

Program Manager, Environmental Planning Office

c. Joe Kwan, The Limtiaco Consulting Group
c. IRHB

Laura Leialoha Phillips McIntyre AICP
Program Manager, Environmental Planning Office
Hawaii State Department of Health
919 Ala Moana Blvd. Rm. 312
Honolulu, Hawaii 96814
Direct Phone: (808) 586-4338
Email: laura.mcintyre@doh.hawaii.gov
Website: http://health.hawaii.gov/epo
Ua mau ke ea o ka aina I ka pono

THE LIMTIACO CONSULTING GROUP
CIVIL ENGINEERING AND ENVIRONMENTAL CONSULTANTS

April 8, 2016

Dr. Kamanaopono M. Crabbe, Ka Pouhana, Chief Executive Officer
State of Hawaii
Office of Hawaiian Affairs
560 N. Nimitz Highway, Suite 200
Honolulu, HI 96817

Subject: Response to Pre-Assessment Consultation for the Environmental Assessment for Malaekahana State Recreation Area - Kahuku Section Park Improvements, Laie, Island of Oahu, Hawaii
Ref. HRD14/7242

Dear Dr. Crabbe:

Thank you for your letter dated 09/18/14 regarding pre-assessment consultation for the Environmental Assessment (EA). The unexpected closure of the project site in November 2014 allowed the Department of Land and Natural Resources (DLNR) to simultaneously address safety concerns from falling tree limbs and initiate planned actions for the removal of several severely deteriorated structures. In 2015, Scientific Consultant Services (SCS) conducted an archaeological inventory survey (AIS) for the project site utilizing modern standards and survey methods. No archaeological or cultural resources were discovered within the areas of the project site where park improvements are planned; however State Parks will ensure that the construction contractor complies with an approved archaeological monitoring plan that identifies specific activities to be monitored during the construction phase due to the potential for encountering undocumented features.

A subsurface cultural deposit that was once visible in the eroding shoreline and initially noted in the 1982 survey report by Yent and Ota was investigated by SCS as directed by State Parks. The investigation was initiated to provide State Parks with better information that will guide management, education, and preservation decisions. As a result of the investigation by SCS, the subsurface cultural deposit, which is outside of the proposed areas of development, was assigned State Site 50-50-02-7774 and interpreted as a pre-Contact habitation complex with a human burial component. Site 7774 is considered to be significant based on Hawaii Register Criterion D (has yielded, or likely to yield, information important for research on history) and E (has cultural significance to an ethnic group, such as Hawaiian people). State Parks has indicated its commitment to preserving all site features in their present state whereby no development other than stabilization, if necessary, will occur within a protective zone that encompasses Site 7774. A burial treatment plan will be prepared for Site 7774, Subsurface Feature 4 in accordance with regulatory requirements.

SCS also conducted a cultural impact assessment (CIA) to help identify the traditional and customary activities and resources within the project area or its vicinity. The consultation effort for the CIA included requests for consultation sent to beneficiaries who are familiar with the area and notices published in *The Honolulu Star Advertiser* and *Ka Wai Ola*. SCS received one

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written response via letter that contained no mention or identification of specific past or ongoing traditional or cultural practices within the vicinity of the proposed project. The findings in the CIA report suggest that the project area is not currently being used for traditional cultural purposes based on available information. DLNR's project will improve the spaces utilized for large group functions including family gatherings and does not restrict access to coastal areas. Proposed park improvements have the potential to foster appreciation, understanding and educational opportunities pertaining to the natural and cultural environment.

The Draft EA is anticipated to be available for public review in April 2016 and we look forward to your department's continued participation in the environmental review process. If you have any questions, please do not hesitate to contact me at 596-7790.

Sincerely,
The Limtiaco Consulting Group, Inc.

Joe Kwan, P.E.
Project Manager

cc: Carty Chang, P.E., Chief Engineer, DLNR Engineering Division

PHONE (808) 594-1888 FAX (808) 594-1865

RECEIVED
STATE PARKS DIV
'14 SEP 22 P1:06
DEPT OF LAND & NATURAL RESOURCES

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
560 N. NIMITZ HWY., SUITE 200
HONOLULU, HAWAI'I 96817

HRD14/7242

September 18, 2014

Mr. Dan Quinn
Administrator
Department of Land and Natural Resources
Division of State Parks
P.O. Box 621
Honolulu, Hawai'i 96817

Re: Comments on Pre-consultation for the Environmental Assessment for the Mālaekahana State Recreation Area—Kahuku Section Park Improvements
Lā'ie, O'ahu, Hawai'i
Tax Map Keys (1) 5-6-001: 024, 045 to 047, 049, 051, and 053 to 065

Aloha Mr. Quinn:

The Office of Hawaiian Affairs is in receipt of your August 14, 2014 letter requesting comments to assist in pre-consultation for the development of an environmental assessment (EA) of the Mālaekahana State Recreation Area—Kahuku Section. The EA is required because of the use of State lands and funding.

Improvements include the installation of new infrastructure to include water, wastewater, electrical/communications systems and construction of a comfort station and satellite restroom facilities. There will also be the replacement of the administrative office and improvements to seven cabins.

It is noted that the most recent archaeological investigation was conducted in 1980 by the Division of State Parks. It would be appropriate to update that investigation using modern standards and survey methodology. As your pre-consultation document notes, "the potential for subsurface remains and artifacts remains high in the area landward (or *mauka*) of sand dunes[.]" While we appreciate your consultation with the State Historic Preservation Division, we recommend that the project strongly consider the use of an archeological monitor, particularly

for the demolition of the several structures and the accessing and remediating of the on-site cesspools servicing the area. OHA does request assurances that should iwi kupuna or Native Hawaiian cultural materials be found during the ground disturbance, work will cease, and the appropriate agencies, including OHA, will be contacted pursuant to applicable law.

OHA supports the closing of the cesspools and the new infrastructure to include water, wastewater and electric/communications systems, and the construction of a comfort station and satellite restroom facilities. However, all work should be done with caution, given the potential for uncovering subsurface cultural materials in this sensitive shoreline area.

Finally, we would encourage you to contact beneficiaries who are familiar with the area. Verla Moore and Kela Miller are members of the Friends of Mālaekahana and are familiar with the area.

Mahalo for the opportunity to comment. We look forward to the opportunity to review the EA and provide additional comments at that time. Should you have any questions, please contact Jerry B. Norris at 594-0227 or by email at jerryn@oha.org.

'O wau iho nō me ka 'oia 'i'o,

Kamana'opono M. Crabbe, Ph.D.
Ka Pouhana, Chief Executive Officer

KM:jbn

C: Joe Kwan, P.E., Project Manager, The Limtiaco Consulting Group

KO`OLAULOA NEIGHBORHOOD BOARD NO. 28
c/o NEIGHBORHOOD COMMISSION • 530 SOUTH KING STREET, ROOM 406 • HONOLULU, HAWAII 96813
TEL: (808) 768-3710 • FAX: (808) 768-3711 • EMAIL: nco@honolulu.gov • INTERNET: http://www1.honolulu.gov

DRAFT REGULAR MEETING MINUTES
THURSDAY, AUGUST 14, 2014
HAU'ULA ELEMENTARY SCHOOL

CALL TO ORDER: Chair Pro Tem Verla Moore called the meeting to order at 6:00 p.m. **Quorum was established with eleven members present.** Note – This 11-member Board requires six (6) members to establish quorum and take official Board action.

Members Present: Kent Fonoimoana, Burton Greene, Dee Dee Letts, Gaylene Lolofie, Creighton Mattoon, Kela Miller, Kerry Moea`i, Verla Moore, Larry Nihipali, , and Norman Thompson.

Members Absent: Hans Taala

Guests: Lieutenant John Vines and Sergeant Andre Carreira (Honolulu Police Department), Captain Kalu Wolfe (Honolulu Fire Department), Adam LeFebvre (Mayor Kirk Caldwell's representative), Carolyn Unser (First Wind), John Katahira, Joe Kwan, and Russell Kunabe (Department Of Land and Natural Resources), Marven Iseke, Choon James, John Morgan, Mary Rose Cacchione, Fred Erskine, Bill Kearsley, Clyde Tomihana, Kenny Weight, Lynda Weight, Holly Smith, Feki Pouha, Catherine Enos, William Enos, Joe Kwan, John Katahira, Kathryn Heath, Barbara Cushing, Barbara Kahana, Raynae Fonoimoana, Patti Olson, KC Connors, William Jurgerson, Gil Riviere, Tony Borge, Elizabeth Borge, and Neil Baarde (Neighborhood Commission Office).

Vacancies: There were no vacancies at this time.

Election of Officers:
- Chair – Board could not reach a consensus and the item was deferred to the next meeting.
- Vice Chair – Board could not reach a consensus and the item was deferred to the next meeting.
- Treasurer – **Kela Miller was elected as Treasurer.**
- Secretary – **Gaylene Lolofie was elected as Secretary**.

Honolulu Fire Department (HFD) – Captain Kalu Wolfe reported the following:
- July 2014 Fire Statistics: The Ka`a`awa/Hau`ula/Kahuku fire stations responded to 0/0/0 structure fires, 0/0/2 wildland fires, 2/1/2 rubbish fires, 0/0/4 vehicle fires, 24/12/17 medical emergencies, 2/6/2 search and rescues, and 7/5/9 miscellaneous emergencies, respectively. There were no major incidents.
- Fire Safety Tip: HFD investigates reports of smoke to determine if a fire exists. While some fires are authorized under county and state regulations, most are unauthorized. When HFD encounters an unauthorized burn, the Fire Captain will request that the fire be extinguished immediately. If the fire is authorized, the Captain must determine if the fire is safe, properly contained, and not a nuisance to others.

Questions, comments, and concerns followed: Fire Inspection – Nihipali asked about a fire inspection that was done at a Subway restaurant in town. Captain Wolfe responded that inspections are standard and there should be fire extinguishers on the wall and nothing blocking the exits.

Honolulu Police Department (HPD) – Lieutenant John Vines reported the following:
- July 2014 Crime Statistics: Statistics included 6 assaults, 6 motor vehicle thefts (MVT), 11 burglaries, 2 drug offenses, 1 robbery, 21 thefts, and 12 unauthorized entries into motor vehicles (UEMV), for a total of 59 calls for service.

Questions, comments, and concerns followed:
1. Statistics – Letts asked if the assaults statistics included domestic violence. Lieutenant Vines responded that he is assuming it does. Fonoimoana asked if the Kahuku burglary can be separated from the statistics. Lieutenant Vines responded that it can be separated online on the HPD website.
2. Kamehameha Highway – Fonoimoana noted that there is an increasing number of people riding bicycles on Kamehameha Highway and asked if HPD can mitigate the flow of traffic around Kahana Road. Lieutenant Vines responded that if the bicyclists are not violating any laws, HPD cannot cite them, but the bicyclists should be in single file line when riding on roads. Iseki asked if HPD can place barriers on

Kamehameha Highway and the Homestead roads. Lieutenant Vines responded that if something is observed HPD can do something, but barriers cannot be placed there.
3. Kahuku Substation – James asked if the old vinyl chairs at the Kahuku Substation have been improved. Lieutenant Vines responded that they are still in the process of improving the substation. Iseki asked if there were any Neighborhood Security Watches (NSW) in the area. Lieutenant Vines will follow up.

APPROVAL OF THE JUNE 12, 2014 REGULAR MEETING MINUTES: **Mattoon moved and Miller seconded to adopt the June 12, 2014 regular meeting minutes as amended. The motion was ADOPTED by UNANIMOUS CONSENT, 11-0-0; (AYE:** Fonoimoana, Greene, Letts, Lolofie, Mattoon, Miller, Moea`i, Moore, Nihipali, Taala, and Thompson.) Amendments as followed:
- Page 2 – Bus Volunteer Program – should read – Greene presented the bus shelter partnership program to the Kahuku Community Association and the Kahaluu Neighborhood Board No. 29 in April 2014.
- Page 2 – Disaster Preparedness Presentation – should read that the activities are significant from July 2013 to July 2015.

APPROVAL OF THE MAY 8, 2014 REGULAR MEETING MINUTES – **Miller moved and Greene seconded to adopt the May 8, 2014 regular meeting minutes. The motion was ADOPTED by UNANIMOUS CONSENT, 11-0-0; (AYE:** Fonoimoana, Greene, Letts, Lolofie, Mattoon, Miller, Moea'i, Moore, Nihipali, Taala, and Thompson.**)**

APPROVAL OF THE APRIL 10, 2014 REGULAR MEETING MINUTES – **Miller moved and Fonoimoana seconded to adopt the April 10, 2014 regular meeting minutes. The motion was ADOPTED by UNANIMOUS CONSENT, 11-0-0; (AYE:** Fonoimoana, Greene, Letts, Lolofie, Mattoon, Miller, Moea'i, Moore, Nihipali, Taala, and Thompson.**)**

TREASURER'S REPORT: Treasurer Miller reported a spending of $2,304.58 for the month of July, leaving a balance of $530.42. The report was filed.

NEW BUSINESS:

Kahuku Community Fund Advisory Committee – Fonoimoana nominated Kerry Moea'i, Miller nominated Larry Nihipali and Mattoon nominated Dee Dee Letts. A resident asked if it is okay to have people from the community be on the committee. Fonoimoana responded that the Board gets to nominate the members and choose a representative. The resident asked if the nominees from the Board and one (1) is no longer on the Board. Chair Moore explained that the members do not need to be on the Board. Fonoimoana clarified the situation and noted that there should be two (2) members nominated by the Kahuku Community Association and two (2) members nominated by the Board. The resident asked if the grants given need to be in Kahuku. Chair Moore responded that she has no knowledge if the grants need to be in Kahuku. Letts commented that the resident should contact the foundation itself for more information. The two (2) members from the Board are Moea'i and Letts.

Kualoa Ranch Environmental Assessment (EA)/Associated Projects – John Morgan reported that the most urgent issue is the Spartan Race that will occur on Saturday, August 16, 2014. Morgan noted that this year there will be some changes in the parking and area for all people to enjoy. Morgan also noted that he would like to expand Kualoa Ranch. The Kualoa Ranch began in 1985 and Morgan is trying to evolve the ranch and applied for a Conditional Use Permit (CUP) special permit. Morgan noted that he has a permit for a zip line that is behind the Ka'a'awa center. Morgan would like to build another center where groups from different organizations or companies can go for a company retreat or other activities. Morgan updated the Board and noted that there are about 230 employees employed at the ranch, and the success that the ranch has seen in the past decades show a diverse agriculture, natural grass fed beef. Morgan noted that the Department of Planning and Permitting (DPP) was concerned about a few issues, but they are trying to address all the situations.

Questions, comments, and concerns that followed:
1. New Facilities – Letts noted that Morgan has been good to work with and asked about the purpose and location of a visitor center. Morgan responded that the new facility will be next to the current building and will be used as a group center that will be mostly used for group meals or activities.
2. Traffic – Moea'i asked about the projected traffic and if there are better ways to advertise the traffic flow. Morgan responded that the signs for the farm fair and the Spartan race were the electronic boards and signs noting when the events are. Morgan also noted that there will be three (3) lanes with two (2) entrances. Moea'i asked about the time line of projected projects or events. Morgan responded that the permitting process may affect the next three (3) years. Lolofie noted that the ranch has good diversity and

was surprised that the farm fair traffic was not bad. Lolofie asked how many people per day will attend the Spartan race. Morgan estimated about 3,000 per day. Lolofie asked and Morgan responded that 83 of the employees are mostly full time. Fonoimoana thanked Morgan for his efforts in trying to alleviate the traffic. Chair Moore noted that Morgan got electronic signs and asked if he acquired the signs on his own or if the Department of Transportation Services (DTS) provided the signs. Morgan responded that the promoter Morgan hired acquired it from DTS. James asked if Morgan is presenting to the Board as part of the Environmental Assessment (EA). Morgan responded that presenting to the Board is a part of the process and then the Board will review the presentation. James and Morgan responded that the consultant is Group 70.

3. Farming – Resident Jesse asked Morgan to continue expanding the farm without impacting any housing nearby. Morgan responded that his expansion will not impact any housing. Connors asked if Morgan will continue to grow local agriculture for the front part of the farm. Morgan responded that he is trying to expand the farm in order to feed more people or integrate a Polynesian culture farm by consolidating a few ideas and noted that the tour will go through the agriculture area. Morgan added that with the filming industry coming in and out of the farm, there will be more employees on the farm. Connors asked if that is something Morgan would like the representatives to look into. Morgan responded that DPP has been supportive with his expansion. Connors responded that she has no desire to shut down the film industry on the island but noted that it could help fund the area. Cushing noted that she appreciates Morgan's work. Morgan responded that he will continue to do his best. Cushing commented that Morgan should update his website about the farm to inform the community of his milestones.

Malaekahana State Recreation Area Improvements – John Katahira reported that there are three (3) plans that could happen depending on the funding that they are given. Katahira commented that in 2009 there were many cesspool violations occurring at the recreation area and gave a brief history of the area. Katahira noted that their current scope if park improvements. Katahira commented that in Plan A, the Kahuku section of Malaekahana, there will be many facilities cleared of all the hazardous materials and will be safe for the public to use and noted that later this year they will start demolishing some buildings. Katahira noted that he has met with the Kahuku Community Association about the project and commented that there will still be a camping area and a beach with a new paved road. Plan B will have the changes of Plan A with a large group use area, buildings, comfort stations, a public pavilion, and a restored version of the cabins that once existed. Katahira noted that it is alright to demolish the buildings in the area because the cabins were deemed unsafe but they are planning to restore the cabins over time. Katahira noted that DLNR is trying not to decrease the density of the area. Plan C is considered the ultimate build-out, it will be the all the plans including a brand new office building with seven (7) restored cabins instead of just the one (1) restored cabin. Katahira noted that regardless of which plan DLNR will choose the next seven (7) steps of the process will be:

1. Five (5) year concessionaire contract, which is pending at the moment
2. The demolition which will take place in the fall of 2014
3. Environmental Assessment (EA), which will be completed by November 2014
4. Design recommended improvements
5. The Department of Land and Natural Resources (DLNR) to develop a funding strategy
6. Construction, which is anticipated as early as 2016
7. The last step is starting a long term contract, which will be around 2020

Katahira noted that if there are any questions, the public can contact Joe Kwan of the Limtiaco Consulting Group at 808-596-7790.

Questions, comments, and concerns that followed:

1. Associations – Chair Moore asked if Kwan or Katahira had met with the Kahuku or Laie associations or the president of each association. Katahira responded that he has met with the president of the Laie Community Asscocation only but that he met with the entire Kahuku Community Association board. Kwan added that he met during the month of July 2014.
2. Responsibility – Fonoimoana noted his thanks for DLNR coming and presenting to the Board and asked who was responsible for the 2009 violations and if the area is still under contract. A DLNR consultant, Russell Kunabe responded that DLNR was informed by the Department of Health (DOH) and the Environmental Protection Agency (EPA) on the sewer systems they were supposed to be highlighted but it was discovered that the preparation was not approved for a large cap. DLNR owns the property and the current owner was notified by the EPA and DOH. Katahira noted that initially they were brought to the Board to correct the violations in order to expedite the violation of the 6-7 large cap cesspool. Katahira noted that two (2) have been fixed, two (2) have been covered, and four (4) are waiting and they are

serving in a single dwelling. DOH wanted DLNR to handle the sanitary facilities and have agreed to construct the comfort stations instead.

3. Comfort Stations – Fonoimoana asked if there will be a comfort station in the picnic area when the renovations are complete. Katahira responded that there will be a comfort station just above the picnic area. DLNR will not make any adjustments to the existing parking and there has not been anything proposed for the bottom area of the park. Mattoon asked who is in charge of the draft EA and who the culture consultant for this project is. Katahira responded that the culture consultant is Scientific Consulting Services (SCS).
4. Funding Strategy – Lolofie asked about the funding strategy. Katahira responded that the project is marked at $2 million, DLNR knows that it is not enough, they realize they could ask legislators on the long term concessionaires for help. Kwan added that option B will be used to provide for other parts of the park. The minimum done will be Plan A, but all of the plans will need requests put in for more funds. It was noted that Malaekahana is top priority.
5. Utilities – Letts asked if the utilities will be ran underground. Katahira responded that the utilities will be ran underground and as the project is going forward, there will be a number of cabins torn down. Katahira assured the Board that the area will look the same. Katahira noted that there are six (6) cabins remaining but they will put all seven (7) back. Fonoimoana asked and Katahira responded that the demolition contractors are integrated and they are based in Halawa. Fonoimoana asked who the applicants are for the request for proposal (RFP). Katahira responded that the selection of review cannot be answered yet because it depends on who the concessionaires are, but noted that he will follow up.
6. Disclosure – Chair Moore disclosed that she and board member Kela Miller are on the Friends of Malaekahana Board and she strongly recommends that the contractors should come from the Koolauloa area. Chair Moore is aware of the problems with infrastructure and asked what kind of new systems will be used. Katahira noted that there will be multiple new systems. Chair Moore noted that the preliminary report said the seven (7) structures will be in sync with the holding capacity and raised concerns that the park may not be large enough to accommodate required holding capacity Katahira responded that the system does not exist yet, but it will be developed. Chair Moore asked if DLNR will be demolishing the wardens' house so the area can be a part of the park. Katahira responded that the entire area will be demolished and re-done. Katahira continued and noted that the five (5) year concessionaire will show where the temporary structures will be and DLNR is currently trying to figure out what will be bought. Chair Moore noted that this area has been in decline for almost 20 years and asked where the State was during that time. Katahira responded that DLNR let the people who were initially running the facility go, and they are hoping to get support from the community.
7. Maintenance – Resident James asked how the wardens' house will be impacted. Katahira noted that the wardens' house will still be open for public use, the bathrooms will be maintained by the concessionaire or DLNR but access to beach will still be there. Resident Heath commented that a lot of people use the area from all over the island, not just the two (2) surrounding communities. Katahira noted that he will look into the draft EA and will follow up. Iseki asked if DLNR will be using all septic tanks or some cesspools. Katahira noted that they will all be septic tanks. A resident commented that in regards to the shoreline management, he does not think that they will let DLNR use septic tanks. Katahira will follow up. Resident Junior commented that he hopes DLNR will consider the number of users there will be for the area. Katahira noted that he will look into the situation with DLNR and DPR. Letts commented that DLNR should look into alternative wastewater programs. Katahira noted that he will look at the federal parts of Haleakala. James asked and Katahira responded that the website is www.TLCGHawaii.com and noted that the materials are not yet on the website. James asked if the concessionaire will be a profit or non-profit organization. Katahira responded that the Friends of Malaekahana have been running the facility and they are a non-profit organization.

GOVERNMENT REPORTS

Mayor Kirk Caldwell's Representative – Adam LeFebvre reported the following:

- Parks – Hauula Community Park reconstruct wastewater systems went to rebid and the anticipated construction start date will be on Thursday, January 1, 2015. Hauula Community Park Softball Field improvements will be sent out to bid on Sunday, September 14, 2014.
- Clarification on Declaring a Seat Vacant – There are three (3) ways a seat may become vacant: 1) The Board declares the seat vacant after three (3) or five (5) absences, 2) The Executive Secretary declares the seat is vacated because the member is no longer eligible, or 3) The member resigns in writing.
- Thomas Square – Back in May 2014, the Division of Urban Forestry (DUF), Department of Parks and Recreation (DPR) announced that the two (2) Benjamin banyan trees located at the top of the stairs directly

across from the Honolulu Museum of Art would need to be removed due to infestation of the Lobate Lac Scale. The overall plans for Thomas Square is being prepared by a consultant.

- Grants In Aid (GIA) Funding – The submitted GIA proposals are reviewed and scored by the GIA Advisory Commission and the Commission members independently review and evaluate each of the proposals submitted. The list on GIA proposals that will be recommended for funding are listed in the City's annual Executive Operating Budget. Once the budget passes through the City Council, it goes before the Mayor for approval.
- Housing First in the Koolauloa Area – The City will be expanding the supply of permanent supportive housing options specifically for chronically homeless individuals and families. The City is in the process of locating properties that can acquire and rehabilitate to suit the housing needs of the population. The City is also working with current homeless service providers to provide the case management and wrap around services for the Koolauloa population.
- Transient Vacation Units (TVU) and Bed and Breakfasts (B&B) – TVU and B&B operations are regulated by Land Use Ordinance (LUO) Sections 21-4.110-1 and 21-4.110-2 and, may only operate outside resort districts and precincts with a valid Nonconforming Use Certificate (NUC), which must be renewed every two (2) years. Any TVU or B&B operating outside of a resort district or precinct without a valid NUC is not doing so lawfully, and is subject to enforcement as violation of the LUO.
- Hauula Worklinks Computer Classes – Newman Consulting is an eligible training provider under the Workforce Investment Act (WIA). Participants who are approved by Oahu Worklinks to attend their computer classes receive tuition assistance under WIA. Tuition assistance is provided based on an individualized training plan, not for a whole class. Newman Consulting holds the classes at the site of their school, not at any Oahu Worklinks centers.
- Kualoa Ranch Film Productions – Production expenditures, its economic impact, full time equivalent job numbers and any donations to schools are figures collected by the Department of Business Economic Development and Tourism. If there are any questions, contact the Hawaii Film Office at 808-586-2570.

Questions, comments, and concerns followed:

1. Bus Service – Greene asked about the possibility of using the old buses being shipped off-island for a morning commuter bus on the 55 route because the express route 88 leaves early but does not make any stops in Kaneohe. LeFebvre will follow up.
2. Hauula Civic Center – Greene asked about the status of repairs of the Hauula Civic Center, and asked if the Speed and Handicapped signs can be replaced and noted that the Center is leaking and getting worse.
3. Kahuku District Park Lighting – Fonoimoana asked about the status of repairs to the Kahuku District Park lighting and noted that there are safety issues at the old pavilion in Hauula, and the concrete wall is loose and could injure someone. LeFebvre will follow up.
4. Tax Assessments – Chair Moore asked why her tax assessment doubled following a repainting of one of the rooms in her house and asked if it is normal. Letts noted that California tax law has the taxes remain the same as long as the current owner stays in the house and new taxes would be applied when the new owner moves in. Letts suggested that Honolulu consider a similar tax law.
5. Hauula Beach Park – A resident asked when the Hauula Beach Park will get the picnic tables back. LeFebvre will follow up.
6. TVUs and B&Bs in Koolauloa – Resident Connors asked for the number of TVUs and B&Bs there are registered in the Koolauloa area. LeFebvre will follow up.
7. Housing Funding – A resident asked if some of the Housing First funds can be used for other issues in the Koolauloa area.
8. Worklinks – Connors asked why Worklinks is closed on Mondays and requested that the decision be reviewed.
9. Kaaawa Park – Nihipali reported that there is a safety issue regarding a dead coconut tree that is about to fall and Nihipali asked for the tree to be removed.

Council Chair Ernie Martin: Mike Sakata provided a handout and reported the following:

- Fiscal Year 2015: With the Fiscal Year beginning, Sakata reported that all three (3) projects have gone into Council for review.
- Residential A Property Tax: Residential A is a class that includes homes valued over $1 million. There is also a one (1) time reduction being done for homeowners and it can be submitted by October 2014 for a compromise.

Questions, comments, and concerns followed:

1. Land Use Violations – Sakata answered for Heath that land use violations are sent to DPP.

2. Tax Assessments – Chair Moore asked if Council can re-look at the tax assessments. Letts commented that the reason the Housing First Initiative failed the first time was because the City sold all the properties at once. James noted that she testified against the tax increase, and commented that she was disappointed because the City needs a paradigm shift and asked where the funds are being wasted. Heath commented that the City recently sold the Chang Foundation and asked if it can be looked into. Sakata will follow up.

Moea'i and Thompson III departed the meeting at 8:04 p.m.; nine (9) members were present.

3. Homeless Initiatives – Connors asked if Sakata can look and see if there can be funds appropriated for a homeless initiative in Hauula. Sakata responded that he will follow up and Connors should call the Film Commission Office for more information on movie productions.

Representative Richard Fale: Representative Fale was not present and no report was provided.

PUBLIC INPUT/COMMUNITY ANNOUNCEMENTS:

Concerns – Heath raised a concern that Chair Moore did not announce the resignation of Larry Nihipali. Heath also raised concern about Thompson III being the Chair of the Planning and Land Use Committee.

First Wind: Carolyn Unser reported that there are three (3) turbines that are not spinning, which will be replaced when the wind conditions get better. Unser noted that the problem is with the pitch bearings.

Questions, comments, and concerns that followed: Repairs – Fonoimoana asked what is needed to complete the repairs. Unser responded that the pitch bearings need to be replaced and it is part of standard repairs.

Responsibilities – Connors asked about the committees on the Board, specifically what each does, what responsibilities the members have, and how can someone be a part of the committee.

Flooding – Resident Borge raised concern about the flooding that occurred on Sunday, July 20, 2014 on Pokiwai Place. The Kalanui Stream off of Homestead Road is the cause of the flooding and would like the issue placed on the agenda for the next meeting. Chair Moore responded that the Hauula Community Association could help, and then have them present to the Board. Borge commented that every time it rains, it causes problems. Borge noted that flood insurance is expensive but should be a priority. Borge hopes that the State agency can come and help fix and then report back to the Board.

Vacancy – Chair Moore announced that Larry Nihipali's seat will be vacant, and if anyone is interested they should come to the next meeting or contact the current board members.

ADJOURNMENT: The meeting adjourned at 8:20 p.m.

Submitted by: Neil Baarde, Neighborhood Assistant
Reviewed by: Rise Doi, Neighborhood Assistant II
Reviewed and approved by: Chair Verla Moore

THE LIMTIACO CONSULTING GROUP
CIVIL ENGINEERING AND ENVIRONMENTAL CONSULTANTS

March 8, 2016

Mr. Michael Tosatto, Administrator
National Marine Fisheries Service
Pacific Islands Regional Office
NOAA Inouye Regional Center (IRC)
1845 Wasp Blvd., Building 176
Honolulu, HI 96818

Subject: Pre-Consultation for the Environmental Assessment
Malaekahana State Recreation Area - Kahuku Section Park Improvements
Tax Map Keys (1) 5-6-001: 024, 045 to 047, 049, 051, and 053 to 065
Laie, Oahu, Hawaii

Dear Mr. Tosatto,

The State of Hawaii, Department of Land and Natural Resources (DLNR) is proposing to improve the 36-acre portion of the Malaekahana State Recreation Area - Kahuku Section. The state-owned site consists of the area that is *makai* (or seaward) of Kamehameha Highway and along the northern end of Malaekahana Bay. The project site is currently utilized for recreational uses including camping, lodging and day use activities. DLNR's project provides the opportunity to install new infrastructure systems and park facilities in accordance with applicable regulatory standards. Proposed park improvements have the potential to foster appreciation, understanding and educational opportunities pertaining to the natural and cultural environment.

Pre-assessment consultation for DLNR's project was initiated by letter dated August 14, 2014 (see attached letter and figure). The unexpected closure of the project site in November 2014 allowed DLNR to simultaneously address safety concerns from falling tree limbs and initiate planned actions for the removal of several severely deteriorated structures. The project site re-opened for public use including camping in May 2015. The Draft EA that we are preparing for DLNR's project pursuant to Chapter 343, Hawaii Revised Statutes is anticipated to be available for public review later this month (March 2016).

The U.S. Fish and Wildlife Service suggested that we include your organization because the Hawaiian monk seal may use beach habitat in the vicinity of the proposed project. Please note, however, that no structures or associated infrastructure will be sited or installed within the shoreline setback. DLNR's project will affect areas that are away from the shoreline and there are no plans to develop or alter the coastline area.

We would appreciate any relevant input and information from your agency regarding the presence of monk seals in the area and potential project impacts to the species. You are welcome to transmit your organization's comments at this time or when the Draft EA is published.

1622 Kanakanui Street • Honolulu, Hawaii 96817
(808) 596-7790 • tlcghawaii.com

Please send comments to:

Curt Cottrell, Administrator
DLNR, Division of State Parks
P.O. Box 621
Honolulu, HI 96809
Fax: (808) 587-0311

And please provide a copy to:

Joe Kwan, P.E.
The Limtiaco Consulting Group
1622 Kanakanui Street
Honolulu, HI 96817

We look forward to your participation in the environmental review process. Should you have any questions, please contact me at (808) 596-7790.

Best regards,
The Limtiaco Consulting Group, Inc.

Joe Kwan, P.E.
Project Manager